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THE
GARDENERS' CHRONICLE

A Weekly Illustrated Journal

OF

HORTICULTURE AND ALLIED SUBJECTS.

(ESTABLISHED IN 1841.)

VOL. LV.—THIRD SERIES.

JANUARY TO JUNE, 1914.

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

1914.
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THE

Gardeners' Chronicle

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CHRONICA WILSONII.

IF we except Charles Maries, who did a certain amount of collecting in the Flowery Kingdom for Veitch more than thirty years ago, "Chinese" Wilson is the pioneer of the race of professional collectors which has sprung into existence of recent years, and has taken over the work of the Lazarist David, and other missionaries and distinguished amateurs who have done such splendid botanical work in China, and whose names are household words to all interested in the subject. With a good start of all competitors, Wilson has already introduced to cultivation a considerable proportion of the trees, shrubs and plants he came across in the tangled mass of mountain and forest, ravine and river, which seems so largely to constitute the western part of China; and though neither a Hooker nor Henry in experience or command of pen, this account* of his wanderings is the most readable that botanists and gardeners have had about a country which, thanks in no small measure to the author's own discoveries, has become of prime importance to them.

Though in all probability no one but

* *A Naturalist in Western China*. By Ernest Henry Wilson. 2 vols. (Methuen, 30s. net.)

himself is yet in a position even remotely to gauge the extent of Wilson's work in China, every year that goes by adds to our realisation of the importance of it; east, west, north, and south one can find hardly a garden in Britain in which there is not already some evidence of his first two expeditions.

In the nature of things a long time must elapse before we are able to appraise Wilson's introductions in the way of Chinese trees and shrubs at their true value; and though, as is inevitable, a proportion of these will have but little interest for us, æsthetic or economic, it seems likely that his discoveries may exer-

Tom Tiddler's ground which lies between China and Thibet. Beyond that he has followed the course of the Yangtse and its great tributary, the Min River, for over a thousand miles westward of Ichang, and yet a glance at the excellent map with which the book is provided shows that he has only scratched the country as yet.

Of late years the tendency of expert opinion has been to regard the Western Chinese flora as allied to that of the Eastern Himalaya, and as a result of the experience gained during his first two expeditions, Wilson saw no reason to question the accuracy of the generally accepted



FIG. 1.—AVENUE OF CUPRESSUS FUNEBRIS AT CHAO-CHU CH TEMPLE, CHENG TU.

(From *A Naturalist in Western China*.)

cise a decided influence on arboriculture in Great Britain.

Wilson's first expedition, undertaken for Veitch, began in 1899, and lasted till 1902; a second journey for the same firm was begun in 1903. After four years he set out again, this time in the interests of Harvard University, and 1910 saw him once more in China on behalf of the same Institution. Apart from his researches into the flora of Yunnan, as to which the book is disappointingly silent, Wilson's wanderings covered a considerable tract of remote and botanically virgin ground in North-west Hupeh, a huge slice of Szechuan, and much of that

view; indeed, he placed it on record at the time that in his judgment the flora of Western Szechuan could only be compared to that of the Sikkim Himalaya. Further acquaintance with the country generally has evidently led our author to modify the opinion he first held, for he now advances anew the interesting theory—originally conceived by Asa Gray—that the alliance is rather with the flora of Eastern North America. While admitting a considerable affinity between the Himalayan and Chinese flora, as to which there can surely be little doubt, Wilson adduces a certain amount of evidence in support of his own conclusions, while some colour:

is lent to the theory by the comparison Prof. Sargent makes, in the introduction, between the flora of Eastern North America and China. Prof. Sargent points out that the comparison cannot be regarded as conclusive, and it will no doubt be well to keep an open mind on the subject till further research into the flora of the country, stretching for several hundred miles, between the Eastern Himalaya and Western China proper reveals the relation of it to the flora of its eastern and western neighbours. Wilson considers the Chinese flora the richest of the temperate regions of the world, and as he is in a better position to judge

from 35 to 60 feet in height, and the largest is 6 feet in girth. . . . The distinctive beauty of *Davidia* is in the two snow-white connate bracts which subtend the flower proper. These are always unequal in size, the larger usually 6 inches long and 3 inches broad, the smaller $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches. . . . At first greenish, they become pure white as the flowers mature and change to brown with age. The flowers and their attendant bracts are pendulous on fairly long stalks, and when stirred by the slightest breeze resemble huge butterflies hovering amongst the trees. The bracts are somewhat boat-shaped and flimsy in texture,

gorgeous beauty of their flowers defies description. They were there in thousands and hundreds of thousands, all clad with a wreath of blossom that almost hid the foliage. Some flowers were crimson, some bright red, some flesh coloured, some silvery pink, some yellow and others pure white. The huge rugged stems, gnarled and twisted into every conceivable shape, are draped with pendant mosses and lichens. How the *Rhododendrons* find foothold on these wild crags and cliffs is a marvel. Many grow on the fallen trunks of Silver Fir, and some are epiphytic; beneath them *Sphagnum*-moss luxuriates. . . . On bare, exposed cliffs I gathered two diminutive species, each only a few inches tall, one with deep purple and the other with pale-yellow flowers."

In this book the association of limestone with *Rhododendron* is so insistent as almost to compel the conclusion that we are reading of a race of lime-tolerant *Rhododendron*, but this is too much to hope for.

Trees have their full share of the book, and the arboriculturist will envy the man who has feasted his eye on *Ailanthus Vilmoriniana* 150 feet high and 20 feet round, and the Tulip tree—dear to the heart of the Frenchmen who fashion the bird-like bodies of monoplanes—70 feet high, to mention two only at random out of a long catalogue of species, many of them new to the western world.

On the reverse of the picture one sees the remains of dense forests of *Abies Delavayi* (the Cold Fir of the Chinese), many of the trees giants of 150 feet, cut down by ruthless hands and still prone where they fell, great *Rhododendron* bushes feeding on the rotting trunks.

In all directions, apparently, wanton destruction of forests is proceeding apace, and Wilson considers that if things are allowed to go on in this fashion there will not be an acre of accessible virgin forest left in all Central, Southern or Western China in fifty years' time. He lays the blame for this deplorable state of affairs largely at the door of the charcoal burners and makers of potash salts.

In the book will be found many pages bearing on sport, agriculture, manufactures, the manners and customs of the Chinese and Thibetans, and other matters of interest to the general reader, but not coming within the province of this review. They exhibit that power of observation which is one of the attributes of the complete traveller.

Realising that the book is for general reading and not for his special delectation, even the hypercritical botanist will find little to carp at in so much of it as concerns him. Here and there a trifling misprint creeps in, while now and again the interest is allowed to flag. The index is conceived on far too narrow lines—one may even search in vain for mention of the Yangtse River—but, all said and done, it is a plain, unvarnished tale by a man of whom all Englishmen interested in horticulture or forestry have reason to be proud. *A. Grove.*



FIG. 2.—A MANDARIN ORANGE TREE IN FRUIT.
(From *A Naturalist in Western China*.)

than most, one may be content to accept his view; moreover, gardeners will rejoice to know that he is confident a great part of the Chinese flora is suitable for cultivation in temperate regions.

Much of the space in a book of this nature is necessarily absorbed by the mere enumeration of the flora met with, but in the volumes before us such catalogues are robbed of any suspicion of aridity, because of the illuminating observations the author makes on the specimens concerned. Take, for instance, his account of a clump of *Davidia* opposite which he pitched his camp one evening: "There are over a score of them growing on a steep, rocky declivity; they vary

and the leaves often hide them considerably; but so freely are they borne that the tree looks from a short distance as if flecked with snow. . . . To my mind, *Davidia involucrata* is at once the most interesting and beautiful of all trees of the north temperate regions."

Wilson gives the *Rhododendron* pride of place, and as he knows of 160 species and has himself introduced no fewer than sixty to cultivation, the genus is clearly entitled to the distinction. The species range from tiny small-leaved Alpines, growing at about 15,000 feet, and with one or two of which British gardeners are beginning to make acquaintance, to huge old bushes 40 feet high and more: "The

NOVELTIES OF 1913. ORCHIDS.

A REVIEW of the novelties of the past year in the light of the only known test, namely, the certificated plants at the Royal Horticultural Society's shows, brings prominently to the mind the fact that the great number of new Orchids presented for public inspection has been made up almost entirely of garden-raised hybrids. So much are the hopes and expectations of cultivators now based upon the superior novelties to be raised by cross-breeding that the efforts of both nurserymen and amateurs are largely concentrated upon the raising of seedlings. Nevertheless it has to be pointed out that the fact that numberless seedlings are raised each year is not necessarily a guarantee that abundant novelties of high quality will be forthcoming. In earlier days, when true species were more commonly used in crossing, better results were obtained in proportion to the number of crosses made, and greater uniformity prevailed in the character of the seedlings. Now-a-days, high-bred hybrids are more often used for crossing, and the seedlings from such parents exhibit increased variation and not infrequently a proneness to degeneration. The saving point is that in batches of quite an ordinary character exceptionally valuable seedlings appear unexpectedly and, as diamonds discovered in valueless deposits, they help to compensate for much spade work that fails to yield satisfactory results. Notwithstanding the large number of Orchid cultivators, the names of those who succeed in winning Awards at the exhibitions do not vary greatly from year to year, and most of the awards are secured by quite a limited number of growers. The work of the R.H.S. Committee continues to increase. But it cannot be said that it does not exercise the most careful discrimination in making its awards. In spite of the very large number of subjects dealt with during the past year, including those presented at the great shows at Chelsea and Holland Park, only thirty-seven secured First-class Certificates and one hundred and six Awards of Merit. Of these awards some were afterwards cancelled owing to the fact that no coloured drawings were forthcoming for the Society's collection.

Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt, Tetbury (gr. Mr. H. G. Alexander), who has gained the highest number of awards, exhibited some of the best novelties, and the specimens presented for inspection have invariably borne the evidence of perfect cultivation, as is shown by the large number of cultural commendations awarded to Mr. H. G. Alexander. Those which won First-class Certificates were as follows:—*Odontoglossum Pescatorei* Lady Holford, the best and largest typical form; the finely-coloured *Laelio-Cattleya luminosa* "Holford's variety"; *L.-C. Britannia* "Westonbirt variety"; the fine pale yellow *Brasso-Cattleya heatonensis* Canary; *Cypripedium Roundhead*

(a model flower), and, at the last meeting of the year, the charming white *Cattleya Percivaliana* alba Lady Holford (see fig. 5, p. 10). Awards of Merit were gained for *Cattleya Leda*, a pretty hybrid between *C. Percivaliana* and *C. Dowiana* aurea; *C. Trianae* Colossal, a large flower of the best type; *C. Magnet*; *Odontoglossum Vivien*; *O. amabile* Zeus; *O. illustrissimum* "Westonbirt variety"; *O. crispum xanthotes* "Westonbirt variety"; *Odontioda Cooksoniae* "Holford's variety"; *Oncidium varicosum* "Westonbirt variety," the largest form of this useful yellow Orchid; *Cypripedium Cyclops*, and *C. Olympus*, both

worthy to rank with the other remarkable *O. Pescatorei* at The Dell, *O. P. Schröderianum* and *O. P. Veitchianum*; *O. ardentissimum* Ebor, and the noble *O. Othmarschen* shown at Chelsea; *Cattleya Trianae* The Baron; *C. Maggie Raphaël* "The Dell variety," two charming flowers; and *Brasso-Laelio-Cattleya The Baroness*, in shape and tint the best yellow hybrid of the year. The plants which received Awards of Merit were *Odontoglossum crispum* The Baroness, a noble flower, splendidly grown; *Brasso-Laelio-Cattleya Veitchii* "The Dell variety"; and *Cattleya Gaskelliana* Fairy Queen.



FIG. 3.—NATIVES CARRYING BRICK TEA TO THE MARKET.

(See "Chronica Wilsonii," p. 1.)

large and of fine shape; *Laelio-Cattleya Ganymede* "Holford's variety"; and *L.-C. Armada*.

Baron BRUNO SCHRODER, The Dell, Englefield Green (gr. Mr. J. E. Shill), by the number of good plants shown during 1913 has demonstrated that the Dell collection is one of the finest in Europe. Great improvements have been made under Mr. Shill's superintendence, and in consequence of the benefit bestowed by the newly-constructed block of Orchid houses the output of seedlings will be increased. The best plants, for which First-class Certificates were obtained, were:—*Odontoglossum Pescatorei* Sanderæ, the fine spotted form, well

The late Sir TREVOR LAWRENCE, Burford (gr. Mr. W. H. White), was a frequent exhibitor of Orchids at the Royal Horticultural Society's meetings, his plants securing for his Orchid-grower a large number of Cultural Commendations, one of the most honourable awards. The Burford collection is rich in rare and curious species; and one great attraction at the meetings of the Royal Horticultural Society were the curious and pretty so-called "botanicals," but since the award of the Botanical Certificate has been transferred from the Orchid to the Scientific Committee there has been a great falling off in such exhibits; so much so, that a return to the old order of things in this

matter may seem desirable. Two of the best of the Burford plants were *Laelio-Cattleya Fascinator-Mossiae* and *Odontoglossum Lairesei*, and these secured Awards of Merit.

PANTIA RALLI, Esq., Ashtead Park, Surrey, takes a great interest in choice varieties of particular crosses. His best exhibits of the past year were *Brasso-Cattleya Menda* (B.-C. Queen Alexandra × *C. labiata* Virginia), which secured a First-class Certificate on February 18; *Miltonia Charlesworthii* "Ralli's variety"; *Cattleya Empress Frederick* var. *Avia Clifton*; *Odontoglossum Crawshayanum superbum*; *Oncidioda Cooksoniae* and *Odontioda Cooksoniae*, both distinguished as Ralli's variety, and both securing Awards of Merit.

J. GURNEY FOWLER, Esq., Brackenhurst, Pembury, Tnnbridge Wells (gr. Mr. J. Davis), although much occupied by transferring his fine collection from the old quarters at Glebelands, South Woodford, has shown some choice novelties during the year. A large number obtained First-class Certificates, e.g., *Cymbidium Alexanderi* "Fowler's variety," a very handsome cream-white flower with rose markings; *Miltonioda Harwoodii* "Fowler's variety," of a deep cerise-rose colour; *Odontoglossum Amethyst* "Glebelands variety," and *Odontonia Brugensis Eileen*, very showy hybrids. *Cymbidium glebelandense* var. *J. Davis*, a most profuse flowerer, and very pretty, received an Award of Merit.

C. J. PHILLIPS, Esq., The Glebe, Sevenoaks (gr. Mr. Bucknell), a comparatively new cultivator, is keenly interested in Orchid hybridisation. Mr. PHILLIPS never shows an indifferent plant, and those which fail to secure awards do so generally because they are too near to a plant previously certificated. In these tests the Royal Horticultural Society's two thousand odd pictures of Certificated plants are of the highest value. His best plants were *Cattleya Adnla* "Glebe variety" (F.C.C., October 7), *Odontioda Madeline* var. *Prince of Orange*, *Odontoglossum amandum*, *Cattleya graniris*, and *Laelio-Cattleya Mrs. Temple*, which secured Awards of Merit.

Sir JEREMIAH COLMAN, Gatton Park (gr. Mr. J. Collier), received First-class Certificates for *Cymbidium Lady Colman* var. *Golden Queen*, a bright and floriferous hybrid; *Odontoglossum Queen of Gatton* (which is the best yellow ground hybrid *Odontoglossum* in its section, especially in its perfect shape); and *Laelio-Cattleya Frederick Boyle* "Gatton variety." An Award of Merit was obtained for the delicate blush-white *Dendrobium bigibbum Lady Colman*, which many would prefer to the others.

The Duke of MARLBOROUGH, Blenheim Palace (gr. Mr. Hunter), showed several pretty new *Cypripediums*. *C. Iona* (*bellatulum* × *Fairrieianum*) secured an Award of Merit, a similar award being voted for *Laelio-Cattleya Olenus* "Blenheim variety," which is one of the richest in colour in its class.

F. M. OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), has in his *Brasso-Cattleya Cliftonii magnifica*, for which a First-class Certificate was given on March 18, one of the best plants of the year. *Cattleya Tityus* "Shrubbery variety" and *Cypripedium Minnie* var. *Amazon*, also from the Shrubbery collection, secured Awards of Merit.

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), seldom lets a meeting pass without sending something. His *Brasso-Cattleya Vilmoriniana* "Goodson's variety" (F.C.C.), *Odontioda Latona* "Goodson's variety," a fine scarlet flower; *Odontoglossum George Day* (a *Rossii rubescens* cross), and *O. Aireworth* "Goodson's variety," all received Awards of Merit.

DE BARRI CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), whose familiarity with *Odontoglossums* is well known, has flowered some good novelties during the past year. His *O. Queen Alexandra Theodora* (A.M., July 29), is a distinct advance on other products of this famous cross raised by him, whilst *O. Cleopatra* "Rosefield variety" received an Award of Merit at the meeting held on December 16.

E. H. DAVIDSON, Esq., Orchid Dene, Twyford, has now a large number of rare Orchids selected for cross-breeding, and a fine stock of seedlings raised by his Orchid-grower, Mr. Lakin. Among the many excellent exhibits which secured awards are the new scarlet *Habenaria Roehelenii*, *Sophro-Cattleya Saxa* "Orchid Dene variety," of a delicate salmon-rose colour; the white-petalled *Cattleya Cybele*, *Odontioda Thwaitesii Purple Emperor*, *Odontoglossum Aireworth* "Orchid Dene variety," and the richly-coloured *Laelio-Cattleya Wellesleyi* var. *Flambeau*. He has also shown a number of *Odontoglossum Rossii rubescens* crosses.

W. R. LEE, Esq., Plumpton Hall, Heywood, Lancashire, keeps the Manchester area in touch with Westminster by frequently sending exhibits. His *Brasso-Laelio-Cattleya King Emperor*, which secured a First-class Certificate on April 15, is one of the largest and best-coloured of the *B. Digbyana* crosses; and his *Cypripedium Queen Alexandra*, *C. Goliath*, and *C. Alcinida* var. *Strelsa*, which received Awards of Merit, are among the best shown during the past year.

Other amateur's exhibits which deserve mention are *Odontioda Mossiae* and *Miltonioda Harwoodii* "Moss' variety," of the late J. S. Moss, an enthusiast in *Odontoglossums*; and *Laelio-Cattleya Dominiana* "Southfield variety" (F.C.C., April 1). *Cattleya Hardyana Mrs. W. Waters Butler* secured an Award of Merit, which is evidence of its distinct character, as it had to compete with a long list of forerunners. The two last were from W. WATERS BUTLER, Esq., Southfield, Edgbaston (gr. Mr. Jones). *Odontoglossum crispum* "Cobb's variety" was shown by Mr. WALTER COBB; *O. eximium* "Warnham Court variety" by Mr. C. J. LUCAS; and some showy hybrid *Odontoglossums*

by WILLIAM THOMPSON, Esq. In our list of novelties seen in flower but not yet certificated, various promising hybrids came from F. J. HANBURY, Esq. (gr. Mr. Matthews), W. H. ST. QUINTIN, Esq. (gr. Mr. Puddle), ERNEST MOCATTA, Esq. (gr. Mr. Stevenson), Mrs. BISCHOFFSHEIM (Orchid-grower, Mr. Jones), Mrs. NORMAN COOKSON (gr. Mr. H. J. Chapman), H. T. PITT, Esq. (gr. Mr. Thurgood), G. F. MOORE, Esq., and R. G. THWAITES, Esq.

CONTINENTAL EXHIBITS.

These have not been plentiful during the past year, probably owing to the numerous exhibitions held on the Continent. Monsieur FIRMIN LAMBEAU, Brussels (gr. M. Demeuter), the leader of modern Orchid culture in Belgium, occasionally sends a few plants, and these are always of fine quality. Those shown last year were sent only in the winter and spring, the best being *Cattleya Enid* var. *F. Lambeau* (*Mossiae Reineckiana* × *Warszewiczii Frau Melanie Beyrodt*), a charming white-petalled flower, which received a First-class Certificate; *Odontonia Firminii* (*M. vexillaria* × *O. crispum*), a very interesting cross; *Laelio-Cattleya Firminii* var. *ardens*, a brilliant orange-red and purple colour; and *Cattleya intertexta Juliettae*, a pretty new form of an old Veitchian hybrid. These received Awards of Merit.

Monsieur H. GRAIRE, of Amiens, has shown some very pretty crosses of *Odontoglossum nebulosum* and *Odontiodas*, several of which received Awards.

(To be continued.)

FORESTRY.

TIMBER FOR CLOG SOLES.

CLOG-MAKING is a time-honoured industry of this country, for we learn that in 1200 the English archers petitioned the King to prohibit clog-makers using Aspen, or there would be a shortage of that wood for their bows and arrows. The best wood for the manufacture of clog soles is that of the Alder, though for inferior wear the timber of the Birch, Sycamore, Willow and Lime is occasionally used.

For ease in working, clean trees of from thirty to fifty years old are preferred, and such as are grown in close woodlands are superior to those from field and hedgerow. The price of Alder timber varies a good deal, according to the district and situation of the plantation where the trees are felled, but about 9d. per cubic foot would be a fair average. On an estate in Wales from which large quantities are annually cut the fixed price is 10d.; but in other parts of the country it may be as low as 7d. or 8d. per foot. If the roads are good, it matters but little the distance from the railway station of the plantation in which the trees are felled, for as a rule the clog soles are cut out roughly and sent for finishing in the larger centres of industry where clogs are worn. The cost of carriage of the timber in the rough is thus avoided, the roughly formed soles being carted to and despatched from the nearest rail or dock.

During the past six months many consignments of clog soles in the rough have been sent from the Bridewell and other estates to the northern parts of the country, in the factories of which the finished shape is given to the sole and the

leather tops attached. It is estimated that fully seven thousand men are employed in the clog-making industry. The making of the soles is an art which can only be successfully engaged in after years of practical experience, and the clog-maker likes his outdoor life and works with an ease and grace that is surprising, and unequalled in any other branch of timber conversion by hand. His tool resembles a stout scythe blade which is worked on a swivel joint, attached to a bench or form about a yard long and a couple of feet in height. One end of the knife is fitted with a handle for ease in manipulation, while the other is securely fixed between iron uprights to the bench, which affords room for plenty of play. It is surprising how, with a few dexterous and well-directed movements of the knife, the roughly-split block of Alder wood is converted into the clog sole. We have seen an expert clog-maker turn out twenty pairs of these soles in an hour. Generally, permission is given to make the clog soles in a convenient opening of woodland, where the timber has been felled, this resulting in a great saving of carriage, a tarpaulin-covered shed being erected and heated by the chippings from the clog soles. Nothing is wasted by the clog-maker, the refuse chips being readily sold as firewood in the neighbourhood at 3d. or 4d. a sackful.

It may seem surprising, but the best Alder—the cleanest and easiest of manipulation—comes from Germany, and this foreign wood is preferred to what is produced at home. But the German Government has for many years been planting Alder in the State forests, and a profitable speculation it is when we consider that the wood is ready for making into clog soles when twenty years planted and that from 5d. upwards per cubic foot can be obtained for the timber. Cheap German clogs are, however, also sent to this country, the soles being made of inferior and more porous wood than the Alder, but they are not in great demand and realise only low prices on the market. In this country the plantations of pure Alder are few and far between, and we have mainly to rely on mixed thinnings and isolated specimens, the timber of which is usually rough and difficult to work. Scotland produces the largest amount of timber suitable for the clog-maker, followed by Ireland and the South and West of England.

When we consider that the Alder alone is one of our hardiest trees and, moreover, one that will produce excellent timber in waterlogged ground, where few other species could succeed, it is surprising that so few plantations of the tree are to be found, and that we are dependent on foreign supplies for an industry which gives remunerative employment to upwards of seven thousand workmen. A. D. W.

ANNUALS.

FOR over thirty years I have been interested in annuals, but it was only last summer I was able for the first time to carry out an extensive trial where I could observe the plants daily. This may seem a strange statement for a seedsman to make, but I will explain. I made the trial referred to at my private residence, and that makes all the difference. On the seed farm or in regular trial grounds work is a matter of business routine, but at home one can examine one's flowers morning, noon and night, on weekdays and on Sundays, solaced by a pipe or a cigar, none daring to make one hurry over the pleasant exercise.

In the autumn of 1912 I decided to make a border for annuals out of land which had been sown down to grass for five or six years. It stretched alongside a path, and the size of the border I decided upon was over 100 yards long by 6 feet wide. I had it well manured and bastard-trenched, leaving the surface quite rough during the winter. I top-dressed the surface

just after digging with soot and lime, and it was left undisturbed until March, when it was pointed over with the digging-fork to the depth of about 4 inches. This brought the surface into friable condition and the treading tended to settle and firm the soil. Again it was left undisturbed till the beginning of May, when it was rolled, and thereafter the surface was worked as fine as possible with a rake. On the 5th and 6th of May the sowing was done, 330 varieties of annuals being sown. In ten days many of the plants had appeared above ground, notably Alyssums, Clarkias, Cyanus, Godetias, Lupinus, Candytufts, Collinsias, Leptosiphons and Virginian Stocks. It was well into June before the Hibiscus, Nicotianas, Nemesias and several of the Calliopsis appeared. Many half-hardy sorts, such as Phlox Drummondii, Lobelia and Portulaca, took three weeks to get above ground.

In the border I arranged three rows of clumps, the front row being of plants under 12 inches in height, the centre row plants from 12 to 18

over it. Larger seeds had a covering spread on carefully with the hand, and made level with the edge of a 9-inch wooden label. Then every plot was gone over and pressed rather firmly with a smooth flat piece of board. This was done to ensure that every seed was in close contact with the soil; then after this was done the whole bed got the slightest touch with a fine rake to take away the flat-pressed appearance which I dislike, and also to make the surface more easily penetrated by rain. On the whole I got good germination, many of the varieties coming up like Mustard and Cress for thickness; but then began the process which more than anything else accounted for the success I obtained. The plants were ruthlessly thinned—not once or twice, but just as often as was necessary—until I had arrived at the plan laid down. For example, Candytufts and Poppy plants stood 6 inches apart when the thinning process was completed. Strong-growing plants like Kochia, many of the Chrysanthemums, Larkspurs and Malopes, were so thinned as to



FIG. 4.—CULTIVATION OF ANNUALS.
(*Cynoglossum linifolium* after thinning)

inches, and the back row plants of over 18 inches in height. This arrangement did not work out quite correctly because, as was to be expected, many of the plants grew several inches taller than expected.

To make regular and neat work I had oval hoops made with which to mark out the spaces for the different varieties. The hoops were made of thin wood, which could be pressed into the surface of the soil, and on removal left a clear line, inside which the seeds were carefully sown. The size of the hoops for marking out the front row were 21 by 12 inches—21 inches long by 12 inches across. The centre plots marked by the same process were 24 by 16 inches, and the back row ones for strong-growing plants, like Chrysanthemums and Larkspurs, were 30 by 18 inches. The space left between the clumps was equivalent to the width of the clump. The method of covering may, I think, be referred to with advantage. I had barrowloads of sifted soil prepared. To cover the minute seeds like Lobelia a dusting of this soil was applied to the Lobelia plot by putting a handful or two of soil into a fine sieve, $\frac{1}{8}$ inch mesh, and shaking it

leave only eight to a dozen plants in the large spaces 30 by 18 inches at the back of the border. I might safely say that, as a rule, plants in the front plots were thinned to 4 inches apart, those in the centre plots to 6 inches, and those in the large back plots to 9 inches. The illustration in figure 4 shows a clump of *Cynoglossum linifolium* after the final thinning. My object in writing these notes is to endeavour to interest a wider public in annuals, which, when well treated, are not the weedy things so many people think they are. In some future notes I hope to write more particularly of varieties. W. Cuthbertson, Duddingston, Mid Lothian.

PANDANUS VEITCHII.—Plants of this variegated stove species, that have been used for decorating purposes in dwelling-rooms, and have become disfigured may be used for purposes of propagation. Select the best coloured side shoots or suckers and insert them singly in thumb pots filled with suitable soil. They will root in a gentle bottom heat in the stove or propagating pit. The old plants may be discarded. E. H., Lockinge.

The Week's Work.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

THE SEASON.—Seldom has the New Year opened more auspiciously than the present one, crops being generally plentiful. The great drought of early summer appeared as if it might ruin the vegetable crops, but very soon after the rains most of the plants developed

rapid growth, and they have given a very practical demonstration of the value of soil-drying. There will probably be some inconvenience arising from the early maturity of Cabbages, which have been fit to cut for some time, but in deeply cultivated soil it is marvellous how well the



crops come through abnormal conditions.

ENDIVE.—Batches of Endive should be placed at the cool end of the Mushroom house at five-day intervals, in order to have them always fresh and nicely blanched. Frequent transplanting enables one to lift them for the last time with nice earthy balls, and in the Mushroom house, if placed close together, with a little water under them, damping of the leaves will not occur. Those in frames should be very freely ventilated, Endive being almost hardy.

TOMATOS.—Seeds of Tomatos for early summer picking should be sown at once. A few seeds should be placed in each thumb pot, the seedlings to be subsequently reduced to one in each pot.

CAULIFLOWERS.—Seedlings left over from the late autumn in boxes may now be transplanted into large 3-inch or 4-inch pots for planting out in March. A compost of equal parts loam and manure from a spent Mushroom bed may be used; or, in a heavier soil, the addition of leaf-soil may be advisable. The plants must on no account be coddled or over-watered.

ONIONS AND LEEKS.—The first sowing of these may be made at once in boxes 4 or 5 inches in depth. Use fine loam and leaf-soil in equal proportions. Some growers allow the seeds to germinate in a cool structure, others in heat, but in the latter case the seedlings must be removed to a cool house whilst still in a small state.

CUCUMBERS.—Where plenty of heat can be obtained, seeds may be sown now for raising plants to fruit at the end of March. One seed should be sown in each thumb pot in a compost of equal parts loam and leaf-mould. Plunge the pots to the rim, and cover with glass to prevent mice from reaching the seeds. The seedlings will require transplanting a day or two subsequent to the development of the cotyledons.

SEAKALE.—If this crop is not yet lifted, it should at once be done, trenching the ground immediately thereafter to clear it of broken roots. Trim the roots of the crowns, and store the latter in clumps underground, where they can be easily got at and placed in the Mushroom house for successional cuttings. For late use arrange a

sufficient number of crowns close together in the open garden, and cover them with some light material deep enough to blanch the growth which pushes naturally in late spring. The strongest of the roots or thongs should be prepared at once for making another plantation, and be covered in the meantime with soil. Buds will form at the upper part of the thongs, and thus give the plants a longer season than if the roots were not prepared until the time of planting.

PLANTS UNDER GLASS

By C. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

HIPPEASTRUM.—Of recent years much has been done by hybridisers to improve the size, shape and colour of these valuable bulbous plants. They now range in colour from deep crimson to mottled white, and a few hybrids may be termed quite white. If Hippeastrums

are required during March and April the present date is a good time to begin forcing, assuming that the plants have had a good season's growth and a resting period. The best and soundest bulbs that show a quantity of roots round the ball of soil should be selected for

earliest forcing. Give the plants a good soaking of water to which a little manure water has been added about 24 hours before top-dressing them. With a pointed stick remove the surface soil without injuring the roots, and top-dress with a mixture of fibrous loam, leaf-soil, manure from a spent Mushroom bed, a little lime rubble and bone meal. Examine each bulb for the presence of thrips, bugs, or other insect pests, and if any are detected remove all loose material and brush the bulbs with a mixture of Gishurst Compound as directed for thrips. Select a house or pit fully exposed to the light. Make up a mild hotbed of leaves or tanners' bark to a depth of 18 inches, and plunge the pots to the rims. Maintain a temperature of 55° in the house, and a temperature in the bed of 65°. Syringe the bulbs daily to promote a moist atmosphere; very little water should be given at the roots until the growths are well advanced. When the plants are in full growth give frequent waterings of liquid manure and Clay's fertiliser; and as the flowers open remove them to a cool house and shade them from bright sunshine. When the flowering period is over return the plants to a heated pit. Encourage growth as much as possible with stimulants, and maintain a moist atmosphere by frequent syringings.

CINERARIA.—The earliest batch of these useful plants is beginning to flower, and the plants should be removed to an intermediate house. Exercise great care in watering and seeding, as plants at this stage are very liable to damp off at the neck. Plants for later flowering should be potted at once. If the plants are attacked with the leaf-boring grub they should be closely watched and each grub picked off. Fumigate the house once a fortnight, as Cinerarias are very subject to green fly.

FORCING.—To maintain a continual supply of bulbous and other forced flowers it is necessary to place a fresh batch of plants in heat every week. Daffodils should not be plunged directly in strong bottom heat, but be grown first for about a week in an atmospheric temperature of 55° to 60°. Azalea mollis, Lilacs, Viburnums and Wistaria may now be forced with satisfactory

results. Clumps of *Anchusa italica* Dropmore variety should be lifted from the open ground, potted and placed in a cold frame or vinery until they start into growth, when they should be brought into a greenhouse. Paeonies may be lifted and treated in much the same manner as *Anchusas*.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Exors. of The Late LADY DE ROTHSCHILD, Aston Clinton, Buckinghamshire.

VINES.—The houses in which Grapes are still hanging should be kept as dry as possible, and the temperature should be kept at about 45°. Each bunch should be carefully examined once a week, and all decaying berries removed. Prune the vines in houses from which the fruit has been

cut, afterwards removing all loose bark from the vines, and well wash the rods with an insecticide. White wash the walls and paint the woodwork if necessary. In any case, the latter should be thoroughly cleansed. After this has been done, the loose surface soil should be removed

from the borders, and a new mulching of turfy, fibrous loam, well-decayed manure, and lime rubble spread over the entire surface, using sufficient to bring the border up to its normal height. If it is inclined to be dry, the border should receive a thorough soaking of clear water and the vinery be kept cold until closing down time. Pot vines, now in active growth, must be carefully watched, always keeping the soil in a moderately moist condition, avoiding the slightest tendency to dryness at the roots. Where the pots are plunged in fermenting material the danger is not so great as if bottom heat is supplied by hot-water pipes. The roots are now very active, and as the vines advance in growth stimulants should be given to prevent any sudden check to the vines during the early stages of growth. Early houses may now have an extra few degrees of heat. Forcing will not be so difficult now that we have passed the shortest day. Each vine should be disbudded as soon as it is apparent which growths are carrying the best bunches. In any case avoid overcrowding the young shoots. As soon as the flowering period begins maintain a temperature of 70° to 75° by day and a minimum temperature of 65° by night. During intervals of sunshine, with a rising temperature, air may be admitted in moderation, always preventing draughts, which would cripple the tender foliage and cause rust on the berries. As soon as fertilisation is completed the borders should receive a thorough soaking with tepid water or diluted liquid manure, and a genial atmosphere should be maintained by damping the paths and staging several times a day with clear water. The evaporating troughs should be kept filled with water, to which a small quantity of strong liquid ammonia has been added, say about one tablespoonful to each gallon of water. The bunches should be thinned as early as possible, after which they will make rapid progress until they reach the stoning period. Heavy cropping must be carefully guarded against in the case of early-forced vines.

EARLY PEACHES AND NECTARINES are now well advanced in their flowering stage. Maintain a temperature of 60° to 65° by day and 55° at night, admitting air on every favourable occasion during mild weather, both day and night. Artificial fertilisation of some kind is



essential at this early period of the year, but if a hive of bees can be introduced into the house much time and labour will be saved.

EARLY STRAWBERRIES IN POTS should now be well under treatment, if ripe fruit is required during March and April. Plants that were placed in a cool house during the early part of last month will be showing signs of activity, but they must not be excited unduly, or many of the crowns will collapse during the early stages of their growth. Careful watering with tepid water only must be observed. Gently syringe on bright, fine days, and maintain a constant circulation of air at a temperature of 45° to 50° until the plants are coming into bloom, after which, with the lengthening of the days, higher temperatures may be allowed.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON, Oakwood, Wylam-on-Tyne.

EARLY-FLOWERING DENDROBIUMS.—In gardens where deciduous Dendrobiums are grown in quantities it is often found desirable to have a few of the plants in flower early in the year. To obtain this result a careful selection should be made from among plants of which the flower buds at the side of the pseudo-bulb, opposite the scars where the leaves have been cast, are in a forward state. The selected plants should be gradually removed from their resting quarters with a view to transferring them eventually to the warm house or stove. To move the plants direct



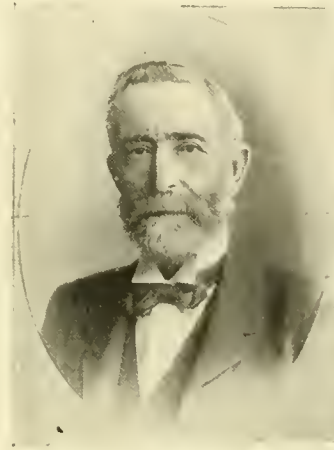
into immediate heat would probably excite too rapid growth, and instead of flowers side shoots would make their appearance. Even when plants are brought from one temperature to another by degrees, if too liberal treatment is afforded in respect to root moisture there will be growth production instead of flowers, so that considerable discretion should be exercised in watering. Only sufficient water is necessary to keep the pseudo-bulbs in a normally plump condition; very little root moisture is required when the atmosphere of the house is damp. As soon, however, as the flower buds appear more liberal treatment may be given. When selecting plants care should be observed to use those with the pseudo-bulbs thoroughly ripened. Any forcing of immature plants would lead to the production of side growths instead of flowers. The plants selected should be placed where they will be fully exposed to the light. Some of the most useful sorts for early forcing are *D. aureum* and *D. nobile* among the species, and *D. Cassiope* and *D. Ainsworthii*, with its allies, among the hybrids. If there is no demand for the plants early in the season it is more satisfactory to permit them to come on in the regular course, the flowering taking place in March or April. Not only is there less likelihood of the plants producing undesirable side growths, but the more favourable conditions of the outside atmosphere give greater substance and finer colour to the flowers. Seedling Dendrobiums and young propagated plants usually commence new growth early in the year. As soon as this commences, any repotting that may be necessary should be attended to, as the growths usually produce roots from the base in the early stages of development. Being easily damaged, repotting (or resurfacing as the case may require) should be attended to before these roots become too far advanced. A compost of finely chopped Sphagnum-moss and fibrous

peat, finely chopped and used in equal proportions, with sufficient sand to render the compost porous, is the most suitable for small plants.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl B'FAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

FOREWORDS.—My remarks each week will deal not only with work in the flower garden proper, but also with the different aspects of natural or "wild" gardening, and the many and varied purposes to which hardy and half-hardy flowering and foliage plants can be applied. The flower garden should provide pleasant surprises, and be a source of charm and delight in all seasons. In order to obtain the best effects repetitions, either in design or in planting, should be avoided, so that at each turn there will be something fresh to contemplate and new beauties to admire. It is of great importance to prepare the soil thoroughly at the start by deep cultivation; trenching to the depth of two feet is to be recommended, incorporating, at the time of digging, plenty of well-rotted animal manure or leaf-mould, with lime, rubble, or sharp sand to keep the texture open. By this means the soil will become better aerated, and the warmth of the sun's rays will penetrate to the roots.



PROTECTION FROM FROSTS AND PESTS.—Examine, at frequent intervals, half-hardy plants, such as Gunneras, Eremuri, Primulas, and *Lobelia cardinalis*, to see that birds or animals have not disturbed the protective materials placed about them, exposing their crowns to the injurious influence of frosts. Mice frequently destroy bulbs during hard weather, and pheasants are also destructive visitors to the garden—these latter are privileged, so that only preventive measures may be taken. The best plan is to surround the plants with wire netting; but the mice should be trapped, using such a trap as the "Little Nipper," baited with cheese.

SUMMER BEDDING PLANS.—Schemes and quantities of plants required for next summer's bedding should be prepared, so that the necessary stocks may be raised in sufficient quantity. The seed order should be sent to the seedsman and beds of fermenting material prepared, so that the seeds of slow-growing subjects may be raised at an early date. Many hardy herbaceous perennials may be raised from seeds in full expectation of their coming true to type and being of vigorous habits. All summer-bedding plants should be kept in a comparatively low temperature for the present, so as to discourage growth as much as may be done with safety, because all growth made during short and comparatively dark days is weakly, and unsuitable for the production of good blooms or ornamental foliage. But any stocks which are insufficient should be placed in a warmer temperature, so that propagation may be commenced at an early date. Such plants as *Antirrhinums*, *Petunias*, and *Verbenas* may now be relied upon to come true from seeds supplied by first-class seedsmen, so that it is not necessary to winter stocks of these plants. The portion of the gardens at Madresfield Court which is reserved for the cultivation of hardy and half-hardy annuals in large, irregular groups is always much appreciated and greatly admired.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

MORELLO CHERRY.—The Morello Cherry is a valuable fruit for private gardens; the tree is perfectly hardy, and thrives well in exposed positions on the north side of walls. It is a good plan to plant trees in different aspects, thus ensuring a succession of fruits; specimens on north walls furnish a supply late in the season. If the ground is in fair condition, no manure should be mixed with it at the time of planting—as a rule, healthy, young trees grow rapidly, and gross wood is of no advantage. The ground, having been trenched some time



previously, should be made firm and level on the surface. Scatter some fine soil or wood ashes amongst the roots; also mortar rubble or some other form of lime, which is necessary for all stone fruits. Trim all damaged roots with a sharp knife, and shorten any that are unduly strong, in order to encourage the development of a fibrous root-system. Fasten the trees lightly to the wall for the present; the branches may be trained more securely when the soil has settled in position. Place a mulch of some light material over the roots to protect them from extremes of weather.

PRUNING AND TRAINING THE MORELLO CHERRY.—Freshly planted Morello Cherries require very little pruning. Cut back the weak shoots to a growth bud, and shorten the strong ones, as this will lay the foundation of a good shaped tree. Established trees require to be pruned the same as Peaches and Nectarines, that is, all old fruiting wood should be cut away, and sufficient, well-ripened, young shoots trained in to furnish the wall space. The best time to do the work is directly after the fruit is gathered. The shoots of Morello Cherries are often trained too thickly.

RENOVATING OLD TREES.—Trees that have been neglected for some years should be overhauled carefully with a view to removing some of the worn-out branches, that is, those bearing few or no young shoots. When the work of thinning is completed, train the branches at suitable distances apart, and spray them thoroughly with an alkali wash, which will completely alter the appearance of the tree. Next remove some of the exhausted soil from the border, and replace with fresh loam. Feed the roots with bone-meal or other fertiliser, wood ashes, and lime rubble. If fresh soil is not available, fork the border, after applying a dressing of artificial manure and wood ashes, finishing with a mulch of farmyard manure.

MANURING FRUIT TREES.—Take advantage of frosty weather to wheel manure to trees that require feeding. Fruit trees cannot be expected to mature heavy crops year after year without manurial assistance. Bush fruit of all kinds, including Gooseberries, Red and Black Currants, and Raspberries will all be greatly benefited by a good dressing of the best manure obtainable. It is becoming a matter of some difficulty to obtain a sufficient supply of animal manure for the garden, but fish manure, bone-meal, and other concentrated fertilisers may be used instead. The garden fire will provide valuable material in the ashes for dressing fruit borders or for mixing with other manures. Collect and burn all prunings, weeds, and rubbish. Worn-out and diseased trees should be removed at once to the fire and burned.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

APPOINTMENTS FOR JANUARY.

- FRIDAY, JANUARY 2—
Dundee Hort. Assoc. meet.
- SATURDAY, JANUARY 3—
Roy. Inst. meet.
- TUESDAY, JANUARY 6—
Roy. Inst. meet. (Lecture by Prof. Turner, "Our Sun").
- WEDNESDAY, JANUARY 7—
B.G.A. Ex. Council meet.
- THURSDAY, JANUARY 8—
Roy. Inst. meet.
- MONDAY, JANUARY 12—
United Hort. Ben. and Prov. Soc. Com. meet. Surveyors' Inst. meet. (Paper by Mr. Graham Mould on "The Law of Dilapidations").
- TUESDAY, JANUARY 13—
Roy. Hort. Soc. Coms. meet. Stirling and Dist. Hort. Assoc. meet.
- WEDNESDAY, JANUARY 14—
Surveyors' Inst. Prelim. Exam. (2 days).
- THURSDAY, JANUARY 15—
Manchester and N. of England Orchid Soc. meet. Linnean Soc. meet. B.G.A. (Watford Branch) meet.
- FRIDAY, JANUARY 16—
Kew Gardeners' Social Evening.
- MONDAY, JANUARY 19—
Surveyors' Inst. Junior meet. (Paper by Mr. H. J. Smith on "The Housing and Town Planning Act in Working").
- TUESDAY, JANUARY 20—
Scot. Hort. Assoc. annual meet. Roy. Inst. meet. (Lecture by Prof. W. Bateson on "Animals and Plants under Domestication").
- THURSDAY, JANUARY 22—
Gardeners' Roy. Ben. Inst. annual meet. and election of pensioners at Simpson's Restaurant, Strand, at 2.45 p.m. Roy. Botanic Soc. meet.
- FRIDAY, JANUARY 23—
Roy. Inst. meet.
- SATURDAY, JANUARY 24—
Roy. Inst. meet.
- TUESDAY, JANUARY 27—
Roy. Hort. Coms. meet. (Lecture at 3 p.m. on "Some Aspects of American Forestry"). Roy. Inst. meet. (Lecture by Prof. Bateson on "Animals and Plants under Domestication").
- THURSDAY, JANUARY 29—
Manchester and N. of Eng. Orchid Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 37.8°.

ACTUAL TEMPERATURES:—
LONDON, Wednesday, December 31 (6 p.m.): Max. 38°; Min. 30°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, January 1 (10 a.m.): Bar. 30.2; Temp. 34°. Weather.—Fine.
PROVINCES.—Wednesday, December 31; Max. 43°, Donegal; Min. 28°, Shields.

SALES FOR THE ENSUING WEEK.

- MONDAY AND WEDNESDAY—
Rose Trees, Shrubs, Perennials, Lilies, etc., at Stevens' Auction Rooms, King Street, Covent Garden, W.C., at 12.30
- MONDAY AND FRIDAY—
Dutch Bulbs, Herbaceous Plants, Lilies and Hardy Bulbs, Fruit Trees and Roses, at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.
- WEDNESDAY—
Border Plants and Perennials, Lilies and other Hardy Bulbs at 12, Palms and Plants at 5, at 67 and 68, Cheapside, E.C., by Protheroe and Morris.
Trade Sale of Miscellaneous Bulbs and Roots at 12 o'clock, 1,296 c/s Japanese Liliiums at 2.30 o'clock, at 67 and 68, Cheapside, E.C., by Protheroe and Morris.
- THURSDAY—
Special Sale of Roses, at 67 and 68, Cheapside, E.O., by Protheroe and Morris, at 1.

Sir Trevor Lawrence.

Our readers would receive with pained surprise the brief announcement of the death of Sir Trevor Lawrence which we printed last week. It was only in April last that he retired from the Presidency of the Royal Horticultural Society with the good wishes and the thanks of every horticulturist for the splendid services he had rendered to the Society and to horticulture. Little was it anticipated that the end would come after only a few short months. At that time it was not generally known that the late President continued to discharge the duties of his post to the last possible moment. When he intimated to the Council his wish that another President should be appointed, enfeebled health was already beginning to have its



(Photograph by Elliott and Fry.)
THE LATE SIR TREVOR LAWRENCE, BT., K.C.V.O., V.M.H.

effect. The Council at first, naturally reluctant to part with its honoured chairman, begged him to reconsider his decision to resign, and so devoted was he to the interests of the Society that he might have been led to do so had not the Council learned in time the true state of Sir Trevor's health, and ceased to press its request.

Although during his life he held several important posts, including for twelve years that of treasurer of St. Bartholomew's Hospital, it is as President of the premier Horticultural Society that he was best known. When, in 1885, he succeeded Lord Aberdare, the affairs of the Society were in a very unsatisfactory condition. The membership was small, the expenses exceeded the income, and the ship seemed to be drifting on to the rocks.

Few men could have been found unselfish enough to saddle themselves with

the responsibilities attaching to the post of President in such depressing circumstances, and fewer still to possess the first-hand knowledge of horticulture requisite to enable them to take the helm with any prospect of success.

Son of a woman who in her day was as keen a horticulturist as could be found, Sir Trevor inherited from his mother his great interest in plants and flowers, and he used to say that it was that inherited love of gardening which led him finally to accept the presidential chair.

The progress of the Society during the last twenty years is well known, and Sir Trevor Lawrence's share in bringing about such satisfactory results was dealt with so fully in our issue of April 5, 1913, last, that we need say no more than that when, after twenty-eight years, the Society again changed pilots, the fellowship numbered over 13,000, and the Society found itself possessed of ample funds.

How far the revival of the fortunes of the Society and the ever-increasing interest in horticulture have acted and re-acted on each other it is difficult to say, but there can be no doubt the Fellows owe a great debt to the late President, and it is to be hoped there may be some early and suitable recognition of his services to horticulture generally.

Until a few years ago it almost seemed as if Sir Trevor Lawrence had discovered the elixir of life, for he appeared perennially young; few men with four score years to their credit would be able, as was Sir Trevor, to spend a day in the garden with a friend, and show but little sign of fatigue at the end of it. Essentially a man of affairs, he possessed in a marked degree a sense of tact and discretion which enabled him to ride smoothly over many a difficult place; he was broad-minded and catholic in his tastes, a delightful host both in his own home and as President of the Society, and a keen practical gardener. Probably no amateur has received, and rightly received, more awards for new or little-known plants than Sir Trevor, as may be seen on reference to our April issue already mentioned.

Transpiration in Light and Darkness.

Practical gardeners and physiologists alike are agreed on the importance of water to the plant. They know that by the judicious employment of water the rate and course of a plant's development may be controlled, and they are alive to the fact that the water requirements of different plants vary to a remarkable extent. Some plants are ever-thirsty, and can never have more than enough, others are so abstemious that they are intolerant even of a few days' rain. Yet, despite the large body of valuable knowledge which we possess with respect to the relation of the plant to water, the meaning of many well-known facts remains obscure, and the significance of various practices commonly employed in gardening has not been fully elucidated. For example, it was only a short time ago that we drew attention to the interesting observation of Mr. Balls that in Egypt, the instant the sun



[*Photograph by C. P. Raffill.*]

RHODODENDRON SCHLIPPENBACHII :
COLOUR OF FLOWERS PALE ROSE WITH REDDISH-BROWN DOTS ON THE UPPER PETALS.

falls upon the cotton plant it ceases to grow owing to the fact that the loss of water outruns the uptake.

Again, who can say with certainty what is the effect on transpiration of syringing the leaves of a vine growing in a hot-house? Or, who would be prepared to state the relative amounts of water which a plant loses during day and night?

These examples of our ignorance or of the uncertainty of our knowledge suffice to show that there is ample room for further physiological investigation into the workaday processes of plants. Such investigations carried out recently by Sir Francis Darwin have brought to light a number of facts of very considerable importance. The task which Sir Francis set himself in the first place was to discover some method of measuring the amount of water which a plant subjected to certain conditions would give off if it could. The importance of this point of view will be realised when it is remembered that the stomata have the last word in controlling transpiration. Thus, imagine a plant brought into such conditions as encourage it to transpire more actively, but at the same time cause the stomata to close. Evidently if resource is had to the ordinary methods for estimating transpiration, the result would be misleading, for it would show only what the plant is doing and not what it is trying to do. In other words, the behaviour of the stomata may mask that of the plant, and it is certain that not a few cultural failures arise from the fact that conditions are sometimes imposed on a plant which encourage the cells of its leaves to give off water vapour vigorously into the air-spaces of the leaf, whilst the stomata, being closed, prevent the escape of that vapour. Sir Francis Darwin found a simple and apparently quite effective way round this difficulty in furthering our knowledge. He put the stomata out of action by smearing a layer of vaseline over the leaf-surface and then provided for the escape of water by making a number of incisions in the leaf. That this drastic treatment may be employed successfully depends on the fact that the leaf consists of an enormous number of transpiring cells all abutting on inter-communicating air-spaces. The incisions destroy but a limited number of these cells, and the remainder are free to carry on their work unimpaired during the short period of the experiment, and any water vapour which they give off escapes freely from the cut surfaces into the air.

As the result of these investigations, Sir Francis has shown, first, that the rate of transpiration is strictly proportional to the humidity of the air, and, second, that even when the air is saturated with moisture, a certain, albeit small, amount of transpiration still goes on. Having devised a method of avoiding the error due to the caprice of stomata he proceeded to examine the effect of light and darkness on the rate of transpiration of leaves. He showed that light exercises a speeding-up action on this process quite apart from its well-known action in causing stomata to open. With leaves of Laurel (*Prunus Laurocerasus*) and of Ivy the average rate of transpiration in light and darkness—

other conditions being equal—is as 130 : 100. That is to say, light, quite apart from its effect on stomata, exercises an accelerating influence on the rate at which the cells of a leaf give off water. To what this acceleration is due remains, however, to be discovered.

Coloured Supplement—The subject of the coloured plate to be published with the issue for next week is *Crinodendron Hookerianum*.

Supplementary Illustration.—Although *Rhododendron Schlippenbachii* was first discovered by Baron SCHLIPPENBACH, growing amongst other shrubs on the shores of Possjet Sound, Russian Manchuria, very long ago, and was collected by Oldham in Korea and its islands in 1863, it is, from the general cultivator's point of view, still a new plant. It is only since the introductions by WILSON, from China, where he found many species of deciduous *Rhododendrons*, mostly, however, with smaller flowers, that this type has come into wider cultivation in this country. The Japanese have this species in cultivation in the city of Jedo, where they call it *Kurofune tsutsusi*. It belongs to the type of *Rhododendron*, which markedly shows the necessity botanists found for including the garden genus *Azalea* with *Rhododendron*, for here, as with other species, we have a shrub bearing the soft, thin-textured, hairy leaves of the *Azalea* and the flowers of the conventional *Rhododendron*. The flowers are produced in loose umbels; the corolla is about three inches in diameter, and of a charming soft, rose-colour, with reddish-brown spots towards the base of the upper lobes. Our illustration is from a plant growing in the Royal Gardens, Kew, where it is quite hardy, and forms a bush three to five feet in height. This type of *Rhododendron* is distinct in character, possesses great outdoor garden value, and may easily be forced into bloom for conservatory decoration.

HAYWARDS HEATH HORTICULTURAL SOCIETY.—The executive of this society, feeling that it has become advisable to extend its scope, has decided to alter the title to "The Haywards Heath and Mid-Sussex Horticultural Society," so that the whole of the district may be included in its sphere of influence. It is also suggested that in order to concentrate its energies on the summer show the exhibition which has hitherto been held in the autumn shall be abandoned, and a sum of £200 is to be offered in prizes at the summer show. The secretary is Mr. GEO. PREVETT, The Rosary, Haywards Heath.

TOBACCO-GROWING IN BRITAIN.—In view of the interest which is being taken in the cultivation of Tobacco in this country, the Customs returns, showing the great increase in the crop, are of value. In 1906 the crops in Ireland amounted to 7,353 lbs., on which a duty of £736 was paid. In the next year the yield had increased to 20,173 lbs., and the duty paid was £2,113. During the year ending March 31, 1913, Ireland supplied 123,997 lbs. of Tobacco, whilst in Scotland, where this crop was first cultivated in 1911, last year's yield was 2,225 lbs. English-grown Tobacco did not find a place on the returns until 1912, when 319 lbs. were chargeable to duty; in 1913 the amount had risen to 8,004 lbs. In the whole of the United Kingdom 139,226 lbs. were grown, and the duty amounted to £23,963.

KEW GARDENERS' SOCIAL EVENING.—The 17th annual social evening of the gardeners at the Royal Gardens, Kew, will be held on Friday, January 16, at the Boat House Hotel, Kew. All old Kewites who intend to be present are asked to notify the hon. sec., Mr. G. E. JOHNSON, 8, Waterloo Place, Kew.

A PRECOCIOUS RHODODENDRON.—Mr. J. D. ROBERTSON, superintendent of the City of London Cemetery, Little Ilford, Essex, kindly sends a photograph taken on December 18 last of a *Rhododendron* in bloom in the cemetery, remarking that if no frosts occur many more flowers will open.

PRESENTATION TO MR. W. A. COOK.—On relinquishing his charge at Leonardslee, Mr. W. A. COOK was the recipient of mementos from the garden staff and the local public hall and cricket club.

PUBLIC PARK FOR LEIGH.—LORD LILFORD has offered to the Town Council of Leigh, Lancashire, 38 acres of land, including Bedford Wood, at a nominal rental of 10s. per annum, as a public park. The law of entail prevents the free gift of the property, which is near to the town.

NATIONAL HORTICULTURAL SOCIETY OF FRANCE.—The annual election of officers of the National Horticultural Society of France has resulted in several important changes in the constitution of the society. M. ALBERT TRUFFAUT, who has been the premier Vice-President since the death of M. HENRI DE VILMORIN, has retired on account of indisposition. His place has been filled by M. ABEL CHATENAY, who for many years has acted as Secrétaire-Général of the society. The Secrétaire-Général is M. ALFRED NOMBLLOT, of the well-known firm of NOMBLLOT-BRUNEAU AND Co., and the Assistant Secretary will be M. LEON LE CLERC. In order to give the provincial nurserymen a share in the management of the society other changes have been made. There are now two Vice-Presidents chosen from the Paris region, namely, M. PH. DE VILMORIN and AUG. NONIN, and two for the provinces, viz., MM. ALBERT BARBIER, of Orléans, and LOUIS LEROY, of Angers. Proportional representation on the Council has also been provided for the provinces, and we notice that MM. PH. RIVOIRE, of Lyons, Dr. VIDAL, of Hyères, MURNARD, of Lille, and DENAÏFFE, of Carignan, have been added to that body.

A NEW AGRICULTURAL JOURNAL.—We notice that a new weekly agricultural journal has just appeared in France called *La Terre*. It is the organ of the agricultural section of the recently established Republican Committee of Commerce, Industry, and Agriculture. It is published under the direction of M. DECKER DAVID.

SCOTTISH SOUTHERN COUNTIES GARDENERS' ANNUAL DINNER.—The annual dinner of the Scottish Southern Counties Gardeners' Association took place at Dumfries on the 19th ult., about sixty being present, under the chairmanship of Mr. W. STURROCK, Larchfield Nurseries, Dumfries. The toast of the evening, "The Gardeners," was proposed by Mr. CRAWFORD, of Messrs. LITTLE AND BALLANTYNE, Carlisle, and replied to by Mr. CRICHTON, Kinmount Gardens. Other toasts were proposed, and songs were sung by a number of gentlemen. A collection was taken on behalf of the Royal Gardeners' Orphan Fund and a satisfactory sum obtained. The committee consisted of Messrs. STURROCK, E. J. JOSS, J. BROWN, W. HUTCHINSON, T. PRITCHARD, J. CROALL, and J. McLEOD. Mr. W. TAYLOR was secretary.

HORTICULTURAL INSTRUCTION IN MIDDLESEX.—The Higher Education Committee of the Middlesex Education Committee, having considered the question of agricultural and horticultural instruction in the county, has recommended the following scheme as an experiment:—Two scholarships to be offered each year (the value to be £20 per annum for the first two years, to be increased to £50 in the third and fourth years); the scholarships to be open to pupils of 16 and under 18 years of age; and, further, that, subject to the payment of a moiety of the cost by the Development Commissioners, the Education Committee enter into an arrange-

ment with University College, Reading, for a period of three years to deal with plant diseases in Middlesex at an estimated cost of £300 per annum. These recommendations have been adopted, with the addition that the scholarships should be open to boys of parents residing in Middlesex.

THE PRODUCTION OF HAIRS ON TROPAEOLUM PERGRINUM.—All good conjuring is done by means of simple devices, and the magic of Nature is doubtless wrought by means as simple as they are obscure. Thus a simple observation led Mr. A. W. HILL to conclusions of extreme interest with respect to the production of hairs on the stems and petioles of the usually glabrous Canary Creeper (*Tropaeolum peregrinum* L.)—the "canariensis" of our gardens. Mr. HILL observed that a plant, the leaf-blades of which had been eaten by snails, produced a few hairs. Taking the hint, he experimented with seedlings of this species, removing the leaf-blades successively as they formed, and thereby compelling the plant to utilise its green petioles and stems for assimilatory and transpiration purposes. As a result of the operation, Mr. HILL found that dense tufts of hairs are

THE KEEPING OF POULTRY.—We have before us a little book with the alluring title, *Profitable Poultry Keeping*,* and it contains helpful advice and information, imparted in simple language, many illustrations of apparatus to be used on a poultry farm, and photographs of examples of the different breeds.

GLASGOW SEED AND NURSERY TRADE ASSOCIATION.—At the ninth annual dinner of this association, which was held on December 20 last, in Ferguson and Forrester's Restaurant, Glasgow, Mr. T. B. B. KERR presided over a large gathering of members. In responding to the toast of "The Seed and Nursery Trade" the chairman alluded to the great antiquity of their calling, and spoke of the climatic difficulties with which they had to contend. The great advance in popularity of the Sweet Pea could be realised when a recently published catalogue enumerated 280 varieties, whereas in 1855 only four varieties were listed, and as late as 1899 a well-known Glasgow firm mentioned in their catalogue only four named varieties and four separate colours. During the twenty-five years he had been in business in Glasgow he had seen many changes, and of the firms then in being only four now

flowers, Borage, Ericas, Aubrietia Dr. Mules, Gaillardias, Chrysanthemums, Achilleas, Berberis Darwini, Periwinkles, Veronicas, Violets, Papaver orientalis, Centaurea alba and rosea, and *Centranthus rubra*.

ANNUALS FOR 1914.—The annual output of year-books and diaries is as great this season as ever, and gardeners and farmers are provided for not less than other trades and professions.

The Gardeners' Diary, published by the Royal Horticultural Society, has quickly found a very large public, and the new edition has several advantages over the earlier issues. It contains reliable information on gardening subjects, the usual diary matter, and space for recording memoranda under each date throughout the year.

The Horticultural Directory, published by the *Journal of Horticulture*, is an indispensable guide to those who are in need of ascertaining the names and addresses of persons engaged in any department of horticulture.

Foresters' Diary.—From W. RIDER AND SON, LTD., we have received a copy of WEBSTER'S *Foresters' Diary*, a useful notebook now in its twelfth year of publication. The diary is small enough to go easily into the waistcoat pocket, but, being printed on India paper, the pages are numerous enough to contain a large amount of useful information on forestry, including a list of foresters in the United Kingdom. The diary gives ample space for notes and several pages for cash account.

Vinton's Agricultural Almanac and Diary.—We suppose that there are few farmers who now begin the year without a copy of *Vinton's Agricultural Almanac and Diary* in which to record the various operations of the year. The book forms a kind of encyclopaedia and diary in one, for the first half contains a mass of useful information, chiefly statistical and official. A diary with ample space for notes and memoranda, a carefully compiled breeders' table, and a cash account, complete this most useful work.

The Smallholder's Year Book is a compendious volume, containing information of the most varied kind and helpful illustrations. Advice is given on many subjects that will interest the small landholder, and the prospective holder is told, in the plainest and simplest way, how to obtain his land in the cheapest manner.

Live Stock Journal.—From Messrs. VINTON AND Co. we have received a copy of the *Live Stock Journal Almanac* for 1914. The almanac begins with a comprehensive breeders' table, and is followed by a series of interesting articles upon different breeds of stock by well-known experts. A number of illustrations of fat stock give variety to the work, and the last pages are occupied by a quantity of useful information of various kinds, including a directory of breeders.

Who's Who, which has issued for so many years from the well-known house of A. and C. BLACK, has become a familiar household friend. The volume is indispensable, and we wonder how it was possible to be accurate in matters which *Who's Who* treats upon when the only book of the kind obtainable was the *Peerage*—of very limited scope, naturally. From the same publishers we have the *Who's Who Year Book*, to be used with the larger volume. The information in the year book is classified under different headings, not, as in *Who's Who*, only under an alphabetical list of surnames. Messrs. BLACK also send us another handy volume, this time of a specialist nature—the *Writers and Artists' Year Book*. The book is in effect a directory of publishers classified in various ways, and gives the fullest information about each, for the use of authors and artists who wish to obtain publication for their productions. It is interesting to find a largely-increased space given to the subject of cinema plays—or "scenarios," as they are often erroneously called—a subject which has leapt to the front rank of public in-



FIG. 5.—CATTLEYA PERCIVALIANA ALBA LADY HOLFORD.

(Awarded R.H.S. First-class Certificate on December 16, 1913.) (See p. 3.)

produced by the plant in the course of a few days. Evidently, therefore, this production of hairs is connected with the arrest of growth and the abnormal condition of the plants with respect to water.

ON GRAFTING LILACS.—Mr. C. S. HARRISON, of Nebraska, has contributed to a recent issue of *Horticulture* an interesting article on the grafting of Lilacs. He observes that in the Northern States of America Privet is a poor stock, and that he uses *Syringa vulgaris* for grafting. Mr. HARRISON insists that of the two types of root of the common Lilac, that with a tap root is the softer, the type with well-developed lateral roots being liable to "sprout." Japanese and Chinese tree Lilacs may be grafted on the latter type of vulgaris; the procedure being to wait until the graft has thrown out roots of its own and then to lift the plants and remove all the vulgaris roots. The roots of the Rouen Lilac, which also do not sprout, may be used for stocks for any of the vulgaris family. The reciprocal graft may also be made. Mr. HARRISON speaks highly of the Chinese Tree Lilac, which his firm introduced into the Western States. It grows fast and blossoms in summer, bearing a mass of fragrant white blossom. These Lilacs are best grown on their own roots or as grafts on the "Western Green Ash."

remain. Referring to the early closing movement, Mr. KERR said that the one o'clock closing was a boon, but he felt that the trade required some consideration in this respect during their busy seasons, and a relaxation of the rule would be beneficial to business. The toast of "Horticultural Interests" was given by Mr. J. DOBSON, and responded to by Mr. JAMES WHITTON.

UNSEASONABLE FLOWERS.—Until Wednesday last information continued to reach us of flowers blooming out of season in various parts of the country. Mr. R. C. NORCUTT, of the Woodbridge Nurseries, sent us on the 23rd ult. two blooms of Frau Karl Druschki Rose and one of La France, which he gathered on the coast near Woodbridge, Suffolk. Mr. NORCUTT describes them as the best specimens he has ever seen out-of-doors at so late a date, and there is every reason to believe his word, for in general development they appear good enough for an N.R.S. exhibition. Another correspondent, writing from Messrs. BROWN'S nurseries at Wetherope, near Stamford, states that the following plants were in bloom out-of-doors on Christmas Day:—Pansies, Violas, Reses, Primroses (double and single), Carnations, Statice, Polyanthus, Trollius, Scabiosa caucasica, Wall-

* The Proprietors (C. Arthur Pearson, Ltd.) of the *Smallholder*, price 1s.

terest in a few short years. Another directory from the same enterprising firm is the *English-woman's Year Book and Directory*, and it may be recommended to any woman who takes an intelligent interest in matters connected with the feminist movement.

AGATHIS VITIENSIS.

IN Australasia the genus *Agathis* has great economic importance. *A. australis*, the Kauri Pine, has been described as the "monarch of the New Zealand forest," where it towers up with a straight trunk to a height of 180 feet,

a girth of 15 feet. In the interior of the larger islands of the Archipelago the resinous gum which exudes from the trunk is made into pastilles, and narrow strips enclosed by pieces of wood are used for illuminating purposes in the smaller islands. This gum is called Makadre, and from the smoke the natives obtain a pigment which they use for personal adornment. The illustration of a branchlet and cone from a tree growing in the Mexican House at Kew shows the character of this member of the Conifer family. The leaves are of a pale green colour, and vary in length from 3½ to 5 inches, and the male catkins are of cylindrical shape. The Kew tree was raised from seeds presented by Sir J. B. Thurston in 1881 whilst he was Governor of Fiji. The

NOTICES OF BOOKS.

WILD WHEATS.*

How few of us realise the antiquity and romance associated with the plant whose grains have furnished the daily bread of generations of mankind for thousands of years. Among the early Greeks and Romans Wheat was the chief cereal, and the Wheat-fields of ancient civilised races of Egypt and Western Asia must have been extensive. Some forms of Wheat were even grown by Neolithic man and the tribes who formed prehistoric settlements in Switzerland and other parts of Central and Eastern Europe.

To-day this cereal is indispensable to the most intelligent and progressive of the white races, and only in backward countries is Rye still the



FIG. 6.—FOLIAGE AND CONE OF AGATHIS VITIENSIS.

[Photograph by C. P. Raffill.

and in favourable circumstances attains to a girth of 40 feet, and lives to a great age. The timber is used for a variety of purposes, its durable nature, straight grain, strength and elasticity recommending it to ship-builders, carriage-makers, bridge-builders, carpenters, whilst it is used even for making sounding-boards for pianofortes. The sap-wood contains a deal of resin, and consequently possesses great calorific value, whilst the value of the Kauri gum is well known. Many other species of *Agathis* are natives of the Continent, and of these *A. vitiensis*, which occurs in mixed forests in the Fiji Archipelago, is valuable to the Fijians. This species becomes a tall tree, a hundred feet high, with a clean stem of some sixty feet; an occasionally fine specimen will have

plant was removed from the tropical palm house in 1897 to the newly-built Mexican house, where it has grown well and is now 25 feet high. None of the species of *Agathis* (syn. *Dammara*) may be grown satisfactorily out-of-doors in this country. The late Mr. Jonathan Rashleigh planted a small tree of *A. australis* in his very interesting garden at Menabilly, Cornwall, where it eked out a short and rather miserable existence.

bread-corn of a large portion of the population; coincident with an improvement in the standard of living comes the substitution of Wheat for Rye.

The determination of the prototypes or wild species from which our domesticated plants have arisen involves many intricate problems of variation, history and philology. Yet, in spite of the fact that not a single cereal or food plant of prime importance has been brought into use from wild stock during the last 3,000 or 4,000 years, the prototypes of the majority of our cultivated crops can be traced without much difficulty. A few there are, however, whose origin continues to baffle us, and among these Wheat occupies a

PUBLICATIONS RECEIVED.—*The Manuring of Market-Garden Crops.* By Bernard Dyer and F. W. E. Shrivell. New edition. (London: Vinton and Co., Ltd.) 1s.

* *Agricultural and Botanical Explorations in Palestine.* By A. Aaronsohn, U.S. Dep. Agric. Bur. Pl. Ind. Bull. 180. *Wild Wheat in Palestine.* By O. F. Cook, U.S. Dep. Agric. Bur. Pl. Ind. Bull. 274.

leading place. So ancient is its history that to the races who grew it 4,000 or 5,000 years ago its origin was as obscure as it is to us. Romance and legend alone supplied them with its story through the kindly services of the beneficent goddesses—Isis, Osiris and Ceres.

The Wheats in cultivation in various parts of the world fall into two groups, viz.—(1) the "Spelts," whose ears break into short fragments, each with a single spikelet attached and whose grain cannot be shaken from the glumes by thrashing; and (2) the Wheats proper, whose ears possess tough axes and readily yield their grains free from the enclosing chaff.

To the former belong:—(1) One-grained Wheat (*Triticum monococcum*), (2) Emmer (*T. dicoccum*), and (3) Common Spelt (*T. Spelta*).

The representatives of the second group are:—(1) The Macaroni and Polish Wheats (*T. durum* and *T. polonicum*), (2) the Rivet Wheats (*T. turgidum*), and (3) the Common Bread Wheats (*T. vulgare*), with which may be associated the so-called Dwarf Wheats (*T. compactum*).

The relationship of these Wheats to each other is still obscure; yet there is little doubt that the tough-eared forms were derived from the brittle-eared Spelts or from wild grasses resembling the latter.

The absence of the brittle rachis reduces their power of dissemination, and among the many hundreds of varieties of cultivated Wheats none has been found capable of maintaining itself as an "escape," and no truly wild form has been discovered in any part of the world which exhibits a close resemblance to any of the macaroni or bread Wheats.

The prototype of one-grained Wheat (*T. monococcum*) has been recognised, however, for more than fifty years in *Triticum aegilipoides* (Balansa), a wild species found in Serbia, Greece and parts of Asia Minor. *T. monococcum* was known to the ancient Greeks and is still cultivated to a slight extent in barren regions of Spain, Austria and the Balkan Peninsula. It has given rise to very few varieties, and the morphological resemblances between the wild species and the cultivated kinds are so close that the connection between them is obvious and undisputed.

T. monococcum stands somewhat alone in its distinctness from other Wheats—even from other Spelts—and its refusal to yield fertile offspring when crossed with these support the view that it is not likely to have been one of the ancestors of our bread Wheats.

It is to the unravelling of the ancestry of the bread and macaroni Wheats that so much interest has always been attached, and a stimulus and new impetus have been given to the research by the discovery of a wild Wheat in Northern Palestine by Mr. Aaronsohn, the Director of the Jewish Experiment Station at Haifa. The same species had, indeed, been collected by Kotschy in 1855 in the neighbourhood of Mount Hermon, but only a single specimen was known in the National Herbarium at Vienna. In 1906, however, Mr. Aaronsohn found it growing in abundance in the same district, and subsequently in the Jordan Valley.

The late Professor Koernicke, the German authority on cereals, who was especially interested in Kotschy's plant, named it *Triticum vulgare dicoccoides*, considering it a form of Emmer (*T. dicoccum*) and the probable ancestor of our cultivated Wheats.

The plant grows freely along roadsides and in the crevices of limestone rocks in districts away from cultivated fields, and, according to Mr. Cook, is in many places the dominant grass. There appears to be little doubt that it is a truly wild species, differing completely from any of the domesticated Wheats grown in the same region, some of which are found as "escapes."

The jointed rachis is exceptionally fragile. The glumes possess long, barbed awns and the spikelets contain one or two elongated grains. The flowers are adapted to cross-fertilisation,

and considerable variation is found among individual plants.

Although in some of its characters it bears a resemblance to *T. dicoccum* and has been named Wild Emmer, the evidence that it is the prototype of the cultivated Emmers is not clear; still more uncertain and obscure is its relationship to the bread and cultivated Wheats.

Observation of living specimens which I have grown during the last two years from grain kindly given me by Professor Biffen rather supports the view that it is a species distinct from the Emmers; it is not impossible that some forms are crosses with cultivated varieties of *T. durum* and *T. vulgare* which are grown in Palestine and Syria.

There is yet a wide gulf between this plant and any of the known varieties of macaroni, rivet or common Wheat, nearly two thousand kinds of which I am growing at Reading this year. Nevertheless, the wild Wheat of Mount Hermon, to which the suggested name of *T. hermonis* may be applied in place of *T. dicoccoides*, is of much interest and provides material for researches which may ultimately throw light upon the origin of the plants from which we obtain our daily bread. *John Percival*.

TREES AND SHRUBS.

A RARE PAMPHLET ON CONIFERS.

THE rare pamphlet, entitled *Botanical Expedition to Oregon*, is of considerable importance, as it contains descriptions of Conifers collected by Jeffrey in North America, and is the authority for the scientific names of several important trees. No account of it appears to have been published. There is a copy in the library at Kew, and another at Edinburgh.

The pamphlet is made up as follows:—An introductory page signed "By order of the Committee, Andrew Murray"; five separate plates, being drawings of cones, seeds and leaves; and pages 1 and 2 of notes and descriptions of some of the plants received from Jeffrey,* who was sent out by the Oregon Committee of Scotland in June, 1850. There is no printed date on the pamphlet, but Prof. I. B. Balfour tells me that the actual date of publication was the first week of September, 1853. There is no doubt about this date, or the fact that the publication was real, as Sir W. J. Hooker, in *London Journal of Botany*, v. 315 (1853), criticises severely the publishing of names to which were attached as authority the words "Oregon Committee." In this he was hypercritical, as on the introductory page the plain statement is made: "Figures and descriptions by Dr. Greville and Professor Balfour of the cones and seeds of the Coniferae." The figures, as mentioned on the plates, which are not numbered, were drawn by R. K. Greville; but the descriptions were written by Prof. J. H. Balfour,† and the name of the latter must be attached to the new species described.

In most books‡ on Conifers the authority "Andrew Murray" or "Oregon Committee" is wrongly given to the species in question, an unfortunate circumstance due to the introductory page of the pamphlet not having been carefully read.

* An account of Jeffrey's life is given in Lawson's *Pisietum Britannicum*, reproduced by Veitch, *Manual of Coniferae*, 1st ed., p. 166 (1888).

† Prof. J. H. Balfour, in a private letter written to Andrew Murray, dated Oct. 13, 1853, says, referring to Hooker's criticism: "All the committee was anxious to make known were the Coniferae, of which they here give drawings, along with notes by me in regard to them. The cones were all I examined." This letter was obligingly communicated to me by Prof. I. B. Balfour.

‡ The following references require correction in the cases where *Pinus Jeffreyi*, *Balfouriana*, and *Murrayana* are mentioned:—Sargent, *Silva N. America*, xi., pp. 59, 79, 91 (1897), and *Trees N. America*, p. 8 (1905); Sudworth, *Check-List of Forest Trees of United States*, pp. 15 and 16 (1898) (published as *U.S. Forestry Bulletin*, No. 17), and *Forest Trees of the Pacific Slope*, 3, 39, 47 (1908); Masters, in *Journ. R. Hort. Soc.*, xlv., 225, 231 (1892), and in *Journ. Linn. Soc. (Bot.)*, xxxv., 646 (1904); Veitch, *Man. Conif.*, 314 (1900); Beissner, *Nadelholzkunde*, 263, 272 (1891).

The following is a list of the Conifers described and figured in the pamphlet, the correct citations being given in each case:—

1. *Pinus Balfouriana*, Balfour, in Murray, *Bot. Exped. to Oregon*, I, with fig. (1853). This species is here for the first time described and named.

2. *Pinus Jeffreyi*, Balfour, in Murray, *Bot. Exped. to Oregon*, 2, with fig. (1853). This tree, here first described, is considered to be a distinct species by Sudworth and other writers; but Sargent considers it to be *Pinus ponderosa*, Lawson, var. *Jeffreyi*, Vasey, in *Rept. Dept. Agric. U.S.*, 1875, p. 179 (1876).

3. *Pinus Murrayana*, Balfour, in Murray, *Bot. Exped. to Oregon*, 2, with fig. (1853). This Pine, here first described, is kept up as a distinct species by many authors; but according to Sargent, it is *Pinus contorta*, Douglas (ex Loudon), var. *Murrayana*, Engelmann, in Brewer and Watson, *Bot. Calif.*, ii. 126 (1880).

4. *Pinus tuberculata*, Gordon, is said by Balfour, in Murray, *Bot. Exped. to Oregon*, 2, with fig. (1853), to have been collected by Jeffrey in lat. 41° at 5,000 feet elevation. The figure of the cone is excellent.

5. *Pinus lasiocarpa*, Balfour, in Murray, *Bot. Exped. to Oregon*, 1, with fig. entitled *Picea lasiocarpa* (1853) (not Hooker).

This tree, of which the cone, scale, bract, and seed are figured, is not *Abies lasiocarpa*, Nuttall, the Silver Fir of the Rocky Mountains, which was first described by Sir W. J. Hooker as *Pinus lasiocarpa*. The figure appears to represent *Abies amabilis*, Forbes, which occurs on the coast range of Oregon, where Jeffrey collected. It is interesting to note that this species, which was discovered by Douglas in 1825, seeds having been sent by him in 1830, is generally supposed not to have been seen again till Sargent and Engelmann found it in 1880. Old trees of this beautiful Fir are very rare in Britain; and there is no evidence that any of these were raised from seed sent by Jeffrey.

5. *Abies Pattoniana*, Balfour, in Murray, *Bot. Exped. to Oregon*, 1, with fig. (1853). This is identical with *Tsuga Pattoniana*, Sénéclauze, the Hemlock Spruce with large cones, which is now generally known in America as *Tsuga Mertensiana*, Sargent. The specimens here described by Balfour were collected by Jeffrey in the Cascade Mountains, lat. 42°. Specimens of the same tree, collected by W. Murray in 1854, on Scots Mountain, lat. 41°, were unfortunately published by his brother as *Abies Hookeriana*, A. Murray, in *Edin. New Phil. Journ.*, 289 (1855). Both the names, A. *Pattoniana*, Balfour, and A. *Hookeriana*, Murray, apply to the same thing, the wild tree in America, which is characterised by bluish leaves, entire in margin, and with conspicuous stomatic lines on both surfaces.

Other specimens preserved in the Kew herbarium, which were collected by Jeffrey on the Mount Baker range, lat. 49°, are identical with the preceding in all respects; but from the seeds that were sent by Jeffrey from this locality, plants were raised which differed in having green leaves, serrulate in margin, and with regular stomatic lines only on the lower surface. The peculiar variety, with green serrulate leaves, was supposed erroneously by Murray to be A. *Pattoniana*, Balfour. It has been named by me, *Tsuga Pattoniana*, var. *Jeffreyi*, Henry, in *Elwes and Henry, Trees of Great Britain*, ii. 231

§ Masters, in *Journ. Linn. Soc. (Bot.)*, xxii., 174 (1887), relying on Barron, in *Gard. Chron.*, v., 78 (1876), erroneously identifies this cone with *A. grandis*. In Barron's nursery at Elvaston the names of *A. grandis* and *A. amabilis* were reversed, as is evident from A. Murray's article in *Proc. Hort. Soc.*, vol. iii. (1863).

¶ The names A. *Pattoniana* and A. *Hookeriana* are both applied in gardens to the typical wild tree; specimens with very glaucous foliage being called by the latter name, whilst less glaucous examples are called by the former name. The typical form has always leaves more or less glaucous, never truly green as in var. *Jeffreyi*. In America, a supposed Alpine form, differing only in its stunted habit, has been identified erroneously with A. *Hookeriana*.

(1907). It has never borne cones, and is now very rare in cultivation; and, so far as I am aware, has not been observed in the wild state in America. It seems to have been either a sport or mutation, or possibly a hybrid between *Tsuga Pattoniana* and *Tsuga Albertiana*, as both these species occur on the Mount Baker range.

7. *Thuja Craigana*, Balfour, in Murray, *Bot. Exped. to Oregon*, 2, with fig. (1853). I stated in *Gardeners' Chronicle*, LIII., 325 of May 17, 1913, that this was the first description of the species, which has long been known as *Libocedrus decurrens*; and that, consequently, the correct name should be *Libocedrus Craigana*, Low, ex R. Brown, in *Trans. Bot. Soc. Edin.* ix. 373 (1868).

I have recently, however, received new information from the Arnold Arboretum, concerning the date of publication of Torrey's *Plantae Frémontianae*, which contains his description of *Libocedrus decurrens*. Mr. Rehder states that there are two sets of this paper in existence. The set, which I believe has invariably been quoted, is part of the bound Volume VI. of *Smithsonian Contributions*, which has the date 1854 on the title-page. The other set, hitherto practically unknown,* seems to have been intended for separate distribution, and bears on the title-page the following:—"Published by the Smithsonian Institution, April, 1853." As the Oregon Committee's pamphlet appeared in September, 1853, the name *Libocedrus Craigana* is invalid. Torrey's name has priority; and the correct citation of the species is *Libocedrus decurrens*, Torrey, *Plantae Frémontianae*, 7, t. 3 (1853). It is very satisfactory that this old-established name need not be changed.

8. *Pinus flexilis*, Balfour, in Murray, *Bot. Exped. to Oregon*, 2, with fig. (1853) (Not James).

This is not identical with the true *Pinus flexilis*, James, *Long's Expedition*, ii. 34 (1823); but is the same as *Pinus albicaulis*, Engelmann, in *Trans. St. Louis Acad.* ii. 209 (1863). A. Henry.

HOME CORRESPONDENCE.

JASMINE FRUITING.—Enclosed is a fruiting spray of the common White Jasmine—*Jasminum officinale*. I do not think that this creeper often matures fruit in this country. When the blossoms are visited in summer by bumble-bees, I notice that the insects insert their proboscides between the calyx and the corolla (and not down the corolla itself). This is, perhaps, the reason why fertilisation is not usually accomplished. There are several fruiting sprays upon the plant from which I picked this yesterday, and last year it fruited also comparatively freely. The fruits appear in late autumn, are pale green, and during November they turn a jet-black colour. I should like to know if the fruiting of this plant is of frequent occurrence in this country? J. E. Shaw, 23, Caledonia Place, Clifton, Bristol, December 17.

DWARF DAHLIA "MARIANNE."—I have been informed that this Dahlia was in the trials at Duffryn and that it showed up well. I cannot understand why it has been missed out of the report, because there can be no two opinions about its being the best dwarf decorative Dahlia in existence. You called attention to it in your columns last year, and in consequence I grew it largely, and found its charming apricot-coloured flowers invaluable for cut-flower work, while the plants, about 2 feet in height, were objects of beauty in the border for months. Grower.

RASPBERRY BELLE DE FONTENAY.—In Mr. Goodacre's article on "Autumn Fruiting Raspberries," in the issue for December 20, he states that no other variety can compare with *Queen Alexandra* for late and certain cropping. This may be Mr. Goodacre's experience, but in case cultivators may

be inclined to cast other varieties aside as inferior I should like to state that for the past three seasons three varieties have been grown in a large garden in Hertfordshire, namely, *Belle de Fontenay*, *Queen Alexandra*, and *November Abundance*, and *Belle de Fontenay* was easily the best for size of fruit and prolific crop. The stools are not lifted annually, but the crop last season—the third in succession—was satisfactory. A. Allen, Pond's Farm Gardens, Beaconsfield.

CHRYSANTHEMUM MADAME C. DESGRANGE.—I am interested in the statement made by Mr. Norman Davis (see vol. LIV., p. 450), that this remarkable variety originated as a "chance seedling among a batch of late varieties." This fact is as remarkable as the variety itself, and I know of no parallel to it, namely, a late variety producing an early seed sport. I suppose Mr. Davis has good grounds for his statement. It is further stated that "its raiser finds no interest in it," which, inferentially, is tantamount to saying that its raiser was known, if not to Mr. Davis, at least to the "French nurseryman into whose hands it passed." I have for years tried to find out who raised *Madame Desgrange*, and have never succeeded. Is it possible that Mr. Davis can tell us? Finally, it is stated that "*Madame C. Desgrange* eventually passed into the hands of Mr. Robert Parker, of Tooting." If by this it is to be inferred that Mr. Parker obtained possession of the whole of the stock, or even a goodly portion of it, the statement is incorrect. Mr. Parker's original stock was comprised of one plant only, which did not come by way of France. This is its history. Mr. Parker had been on a business journey to Wales, and in returning called on a friend in Bristol in whose garden there were two fine plants in full flower. Recognising its merit as an out-door variety, Mr. Parker expressed a wish to have it, and in due course one of the plants found its way to Tooting. This was not later than 1873, since in 1874 or 1875—I believe the former year—two long lines of *Madame Desgrange* occupied positions in one of the huge specimen beds for which the Tooting "Exotic Nursery" was then famous. Other lines of plants in this particular bed were of *Kniphofia aloides* (centre), then two lines of *Desgrange*, one on either side, followed by *Aster amellus*, *Rudbeckia Newmanii* and a border of *Verbena venosa*, two lines of each. These plants were all in flower together, and were the admiration of those who saw them. I had met with many erroneous statements concerning the early history of *Madame Desgrange* and when with Mr. Parker a year or two before his death I purposely enquired how he first became possessed of it. What I have stated above is in effect his own words. Moreover, the variety was grown at Tooting in my day, forty years ago, hence the statement is backed by my personal knowledge. E. H. Jenkins.

Buddleia COLVILEI.—*Buddleia Colvilei* does not often flower freely at this time of the year. There is, however, a plant growing in the open border in these gardens, carrying a quantity of blossom. On Christmas Day I counted over 20 flower-spikes fully developed, and there are numbers of branches on which the flower-buds are just showing colour. The *Buddleia* was planted about ten years ago, and has blossomed on three previous occasions, but never so freely or so late in the season as now. The flowers are distinct from those of all other *Buddleias*, and resemble the rosy-red blossoms of a *Pentstemon*. The foliage is a kind of silver-grey. It is a strong-growing subject, but unlike others of the species it does not flower until it has been established for some years. Growing in the same border with the *Buddleia* is a large bush of *Eriobotrya japonica* (the Loquat), in full flower. It has occupied its present position for about 12 years, but this is the first time it has blossomed. It is generally planted against a wall, but it makes a magnificent bush in favoured situations. The plant prefers a rather light, loamy soil, and is readily increased from cuttings or layers. F. W. Rich, Elfordleigh Gardens, Plympton.

PRIMULA OBCONICA AND SKIN IRRITATION.—I have worked among plants of *Primula obconica* for a number of years, and have never felt any ill-effects until this season, when I have suffered

irritation on two occasions after handling the plants. The first time the irritation lasted about four days, but latterly it has been more severe, and I have had to seek medical advice. W. Marsh, Markeaton Hall Gardens, Derby.

NATIONAL ROSE SOCIETY.—From the statement made at the recent annual meeting of this society it seems to be a wealthy body, and its popularity is demonstrated by the annual influx of new members. It may be assumed that the Rose is destined to be more largely grown in the future even than in the past. The introduction of so many desirable varieties increases the interest of the flower, especially to exhibitors, of whom amateurs form a large proportion. No doubt the great number of improved forms of climbing Roses, especially in the *Wichuraiana* section, has done much to popularise the flower in small gardens as well as in larger ones. This form can be employed, for instance, in providing screens to hide unsightly corners, at the same time giving a great wealth of blossom. I would like to point out to the Executive of the society that the time has come when drastic changes should be made in the arrangements for the great festival held each year in the charming grounds of the Royal Botanic Gardens, Regent's Park. Complaints are constantly made at the lack of tent room. This lack of space is particularly noticeable in the tent set apart for new Roses, which forms the centre of interest in the show. The tents are not only too small, but they are insufficiently ventilated for the reasonable comfort of visitors. Better ventilated tents, made on the principle of those used at Chelsea during the last two years, would prolong the beauty of the flowers, and provide means of inspecting them in more pleasant circumstances. Under existing arrangements the visitors are inclined to feel on a hot day that the visit to the show is hardly worth the inconvenience. A judicious expenditure in the provision of extra tent space would be welcomed by the members, and be the means of adding to the already long list of subscribers to the society. E. Molyneux.

PARMENTIER AND THE POTATO.—The centenary of the death of Parmentier has brought once again to public notice the legend that to his efforts we owe the Potato as a popular article of diet. The long continuance of this story is a remarkable comment upon certain methods of journalism and book-making. It has, however, occurred to two of the writers on Parmentier to read his book, and the following interesting passage is quoted by M. Gibault in his *Histoire des Légumes*. On page 1 of the *Examen Chimique des Pommes des Terres*, the book which was supposed to have convinced the French peasant that the Potato might be safely eaten, the following passage may be read:—"The use of this alimentary plant has been adopted for a century." Later, on p. 5, it is said that its culture was undertaken largely, and it was then (1770) a part of the poor man's food. "It is common in the markets, and is sold at the street corners, cooked or raw, as they sell chestnuts." Parmentier was doubtless interested in a certain variety of Potato, and adroitly secured a Royal advertisement for this sort, but those who eat potato "Parmentier" need not place the credit, or blame, as tastes may be, of this starchy product to his account. The wise advice, "Verify your references," was never better illustrated than in the history of Parmentier's elevation to a position he never thought of claiming for himself. Edward A. Bunyard.

GAS TAR AND MEALY BUG.—I may remind J. H. Y. (see page 427) that he has given us no new cure for mealy bug on vines, as the use of hydrocyanic acid gas was discussed in the *Gardeners' Chronicle* eight or nine years ago, and has been mentioned at intervals since, and if all who tried it had found it to be the safe, simple, and effective cure we wait for, probably there would have been very little mealy bug left in the kingdom to experiment on with gas tar or any other specific. I tried it before using gas tar, and whilst I agree with nearly all that J. H. Y. writes concerning its use for vines, I am of the opinion that to be effective on old vines the fumigation must be repeated several times to ensure the destruction of the young

* This set, with the correct date, 1853, is not cited in Sargent, *Silva*, x. 135 (1896); Veitch, *Man. Co. F.*, 253 (1900); Elwes and Henry, *Trees of Great Brit. in Ill.*, 489 (1908).

bugs, which hatch from the eggs laid in such places as the holes in the end of old spurs. It is for this reason that a really safe mixture which could be painted on the vines when they are being cleansed would be preferable. Many gardeners have to accommodate a variety of pot plants in vineries after the fruit has been cut, and I have not found the gas harmless to soft-wooded plants. I fumigated a vinery in early summer, which had been treated previously in winter, before the fruit commenced to colour, using a little under the strength recommended for bug and a little over that for greenfly; and a few *Chrysanthemums*, which were left in the vinery after the final potting, were cleared of the black fly which affected them, but the fumigation also scorched the tips of the young leaves. Another curious effect was noticed on some *Zonal Pelargoniums*. The edges of the very young leaves were scorched, and the younger flower-spikes, which had grown a few inches only, were black and withered, while the trusses which were just showing colour and the main leaves were uninjured. The Grapes on the vines were also unharmed, but the tips of the sub-laterals were affected similarly to the *Pelargonium* buds. I have used hydrocyanic acid gas for greenfly without injury to the plants, but, as is well known, mealy bug requires a stronger preparation, and it is this which causes the trouble. Will your correspondent kindly state the proportions necessary for vines, and the exact amount per 1,000 cubic feet he recommends for destroying bug on stove house plants, Cucumbers, Melons, etc., without injury to the plants? There is a similar preparation named "Hydrogas" which is said to be less dangerous, but I have not tried it. The users of gas tar do not "smear" their vines, they apply the tar with a brush, and when dry the canes look clean and glossy against the white woodwork and whitewashed walls of the vineries. *A. Shakelton, Forde Abbey Gardens, Chard.*

—Recent references in the *Gardeners' Chronicle* regarding coal gas tar as a remedy for the extirpation of this pest reminds me of a circumstance that occurred nearly fifty years ago under my own cognisance. The whole complement of vines in a large house were more or less injured by an application of gas tar and clay, inasmuch that while several of the least injured had to be cut back nearly to the base, others were supplanted by young vines. The rods in question had been subjected to the application of the insecticide in lieu of the annual dressing of "Gishurst Compound" or other remedies, which had been found more or less efficacious and had never injured the vines. In the case of the gas tar dressing, excessive peeling and scraping of the loose bark was partly responsible for the disaster, as proved by the fact that where merely the loose bark was removed, injury was not apparent; however, so far the remedy was worse than the disease. Shortly after the occurrence I was informed that had Stockholm pine tar been used instead of gas tar, little or no harm would have resulted. A small supply was procured, but as it was not required for the vines it was applied to fruit trees, such as Apples, Pears, Plums and others, with excellent results and no apparent injury to the trees. This result was obtained without the trouble of excorticating rough bark, which affords a ready shelter for the breeding and hibernation of the insects. It would be instructive if others who may have tried the wood tar remedy were to give their experiences of this as opposed to mineral tar. *William Gardiner, Horsham.*

MEALY BUG ON VINES.—Though I have used cyanide of potassium for many years as an insecticide I never employ it for plants such as *Codiaeums*. *Spider* will find vaporized nicotine an efficient and safe insecticide for bug and red spider on these and other plants. A risk always attends the use of cyanide, not only of injuring tender plants, but of poisoning any one who may inhale the gas. The latest formula I have seen gives $\frac{1}{2}$ oz. cyanide, 1 oz. sulphuric acid, and 2 oz. water per 1,000 cubic feet, the structure to be closed from dark to daylight. These amounts were to be doubled for mealy bug on vines at rest, the vines having been previously painted with wood alcohol (methylated spirits of wine). *B.*

NURSERY WAGES, PIECEWORK AND OVERTIME.—It was manifestly unfair to the Surrey nurserymen for the London daily papers to take up the so-called low wages given in that district, where for eight months in the year most of the regular hands are on piecework earning good money, and often the "hoeing men," having kept their acreage clean, have the chance of taking haying or harvest work in addition. Another point is that all the chief nurserymen keep their men on, wet or dry, in snow or frost, and thus they have that steady employment which is such a boon for the family, and far better than high wages as builders, etc., which often lead to extravagance, with liability to be dismissed at any time suddenly and no nest-egg to fall back upon. Nurserymen, too, are quick to recognise any workman who shows ability. As one of the first firms to introduce extended piecework and overtime in summer, I may say that it pans out greatly to the advantage of the men, and important work, requiring the greatest promptitude, is done quickly and carefully, the men often getting to budding at four o'clock in the morning, resting at noon, and resuming work until seven or eight at night. In my time wages have risen for nearly all grades ten shillings per week, and as we have several hands who have been all their lives with us, they know when they are well off. We are always ready to listen to any reasonable requests, consistent with the fact that the business has to pay and is not run as a charitable institution, and, like the rest of the trade, we can manage our own affairs without the assistance of any "soft-handed" agitators' interference. I enclose my card and on this occasion sign myself, *Experienced.*

JOURNEYMEN GARDENERS AND LOW WAGES.

—The remarks of *A. M.* on low wages for journeyman gardeners are interesting. It has long been recognised that the wages paid to these men are totally inadequate for the work they have to perform, and the long hours, with Sunday and weekly duty in their turn. The general wages are from 10s. to £1 weekly, and to reach the maximum sum entails quite 12 years' service. The bothy which goes with this remuneration is often not the sort of abode that appeals to a young man used to a good home. The prospects, considering the great increase in the price of necessities, are not sufficiently good to induce reliable, trustworthy men to enter the profession. *L. C., Surrey.*

—Employers must surely soon acknowledge that the wages paid to the garden staff is totally inadequate in these days of dear provisions. On all sides we hear of young men leaving the garden for service in other callings where the prospects of promotion and secure employment are the chief inducements. There are many reasons for the present low standard of wages. Many employers look no further when engaging a man than the matter of character and wages. If an excellent character is forthcoming and a low wage is asked, the candidate, be he never so poor a craftsman, stands as good a chance (if not far better) than a man who is thoroughly proficient. It has always been rather a mystery to me that the owner of an estate will spend large sums of money on trees, plants, and the equipment of a garden and then seek for a man to take charge who asks a low wage. I am well aware that through force of circumstances many excellent men are driven to accept low wages, and in such cases the employer has the advantage. There is another side, however: How often do we hear of the owners saying they have bought this, or that, spent so much on glass, so much on manure or sundries, and have only wretched results. Are they quite certain that they have a good man in charge, who is receiving a fair wage, is comfortably housed and content? Also that the members of the garden staff are receiving a fair wage and are working in conditions which are favourable? There are few professions in which more depends upon the individual engaged than in gardening. *Roamer.*

—I agree with your correspondents on p. 462. The charge laid by *A. M.*, supported by *L.*, in the issue of December 20, cannot be proved. Undoubtedly cases of too low payment exist, but they are exceptions, not the rule. My experience, extending over twenty-two years, convinces me that the journeyman's position is better to-day

than ever before. Never was his horizon larger; never, perhaps, was his ability less. With a mere smattering of knowledge he applies for posts he is unfitted to fill, and the duties pertaining to them he knows hardly anything about. Where is the head gardener who cannot point to the damage done again and again by the so-called experienced young men he has been unwise enough to place entire confidence in? Ten years ago young men knew their work, and did it thoroughly; if they did not out they went. I knew young men, strong, practical, civil, obliging, enthusiastic, devoted to the profession—qualities which scores of present-day journeymen appear never to possess. Our wages—12s., 14s., 16s.—were considered fair pay; 18s. was scarcely heard of. As for £1, 22s., 24s., with bothy, milk, etc., we never heard tell of these princely posts; Saturday half-days off, good yearly holidays, Christmas parties and boxes. Happy, some of us, if we had not to put in two or three hours most nights as overtime, for which we received nothing except the experience gained from doing the work. I am thankful to have seen an end to those bad times; they have gone because the supply of young men is limited, and those who refuse to pay fair wages must go without men or do the work themselves—which is as it should be. Between the nursery employee and the private gardener there can be no comparison. Many nurserymen and market gardeners would not take so-called experienced journeymen from private gardens if they would work for nothing; whilst many head gardeners would not employ nursery hands, even if they offered to pay for the privilege of being on the place. Every man to his trade is a good maxim for all of us. To-day 18s. is the standard wage for young journeymen—inside and out, with bothy, etc.—that brings his wage to anything from £1 up to 26s. per week. Every bothy I know of is comfortable enough for any reasonable workman. As Mr. Legg truly says, the upkeep of proper bothies is a much larger item than appears to some. Many a young journeyman is to-day better off than the head gardener. If *A. M.* and *L.* know their work and have good characters an advertisement in the *Gardeners' Chronicle* will bring them offers of good situations from all over the kingdom at 18s. and upwards. Respecting the B.G.A., there is a prejudice against it in some quarters through mistaken ideas of its aims. It was founded to protect alike the interests of the qualified gardener and the reasonable employer. This season now commenced will see the greatest scarcity of journeymen gardeners this country has ever known; the trouble will be acute both for the head gardener and his employer. Let us not shut our eyes to the fact; this is the journeyman's opportunity, and he is going to make good use of it; so much is a certainty. Having bettered his position, let us hope he will take a deeper, keener, truer interest in his work, thereby fitting himself to take the places of the old guard as they retire; many of whom they will find it difficult even to emulate. With Mr. Beeson, I appeal to them to study just a little more the interests of the employer and his head gardener, who has to teach them for nothing the secrets of a great and honourable calling. *Ed. A. Norris, Malquoits Gardens, Ewhurst, Surrey.*

—May I make a few further remarks in reply to *S. Legg* and *T. Beeson* on this subject? If Messrs. Legg and Beeson will scan the "Situations Vacant" column every week, and compare the cases where 19s. to 20s. is offered with those mentioning 16s. or so, I think they will find that two-thirds of them will offer the latter. Even if journeymen were paid 19s. on an average, do your correspondents consider that sufficient? I contend that they should be paid 25s., if good bothies are provided, or 30s. without, and duty paid 4s. extra. In what other trade, may I ask, is such a starvation wage paid? Even the roadsweepers here (Hampstead) are paid 28s., and leggings and cape are provided. Mr. Legg remarks upon the considerable expense to the employer involved by the upkeep of the bothy. How much does this cost per head in most bothies? 3s. to 4s. per week. Even when vegetables are also provided they cost the employer little or nothing. *E. L.*

SOCIETIES.

LINNEAN.

DECEMBER 18.—At the meeting held on this date, Prof. E. B. Poulton, F.R.S., President, in the chair, Mr. JOHN PARKIN, M.A., gave a summary of his paper on "The Evolution of the Inflorescence." He stated that the evolution of all types of inflorescences is to be traced from the solitary terminal flower. The first cluster to arise is a cymose group of three flowers (a simple dichasium). This comes about through the pushing out of floral shoots from the leaf-axils just below the terminal flower. Two somewhat opposing tendencies now reveal themselves:— (i.) Either the secondary floral shoots may branch repeatedly, giving rise to the compound or continuous dichasium. From this sympodial cymes, etc., can be derived. (ii.) Or the number of these secondary shoots may be increased. This eventually leads to the formation of true racemose inflorescences. Solitary axillary flowers are shown to arise in three different ways, and are all capable of being derived from the solitary terminal flower. Finally, attention is drawn to a little-recognised form of flower-cluster, which is characterised by the main axis, after emitting flowers laterally, continuing its growth vegetatively. The term *intercalary* is proposed for such. The origin of these inflorescences is indicated, and their further evolution into *pseudoterminal* inflorescences shown.

Mr. C. E. SALMON then read a short note on "Hypericum Desetangii, Lamotte, in Britain," illustrating his remarks by a series of specimens of that species and its nearest allies, together with a lantern-slide.

The next General Meeting will be held on Thursday, January 15, 1914, at 8 p.m.

EXHIBITIONS AND PAPERS.

- (1) Mrs. HENSHAW.—Lantern-slides illustrating the fauna and flora of the interior of Vancouver, from her last journey.
- (2) Mr. H. A. BAYLIS, B.A.—Some observations on the tentacles of *Blennius gattorguine*. (Communicated by Prof. G. C. BOURNE, F.R.S., Sec.L.S.)
- (3) Mr. G. C. DRUCE.—(a) Some recent additions to the British flora; (b) A note on Article 45 of the Vienna Code; (c) The Abridgment of Miller's *Gardener's Dictionary* of 1754, and Hill's *British Herbal* of 1756.

CROYDON NATURAL HISTORY.

The December meeting of the Croydon Natural History and Scientific Society was distinguished by a record attendance on the occasion of a lantern lecture on Alpine plants at home and in the garden, delivered jointly by Mr. HUGH LEWIS, of Mayfield, and Mr. W. E. TH. INGWERSEN.

After paying a tribute to Mr. INGWERSEN, to whose guidance on the subject he owed practically everything, Mr. LEWIS said that the idea of Alpine gardens or Alpinums was by no means a new one, records of at least one Alpine garden dating three centuries back. Mr. LEWIS then discoursed on the wide climatic differences experienced by the Alpine plants on being removed from their native crags to lowland gardens, and the effect produced by such changes, the plants becoming modified in structure—i.e., losing in part the very compact and tufted growth which distinguishes them in their mountain homes. The lecturer also pointed to the means of correcting this lax habit by planting many of the Alpine plants in conditions equal, as near as possible, to those appertaining to screes or moraines.

The lecturer, availing himself of the latest literature in Alpine plants and conditions (which he duly acknowledged), pointed out the actual necessity of Alpine gardens as sanctuaries for such Alpines as were threatened by the danger of total extinction in their mountain homes, by farming in Switzerland, involving draining and manuring of many of the slopes in which the mountain flora now reigns supreme. A great danger to the Alpine flora in the higher reaches above the cultivated pastures was the increased number of sheep, which, shaving the high,

stony pasture to a short, lawnlike turf, prevented many of the plants constituting this turf from seeding and increasing, and, weakened by the continued eating down of the sheep, the old plants gradually died away. He also called attention to the effect of light on growth, habit and colour.

After mentioning the advisability of expert advice in the formation and building of rock gardens and collections of Alpine plants, Mr. LEWIS left the field to Mr. INGWERSEN, who invited the company present to accompany him on the screen on a trip into the High Alps, and showed a large number of lantern-slides taken in Scotland, Switzerland, Norway, Italy, Thibet, Sikkim, Himalayas, and a number taken by Mr. LEWIS in his own garden. Commencing with the rich Alpine pastures, which presented sheets of pink, blue, purple or red according to their season, he passed to the Alpine woodlands, showing *Linnaea borealis*, and touching upon the wide distribution of this plant; the lecturer was able to show it growing in Norway, as well as in Switzerland, on both occasions under Conifers, which was the typical position favoured by this plant, although it occurred in Denmark and North Germany in Beech and Birch woods. Showing then a twisted and blasted Fir tree at the so-called tree limit to illustrate the force and rigour of the Alpine climate at high elevations, the lecturer mounted



THE LATE W. COLLINS.

to the higher and stonier pastures above the woodland belt, showing such characteristic plants as the Alpenrose, Cobweb Houseleek, *Saxifraga Cotyledon*, *Anemone sulphurea* and various forms of the stemless *Gentian*, of which the variety *G. angustifolia* (commonly grown in gardens as *G. acaulis*) was such a disappointment in many Croydon gardens by refusing to flower. After showing some more slides of *Daphnes*, *Primulas*, *Anemone vernalis* (closed and open), the lecturer demonstrated by slides the difference between the *Soldanella alpina* and *S. pusilla*, and was happy to be able to show *Soldanella alpina* actually piercing the melting snow in the Alps with its pale mauve flowers. Coming now to the high screes and moraines, the lecturer showed such typical plants as *Silene acaulis*, *Dryas octopetala*, *Saxifraga oppositifolia*, *Geum reptans*, *Campanula cenisia* and others. A number of lantern pictures from Mr. LEWIS's Alpine garden included *Silene Hookeri*, the rare *Lewisia Cotyledon* and *Saxifraga Griesebachii*.

BOTANICAL SOCIETY OF EDINBURGH.

THE second meeting for the session 1913-14 was held on the 11th ult., Mr. R. Stewart MacDougall, M.A., D.Sc., President, in the chair.

Mr. W. G. SMITH, Ph.D., gave some notes on Danish vegetation, illustrated with numerous lantern slides.

Mr. M. Y. ORR showed specimens of the leaf insect, *Pulchriphyllum crurifolium*, Serv., and gave notes on its habits.

Mr. R. S. MACDOUGALL, M.A., D.Sc., exhibited some Ceylon insects injurious to Tea, Rubber and Coffee.

Among the plants exhibited from the Royal Botanic Garden, Edinburgh, at the last two meetings were:—

Alternanthera paronychioides, St. Hil. A South American plant of creeping habit and small green foliage

Buddleia asiatica, Lour. A not quite hardy species, with fragrant, white flowers and smallish silvery foliage, from subtropical Asia.

Dracocephalum tanguticum, Maxim. This species from China is perhaps one of the best late autumn plants for its profusion of bloom, and is suitable either for the rockery or border.

Euryops virgineus, Less. South Africa. A tender shrub, hardy in Cornwall and the Scilly Islands. Flowering out of doors at Edinburgh.

Genista solditana, Pomel. An Algerian plant requiring protection in the north but perhaps hardy in the southern parts of the country.

Gentiana rhodantha, Franch. Of good, bushy habit and a vigorous grower. The flowers are of a pinky-white colour, with a fringed corolla.

Gentiana rigescens, Franch. A sturdy grower of a bushy habit, with persistent stems and foliage. The flowers are of a violet-pink colour. Very floriferous, and a late blooming species worthy of being better known. Both from Yunnan.

Hydrocotyle hirsuta, Sw. A peculiar Umbellifer from the Island of St. Domingo.

Jasminum lineare, R. Br. A rather pretty plant with fine foliage and white flowers.

Lepidium piscidium, Forst. f. A plant from the Pacific Islands, said to be used by the natives for catching fish. The plant itself was raised from seed obtained on Henderson Island.

Lobelia puberula, Michx. North America. A late-flowering species with blue flowers.

Saxifraga cinerascens, Engler et Irmischer. A doubtfully hardy species from Yunnan with yellow flowers.

Saxifraga turfosa, Engler et Irmischer. Somewhat like *S. diversifolia*, with yellow flowers, but propagating itself by stolons. Yunnan.

Spathoglottis edinensis × Rolfe. Raised at the Royal Botanic Garden from seed procured by crossing *S. Fortunei*, Lindl., and *S. pulchra*, Schlechter.

Obituary.

SIR TREVOR LAWRENCE.—The funeral of the late Sir Trevor Lawrence, Bart., V.M.H., whose death occurred on the 2nd ult., took place at Mickleham Parish Church on Saturday, the 27th ult. The church was filled with mourners, many of whom had travelled long distances to pay their respects to the memory of the late President of the Royal Horticultural Society. By special request no floral offerings were sent, and the only emblem on the coffin was a tasteful cross of *Calanthes*, *Epiphyllums* and *White Lapagerias*, made by Lady Lawrence, who was supported at the funeral by her eldest son, Sir William Lawrence, his wife, and other members of the family. Amongst those present were the Lord-Lieutenant of Surrey (Col. the Hon. Henry Cubitt, C.B.), Sir Albert Rollit, Sir Jeremiah Colman, Bt., Sir David Prain, F.R.S., Professor Bateson, F.R.S. (representing the John Innes Horticultural Institution), Mr. Thomas McRow (secretary of the Royal Agricultural Society) and a representative of the *Gardeners' Chronicle*. A memorial service was held on the same day at Holy Trinity Church, Prince Consort Road, Kensington Gore, and was attended by members of the Council of the Royal Horticultural Society. The President, Lord Grenfell, was confined to the house by illness, but the following members were present:—Baron Bruno von Schroder, Sir Harry Veitch, Sir George Holford, K.C.V.O., Sir Daniel Morris, Mr. W. A. Bilney, Mr. A. W. Sutton, Mr. Henry B. May, and the Rev. W. Wilks. There were also present Mr. David W. Thomson (Edinburgh), Mr. J. T. Bennett-Poë, Mr. F. J. Chittenden, and Mr. R. Hooper Pearson.

T. L. CHAPMAN.—We regret to record the death, at his residence in Armadale, of Thomas Learmonth Chapman, for forty-six years farmer at Wester Hillhouse, in Torphichen parish, who died on December 21, in his ninetyeth year. Deceased was a native of Beancross, Falkirk, but had resided for over fifty years in West Lothian. He was chiefly noted as a grower of seedling Potatoes, and was the raiser of such well-known varieties as the Factor, the Crofter, the Chapman, the Laird, and the Cottar.

W. COLLINS.—It is with regret that we announce the death of the late secretary of the United Horticultural Benefit and Provident Society, which occurred on the 21st ult. Mr. Collins underwent an operation in November, and was apparently progressing favourably until about ten days before his death, when he contracted a chill, which brought on an attack of pleurisy. Among the numerous floral tributes which were sent was a harp from the members of the United Horticultural Benefit and Provident Society. He leaves a widow to mourn his loss.

JOHN MATTOCK.—The death of this well-known Rose-grower at the age of 76 occurred at his residence at Headington, near Oxford, on the 22nd ult. Mr. John Mattock was born at Bath, and 40 years ago moved to Oxford. For a long time he had been a very successful exhibitor at the principal Rose shows.

GARDENING APPOINTMENTS.

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

Mr. James G. Rogers, jun., late with Mr. T. R. HAYES, Alpine Nurseries, Keswick, Cumberland, and Mr. J. WOOD, Boston Spa, Yorkshire, appointed to the SHEFFIELD HORTICULTURAL CO., LTD., Silver Hill Nurseries, Ecclesall, Sheffield, in the Alpine, Herbaceous and Landscape department.

Mr. James A. Price, as Gardener to Sir J. D. REES, M.P., Aylwards, Stanmore, Middlesex.

Mr. W. H. Jones, for the past 4½ years Gardener at Shirenewtown Hall, Chepstow, Monmouthshire, and previously 5½ years Second Gardener at Aberbalden, Abergavenny, Monmouthshire, as Gardener to N. J. McNEIL, Esq., The Rhyd, Tredegar, Monmouthshire. [Thanks for 1s. for R.G.O.F. box.—Eds.]

Mr. G. R. Nicholls, for 7 years and 9 months Gardener to ROBERT GORDON, Esq., Brockham Park, Betchworth, as Gardener to Captain SLOANE STANLEY, Paulton, Romsey, Hampshire. [Thanks for 1s. for R.G.O.F. box.—Eds.]

Mr. F. M. Folkard, late Foreman at Pett Place, Charing, previously at Orwell Park, as Gardener to H. BROCKLEBANK, Esq., Barton House, near Cambridge. [Thanks for 1s. for R.G.O.F. box.—Eds.]

Mr. George Woolly, for nearly three years Gardener to WALTER WEBB, Esq., Malquoits, Ewhurst, near Guildford, Surrey, as Gardener to Captain E. BERRY, Wycliffe Hall, Barnard's Castle, Yorkshire.

CATALOGUES RECEIVED.

Seeds.

LITTLE AND BALLANTYNE, Carlisle.
JOHN PEED AND SON, West Norwood, London.
BARR AND HUNTER, Maxwelltown, Dumfries.
DAVID W. THOMSON, 113, George Street, Edinburgh.
DICKSONS, Chester.
WM. CUTBUSH AND SON, Highgate, London.
HERD BROTHERS, Market Square, Penrith.
FISHER, SON AND SIBBAY, LTD., Handsworth, Sheffield.
WM. FELL AND CO., Hexham.
AGRICULTURAL AND HORTICULTURAL ASSOCIATION, LTD., 92, Long Acre, London.
ALFRED DAWKINS, 408, King's Road, Chelsea, London.
COOPER, TABER & CO., LTD., 90 and 92, Southwark Street, London.—Wholesale.
THOMAS METHVEN & SONS, 5, Frederick Street, Edinburgh.

Miscellaneous.

ISAAC GODDER, Willington Nurseries, near Bedford.—Chrysanthemums.

Foreign.

J. DAHEINFELDT, Odense, Denmark.—Seeds.

DEBATING SOCIETIES.

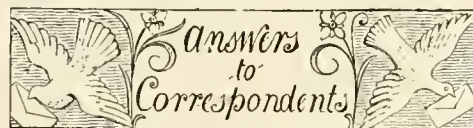
EQHAM DISTRICT GARDENERS.—At a meeting of this association held on the 17th ult. Mr. T. Bowser, of Ashleigh Gardens, Virginia Waters, delivered a paper on "Rock Gardens." The lecturer stated that this form of gardening has become very popular in gardens of late, and whether they are small or large a rockery was always an interesting feature of the gardens. Low-lying slopes were the best positions, avoiding large overhanging trees, for plants which re-

quire shady places can be planted on the shady side of large rocks or stones. One should try to have the rockery as natural as possible, and where streams of water are at hand these may always be used to advantage. No one particular plan should be followed but a plan that is best adapted to the site.

BRITISH GARDENERS' (Watford Branch)—A meeting of this branch of the B.G.A. was held on the 18th ult. Mr. W. Phillipa presided, and there was a record attendance. Mr. Graham, of Colney Park, St. Albans, gave a lecture on "Chrysanthemums."

ENQUIRY.

BACTERIAL DISEASE OF HYACINTH.—Can any reader inform me if the bacterial disease of the Hyacinth (*Pseudomonas hyacinthi*) has been recorded from this country? E. S. S.



BIRDS AND BUDS: Miss M. E. In order to prevent birds pecking off the buds on your Camellias, Honeysuckle and Damson trees, spray them with lime, sulphur, and a little size mixed in water.

CARNATIONS: H. T., Ireland. The plants are badly attacked by the fungus *Heterosporium echinulatum*. Pick off all affected leaves, and spray both diseased and healthy plants every third day with potassium sulphide, which may be made as follows:—Water, 2½ gallons, and potassium sulphide, 1 oz. Dissolve the potassium sulphide (or liver of sulphur as it is often called) in a quart of hot water, then make it up to 2½ gallons by adding cold water.

CINERARIA PRINCESS ALICE: S. S., Yorkshire. There is no disease present. For some reason the cultivation has been wrong. All varieties of a species do not necessarily require similar treatment.

CINERARIAS: G. W. W. Eelworm is present in the soil. The soil should have been sterilised by heating before the potting was carried out.

CYCLAMEN BLOOMS: W. P. B. The rusty appearance of the Cyclamen blooms is caused by mites. Dip the plants in an infusion of Quassia and soft soap.

FUMIGATING WITH HYDROCYANIC ACID GAS: M. A. and A. P. The proportions may be found on page 462 of the issue dated December 27, 1913.

GRAFTING OF PLUMS AND CHERRIES: Correspondent. As the grafting of Plums and Cherries is always risky, growers do not usually expect more than 75 per cent. of the grafts to succeed. Budding is better, when 90 per cent. may be expected.

NAMES OF FRUITS: W. C. Hersee. A fine specimen of Lane's Prince Albert.—A. M. 1, Beurré Diel; 2, Uvedale's St. Germain; 3, Easter Beurré; 4, Lord Burghley.—J. F. Dancer. Winter Orange.—A. C. S. M. 1, Winter Hawthornden; 2, Golden Reinette; 3, Gascoyne's Scarlet; 4, Lincoln Codlin.—J. D. 1, Beurré Diel; 2, Vicar of Winkfield; 3, Emile d'Heyst; 4, Braddick's Nonpareil; 5, Lane's Prince Albert; 6, Allington Pippin.

NAMES OF PLANTS: H. S. The Rose blooms are not in character. Send again earlier in the season.—T. W. We do not recognise the Carnation, and suggest that a bloom be sent to a grower who specialises with this flower.—T. W. R. Probably *Rhododendron racemosum*, but send again when in flower.

NEW ROSE: J. P. A deep pink-coloured sport from Rose Frau Karl Druschki which possesses rich fragrance would be a valuable addition. You should cultivate the plants and exhibit blooms at the next summer show of the National Rose Society, which will be held in Regent's Park, London, on July 7, when its merits would be adjudicated upon.

PEACH BUDS DROPPING: M. A. X. This condition may be caused by a variety of circumstances, and in the absence of a knowledge of the conditions under which the trees are grow-

ing we can only say that the chief causes are dryness at the root and too dry an atmosphere. In some of the early varieties the habit of regularly casting a large proportion of flower-buds just before growth becomes active seems to be ineradicable, and to be successful with these it becomes necessary to exercise great care in cultural detail.

PINE CONES: T. W. R. All your cones appear to be *Pinus Jeffreyi* or *P. ponderosa*. The two species are closely allied, but the former has usually larger cones and the young shoots are glaucous. We think No. 1 is *P. ponderosa*, the remainder *P. Jeffreyi*, but are not very certain about Nos. 2 and 4.

PINUS COULTERI: A. W. C. There is no disease present on the leaves. The injury is probably caused at the root, which should be exposed and examined. If white strands of mycelium are present on the surface, or there appears a white felt under the bark, dredge the plant copiously with a mixture of powdered lime and sulphur in equal quantities, and mix the same with the soil when replacing.

SHRUBS FOR SOUTH DORSET: A Dorset Gardener. Many of the rare trees and shrubs which you have admired in Cornwall would succeed in your garden, but much depends on position and aspect, and without local knowledge we can only generalise. The Magnolias you have planted will be quite hardy, and it would be worth while to add *M. Campbellii*, *M. Delavayi*, and *M. grandiflora* as standards. The most showy of the early-flowering, half-hardy *Rhododendrons* are the hybrids, of which any nurseryman who specialises in them will offer a good selection. The *Andromeda* described is probably *A. floribunda*. The following are the names of rare and showy shrubs which flower during the first half of the year and should be suitable for your purpose:—*Andromeda japonica*, *Camellia reticulata*, *C. Sasanqua*, *C. Lavinia Maggi*, *C. Donkelaaris* and others. *Berberis Bealei*, *Choisya ternata*, *Crinodendron Hookerianum*, *Daphne Cneorum* major, *Desfontainea spinosa*, *Erica ciconodes*, *E. australis*, *Embothrium coccineum*, *Escallonia exoniensis*, *Fabiana imbricata*, *Grevillea thyrsoidea*, *Lonicera sempervirens*, *Olearia macrodonta*, *Paeonia Moutan* (many varieties), and *Veronica Hulkeana*. It would also be well worth trying to grow such of the hardier *Mimosas* as *Acacia Baileyana*, *A. dealbata* and *A. longifolia*.

TOMATOS: A. N. There is no fungus disease present. The leaves are probably injured by fumes or too dry air. The lime should be powdered and dredged on when the leaves are damp, if intended to destroy caterpillars. Spraying with an insecticide is better.

TULIPS DISEASED: H. H. The bulbs are injured by the fungus *Fusarium bulbigenum*. The soil in which they have grown will be infected, and should be sterilised. No cure is possible, as the fungus is in the tissues of the bulb.

VINE DRESSING: L. T. P. The specific should be applied only to the rods, but any of the liquid which unavoidably falls on the soil will do no harm. The sulphur should be used after the vines have commenced their season's growth.

VINE ROOTS: Colonel W. B. A reply to your second query was given in the issue of December 13, p. 432.

YEW HEDGE: Gardener. Sulphate of ammonia applied at the rate of 1 oz. per square yard would be a suitable stimulant for the Yew hedge which is "becoming bare at base." If, as we suspect, it is an old hedge, it is probable that it is suffering from lack of nourishment. Too often hedges are planted, and except for periodic prunings and an occasional weeding, receive no after attention. Established hedges should receive annual top-dressings of soil and decayed manure.

Communications Received.—W. H. P.—W. R. P.—D. B. C.—W. W.—A. C. B.—R. W. C.—E. B.—R. A. M.—J. D.—J. W. M.—C. T.—E. T. C.—G. W. H.—C. R. M., New York—Mrs E. H.—H. S. T.—C. G. G.—Mrs. B.—J. H. A.—C. F. C.—J. D.—W. H. W.—A. G.—Miss E. A.—J. L. S., Washington—R. W. T.



TRICUSPIDARIA DEPENDENS (CRINODENDRON HOOKERIANUM). NAT. ORD. TILIACEAE.

A Chilean Shrub, hardy in the South-western Counties and other favourable localities.

THE

Gardeners' Chronicle

No. 1,411.—SATURDAY, JANUARY 10, 1914.

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MR. BOWLES' GARDEN.

NO one who loves plants for their own sake and endeavours to make one particular garden reflect, as in a mirror, his highest conception of beauty, can inspect the plan that is being worked out by another idealist without gaining experience. But certain gardens will always possess greater interest than others, usually because they are more characteristic of their makers. In place of slavish copying of a set pattern we want more and more liberty of design in order that every garden may possess the freshness and charm of originality, for no two need be alike, any more than the minds of those who fashion them.

For many years past Mr. Bowles has studied, handled and cultivated vast numbers of plants, making close friendships with many that specially claim his admiration or interest and getting an acquaintance with countless others. He looks upon his garden as a means of affording a home for the plants. If the garden suits their requirements, it likewise fulfils its owner's wishes, and just as any host seeks to know the characteristics and preferences of his friends, so does Mr. Bowles study his plants with minute care and absorbing interest, their affinities, peculiarities of structure, likes and dislikes and general habits.

With respect to the general conditions affecting the garden, the first thing to be

noted is that although Myddelton House is only 10 miles due north of London it is surrounded by a rural landscape, and the rustic character of the neighbourhood is proved by its rich fauna and flora. The site is 111 feet above sea level and is on the edge of a district which shares with Yarmouth the lowest rainfall in Britain. A coarse gravel subsoil drains the ground to such a degree that the garden may be classed amongst the driest in England. The New River runs through the centre of the garden, but although this artificial waterway was made some 300 years ago, the banks still carry the water through the gardens without allowing any to soak through to the benefit of adjacent plants. Moreover, the New River water is so hard that Rhododendrons have been killed

fine specimen of the hardy Palm (*Trachycarpus excelsus*) which stands in front of the conservatory is likewise in flower, the setting is very pretty, whilst on the lawn is a fine Cedar of such dimensions that one hears with something of a start that Mr. Bowles' great-grandfather brought it from Covent Garden in a pot. A fine bush of *Salvia Grahamii* in front of the conservatory must be 6ft. to 7ft. high. Across the lawn is a long border of moderate width, full of good things of herbaceous habit, and including such a colony of *Eremurus* as very few private gardens possess. There must be enough *Eremurus* plants to stock a nursery, and since most of the sorts are well represented they make a floral display of unusual attractiveness. In the border also there are many *Kniphofias*, in-



[Photograph by W. J. Tasey.]
FIG. 8.—MORNING ROOM WINDOW AT MYDDELTON HOUSE.

merely by watering them with it during periods of drought. A row of Yews on its north bank has been declared to be at least a hundred years older than the river, and it is not unlikely that there was a garden here in which the trees were planted. Mr. Bowles' ancestors settled here in the early years of the eighteenth century, but the oldest tree of which anything like a definite date of planting is known is a fine specimen of *Taxodium distichum* planted by his great-grandmother at some time prior to 1812. The present dwelling-house was built a few years later, and instead of using the good red brick of the district, the builders procured a then fashionable yellow brick from Suffolk, wherefore, says Mr. Bowles, "it has been my constant aim to smother it in creepers of all kinds." In May, when the *Wistaria* on the south front is in full bloom (see Fig. 8) and the

cluding the very beautiful *K. Northiae*. In this same part of the garden, but across another stretch of lawn, may be seen an interesting grouping of coloured foliage where grey-leaved plants and those with silver variegation are massed against bold groups of golden-leaved plants on one side and purple foliage on the other.

Mr. Bowles specially admires the large genus *Geranium*, and he collects all good hardy species that he can obtain, consequently they are to be seen in various situations, but they never seem inappropriately associated, because they mix well with other families. Turning towards a friendly wall that provides the necessary shelter for many young plants that would find it difficult or impossible to succeed in an exposed situation, a specimen of *Eucalyptus cordata*, 15 feet high and in flower, that Mr. Bowles has raised from seed obtained from an older plant, serves

to draw attention to the considerable number of species of Eucalyptus that have been grown to effective specimens. Mr. Bowles says that *E. cordata* is not an easy plant to purchase owing to incorrect nomenclature, but when it is obtained true it is one of the hardier species, far hardier than *E. Globulus* that usually does duty in gardens for the whole genus. *Olearia virgata* and its variety *lineata* produce small white, rayless flowers in July, but are rare plants, possessing much interest, and the weeping form of *Rosa rugosa*, *Eucalyptus pulverulenta*, and the choice sorts of Chinese Buddleias lately introduced, but already grown into specimens of considerable height, and many other good garden plants make the border that runs along with the wall a place of interest all the year round. *Solanum crispum* is to be seen some little distance away, scrambling over some posts and draping an old grey vase with its fes-

near Tortworth; a similarly twisted Hawthorn; a fastigiate form of the common Elder; an Oak-leaved variety of the common Laburnum; a pigmy Ash with a name almost as long as itself—*Fraxinus excelsior* var. *atrovirens nana*; *Rumex flexuosus* with very narrow, perfectly brown leaves; a viviparous form of *Poa alpina*; the Plymouth Strawberry; the one-leaved Strawberry, *Fragaria vesca* var. *monophylla*; a Hen-and-Chicken form of the common Daisy; the green Primrose; a white-flowered *Ajuga reptans*, and a form of *C. lactiflora* which grows only 1 foot instead of 6 feet, the normal height of the type. There are many other oddities in this irregular piece of ground, but sufficient have been mentioned to indicate not only the character of the plants which find a home in the collection, but also the interest such a gathering possesses for plant teratologists. These eccentrics are sheltered by standard Magnolias, *Wistaria sinensis*, *W. multi-*

cluding Irises and Tulips, are also grown in profusion. Of *Iris florentina* a word is needed to explain the beautiful belt of flowers that runs along by the side of the New River—(see fig. 11)—where Mr. Bowles made a clearing of the Laurels and *Viburnum Tinus* that formerly grew there, in order to make way for his principal collection of Irises—namely, those of the bearded section. The whole front of the bed is planted with a band some 8 feet deep and 20 yards long of *Iris florentina*, with an occasional clump of *I. germanica* amongst them, these latter for improving the dainty picture by adding touches of purple to the sheet of grey.

The Rock garden is one of the most interesting we have seen, although its owner does not claim for it superior structural effects. Its interest is more in the plants, their rarity and their flourishing, contented appearance. The design, says Mr. Bowles, would have been different had the rockery been constructed at one time, but it was not, and the first portion that was formed on a bank of stiff clay has been added to on more than one occasion by taking in pieces of meadow land for the purpose. Each and every portion has been planned, built and planted by Mr. Bowles himself, who with his own hands has helped to fix the great stones in their positions, and he, with the cunning of the true plantsman, has selected the places for the rarer and more difficult plants to occupy. He has no hard and fast rules about keeping the rockery exclusively for true Alpines, but on the contrary he plants thereon any favourite he has reason to think will thrive better there than anywhere else. Yet he has specimens of true Alpine species, really difficult plants, that make all rock-garden visitors exclaim at the wonderful success obtained. It is the success that falls only to the lot of those who have that gardening instinct by which they are able to divine with accuracy the peculiar requirements of individual plants, and the patience that never tires in the daily task of maintaining the conditions necessary to the plant's highest development. The illustration in fig. 10 represents a clump of the only American species of *Meconopsis* (*M. heterophylla*) flowering in May by the side of one of the rockery paths. The plant is an annual, and it produces its rich orange-coloured flowers, with chocolate-red, almost black centres, in the greatest abundance. But this usually happens only when it is self-sown; in other cases it is not easy to get such vigorous clumps. We must not attempt to describe the interesting plants on the rockery, however, for it would not be possible here to mention even a tithe of them, nor can we describe the collection of hardy Succulents and other features that go to the making of Mr. Bowles' charming garden. Sufficient may have been said to indicate its general character, but its peculiar charms to the plant-lover can only be fully appreciated after a visit to the garden with Mr. Bowles as guide.



(Photograph by J. A. James.)

FIG. 9.—WISTARIA MULTIJUGA IN MR. BOWLES' GARDEN.

toons of lilac-coloured flowers; truly a beautiful plant for the pleasure grounds, and particularly effective when given such a charming environment as Mr. Bowles has chosen for it. We have mentioned only a few of the trees and shrubs that recur to the memory, but they fail altogether to represent the many interesting species, including standard Wistarias and Magnolias, that are to be seen in various parts of the garden. A fine plant of *Wistaria multijuga* in full flower is shown in fig. 9, and a very graceful plant it is.

In Mr. Bowles' garden there is a small enclosure known as the Asylum. This spot has come to be known by this somewhat extraordinary name because most of its occupants are eccentrics that show some marked difference from the normal habits or appearance of their near relatives. Readers may possibly guess what some of these "demented" plants, as Mr. Bowles calls them, are like. A few may be mentioned. The first of the collection is the twisted Hazel, which Lord Ducie first found in a hedge

juga, *W. brachybotrys*, and flowering Cherries that make the surroundings pleasantly agreeable in spring even to those who have no wish to study the abnormal.

In this article it is not intended to write of Mr. Bowles' Crocuses, and for several reasons. First, our notes are chiefly of the spring garden as it appears in May, when the Crocuses are quiescent; but a stronger reason is that it would be next to impossible to deal with the Crocuses without excluding all else from notice. For Mr. Bowles' Crocuses are the Crocuses at present in cultivation. They are his special favourites, and no species, variety or form of the Crocus exists but Mr. Bowles possesses or would like to acquire it for his collection. The frame-yard tells its tale, however, for many of the frames contain the choicest and most tender Crocuses in pots, boxes, or planted out; and here, in the dark mornings of the New Year, Mr. Bowles may often be seen eagerly anticipating the opening into flower of his greatly beloved plants. Snowdrops, Daffodils and other early bulbs, in-

THE MARKET FRUIT GARDEN.

REVIEW OF PAST SEASON.

IN reviewing the circumstances of fruit-growing during the past year it is not only financial results that have to be taken into account. These have varied greatly, but, on the whole, have proved better than could have been expected early in the summer. The comparatively few growers who had even a fair crop of Plums must have had unusually good returns, for Gooseberries and Black Currants both yielded well as a rule, and the fruits sold for good prices, while the comparatively high value of Apples went far towards making up for the deficiency in the production of many varieties. But the results

NOVELTIES OF 1913.

ORCHIDS.
(Continued from p. 4.)
NURSERYMEN.

MESSRS. CHARLESWORTH AND Co., Haywards Heath, proprietors of one of the most remarkable and interesting Orchid nurseries, stand well in the matter of awards. During 1913 they obtained First-class Certificates for *Cymbidium Humblotii*, shown on April 1; *Miltonia Charlesworthii* and *Laelio-Cattleya Sylvia Princess Victoria Louise*, and the large, bronzy-red *Odontioda Brewii*, this last certificated at Holland House. The Awards of Merit were for *Cypripedium Alcinida* at the first meeting in 1913; *Oncidioda Cooksoniae*, *Oncidioda Bella*; *Odontioda Wilsonii* The President—a very pretty white and purple flower, shaped like *Odontoglossum Pescatorei*; *Cattleya Mossiae Olympia*; *Odontoglossum*

FAULTY INSTRUMENTS.

Is there any other article in common use quite as badly made as the thermometer? I have three instruments side by side, and the range of variation is 4°. The median one is taken to be the most accurate, partly because it has been tested against several other thermometers, and partly because, being a maximum as well as a minimum recorder, it marks the same temperature in the two columns of mercury. At a considerable expense a Kew-registered thermometer may be obtained; but even then, more often than not, an allowance for a detected error has to be made every time that the register is examined. Probably three-fourths of the records of frost that find their way into newspapers are erroneous.

CLEARING OFF APPLES.

Bramley's Seedling Apples left over one-eighth in bulk since they were stored, as tested by the

of the terribly wet season, 1912-13, which developed last year, are of much greater importance than the returns of that year, as they involve permanent injury to trees. Brown rot, scab, canker, and silver leaf all developed to an extent never seen before in my orchards. On the whole, brown rot has done me most harm, because it has attacked Plums extensively, as well as some varieties of Apples. To growers of Cherries for market it is a source of much loss. The scanty attention given to this disease has long been a source of astonishment to me. We hear of the "mummified" fruits which are among the results of an attack, but very little of the destroyed spurs and shoots. Until last season attacks on Apple trees had been only slight and limited in extent. But in my oldest plantation of Plums brown rot had been slowly extending for many years, in spite of the cutting-off of affected shoots and spurs; and last season the disease spread more or less all over the orchard. On Pond's Seedling and Gisborne nearly half the fruit spurs and many of the twigs are dead, as shown by the withered leaves still clinging to them. Czar and Monarch are less affected, and Prolific least of all. The first two varieties named are ruined, I think, and will probably have to be dug up after next fruiting season. We are spraying the orchard with sulphate of copper pure and simple, 4 lbs. to 100 gallons. My younger Plum orchards are not much affected, and, by spraying them with sulphate of copper, after cutting off the few affected twigs or spurs, I may check the small beginning of the disease. Domino Apple is also badly affected with brown rot, and Gascoyne's Scarlet, Early Julyan, and two or three other varieties slightly. Scab and canker are more common than they have ever been before. Multitudes of fruit spurs on Cox's Orange Pippin planted seven years ago are cankered. These are being cut off, and there are great numbers of sound spurs left.

RAINFALL IN 1913.

My total rainfall in 1913 was 30.98in., as compared with 33.23in. for 1912, and 28.73in. as the average for the twelve years ending with 1912. The monthly measurements in inches were 4.09 for January, 1.12 for February, 2.63 for March, 3.85 for April, 0.71 for May, 0.68 for June, 2.38 for July, 1.85 for August, 2 for September, 6.05 for October, 4.18 for November, and 1.44 for December. Only four of the twelve districts into which the United Kingdom is divided in the weekly reports of the Meteorological Office had over an average rainfall, and two of these are in Ireland. England south-west had 0.78in. over average, and England south-east 0.02in. over. The rest, including the Scottish districts, had less than an average rainfall.

EARLY WINTER SEVERITY.

Not since 1908 has there been weather on the last few days of December and the first days of January as severe as that which we have lately experienced. Slight frosts were registered on the 18th, 19th, and 23rd of December, while my exposed thermometer 4ft. from the ground showed 6° of frost on the night of the 24th. But a wind of arctic severity set in on the 29th, and there were 7, 6, and 8 degrees of frost on three successive nights. Sheltered thermometers in the North generally registered fewer degrees of frost than my unsheltered instruments on the 29th and 30th, because the coldness was mainly that of a wind frost. But in the night of the 31st records up to 15° of frost were registered. My object is to ascertain the temperatures to which my fruit trees and bushes are subjected, and therefore I do not adopt the usual plan of sheltering thermometers by louvres. In 1908 there was much greater severity from December 27 to December 30, inclusive. A great quantity of snow fell in the country generally, and frosts up to 16° were registered.



FIG. 10.—MECONOPSIS HETEROPHYLLA IN MR. BOWLES' GARDEN. FLOWERS ORANGE-COLOURED WITH CHOCOLATE-RED EYE.

[Photograph by W. J. Vasey.]

number of filled trays, and we began to send them to market on New Year's Day. They had been picked over twice, all unsound fruits having been removed from the sound ones. But at the end of December spots of rot began to show on a few Apples, and it was deemed advisable to pack them by instalments. The price has risen greatly, and there is a small margin of profit on the keeping of this variety. Newton Wonder is still keeping well, but will soon follow Bramley's to the market. *A Southern Grower.*

Georgius Rex; *Laelio-Cattleya Feronia* "Charlesworth's variety"; *Sophr-Laelio-Cattleya Laconia* and *S.-L.-C. Niobe*; and the distinct *Odontonia Langowoyi*. These were all finely-coloured flowers, and among species *Paphinia cristata* and *Angraecum recurvum* made a good show.

Messrs. SANDER AND SONS, St. Albans, whose enterprise in collecting Orchids is well sustained, exhibit some very showy species, as well as a number of interesting "botanicals." They secured at Holland House Show a First-class Certificate for *Miltonia Sanderiae*, one of the most delicately beautiful of hybrid *Miltonias*; an Award of Merit for the large and beautiful *Cattleya Mossiae Dreadnought*; and similar awards at Chelsea for *Odontonia Laelia*

PUBLICATIONS RECEIVED.—*My Garden Diary for 1914.* (Reading: Sutton and Sons.)—*Willing's Press Guide, 1914.* (London: James Willing, Ltd.) Price 1s.

Sander (one of a very useful decorative group raised by the firm), *Brasso-Cattleya Vilmoriniana* Etna (a very bright, purplish-rose flower), and *Oncidioda Cooksoniae illustris*, bright red. Other distinguished novelties were *Cycnoches Cooperi*, with long racemes of sepia-brown flowers, and a good companion to the new *C. Forgetianum* introduced by Messrs. Sander; *Phaius Cooperi*, a very distinct species, with chocolate-purple sepals and petals; *Maxillaria Fletcheriana*; *Cattleya Fabia* Prince of Wales, the darkest form; *Cypripedium Estella*, and other new *Cypripediums*, including the massive *C. Royal Monarch* and *C. insigne* Louis Sander. The new *Odontonia Farnesiana* and *O. MacNabiana* were also shown.

"Orchidhurst variety"; *Odontioda Seymourae*; the bright carmine-red *Miltonioda Harwoodii* "Shrubbery variety"; *Cypripedium Baron Schröder* var. *Kentore*, and many handsome hybrids chiefly flowering for the first time. A Botanical Certificate was also received for *Kefersteinia laminata*, and Cultural Commendations for *Oncidium corynephorum splendens*, and other finely-grown specimens.

Messrs. J. AND A. McBEAN, Cooksbridge, have made, perhaps, the best and most varied show of hybrid Orchids they have ever contributed to the shows. *Odontoglossum eximium* Alpha, which secured a First-class Certificate on March 4, is one of the most beautiful of the blotched *Odontoglossums* which Messrs. McBean

Exotic Nursery, King's Road, Chelsea, may be called the founders of the hybrid Orchid industry, and their original *Laelio-Cattleyas* and other showy Orchids are still standard types. *Laelio-Cattleya Olenus* var. *Ettrick* (A.M., August 26) and others were shown by this firm, together with new *Cypripediums*.

Messrs. FLORY AND BLACK, who have taken over the Laugley Orchid Nursery, Slough, formerly occupied by Messrs. Veitch, will reap the advantage attaching to work carried out under Messrs. Veitch's management, and already we have recorded in these pages some desirable novelties produced by them during their short occupation of the nursery, together with the fine new *Dendrobium Leeanum* "Langley variety," for which they received an Award of Merit on November 18.

Messrs. MANSELL AND HATCHER, Rawdon, Yorks, secured a First-class Certificate for *Cattleya Empress Frederick alba* at the Chelsea Show, and an Award of Merit for *Cattleya Magnet* var. *Serenata*.

Messrs. JAS. CYPHER AND SONS, Cheltenham, regularly show good exhibits, distinguished by their fine condition and floriferous character. The pretty *Coeloglyne intermedia* (A.M., January 21) is a very good example.

Messrs. HASSELL AND CO., Southgate, and other raisers have flowered good novelties during the year which may be accepted as worthy of awards, but the standard rises as time goes on, and it is not sufficient now merely to show a new and attractive cross; it must be strikingly distinct and sufficiently well grown to show its merits.

ILLUSTRATIONS IN GARDENERS' CHRONICLE.

The following new and rare Orchids were illustrated in these pages during 1913:—

- Angraecum Andersonii*, March 8, p. 146.
- Angraecum recurvum*, November 29, p. 374.
- Cattleya Trianae alba* Souvenir de Louis Verdenck, March 29, p. 199.
- Cattleya Lawrenceana* in Mrs. Bischoffsheim's garden (Coloured Supp.), August 30.
- Cypripedium Bourtonense*, December 27, p. 454.
- Cypripedium Demeter*, January 4, p. 3.
- Cypripedium Roundhead*, April 12, p. 230.
- Habenaria iantha*, November 1, p. 300.
- Laelio-Cattleya Nella*, December 13, p. 416.
- Lycaste Tunstillii*, December 13, p. 415.
- Megacalinium triste*, March 1, p. 131.
- Odontonia Laelia* Sander, May 24, p. 349.
- Odontioda Madeline* Prince of Orange, February 8, p. 92.
- Odontoglossum Cleopatra* "Rosefield variety," December 27, p. 456.
- Odontoglossum eximium* "Warnham Court variety," April 19, p. 246.
- Odontoglossum eximium Armstrongiae*, May 24, p. 350.
- Odontoglossum Pescatorei* Lady Holford, May 3, p. 283.
- Oncidium Lanceanum*, October 18, p. 279.
- Podandria* (*Habenaria*) *macrandra*, September 13, p. 182.
- Saccolabium glomeratum*, November 8, p. 317.

NEW OR NOTEWORTHY PLANTS.

CLEISOSTOMA SPICATUM LINDL.

A FINE inflorescence of this rare and pretty species from Borneo is sent by Mr. C. Wright, gardener to the Hon. N. Charles Rothschild. It is a strong grower, with thick, dark-green leaves 4 to 6 inches long, and 1 to 2 inches broad. The decurved rachis is stout and minutely furfuraceous, the slight downy covering extending to the ovaries and outsides of the floral segments. The flowers, which are $\frac{1}{2}$ inch across, have the sepals and petals red, with a thin, yellow line up the middle of the petals and lateral sepals. The whitish lip is prolonged into a spur $\frac{1}{2}$ inch in length, flattened at the apex. The inflorescence bears over forty flowers. *Cleisostoma* is one of the subgenera of *Saccolabium*, a genus from which there is little to distinguish it. The following references are interesting:—*Cleisostoma spicatum* Lindl. in *Bot. Reg.* sub. t. 32; Hook. f. *Flora of Brit. India* VI. 72; *Sarcanthus densiflora* Parish et Rehb. f. in *Trans. Linn. Soc.* XXX. 136; *Saccolabium densiflorum* Lindl. in *Wall Cat.* n. 7311; *Gen. et sp. Orch.* 220 and *Bot. Reg.* 1838. Misc. 56; *Aërides densi-*



FIG. 11.—IRIS FLORENTINA IN MR. BOWLES' GARDEN.
(See p. 18.)

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, are now reaping the benefit of the large block of well-appointed houses in which their fine stock has been developed during recent years. At Chelsea, on May 20, their group, illustrated in the *Gardeners' Chronicle* of June 7, p. 385, contained a wealth of new and rare hybrids. The best were the deep scarlet *Odontioda Chanticleer* "Orchidhurst variety" (F.C.C.); *Odontoglossum eximium* *Armstrongiae*, a perfect flower; *Laelio-Cattleya Aphrodite* "Orchidhurst variety"; and the deep ruby-rose *Brasso-Laelio-Cattleya Excelsior*. On other occasions Awards of Merit were gained for *Laelio-Cattleya George Woodhams*, a fine hybrid in itself and a good parent, as seen in the beautiful, new *L.-C. Armstrongae* (*L.-C. Geo. Woodhams* × *C. Iris*); and *L.-C. Marquis de Wavrin*

cultivate so well, and the large, pure white *Dendrobium Dearei* "McBean's variety" is an acquisition which, however, must always be rare. Awards of Merit were gained for *Laelio-Cattleya Smilax* var. *Prince of Orange*, *L.-C. Urania*, *L.-C. Autodon*, *Odontoglossum Phoebe splendens*, *Odontioda Keighleyensis ignifera*, *O. Charlesworthii* *Perfection*, a large, deep red form of one of the best *Odontiodas*; *Oncidium McBeanianum* (*superbians* × *macranthum*), a remarkable and pretty cross; *Cattleya Mendelii* *May Queen*, shown at Chelsea; *C. Drapsiana* "McBean's variety"; *Cymbidium Gottianum superbum*, and *Brasso-Cattleya Iris*. Messrs. McBEAN also gained a certificate of Appreciation for the remarkable *Adaglossum Juno* (*Ada aurantiaca* × *O. Edwardii*).

Messrs. JAMES VEITCH AND SONS, Royal

florum, Wall MS. Hab. Bhotan, Tenasserim, Moulmein, Penang, Perak, Borneo. It is finely figured in *Calcutta Bot. Gar. Arn.* Vol I., 85, plate 83 and Vol. VI., plate 311, the Sikkin form, which is more slender and may be otherwise different. Mr. H. N. Ridley in his excellent *Materials for a Flora of the Malay Peninsula* retains *Sarcanthus densiflorum* Lindl.

SARCANTHUS ROBUSTUM, Nv. Sp.*

THE accompanying illustration (see fig. 12) represents a very distinct and pretty *Sarcanthus* imported from Borneo by the Hon. N. Charles Rothschild, Ashton Wold, Oundle. Notwithstanding considerable pains have been taken with the plant, both at Kew and the Natural History Museum, it remains unidentified, being distinct from the many specimens examined. Consequently I propose for it the name given above. The illustration represents an inflorescence and a single flower with the sepals and petals removed, this latter showing the lip and column, both natural size; the leaf is reduced one-third. The flowers are cream-white to bluish-white and the markings claret-purple. *James O'Brien.*

NOTICES OF BOOKS.

THE ROSE BOOK.†

THIS volume contains 283 pages, and the general scheme of the book is that the first 150 pages are devoted to descriptions of various types of Roses with selected lists containing brief notes on the varieties, while the remainder of the book is for the most part devoted to details of cultivation. The descriptive portion is divided into Part I., "Roses to begin with," and Part II., "Roses to proceed with"; Part I. including the Wichuraianas, multifloras, Hybrid Perpetuals, and Hybrid Teas; Part II. Teas, Chinas, Moss Roses, Penzance Briars, Pernetiana and other types. No doubt the authors are well advised in suggesting that beginners should start with the Wichuraianas, for, as a class, they are of the easiest culture and often produce good effects in somewhat adverse conditions, but the division is arbitrary and hardly satisfactory; for instance, the Penzance Briars are surely of easier culture than many of the Hybrid Teas.

A good deal of the writing in this part is somewhat diffuse, while on the other hand the descriptions of varieties might have been amplified with advantage, and might perhaps have been more serviceable if they had been rather more critical and less generally appreciative. The observations do not always tally with that of the writer of this review. For instance, Alberic Barbier is stated to flower in June and autumn, while Coquina is only mentioned as flowering in June. In the reviewer's garden Alberic Barbier, though it has an unusually long period of flowering, produces nothing but an occasional flower afterwards, while Coquina has a considerable and well defined second flowering which is perhaps more pronounced than any other of the Wichuraiana group, unless it be François Foucard. Again, it is stated that *Avoca* blooms only in July. This is true when the plant is treated as a cut-back, but pegged down or better still allowed to grow freely on a pillar it will flower in late summer and autumn with considerable freedom. On the 16th day of October last over a dozen flowers were counted on a pillar

of *Avoca* which was about equally well furnished ever since the summer; most of the pegged down plants continued to flower almost to the end of the year. Some twenty pages are devoted to a description of Rose species, the Wild Roses of Britain and other countries. In both cases an alphabetical arrangement has been followed, with the result that the principal groups do not clearly emerge, and this is perhaps responsible for one or two rather curious omissions, e.g., *R. nitida*, *R. sempervirens* and *R. Fedtchenkoana*, while if the list is intended only for the assistance of gardeners it is perhaps a pity that little is said as to the relative merit of the species as garden plants.

The part dealing with cultural details is, in our opinion, the best part of the book, the directions are clear, simple and practical, and the style more pleasing and concise. The best time to apply the annual dressing of manure to established beds and borders of Roses is decided by the authors in favour of autumn, the manure

the well-established practice of exhibitors, and the results they obtain from watering freely with liquid manure at this period. No doubt throughout winter, especially if it be a mild one, and early spring, Roses are continually making fresh roots, but this is only in order that they may be ready for the later strain on their services when active growth commences. During winter the Roses do not want and cannot make the best use of manure, and many think they are better without it. Moreover, autumn rains are heavy, and the Rothamsted experiments show that the months of November, December and January are the periods of maximum percolation of rainfall, the drainage curve then falls rapidly, and is at its lowest through April and May, rising slightly through the three following months and rapidly in September. Manure applied in autumn, therefore, seems likely to have many of its valuable constituents washed away during the winter, and so much is this the case that it has been stated that in land occupied by cereal crops the drainage waters show that there is practically no nitrate left in the soil by the month of May.

The chief point in favour of autumn manuring appears to be its obvious convenience. It can be carried out while the beds are being tidied up, a process required in most gardens before winter sets in. Secondly, the digging in at this period may be thought less disturbing to the roots than when this is carried out while the young roots of the Roses for the coming season are delicate and easily injured.

Whether these considerations outweigh the probable loss of manurial matter carried off by the winter rains it will be for each cultivator to determine for himself. It is likely that the man on a heavy soil will think he runs less risk in this respect than his brother gardener on a light and porous formation. We admit the question is not yet settled. Interesting as are the Rothamsted experiments, we do not know that any have yet been conducted on a heavily manured Rose bed, but the arguments in favour of spring manuring seem to have some weight, particularly in the case of light soils. *White Rose.*



FIG. 12.—*SARCANTHUS ROBUSTUM*, A NEW SPECIES INTRODUCED FROM BORNEO BY MR. CHARLES ROTHSCHILD. COLOUR OF FLOWERS, CREAMY-WHITE WITH CHOCOLATE-BROWN MARKINGS.

being dug in, and any varieties that require protection receiving a mound of soil or burnt earth for the purpose. Undoubtedly the latter advice is sound, but the question whether Roses benefit most from an application of manure in autumn or spring must be considered still an open one, always assuming that if it is applied in spring it is being prepared throughout the winter by lying in a great heap well covered with soil. We may perhaps hope that our friends the meteorologists may be able to help us later on when they have perfected their experiments on the percolation of water through soil, and the contents of what we may term the filtrate. It is by no means improbable that the ultimate decision of the question will be different for light and heavy soils, and that the amount of humus in the soil may be a further element in arriving at a just conclusion. In modern conditions of Rose-growing we want to present the maximum quantity of manure in the form most readily capable of assimilation in the latter part of May and throughout June. The truth of this proposition, if it needs proof, may be gathered from

CANADA.

PROHIBITION OF IMPORTATION OF PLANTS BY MAIL.

FOR the information of those readers of the *Gardeners' Chronicle* who are accustomed to forward or may contemplate forwarding to Canada shipments of plants by mail, the following amendments to the regulations under "The Destructive Insect and Pest Act," governing the importation of plants and vegetation into Canada, will be interesting.

In Regulation 3, line 14, the words "Importations by mail shall be subject to the same regulations" have been struck out and the following new regulation (No. 18) has been passed by Order-in-Council of December 4, 1913:—"18.—The importation of all nursery stock, including trees, shrubs, plants, vines, grafts, scions, cuttings or buds, through the mails is prohibited, excepting greenhouse-grown florists' stock, cut flowers, herbaceous perennials and bedding plants, which will be admitted, provided that a detailed statement of the contents is attached to such parcels."

In order that sufficient notice may be given of this prohibition of the importation of nursery stock, etc., into Canada through the mails, this regulation will take effect on and after March 1, 1914.

Information relative to the importation of trees, plants, etc., into Canada and copies of the regulations governing the same will be gladly furnished by the undersigned, to whom communications on the subject should be addressed. *C. Gordon Hewitt, Dominion Entomologist, Department of Agriculture, Ottawa, Ont.*

* *SARCANTHUS ROBUSTUM*.—Stems $\frac{3}{4}$ inch wide, $\frac{1}{2}$ inch thick, green. Leaves $\frac{1}{2}$ to 2 inches apart, 4 to 6 inches long, about 1 inch wide, fleshy, hard, dark green, unequally bilobed at the apex. Raceme decurved at the extreme half bearing several flowers (ten or more on the imported spikes). Peduncle stout, pedicels and ovary a third of an inch long, slightly grooved. Flowers about $\frac{1}{2}$ inch across, fleshy, white to bluish, with claret-purple markings. Sepals obovate acute, the dorsal sepal concave, the laterals divergent; petals narrower, recurved. Lips stout, prolonged with spur, the callus and septate division being characteristic of *Sarcanthus*. Column fleshy, thick at the base.
† By H. H. Thomas, assisted by Walter Easlea. Messrs. Cassell. 6s.

The Week's Work.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl B AUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

THE FORMAL GARDEN.—The portion of the flower garden nearest to the residence should be made attractive by planting the beds and borders twice each year with spring and summer bedding plants respectively. Further away from the house more freedom and a more natural style of planting can be adopted. To have the garden attractive on every day of the year should be the aim of every garden lover; yet how seldom is a real effort made to have it so. Thirty years ago the gardens at Madresfield Court contained large plantations of Laurels, Box, Yew, Privet and other sombre-looking shrubs, all planted in monotonous style, and most of these have been destroyed. Their places have been planted with bold groups of evergreen and deciduous hardy flowering shrubs, and nearly every plant has room to become a fine specimen. There is a wealth of material to select from, including *Lonicera Standishii*, *L. integrifolia*, *Hammamelis* (the Witch Hazel), *Daphne Mezereum*, the Sweet Gale, *Erica codonodes*, and many others now in full bloom, which will be followed by others in succession. *Berberis Darwinii*, *B. stenophylla*, *Viburnums*, *Lilacs*, *Spiraeas*, *Choyisia ternata*, *Veronicas*, *Azaras*, *Laburnums*, *Syringas*, *Philadelphus*, *Weigelas*, *Deutzias*, *Maples* and *Hydrangeas* are a few that are suitable. In a recess may be planted a few of the choicer *Rhododendrons*, *Azaleas*, *Andromedas*, *Ericas*, and other peat-loving plants. Other sheltered corners may be selected for *Bamboos*, *Gynerium* (Pampas Grass), hardy Palms and Ferns, whilst the water-side may be planted with *Caltha palustris*, *Spiraea Aruncus*, *Lythrum*, *Iris Kaempferi*, and bog-loving plants. Room should be found for large, irregular groups, standing well back, of such plants as *Pyrethrum uliginosum*, *Helianthus* in variety, *Lychnis*, *Paeonies* and *Eupatoriums*, reserving the choicer medium-growing plants for the herbaceous border proper. Another corner may be furnished with rock plants, and still another with choice bulbs, such as *Darwin* and *Cottage Tulips*, *Hyacinthus candidans*, *Gladioli*, *Montbretias* and *Anemones*.

BANKS OF HARDY FLOWERS.—There is nothing more pleasing or effective than mounds or banks of hardy flowers, especially when seen from a distance. *Tritomas* or *Kniphofias*, *Rudbeckias*, tall *Pyrethrums*, *Indian Poppies*, the taller *Delphiniums*, *Sunflowers*, *Dahlias*, tall-growing *Pentstemons*, and *Hemerocallis* are all suitable for the purpose. The choicer *Michaelmas Daisies* are worthy a series of beds in the grass to themselves. Room should also be found for sloping banks of *Gentians*, *Lily-of-the-Valley*, *Anemones*, *Ranunculus*, and *Erythronium* (Dog's Tooth Violets). The garden should have a space set apart for annuals, which I propose to deal with later on. Bulbs are to be recommended for planting in the grass, including *Daffodils*, *Dutch Tulips*, *Grape Hyacinths*, *Chionodoxa*, *Scillas*, especially *S. hyacinthiflora alba*, *Colchicums*, and *Cyclamen europeum*, for a shady bank.

TURF AND GRAVEL PATHS.—Complete all necessary alterations to turf on lawns and repairs to grass verges where these are worn or damaged by the absence of light and the drip of dense evergreen trees and shrubs. Use the roller after rains (but not when the ground is frozen), for the more turf and grass lawns or paths are rolled the more satisfactory they become. If *Daisies* are troublesome, carefully skim off the turf very thinly, and allow it to remain in rolls for a fortnight. Afterwards prepare the soil by slightly breaking up the surface about 2 inches deep, and relay the turf. This will kill a large number of the *Daisies*, but the turf will contain seeds of the weed, and will need dressing with lawn sand, or sulphate of ammonia mixed with river sand. Scatter the lawn sand

in the same way as guano or other artificials are applied. The lawn sand will cause the leaves of the *Daisies* to shrivel, but the application must be repeated to kill the roots of the plants.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

STRAWBERRY BEDS.—If the work has not been done already, established Strawberry beds should be cleared of rubbish, the soil lightly forked, and a good dressing of farmyard manure applied. The manurial properties of the dung will be washed down to the roots by the rains, ready for the plants to appropriate in the spring, causing them to grow vigorously and develop strong trusses. Fresh plantations which have not yet furnished fruits require no top-dressing of manure, but the beds should be made clean and tidy. The present is a suitable time to prepare ground for future planting. Trench the soil deeply, enrich it with plenty of good manure and leave the surface rough and exposed to the ameliorating influence of frost and the weather generally. The site may be used for planting early Potatoes and similar crops, which will be cleared off in time for planting the Strawberries. At planting time the soil will need very little preparation, and will have become settled, so that it will be in an excellent condition for receiving the young plants.

GENERAL WORK.—In most gardens certain varieties of Apples, Pears and other fruits are not a success, and these should be marked at the time of pruning, manuring or spraying, with a view to heading back such as are in a healthy condition for re-grafting in the spring. This also applies to varieties that have been superseded by better sorts. The scions should be procured early and set carefully in damp sand or earth until required. Examine the scions occasionally to see that rats or other vermin are not causing damage to them, which may happen if frost prevails for a considerable time. During times of inclement weather labels should be made and painted for future use, stakes and poles trimmed and pointed. Examine Strawberry and other nets with a view to repairing any that are broken, and see what new ones are likely to be required. Where nails and shreds are used for fastening fruit trees the old nails should be made red-hot and the old shreds burnt. Rabbits and hares are often a source of great trouble in orchards and fruit gardens which are not enclosed by walls. They are especially troublesome during cold weather, when they will soon ruin the trees in young orchards if not checked. Wire fencing should be examined carefully and faulty portions replaced; the fence should be fairly high, and it is best turned over outwards a few inches at the top. Dress the stems of the trees with one of the preparations for making the bark distasteful to animals, and exercise a constant supervision of trees in outside gardens or orchards to see that the animals do not cause damage.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. Cookson, Oakwood, Wylam-on-Tyne.

SEED-SOWING.—Hybridisation is practised more or less extensively in almost all collections, and many of the seed-vessels are now ripening. Whilst seeds of some species may be sown at the time of harvesting (at the end of November and December) it is found desirable to save the bulk of them for sowing at the turn of the year. This method is to be recommended because, owing to the shortness of the days and the generally unfavourable conditions in winter, germination is then very slow, and the seedlings grow more or less weakly. With the turn of the year and the lengthening days the conditions gradually become more favourable, and seed germinates more satisfactorily. The methods of sowing must necessarily be governed by the facilities at hand. Where hybridisation is extensively practised it is best to have suitably-heated cases in which to germinate seeds of

Cattleya, *Laelia*, *Dendrobium*, and others of the *Epidendrum* group. By the use of these cases germination will be hastened considerably, thus shortening the time between seed-sowing and flowering. In most gardens some kind of propagating case is available, or one may easily be fixed up, which will be found of considerable advantage in maintaining an equable temperature and, with less evaporation of moisture than in the house itself, there will not be such need for waterings. It requires but very little disturbance to dislodge the seedlings from the soil in the early stages, and the least carelessness in watering is sufficient and may wash them over the sides of the pots. The method of sowing may not be generally understood; it should be done as follows: A piece of new canvas or some porous material about 4 or 5 inches square is laid flat on the palm of the hand and covered with finely-chopped Sphagnum-moss. The edges are then wrapped around the moss, forming it into a ball. This is then placed into well-drained pots, just sufficiently large to contain it. It is then watered, and when the superfluous moisture has drained away the seeds are sown on the canvas. The seeds are then transferred to the cases referred to above. *Odontoglossums* are best sown on pots in which the parent plants are growing, and the work may be done as soon as the capsules have ripened. Several pots should be chosen for seed-beds so as to ensure getting the most suitable, for, say, in half a dozen pots the seed may germinate well in one, whilst the other five may prove failures. The same is true of *Cypripediums* and *Calanthes*. It is desirable in the case of *Cypripediums* to select plants that have been recently potted, or where the compost is in a sweet and healthy condition. Most Orchids are very slow in germinating, and sometimes a year may elapse before the seedlings appear. Some of the same batch may germinate quickly and seeds of the others take a long time. Pot plants used for germinating seedlings need watering with extra care. Most of the failures are caused by careless applications of water before the seeds become attached to the rotting material, and in most cases floating them over the sides of the pots. *Calanthe* seeds ripen in about four months from the time the ovules are fertilised, and are best sown on recently-potted plants of their own kind in the spring.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of Derby, Knowsley Hall, Lancashire.

CYCLAMEN.—The first batches of these most useful plants will now be in full flower. Maintain a buoyant atmosphere of about 55°, and mix a little Clay's Fertiliser in the water applied to the roots. The later batches may be top-dressed with loamy soil, containing a little chemical manure. Remove a little of the surface soil with a stick, taking care not to damage the roots or corm. If flowers are required for house or table decoration pull the blooms in preference to cutting; the latter method leaves part of the stem, which rots and causes damage to young flowers at the base. Seedling *Cyclamen* which were sown during September and October should now have two or three leaves. Prick the strongest into pots or pans, putting the seedlings 3 inches apart, and keeping the greater portion of the corm above the soil. Use a compost of equal parts loam, peat and Oak leaves rubbed through a quarter-inch sieve, adding a little coarse sand and charcoal. *Cyclamen* are slow in germinating, so it is advisable to keep the pans on a shelf in case of young seedlings appearing later. Keep the young plants close to the glass; spray them on fine days and fumigate them occasionally.

CONSERVATORY AND GREENHOUSE.—Keep the conservatory gay with batches of forced bulbs and plants from the forcing-pit. *Azalea indica Deutsche Perle* and *A. Fielder's White* are good varieties to force and very little heat is required to bring them into bloom. Place them first in a temperature of about 60°, increasing the heat in the course of a week to 65°. Apply the syringe with force to the underside of the leaves to dislodge thrip and white fly. When the plants come into flower remove them to the

conservatory, where they will last in bloom for a long time. As the specimens pass out of flower pick off all seed-pods and return the plants to a warm pit to complete their growth.

MIGNONETTE, SWEET PEAS, CLARKIAS, SCHIZANTHUS & CALCEOLARIAS.—These plants require plenty of fresh air on all favourable occasions. Stake Mignonette neatly and stir the surface soil. Re-pot later batches and make a sowing now to produce flowers at a season just before the outdoor sowings are ready. Support Sweet Peas in pots with pieces of Birch broom and grow them as sturdily as possible.

RICHARDIA AFRICANA.—Plants of this popular "Lily" will now be in full growth and pushing up flower spathes. Give the plants a little fertiliser alternately with some diluted manure water prepared from cow-manure two or three times a week, according to the growth of the plants. Examine them for the presence of green fly, especially on the undersides of the leaves and on the half-opened spathes. Sponge the leaves with soapy water.

SEASONABLE REMINDERS.—Examine all stock plants, such as Fuchsias, Cannas, Sweet-scented Verbenas, Hydrangeas, Standard Heliotropes, Ivy-leaved Pelargoniums, Streptocarpus, and similar plants, to see that they are not too dry at the roots. If young plants of Fuchsia are required to flower in the early autumn, select some old plants of the varieties needed and start them into growth in a temperature of about 60°. Syringe them daily; take cuttings when the growths are 2½ to 3 inches long, rooting them in a frame that can be kept fairly close; pot them on as required. Stop the plants occasionally to obtain shapely specimens, and preserve them from all influences that would check growth.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

POT FIGS.—Unless bottom heat is supplied by hot-water pipes, the fermenting materials in which these are plunged should be renewed from time to time in order to maintain the bed a temperature of about 70°. The atmospheric temperature should be 70° by day and about 60° at night. A rise of 8° or 10° during the day with sun heat will do no harm, but the atmosphere must be kept moist at such times by damping the paths and brickwork with tepid water. A start should be made with successional trees; spray them to keep the bark and buds moist and grow them in a temperature of 50° to 55° by day, allowing a little less warmth at night.

FIGS PLANTED IN BORDERS.—Trees in mid-season or late houses should be pruned carefully, thinning out unripened and useless growths. Wash or paint the shoots with an insecticide (a mixture of soft soap, sulphur and warm water is suitable), to destroy scale or mealy bug. The shoots of trees trained on trellises should be fastened not closer than four inches apart, allowing six inches if there is plenty of room, for the leaves must not be crowded. Before starting the trees into growth water the border copiously. If it is considered necessary to renew the soil a mixture of fibrous loam, lime rubble and well-rotted manure—or half-decayed cow-manure—with a sprinkling of wood ashes and soot, may be employed. This mixture will be suitable also for tree in pots.

PINEAPPLES.—The temperature of the nursery house or pit should be about 65° by day, with a rise of 8° or 10° by sun heat—falling to 56° or 58° at night. During mild weather a little fresh air may be admitted to the pit. Only sufficient water will be required at the roots for the present to keep the soil moderately moist, and tepid water alone must be used at this or any other time. Plants in succession houses should be treated similarly, keeping the atmospheric temperature as near to 60° as possible; a sudden increase of heat at this season might result in the plants starting to form fruits prematurely. Water should be afforded in very moderate quantities; rather keep the plunging materials moist than to water the soil frequently, as the more

steadily the plants grow at this season the more likely are they to give better results later on. Pines in the fruiting houses should be grown in a steady night temperature of 60° to 65°, but a few degrees warmer through the day, either through the sun's rays or artificial heat, will assist in just keeping the plants growing; that is, if it is desirable that they do not show signs of fruiting before the middle or end of February. As a rule small houses have an advantage over larger ones, inasmuch as the plants can be brought into fruit in regular succession in suitable quantities. Drip, either from the condensation of moisture on the glass and roof or bad glazing, must be carefully guarded against, or the crowns of the plants may be seriously injured.

PEACHES.—A house may be started for succession. The temperature should be about 50° by day and 45° at night. Very little fire heat will be required; indeed, it is better not to hasten the trees into flower, as the buds are swelling fast under ordinary conditions, and many of them may drop if the temperature is very warm. Spray the trees lightly with clean water once or twice each day, according to the weather conditions. See that the soil in the borders is kept in a fairly moist condition, and in other respects carefully follow the instructions given in my notes printed last week.

THE "FRENCH" GARDEN.

By PAUL AQUATIUS.

COLD FRAMES.—The crops to be grown in cold frames should now be set at the earliest opportunity. On a bright day all lights can be removed, the soil well raked over, and seeds of Radish French Breakfast inserted broadcast, applying about ¼ lb. for each row of five frames. Carrot Chantenay or Guérande will also be sown, and the seeds covered with sifted soil, lightly pressed down. Six rows should be marked out for the Lettuces and the frames again covered with the lights. The two varieties of Lettuces, Little Gott and White Passion, are useful for sowing in cold frames; 108 plants of the former or 90 of the latter are sufficient for each frame. The plants required are lifted from the nursery beds and taken to the shed, where they are examined and cleansed of all bad leaves. All those showing decay on the stem should be rejected. To facilitate the handling of the lights two men should be employed for the planting, one setting the top and the other the bottom rows. Make the soil firm about the roots, but do not plant too deeply. Where little or no hot-bed is made, the paths between the frames should be filled with short and dry manure. This will hasten early growth and prevent cold winds from penetrating into the frames.

HOT-BEDS.—The making of the hot-beds will commence immediately in most gardens. The time must, however, be determined by the size of the Lettuce plants and the quantity of manure in hand. The place of the first bed (5 feet 6 inches wide) will be marked out with canes, set 8 to 10 feet apart, the manure brought in late in December being placed in a ridge. Fresh manure must then be added and well mixed with the old. Special care must be taken when making the outside, which must be very firm, utilising preferably strawy manure for the purpose. When the bed is completed the surface should be well trodden down and afterwards levelled. It should not then be more than 9 or 10 inches thick. The frames are to be set straight, allowing 1 inch between each to prevent the jamming of lights later on. A little manure can be placed in the frames to make a smooth and even surface before placing the soil. The space for the second bed is next marked out and all the black soil piled up is put inside the frames of the first bed. As soon as it is levelled and raked over Carrot Bellet can be sown very thinly. Radishes or Spinach might also be sown, but these crops hardly repay the extra labour entailed, and if they are sown in cold frames a better supply may be obtained without injuring the Lettuces. The seeds are covered with fine sifted soil and pressed down, seven rows being marked out for Lettuces Little Gott,

which will be planted (147 per frame) as soon as fermentation begins. The beds intended for Turnips are prepared in a similar way, but only Lettuces are now set (168 per frame). The seeds of Turnips are only inserted after the Lettuces are marketed, because this crop cannot thrive in a freshly-made hot-bed, and the dull, wet weather of January and February are unfavourable to the quick growth of this vegetable. The making of the hot-beds should be completed very early in February, and every bed finished on the same day as it is started, in case snow or frost involves a suspension of work.

NURSERY BEDS.—As soon as the planting of Lettuces begins the cloches at liberty can be placed on the beds prepared for Radishes and Carrots under frames. The planting is, however, postponed for another fortnight, when the soil is in a better condition. A bed of cloches should be retained to prick out a third batch of Cos Lettuces, 5 per cloche, instead of 14 as for the second transplanting. This is only done in the case of plants needed for the hot-beds in February. It produces half-grown plants, and helps to secure a very early crop. Cos Lettuce, Paris White, and Cabbage Lettuce Vauxhall Defiance are now to be sown in cold frames (½ oz. of seeds per frame) for setting outside late in April. This batch is not pricked out in nursery beds.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

HORSE RADISH.—This vegetable is usually treated with inexcusable neglect. The proper method is to lift the roots annually, storing them in sand for use in the kitchen, or merely covering them with soil in the garden. Then a new plantation is made of the number of roots annually required by the household. The ground should be dug two spits in depth, and on the top of the under spit, or about 10 inches below the surface, the roots should be arranged at 2 feet apart and covered with soil to the required level. Treated in this way nice straight even roots are produced. When the ground has been trenched some time previously to planting, the short pieces of root can be set equally well in holes, made deep enough with a dibber.

POTATOS.—It is usual to force a few Potatoes in 10 or 11 inch pots in a vinery or Peach house. The pots need not be much more than half-filled with turfy loam at present, and the tubers just covered. Very little water at the roots will be required for the first few weeks, and additions of a compost composed of half loam and half leaf-mould must be made from time to time as the haulm extends.

SEED-SOWING.—Where provision for the earliest plants of Brussels Sprouts was not made in autumn by sowing out-of-doors, seeds may be sown at once in boxes and the seedlings raised under glass. A few Cabbage Lettuces of the Tom Thumb type should be raised in the same way. Mustard and Cress should be planted every few days to keep up a supply of this salad; soak the shallow layer of soil, cover the seeds with thick brown paper, and germinate them in a hothouse. If more moisture is required rather dip the boxes than water the soil overhead. Sowings of French Beans should be made at brief intervals, but unless there is enough heat to grow these well forcing should not be attempted meanwhile.

PEAS.—In some years it is possible to make an early sowing in this month, sometimes earlier, sometimes later, according to the state of the soil and the weather. I never bury the seeds of this sowing deeply, but prefer to cover them in broad-ridge fashion with very fine soil. I thus obtain a warmer seed bed. The importance of sowing on a suitable day is very important, and the first opportunity should be embraced, for it may be well into March, if the crop is not got in this month, before the soil is again fit for working. There is, of course, a risk when sowing so early, but it is a risk well worth taking. I invariably choose a dwarf variety for the earliest crop out-of-doors.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

APPOINTMENTS FOR THE ENSUING WEEK.

- SATURDAY, JANUARY 10—
B.G.A. meet. at Richmond Hotel, Godalming.
- MONDAY, JANUARY 12—
United Hort. Ben. and Prov. Soc. Com. meet.
Surveyors' Inst. meet.
- TUESDAY, JANUARY 13—
Roy. Hort. Soc. Coms. meet. Horticultural Club Dinner; lecture by Mr. Wollaston on "Plant Collecting in New Guinea." Stirling and Dist. Hort. Assoc. Meet. B.G.A. meet. at Railway Institute, Finsbury Park.
- WEDNESDAY, JANUARY 14—
Surveyors' Inst. Prelim. Exam. (2 days).
- THURSDAY, JANUARY 15—
Manchester and N. of England Orchid Soc. meet.
Linnean Soc. meet. B.G.A. (Watford Branch) meet.
- FRIDAY, JANUARY 16—
Kew Gardeners' Social Evening.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 38.6°.

ACTUAL TEMPERATURES:—
LONDON, Wednesday, January 7 (6 p.m.): Max. 39°; Min. 31°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, January 8 (10 a.m.): Bar. 29.8; Temp. 46. Weather.—Fine.
PROVINCES.—Wednesday, January 7; Max. 47° Valencia; Min. 38°, Aberdeen.

SALES FOR THE ENSUING WEEK.

- MONDAY AND FRIDAY—
Herbaceous and Border Plants, Lilliums, Gladiolus, Begonias and other Hardy Bulbs, Roses and Fruit Trees, at 12, at 67 and 68, Cheapside, E.C., by Protheroe and Morris.
- WEDNESDAY—
Perennials, Herbaceous Plants, Gladiolus, Begonias, Lilies, Forcing Plants, etc., at 12. Palms and Plants at 5. At Protheroe and Morris's rooms.
- THURSDAY—
Special Sale of Roses at Protheroe and Morris's rooms, at 1.
- FRIDAY—
An importation of Burmese Dendrobiums; also established Orchids. At Protheroe and Morris's rooms, at 12.45.

Radium Emanations and Plant Growth.

We gave recently an account of experiments in the use of electricity as an adjunct to intensive cultivation. In the course of that account it was shown that there is reason to believe that the electrical discharge may play an important part in the horticulture of the near future, and this in several directions: First in the increase and acceleration of the growth of crops, and second in assisting the cultivator to cope with plant diseases. We have now to recount the progress which is being made with the investigation of the effects of radium emanations on plant life.

It is not surprising that our knowledge of the reactions of plants to radium emanations is still scanty, for the dis-

covery of radium is but recent, and the price of radium is all but prohibitive.

It would appear, however, that this barrier to research is about to be removed, and that processes recently invented, and referred to by Mr. Thomas Baker in his recent paper before the Royal Society of Arts, will bring radio-active substances within the purchasable reach of those desirous of experimenting with it.

Mr. Baker, in addition to holding out this prospect, has done the further service of summarising the results of his own and other recent experiments into the effects of radium on plant-development. Like the electrical discharge, radium emanations appear to act differentially on living things; that is to say they behave as though endowed with powers of good and evil—whom they will they slay, and whom they will they keep alive. Herein lies the immense possibility for the employment of the emanations in the service of mankind.

Thus Dr. Stoklasa has described recently in the *Comptes Rendus* the effects of various radium emanations on the nitrogen-fixing bacteria of the soil, and has shown that fixation of nitrogen goes on more rapidly in soil subjected to these emanations than in ordinary soil. Whether or not this property of radium of encouraging the growth and activity of certain beneficent bacteria is capable of economic application remains to be determined; but there would appear to be no valid reason—if the problem of price can be solved—why radio-active substances should not come to be used as fertilisers. Mr. Baker is emphatically of opinion that residues containing traces only of radio-active material are capable of accelerating greatly the growth of plants. He admits, however, that different kinds of plants do not respond in a uniform way to treatment with radio-active substances. For example, in one set of experiments on the use of radio-active earth Cress responded but poorly, whereas Radishes developed about three times more rapidly in a radio-active than in normal soil. The treated plants germinated much more quickly, and were already two inches high when the plants in ordinary earth were bursting through the soil. Mr. Baker is not inclined to attribute the more rapid growth of the treated plants to a sterilising effect of radium on the soil.

As an example of the minute quantity of radio-active substance required to produce a beneficent effect the following numbers and results may be cited: One part of radio-active material containing 2 m.g. (= .00035 oz.) per ton was added to ten parts of soil; Wheat was sown in the radio-active and in ordinary soil. Germination took place much more quickly in the radio-active earth, and in four weeks—the experiment was done in winter—the Wheat in the treated earth was half as tall again as that in ordinary soil. Larger quantities of radio-active material produced an adverse effect both in the germination and growth of Wheat.

Needless to say that, as is the case with the effect of the electrical discharge, nothing is known as to the manner in which radio-activity accelerates growth. Much more experimental work is required before these new instruments of husbandry can find use in our gardens and fields, but practical developments have a habit of coming quickly on the heels of scientific discovery, and therefore it behoves us to take a quick interest in the experiments which are in progress, and to facilitate them to the utmost of our power.

Like Samson in the temple of Dagon, with his hands on the middle pillars, who slew at his death more than they which he slew in his life, so the dying element Radium releases terrific forces in the course of its disintegration. To learn to apply those forces to the sustenance of mankind is one of the boldest aspirations of modern science.

Conditions Affecting Germination.

The vagaries of seeds with respect to germination are well known; but the factors

which determine the erratic behaviour are by no means understood. Seedsmen have discovered and put in practice various methods for enforcing the germination of difficult "subjects," but it is only recently that a systematic attempt has been made to investigate the causes which restrict the germination of various refractory seeds. Recent work by Messrs. Murerati and Zapparoli carried out in the experimental station for Italian agriculture, and summarised in the *Botanisches Centralblatt**, has for an object the classification of seeds according to their behaviour when exposed to various conditions of humidity. These observers find that variations in moisture have a markedly different effect on diverse seeds. In the case of such plants as *Avena fatua*, *Galium Aparine*, *Papaver Rhoeas*, and others they find that germination is greatly accelerated when the seeds are kept alternately for a long period in a dry place, and for a short period in moist air. Other seeds germinate more readily when they are exposed alternately for equal periods to dry and to moist air; but though the rate is increased the percentage of germination is reduced by this process. In this category are such seeds as those of *Rapistrum rugosum*, *Sinapis arvensis*, *Salvia pratensis*, *Abutilon Avicennae* and *Oenothera biennis*.

The germination of some seeds is uninfluenced by changed conditions of humidity—for example, *Convolvulus sepium*, *Solanum nigrum*, and others. In these cases, although the seeds remain alive, the percentage of germination is very low. The seeds of Leguminosae, *Vicia Cracca*, *V. hirta*, *Lathyrus Aphaca*, and *Daucus Carota* germinate "in gusts"—by instalments, and variations in amount of moisture do not break this habit.

Lastly, certain seeds do not germinate at all unless they are exposed alternately to dry and to moist air. If maintained in a

moist place they remain alive, but do not grow. To this class belong *Panicum Crus-Galli* and *Rumex crispus*.

Although the seeds on which these experiments were made are, for the most part, those of native "weeds," cultivators and others especially interested in the germination of garden or farm seeds may gain hints of no small usefulness by a study of this interesting work of the Italian scientists.

Coloured Supplement.—In the milder parts of the British Isles no trees and shrubs give greater interest, distinction and beauty to gardens than those of Chile, and amongst Chilean plants a place in the first rank must be given to the small tree of which we give a coloured plate. The nomenclature of the species is involved in the greatest confusion. In the *Botanical Magazine* at tab. 7160, it was figured by Sir JOSEPH HOOKER as *Tricuspidaria dependens*, a name which has been found to belong properly to a white-flowered species also in cultivation and described below. Under this name and under a synonym, *Crinodendron Hookerianum*, the plant has become widely spread in the gardens of south and south-west England, the west of Scotland, and most parts of Ireland, and the garden name is printed on our plate. At the same time the correct name is *T. lanceolata*, as was pointed out by Mr. Watson in *Gard. Chron.*, October 28, 1905. *Tricuspidaria lanceolata*, Miguel (*T. dependens* of Hooker, not of Ruiz and Pavon), is an evergreen tree 15 to 20 feet high, a native of the provinces of Valdivia and Llanquihue in Chile, and in the island of Chiloe. It is of rounded, bushy habit, and its young shoots are clothed with a soft, brown wool. The leaves, of hardish texture, are lance-shaped, rather coarsely toothed on the terminal half, pointed, $1\frac{1}{2}$ to $4\frac{1}{2}$ inches long by $\frac{1}{2}$ to 1 inch wide, dark, dullish-green above, paler beneath, and hairy on the midrib and prominent veins. The flowers, produced on stiffly pendulous stalks, need no description in the presence of the accompanying plate. They have one peculiarity, however, that should be mentioned; they form and are pushed forth from the leaf-axils on stalks an inch or more long in autumn, but the flowers do not expand or acquire their beautiful colour until the following May, or later. The finest example in the United Kingdom that is known to us is in the garden of Captain ACTON, Kilmacurragh, Co. Wicklow. According to Mr. W. J. BEAN in the *New Bulletin* for 1913, p. 110, this tree, measured by him last February, was then 20 feet high and 15 feet through. Imagine such a tree thickly laden with flowers like those portrayed on our plate! Those whose gardens are situated in a similar climate will surely need no further inducement to plant it this season. Like most Chilean trees and shrubs, it likes abundant moisture, and is benefited by a proportion of leaf-soil or peat (or both), mixed with the ordinary garden soil at the time of planting. *T. dependens* (true), Ruiz and Pavon, is distinct in nearly every respect from *T. lanceolata*. It is evergreen, but is a larger tree, and is known to reach over 30 feet in height. It is also of freer and more rapid growth. The young shoots are almost quite smooth; the leaves are ovate or oval, sometimes almost orbicular on the flowering shoots; and they are from 1 to 3 inches long by $\frac{1}{2}$ to $1\frac{1}{2}$ inches wide, the short stalk, the midrib and the chief veins minutely downy when young. The flowers are white and bell-shaped, not tapered from the base to the apex; they are borne on slender, smooth stalks 1 to $1\frac{1}{2}$ inches long, often pendulous or horizontal. Each petal is terminated by three conspicuous teeth. Cultivators in Ireland inform us that this tree is not so hardy in the open

ground there as is the red-flowered *T. lanceolata*. At Kew, however, on a wall in the garden of Cambridge Cottage, facing east, the white-flowered species is growing freely, and in July, 1912 and 1913 flowered profusely. But the plant has only been in its present situation about four years, and no very severe frost has been encountered during that time. Still, so far as present experience goes, it is a promising evergreen for walls, and it flowers at a time when shrubs in general are past. It is a native of Chile, with a rather more northerly distribution than *T. lanceolata*, and was introduced by Mr. H. J. ELWES, F.R.S., in 1901.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the committees will be held on the 13th inst. in the Vincent Square Hall, Westminster.

HORTICULTURAL CLUB.—A house dinner of the club will take place on Tuesday, January 13, at 6.30 p.m., at the Hotel Windsor, Victoria Street, Westminster, when Mr. L. F. R. WOLLASTON will give a lecture entitled "Plant-collecting in New Guinea." The lecture will be illustrated with slides, reproduced from photographs taken by the lecturer. The following new members were elected at the meeting held on the 2nd ult.:—Mr. ARTHUR BATES, Mr. REGINALD CORY, and Mr. FREDERICK AMBROSE GARDINER. The Annual Meeting and Dinner will be held on February 10.

NORTH OF ENGLAND HORTICULTURAL SOCIETY.—At a meeting of this society, to be held in the Railway Institute, York, on Tuesday, January 13, at 7 p.m., a lecture will be delivered by Dr. E. J. RUSSELL (Director of the Rothamsted Experimental Station), on "The Cultivation of the Soil."

MR. W. F. GUNN.—Mr. W. F. GUNN, manager of the Dublin branch of Messrs. Alex. Dickson and Sons' seed business, has been appointed a Justice of the Peace for the City of Dublin. Mr. GUNN is president of the Dublin Naturalists' Field Club, a member of the committee of the Irish Forestry Society, and a member of the Council of the Royal Horticultural Society of Ireland.

NEW GARDENS AT GREENACRES, DISLEY.—At the conclusion of the laying out of the grounds at her Cheshire residence Miss CROSSLEY recently entertained the contractors and all the men employed on the work at dinner. The garden scheme includes a three-acre rock garden, Rose garden, wall garden, and a wild garden.

LIME CULTIVATION IN THE WEST INDIES.—The good work that has been carried on by the Department of Agriculture for the West Indies ever since its establishment is by no means diminishing under the able direction of its present Commissioner, Dr. FRANCIS WATTS, C.M.G., who has proved a worthy successor to Sir DANIEL MORRIS, and whose activities in promoting the welfare of the islands by the development of their natural resources and capabilities are exemplified, not only by the regular publication of the *West Indian Bulletin* and the *Agricultural News*, but also by the occasional issue of handy and cheap literature on distinct subjects, under the general title of "The Pamphlet Series." In many instances these are more than pamphlets, as in the case of one recently published, under the title *Lime Cultivation in the West Indies*, which runs into 136 pp., costs only ninepence, and contains not only much practical matter but also information that is interesting to the general reader. In noticing this book it is only right to say that it is the successor of one issued in 1908, under the title of *The A B C of Lime Cultivation*, which Dr. WATTS in his preface says has long been out of print, so that "the opportunity has been taken in preparing this handbook to revise and bring up to date the

information now available concerning the Lime industry," which, as he further says, "has continued to make steady progress in the West Indies, and is, at the present time, engaging a large amount of attention and undergoing rapid development." The following extracts on some of the products of the Lime, such as fresh Limes and Lime oils, will give an idea of the information to be gained from this little manual:—
"The products of a Lime estate are put upon the market in a number of different forms. That portion of the crop which is intended to be shipped as a manufactured product is allowed to ripen on the trees, the fruits, when fully ripe, dropping to the ground. For shipping as fresh or green Limes the fruits must be picked from the trees as they reach their full growth and just before the process of ripening begins. Fresh Limes are really green Limes; that is to say, they are green in the sense of not being fully ripe, and in order to be successfully shipped they must be green in colour. These fruits are generally thoroughly ripe and yellow by the time they reach the consumer in America or England. The term 'fresh Limes' is to be preferred in this connection." Under Lime oils we read:—"When the ripe fruits have fallen to the ground they are collected by women and girls and placed in heaps convenient for taking up and transporting to the mill. These Limes yield the following products, according to the method of handling and the market to be supplied. From the skins of the Lime the essential oil of Lime is obtained, a certain amount being taken from the Limes before they go to the mill, and a certain amount being obtained by distillation from the juice which comes from the mill. The oil which is obtained before the Limes go to the mill is known as 'ecuelled oil,' or hand-pressed oil (it has also received the name of otto of Limes), whilst that which is obtained by distillation is spoken of as distilled Lime oil. The ecuelled oil is more valuable and always commands a higher price on the market."

THE FLORA OF NIGERIA.*—Another interesting contribution to the flora of Nigeria has been published by the Trustees of the British Museum under the title given below. Mr. and Mrs. TALBOT are enthusiastic and successful collectors, and Mrs. TALBOT has added greatly to the value of their collections by her careful coloured drawings of the flowers of some of the more striking subjects. Mr. TALBOT contributes some introductory notes on the general character of the vegetation, which is practically the same as that of the adjoining German Cameroons region. He says: "The forests of Oban are usually described as within the evergreen belt, but though evergreens predominate, more careful study discloses the presence of a very large proportion of deciduous trees, many of which burst into leaf and flower twice every year. Several are known to flower no fewer than four times in the year, while on the other hand some cauliflorous trees only blossom every two or three years. Natives, whose information in other cases proved trustworthy, declared that certain kinds only flower once in seven years." Lianas, he states, often of the girth of our northern tree trunks, hang between giant boles 200 to 300 feet high, and, in the case of Cotton trees, over 80 feet in circumference. The collection includes upwards of 1,000 species, 195 of which are new, and there are nine new genera. Specially interesting among the new genera are:—*Crateranthus*, intermediate in structure between *Napoleonaea* and the tropical South American *Asteranthos*; *Afrohamelia* (*Rubiaceae*), *Talbotia* (*Acanthaceae*), and *Amauriella*, a member of the *Philodendroideae*. Special attention was given by Mr. and Mrs. TALBOT to cauliflorous trees, or such as produce their flowers on the trunks or on old branches, and

* *Catalogue of the Plants Collected by Mr. and Mrs. P. A. Talbot in the Oban District, South Nigeria.* By A. B. Rendle, E. G. Baker, S. Moore, and others. Printed by order of the Trustees of the British Museum. Octavo, pp. x. + 158, with 17 plates. 9s.

many new kinds were collected and drawn, belonging to such genera as *Cola*, *Napoleona*, *Drypetes*, *Tetrastemon*, *Omphalocarpum* and *Diospyros*. The *Rubiaceae* yielded the largest number of new genera (4) and species (34), though the new genera offer no very striking characteristics. *Acanthaceae* comes next with 21 new species, and there are 20 new species out of 70 of *Orchids*, mostly belonging to the genera *Bulbophyllum*, *Polystachya* and *Angraecum*. Although this book is called a catalogue, it is much more than that, for besides the full descriptions of all the new plants and the plates it contains much other information. No fewer than seven new species of *Napoleona* are described, just doubling the number previously known, and the allied new genus *Crateranthus* is among the most interesting of those figured. Kew has also received a set of the Talbot collections. W. B. H.

MR. ELWES AS A PLANT COLLECTOR.—At a recent meeting of the Cirencester Gardeners' Society Mr. H. J. ELWES, F.R.S., delivered an address on "Travels in Search of Plants." Mr. ELWES said his first real plant collecting was more or less an accident. He was going to Cyprus to collect birds, and happened to land in Asia Minor in the spring, when the country was covered with beautiful flowers, and, knowing just enough what bulbs were likely to be good and new, he filled two saddle bags with about forty different species of terrestrial *Orchids*, one of which proved to be new. When he brought it home and showed it to a committee of the Royal Horticultural Society that body said it was a worthless plant, and yet there was hardly a gardener now who did not cultivate it by hundreds. On an island he "grubbed up" two or three *Crocuses*, of which one turned out to be new, and it was then that he got rather keen about collecting. Ever since he had tried to continue the collecting of plants, birds, and insects, and he really thought the collecting of plants gave the most satisfaction. Mr. ELWES then proceeded, by the aid of lantern views, to give an account of his travels in Chili, Suakin, the Himalayas, Formosa, Mexico, the Andes, Thibet, and other places, in search of plants and to study their growth and habits.

THE PRESERVATION OF WILD FLOWERS.—The subject of "The Rehabilitation of Wild Flowers" was discussed at the dinner of the Lyceum Club on the 6th inst., and it was suggested that wild flowers should be protected from destruction by children. Sir DAVID PRAIN, F.R.S., Director of the Royal Gardens, Kew, said that it was important that an early opportunity should be taken of educating the teacher. It had been definitely stated by a member of a scientific society that the greatest enemy of wild flowers in England to-day was in many cases the schoolmaster. There had been instances of teachers who, upon discovering the existence of some rare plant, had gathered as many specimens as possible for distribution among his scholars. He appealed to all lovers of the beautiful to assist in the preservation of wild flowers. One of the speakers said that he hoped there would be established a League of Wayfarers with the object of restoring flowers to the countryside. A purpose of the League would be to stimulate the County Councils in enforcing the powers they possessed in preserving wild flowers. He suggested that planting parties should be arranged where the wastage and need of replanting were the greatest.

ENGLISH FORESTRY ASSOCIATION.—It is proposed to hold a representative exhibition of woodland and timber industries in London, under the auspices of the English Forestry Association. Invitations to co-operate are extended to all interested in the subject, and it is hoped to obtain the enthusiastic support of all concerned with English timber and under-

wood. During the course of the exhibition conferences will be held to discuss important points, and especially with a view of extending the uses of English timber or the goods manufactured from it. No information is yet given as to the place of exhibition, but we are informed that the secretary is Mr. M. C. DUCHESNE, Farnham Common, Slough.

NEW OPEN SPACE FOR BIRMINGHAM.—At the meeting of the Birmingham City Council, on the 6th inst., Mr. GEORGE CADBURY's offer of five acres of freehold land at King's Norton for use as a playing-field or recreation-ground for the scholars attending the secondary school there was accepted and the thanks of the Council accorded to Mr. CADBURY.

HORTICULTURAL EDUCATION IN PRUSSIA.—According to the *Journal of the Board of Agriculture*, Prussia possesses three centres for higher horticultural education. The Royal School for Gardeners at Dahlem (Die Königliche Gärtnerlehranstalt), which was founded in 1823; the Royal Pomological Institute at Proskau (Das Königliche pomologische Institut), opened in 1868; and the Royal School for Fruit Cultivation, Vine-Growing, and Gardening at Geisenheim-on-the-Rhine (Die Königliche Lehranstalt für Obst-Wein und Gartenbau). Dahlem demands of its students that they should have attained to the lower only of the two leaving certificates, or have had a correspondingly good education, together with four years' practical experience in gardening. At Proskau and Geisenheim the demands as to previous education are less, but both require that prospective students should have had at least two years' experience in practical gardening. In any case, however, a student who wishes to enter for the State technical examination in horticulture must possess the lower leaving certificate or its equivalent. The course usually lasts for two years; but at Geisenheim there is, in addition, a lower course lasting one year only, and open to practical gardeners of moderate education. The usual course is one or two years, the details of which differ at each of the institutions, but in each case it is so arranged as to make full use of the practical knowledge that the students already possess. There are also shorter courses for special purposes, especially at Proskau and Geisenheim. All three institutions enforce a leaving examination on those students who have completed the full two years' course. Gardeners who have passed this examination may, after they have completed seven years' practical experience, of which three years must be after leaving the institution, enter for an examination conducted under the auspices of the State, and, if successful, are granted a diploma, and the right to be termed master of their craft.

RESEARCH AND FARM INSTITUTES.—At the Conference of Educational Associations held at London University on the 6th inst., Mr. A. D. HALL, F.R.S., recently of Rothamsted, but now of the Development Commission, read a paper on the Organisation of Agricultural Education in England and Wales, wherein he stated that it had only been the advent of fresh supplies from the Development Fund that had enabled the Board of Agriculture to exercise any general co-ordinating power over agricultural education, and to lay the foundations of a scheme that should provide for all the needs of the rural community. Mr. HALL declared such a scheme did now exist in outline, but time and the co-operation of the local authorities and a desire for education were necessary to make it a real factor in national prosperity. Some ten or a dozen research institutes had been founded, generally attached to a university, and each with a subject allotted to it. These institutions were non-local, they had no educational obligations, and they were not expected to communicate their results directly to

the farmers. That function belonged to the parallel organisation of the agricultural colleges, to which end England and Wales were divided into twelve provinces, in each of which one of the colleges was situated giving long courses of instruction suitable for future landowners and large farmers, land agents, teachers, and other officials. In Mr. HALL's opinion agriculture was likely to play relatively a more important part in the national economy than it had been doing for the last century or so, and he felt that its future depended more upon the improvement of the men practising it than upon any legislative dealings with the land or its occupiers.

ANNUALS.

BEING interested in annuals for the decoration of the flower garden in summer and autumn, I was pleased to see on p. 420, Vol. LIV., Mr. Harris, of Lockinge Park Gardens, advocating their use, and still more so to see him recommending a border of annuals as a pretty feature for inclusion in the flower garden. In these gardens we have a border measuring 270 feet long by 12 feet wide, devoted entirely to annuals or plants that may be used as such, and it was quite one of the best features last season. The soil of the border was trenched and well manured at the start, and the next year it was dug and manured in the ordinary way. This season it will be trenched again, but not much manure will be added, instead a good dressing of lime, soot, and wood ashes will be applied. Whatever the weather may be, I look forward to a good display. Sweet Peas were planted for a background in two rows, in clumps at 4 feet apart, four clumps of each colour. In front of the Sweet Peas were annuals that grow from four to five feet in height, and again in front of these were others only 3 to 4 feet tall. The front row was composed of those only 2 feet high or thereabouts. Mixed *Violas* were used as an edging, and the path in front of these is grass 4 feet wide, which served to throw the colours of the flowers into greater relief. This coming season we hope to plant the Sweet Peas in large round clumps at intervals of twelve or fifteen feet apart, and also clumps of climbing *Nasturtiums*, *Tropaeolum canariense* and *Convolvulus*. Below I give a list of annuals, and also a few biennials used as annuals, which we planted last year:—*Alonsoa Warscewiczii*, *Anagallis* (blue and red), *Antirrhinum* (tall, intermediate and dwarf), *Arctotis grandis*, *Asters* (several sorts and colours), *Cacalia aurea* and *C. coccinea*; *Candytuft* (white spiral, lilac, crimson, etc.), annual *Chrysanthemums*, *Collinsia bicolor*, *Cornflower Chameleon*, *Cosmea* (early-flowering varieties), *Dianthus* of sorts, *Diascia Barberae*, *Lupinus* (blue, pink, and other colours), *Malope* (crimson), *Sweet Peas*, *Petunia Empress*, *Phacelia campanularia*, *P. grandiflora*, *Phlox Drummondii*, *Poppies* (various), *Salpiglossis* (four colours), *Abronia umbellata*, *Alyssum Snow Carpet*, *Calendula Cockade Orange*, *Clarksias Salmon Queen*, *Purple King*, *Scarlet Queen*, of the elegant type, and several of *C. pulchella* varieties; *Chirtonia pulchella*, *Eschscholtzias*, *Eutoca viscidula*, *Godetias* in various colours, *Gypsophila muralis*, *G. elegans*, *Hibiscus africanus*, *Ionopsidium acaule*, *Kaulfussia ameloides*, tall and dwarf *Larkspurs*, *Leptosiphon roseus*, *Linarias* of sorts, pink and white *Lavateras*, *Mimulus Queen's Prize*, *Nemesia strumosa* and the variety "Blue Gem," *Nemophilas*, *Ten week Stocks*, *Scabious* in four colours, *Stalice Suworowii*, *Sweet Sultans*, *Verbenas* in various colours, *Nigella Miss Jekyll*, tall and dwarf *Coreopsis*, *Swan River Daisy*, *Salvia violacea*, *Amaranthus cordatus* (Love-lies-bleeding), and *Amaranthus hypochondriacus* (Prince's Feather).

Many of these annuals were sown out-of-doors in April, and the seedlings were well thinned. During the summer the Dutch hoe was used frequently to destroy weeds and aerate the soil. This I have found to suit the young plants much better than heavy waterings, and I noticed a marked difference in the growth of the plants afterwards. The plants were thinned according to the growth I thought they would make. Some such as *Lavatera*, *Love-lies-bleeding*, *Prince's Feather*, *Cosmos* and tall *Poppies* were not closer than 1 foot or 18 inches, and in some cases this distance was not too much. To keep the tall plants from being blown about by winds neat Pea sticks were placed about some, whilst others were tied to stakes, and although this entailed considerable labour, the display of bloom was ample compensation, and the border continued in bloom until quite late in the autumn. *R. W. Thatcher, Carlton Park, Market Harborough.*

TREES AND SHRUBS.

RHODODENDRON NOBLEANUM.

RHODODENDRON NOBLEANUM is one of the oldest of the hardy hybrid *Rhododendrons*, and is still extensively cultivated, its early flowering giving it a value over the bulk of the hardy members of the genus, which flower in May or June. It was raised from the Himalayan *R. arboreum*, which has blood-red flowers, crossed with *R. caucasicum*, the blooms of which are white or pale-straw coloured. The influence of *R. arboreum* is strongly predominant in the hybrid, which takes little but hardiness from its other parent. There are several forms of *R. nobleanum* in cultivation, which are probably different seedlings from the original cross. The colours of the flowers vary from deep-crimson to a rosy-pink, but the typical form has bright, deep-crimson flowers, which are produced freely on even small plants. The leaves are 6 inches or more long by 1 inch to 2 inches wide, dark green above and covered beneath with a greyish-brown felt or tomentum, which appears smooth and shining on the surface. Others vary in the colour and quantity of this tomentum as well as in the colour of the flowers.

The variety *album* has white flowers marked with two faint perpendicular rows of dark-red spots on the upper segment. The leaves are shorter and broader than those of the type, and are also darker on the undersides. The variety *venustum* has blooms of a pleasing rosy-pink shade, freely produced in somewhat small trusses. The leaves are about the size of those of the type, but are turned downwards at the edges, which makes them look much longer and narrower. They are of light-green colour beneath, the grey or brown tomentum being practically absent. This plant must not be confounded with *R. venustum* × (*Jacksonii*), a later-blooming plant of dwarf habit and bright pink flowers.

R. nobleanum and all its forms bloom at any time from December to April, when weather conditions will allow. *J. Clark, Bagshot, Surrey.*

CULTURAL NOTE.

SALVIA SPLENDENS BOUQUET ROSE.

This variety of the Scarlet Sage is a welcome addition to gardens in winter. It differs from the older sorts in having flowers of a salmon colour, and the spikes are not so compact; but this defect will probably be overcome by selection. The majority of the plants come true to colour when raised from seeds. *W. H. Divers, V.M.H., Belvoir Castle Gardens, Grantham.*

THE VARIEGATED WILLOW WEEVIL (CRYPTORHYNCHUS LAPATHI, L.).

THE Variegated Willow Weevil has recently been reported from the North of Scotland, and it appears to be more widely distributed than has hitherto been supposed.*

Cryptorhynchus lapathi, the Alder weevil of the German forester, is in this country chiefly

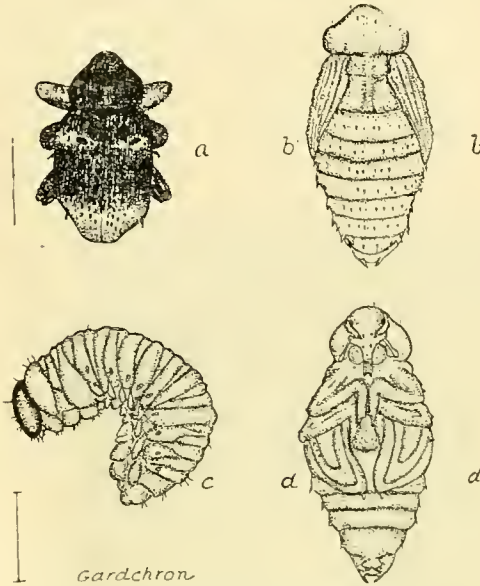


FIG. 13.—VARIEGATED WILLOW WEEVIL, *CRYPTORHYNCHUS LAPATHI* (× 2).

a, Adult weevil; b, pupa, dorsal aspect; c, larva; d, pupa, ventral aspect.

an enemy of the Willow, although Alder, Birch and Poplar are also attacked by it. Both the adult beetle and its larva are injurious. The beetle gnaws the tender bark of the young shoots, causing them to wilt or die and break off. The



FIG. 14.—TUNNELINGS OF THE WILLOW WEEVIL.

a, Straight larval gallery; b, hook-shaped gallery.

larva eats into the bark of the stem and main branches, almost girdling them, and then bores into the wood itself, sometimes penetrating into the pith. It pupates there, and, as a full-grown weevil, may rest there during the winter.

* *Entomologists' Monthly Magazine*, November 1, 1913.

C. lapathi belongs to the group of long-snouted weevils. Except when it is feeding, its snout lies hidden in a furrow in the thorax. The antennae are elbowed. The adult measures rather less than half an inch in length. It is stoutly built and squat. The whole body is covered with patches of short black hairs, which give it a warty appearance. The head and basal two-thirds of the elytra are dull black, the rest of the elytra being a rosy-pink. The femora of the first pair of legs are also pink.

The larva is a white, soft-bodied, legless grub, with a well-marked, brown head and biting jaws. When full-grown it is about half an inch long. The pupa is soft-bodied and white; its abdomen ends in two short spines curving inwards.

The larval galleries of *C. lapathi* are of two types. The first is a simple, straight tunnel, bored from below upwards, about two inches long (fig. 14 A). The second type is a hook-shaped tunnel bent back on itself (fig. 14 B). At the end of this gallery the larva pupates, head downwards.

Scheidter, of Munich University, has recently worked out the life-history of *C. lapathi*.† He describes two types of generation, a one-year and a two-year. Both types may be observed in the same neighbourhood. Again, he finds that the adult weevil may remain in its pupating chamber throughout the winter, or it may leave it on emerging from its pupal state in August, and, foraging until cold weather comes, may winter in the soil or in herbage or in an unused gallery. In the last case the weevil is found head up in the gallery.

In the North of Scotland the life-history is as follows. The beetle flies in the end of April and throughout May and June, when it lays its eggs on the bark of the stems and main branches of Willows from four to fifteen years of age. For two or three weeks the young larva gnaws a tunnel in the cambial layer, almost girdling the stem. This tunnel is irregular. In July it is almost full grown, and commences to tunnel into the wood itself. In August and September it pupates and, as the adult beetle, remains in its pupal chamber until April of the next year, when it appears and commences egg-laying.

In the North the generation is a one-year one. Throughout the winter only adults are to be found in the galleries, lying head downwards. In these cases, too, the galleries are still filled with frass.

C. lapathi may do very considerable damage to Willow stems. The early work of the larva is the most serious in that the sap-flow may be stopped, and is always reduced. Stems and branches from one to six inches in diameter may be destroyed in this way.

The only remedy is to remove all infested stems and branches during the winter months and burn them. In this way the weevils are destroyed before emerging. *J. W. Munro, Aberdeen University.*

AMERICAN NOTES.

THE WOLF RIVER APPLE.

RECENT issues (see *Gardeners' Chronicle*, Nov. 1, 1913, p. 300, and Dec. 6, p. 398) have contained comments on the Wolf River Apple.

This is perhaps the largest Apple grown. Certainly it is often shown as such at the exhibitions here representing all the States where the cultivation of Apples is one of the chief industries. It possesses good eating qualities for a large fruit and invariably takes on a fine colour. The writer does not know its origin, but there is a suspicion that it is comparatively

† Scheidter, *Bunten Erlezwusler; Zoologische Zeitschrift für Forst und L. wertschaft*, April, 1913.

recent, or else it remained unknown until the revival of Apple culture in the past few years.

The soil where best results are obtained is usually strongly impregnated with iron. At a recent "land show" in Chicago, where each State strives to advertise itself by showing its best products, samples of earth were seen that represented the best Apple soil, and the dipping in of a magnet showed seemingly an enormous percentage of iron. The crops, however, are all raised by irrigation, so that the food contents of the soil are controlled by the application of water. Thus colour, flavour and size are attainable to a degree at will. Great pains are taken to ascertain when to use water. This is true also of the Citrus fruit culture, so that irrigation by no means solves all the problems of the fruit culture of the present day: it only accentuates some of them. By this mail a

In structure *C. Siebertiana* much resembles *C. Veitchii*. The spotted labellum shows the influence of the pollen-parent, and in the single flowers, taken from different plants, the variation is said to be remarkable. About thirty seedlings were raised from the cross, twenty of which have not yet flowered.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

NATIONAL DIPLOMA IN HORTICULTURE.—With reference to the details published in your issue of August 30 last, on the subject of a National Diploma in Horticulture, I notice that the fee mentioned is £4. This, to a poor man, would be a large sum; indeed, I doubt whether, if I myself desired to enter for the examination,

ture to affirm, sufficiently realised, or the subject of afforestation would receive more serious attention. As one journeys across the country how seldom it is that one comes upon any newly-planted forest trees; yet, on the contrary, how frequently one reads or hears of the gales laying some old veterans low. This denuding of the counties' best timber trees is constantly going on, but the vacancies thus caused are not made good. Six of the best counties for timber growing, if their present material is any criterion, would be Hereford, Gloucester, Worcester, Warwick, Oxford, and Chester. Mr. Hutchins rightly says 5,000 acres is an unnecessarily high limit for an experimental area. Surely 1,000 acres would make a favourable impression wherever planted, while a plantation of 500 acres of the more costly species, grown in a favoured spot where a large number could not be accommodated, would at least make a presentable appearance, beside making work and providing an ultimate reward. I wonder what is the extent of Delamere Forest, in Cheshire. It would be interesting to learn where the Coast Erosion Committee obtained the figures wherein they inform us that 1,500 acres of grass land provides employment for one man. Certainly the men are not in each other's way. There cannot be many thistles or the like to be kept under, and the grass would not be too rank from the amount of manure applied. Is it not possible for some influential body to take some step which will serve to focus public opinion on afforestation?—*C. Turner, Ken View Garden, Highgate, N.*

CHRYSANTHEMUM MADAME CASTEX DESGRANGES.

—Like Mr. E. H. Jenkins (see p. 13), I, too, am interested in Mr. Norman Davis's statement about this old-time popular early-flowering variety, but I am by no means convinced of the accuracy of that statement. Nor can I easily reconcile with information collected during many years' research Mr. Jenkins' statement, based upon his enquiry of the late Mr. Parker and probably his own memory, that the flower was in cultivation here in England so far back as 1873. The evidence gathered by me does not support, but rather contradicts, this; and I notice Mr. Jenkins has for years tried to find out who the raiser was, and perhaps the date of its original distribution, but without success. Let it be first of all understood that the proper name is Madame Castex Desgranges. An elementary knowledge of French, apart from the vagaries of proper names, suffices to show that "Desgrange" must be a mere slip of the pen or an error due to ignorance. This, however, is of little importance, for the N.C.S. in its official catalogue definitely accepted the name as given at the head of this article, and the catalogue is accepted as binding in matters of nomenclature. The chief interest in the question centres round its origin and date of distribution, and from what I know of the efforts of the French in trying to obtain a race of early-flowering Chrysanthemums, dating back to the far-off days of Lebois, I cannot agree with Mr. Davis' hypothesis—and that is all his statement amounts to—that Mme. Castex Desgranges was a chance seedling any more than I can agree with his expression of opinion that the Chinese gardeners crossed the *Chrysanthemum indicum* or *sinense* with *C. Leucanthemum* prior to the introduction of the popular autumn flower into England more than a century ago. Those who were present at the conference will remember that Mr. Davis expressed his opinion as purely conjectural. He did not attempt to substantiate it by any literary or other proof. His account of the evolution of the early race was largely his own personal experience extending over the period during which he has cultivated the flower. Valuable, of course, as far as it goes, but incomplete, at any rate, from a scientific or historical point of view. I shall show later that there is good reason for supposing that Mme. Castex Desgranges was not what Mr. Davis supposes it to have been, but for the moment we must consider Mr. Jenkins' statement about its being here in England as far back as 1873. Personal knowledge on my part I cannot invoke, for my own practical acquaintance with the flower did not begin till 1882, but my literary and historical knowledge of it goes back infinitely farther. Against Mr. Jenkins' date we have also the experience and recorded



FIG. 15.—*CALANTHE SIEBERTIANA*.

copy of an Apple issue of a Montana paper is forwarded, showing the interest taken in Apple culture in the West. *E. O. Orpet, Walden Superintendent's Office, Lake Forest, Ill.*

HYBRID CALANTHE.

We have received from Herr August Siebert, of the Palmengarten-Gesellschaft, Frankfurt-a/Main, flowers of a hybrid *Calanthe*, *C. Siebertiana* Schlechter (see fig. 15), raised in the Frankfurt garden. The hybrid resulted from a cross between *Calanthe Veitchii* hort. ♀ and *C. cardioglossa* Schlechter ♂. The first plant flowered two years and eleven months after the flower was pollinated. The plants are described as very floriferous, bulbs under 5 cm. in height showing flower spikes.

I could afford the necessary sum, let alone the extra expense of travelling, if the place of examination were some distance away. Many men would be glad to try their skill in this way, but I am afraid that a married man with a family would be entirely prevented from entering owing to the miserably low wages paid in the gardening profession. I notice that the final examination is to specialise in some one branch of horticulture. This seems somewhat of a hardship to the ordinary head gardener, who is expected to be equally proficient in all branches, and has neither time nor opportunity to specialise. *C. Robinson, St. Hilary Gardens, Cowbridge.*

THE INTERNATIONAL FOREST CONGRESS (see Vol. LIV., pp. 374, 394, 414).—What a wealth of interest and instruction the article on this subject provided. The many facts related therein should do much towards popularising this subject of vital, national concern. The importance of forestry, as one of the most valuable of national assets, is not, I ven-

facts of the greatest early-flowering specialist of his time, Mr. W. Piercy, which I quote further on. For fuller details of the early-flowering section than I can narrate here the enquiring reader may be referred to my history of the early Chrysanthemums that appeared in *The Garden* for May 16, 1891, and to my paper in the report of the N.C.S. Early-flowering Conference, held at the Crystal Palace, October 4, 1905. At other times and in other places I have more or less fully dealt with the origin of Mme. Castex Desgranges, based not upon mere speculation nor upon my own memory or experience, but from documentary evidence and personal correspondence, extending over thirty years, with the leading French Chrysanthemum growers. Of course, here again my informants on any point may be mistaken, but so far as concerns French varieties they are perhaps less likely to be inaccurate than their English colleagues. There is no doubt that Madame Castex Desgranges was like some other things in the world—it was known before it was discovered. Both Mr. Davis and Mr. Jenkins will probably peruse with interest the version of the late Mr. W. Piercy, who at the N.C.S. Conference in September, 1889, gave his life experience in early Chrysanthemums, some of which—and particularly that relating to Madame Castex Desgranges—was substantiated by reference to authentic sources—viz., the French catalogues. He says: "The most striking point to advance in general estimation these early sorts . . . was the discovery in the summer of 1879 of Madame Castex Desgrange by Mr. Robert Parker, at that time of the Exotic Nursery, Tooting, Surrey. This was found by him in a lady's garden in Wales. On March 15, 1880, he gave me two little plants of it, and from those two little plants and his stock the bulk of those now in cultivation have come. As is customary, as soon as this variety became known we had the cry common in such cases that it was known before. Old French catalogues were found in which there was the name, but no one had seen the plant. Others said they had it, but I did not find they had the stock. It was in the lists of Mons. Lemoine and Mons. Crousse, of Nancy, France, of March, 1881, but I expect they had it from England the year before or raked it up from some place in France, for we had heard nothing of it from them before March, 1881. Lemoine says it was raised by Boucharlat; Crousse spells it Desgranges." So much for Mr. Piercy's version, and although it will be seen he relies partly upon documentary evidence, he, too, becomes speculative. The chief point to which attention must be drawn is Mr. Piercy's date of 1879 as against Mr. Jenkins' 1873. To the uninitiated the case as stated entitles one to draw the conclusion that Mr. Piercy, as a practical man writing only ten years afterwards, is as likely to be correct as Mr. Jenkins writing forty years afterwards. But that will not be sufficient to settle the point, for the converse is equally likely to be the fact. It will be seen that Lemoine says it was raised by Boucharlat. My Lemoine catalogues have long since gone the way of all wastepaper, but I have what is better—I have those of Boucharlat himself. The earliest is dated 1883, and under "Chrysanthèmes Précoces" is "Castex Desgranges, Japonaise blanche pure." No raiser's name to this or any of the others is given. Apparently no general catalogue of his for 1884 or 1885 reached me, but in 1886 the variety is again included in the early section, this time adorned with the prefix of "Mme." Still no raiser's name appears. In 1887 it appears as "Mme. Castex Desgranges (B)." From what has been said by Mr. Jenkins and Mr. Piercy it is obvious that there is very little satisfaction to be obtained by referring to English catalogues between 1873 and 1879, for Madame Castex Desgranges did not become known to our growers in general till about the latter date. Mme. Castex Desgranges, between the date of its being raised and the date of its becoming commonly known in this country, is in an identical position with another variety that Mr. Davis and Mr. Jenkins probably know quite as well: I mean *Secur Mélanie*, which was raised and grown on the Continent many years prior to its introduction here. In concluding I may add that when the late Shirley Hibberd, about twenty-five years ago, gave me a commission to write a detailed history of the Chrysanthemum, which formed the principal part of a special Chrysanthemum double number of

the *Gardeners' Magazine* (October 26, 1889), I ransacked all my own sources of information, and also put myself into correspondence with every French Chrysanthemum grower I knew, to obtain definite and authentic material relating to the subject. Much original matter thus collected, having served its purpose, is now no longer at hand, but I have a very distinct recollection of enquiries made concerning the early-flowering Japanese variety under discussion. My history was followed by a number of biographical notices of the then famous French growers, compiled from notes supplied by themselves and from my own knowledge of their work. The son-in-law of Boucharlat, whom I still know personally, sent me details of his father-in-law's work, and told me that he it was who first sent out in 1873 or 1874 a set of early-flowering varieties, of which at that time (1889) only one, Mme. Castex Desgranges, had survived. He certainly ought to know; and Mr. Piercy's reference to Lemoine confirms the claim of Boucharlat as raiser. Although unknown in England, Boucharlat forty years ago was sending out new Chrysanthemums in France, and even the great Simon Délaux, when he raised his first seedlings, distributed them through Boucharlat, as he told me himself. Lemoine was then the only Frenchman that did any business of the kind in England, and he would, of course, secure any novelties Boucharlat put on the French market. Suppose we assume, for argument's sake, that Mr. Jenkins' date (1873) is correct, notwithstanding Mr. Piercy's later date, and the irresistible conclusion is that Mme. Castex Desgranges was sent out in the spring of 1873, flowered here in the autumn, and then the rest of the story is clear. *C. Harman Payne, 141, Wellmeadow Road, Catford.*

THE ABNORMAL SEASON.—I have read with interest the notes already printed on the abnormal season. In the gardens here, Royal Sovereign Strawberries, grown in pots and plunged in the open ground, have during the past two seasons pushed up their flower trusses early in December. Last year, as an experiment, I pinched out a few of these forward trusses in January, before placing the plants in the forcing house, and the result was that several weaker flower trusses were developed, which produced smaller fruits than would have been borne on the first truss. I have not found any difficulty in forcing *Freesia refracta alba* into bloom by the date mentioned. By the middle of December we had large batches of this plant in full bloom, bearing ten flowers to a spike, and with stout foliage, but the perfume is not nearly so strong as is the case with plants which flower later. *C. Robinson, St. Hilary Gardens, Coubridge, S. Wales.*

FAILURE WITH CHRYSANTHEMUMS (see Vol. LIV., p. 426).—May I suggest that Mr. Kearns' failure with his Chrysanthemums was caused in part by housing them too early in such an abnormal season? Growth was active at the time the plants were housed, and the temperature of 65° and upwards excited the plants into further growth, in which the applications of manure assisted. Mr. Kearns does not say if his plants were potted firmly; I am of the opinion that firm potting is very essential. *C. Robinson.*

SILVER-LEAF DISEASE.—The soil in these gardens is a sandy loam, not the least adhesive. I mention this fact because it would be interesting to learn whether the disease is more prevalent on trees growing on heavy or light ground. It would help towards settling his question if correspondents writing on this topic would state the nature of their soil, as I note some have done. My own experience is that it is more prevalent on light soils. According to observations of trees suffering from this serious disease I am inclined to agree with *J. F. N.*, p. 426, Vol. LIV., as to manures being favourable to the disease. In my case I put it down to inorganic manures. The trees in our second Peach house are planted in the ordinary soil that the house is built upon, but not the least trace of silvering is apparent. But three trees taken out of this same house and planted in the first house four years ago have since shown the disease. A tree of the variety Early Silver utterly collapsed through the malady spreading so quickly. The border was prepared in the usual way and enriched with

bone, wood ash and lime rubble. The same refers to outside trees. Some Plums planted in prepared soil show the disease, others planted haphazard show no signs of silver leaf whatever. In rich soils young trees make far too much wood and they grow vigorously in almost all soils. *Chas. F. Coates, Manor Park, Pottton.*

DAHLIA MARIANNE.—In reply to *Grower*, who writes of Dahlia Marianne (see p. 13), may I ask him if he has seen such varieties as Barlow's Bedder and Gluchaut growing side by side with Marianne? *A. C.*

PRIMULA OBCONICA AND SKIN IRRITATION.—My experience with this plant is very similar to that described by Mr. W. Marsh on p. 13. As has been the case with him, I was unaffected for many years, during which time I often brushed the skin of the tender underside of my upper-arm with leaves of *Primula obconica*. But one day, when working amongst these plants, I felt a stinging sensation in my right hand, which was soon followed by intense irritation. A local chemist supplied a soothing lotion, in which flowers of sulphur entered, and it allayed the irritation for the moment, but it returned for about a week. On this occasion the weather was unusually hot and I attributed the poisoning to the overheated state of my blood; so some time later I again handled the leaves of *Primula obconica* and was again poisoned. I repeated the experiment at about a year's interval with the same result, and after the lapse of several years I accidentally touched a leaf and was badly stung. It would be interesting to know if this susceptibility to *P. obconica*, after having been immune, is experienced by other persons. *A. C. Bartlett.*

JASMINUM OFFICINALE FRUITING (see page 13).—There is nothing unusual in this hardy climber perfecting its seeds in this country, but whether such seeds germinate I am unable to say, not having given them a trial, as the plant is so easily increased by cuttings or layers, propagation being best carried out during the autumn months. I was pruning a plant a few weeks ago, and noticed several well-ripened berries on the shorter shoots fairly close to the wall. This particular plant had not been pruned since it was planted some seven years ago, so readers can imagine what a tangled mass of shoots had to be cut away. The plants should be spurred back each winter, in a similar manner to *J. nudicaule*, in early spring. *J. Mayne, Buckinghamshire.*

—We have at the present time two plants of *Jasminum officinale* on a south wall, with several fruiting sprays, some of the berries green and others quite black. I have never seen ripe fruits before, but I have noticed green berries several times. I sowed some of the berries in a pot on December 20, to see if the seeds would germinate. *A. H. Chapman, Orchards Gardens, East Grinstead.*

—Although the fruiting of *Jasminum officinale* is not a regular occurrence, wall-plants in the West of England often bear a sprinkling of the fruits which Mr. J. E. Shaw describes so well on p. 13. *A.*

AUTUMN-FRUITING RASPBERRIES.—Amongst other good works, the Royal Horticultural Society is making a trial of autumn-fruiting Raspberries at Wisley, and I believe have found several varieties which promise to be superior to Alexandra, although as I saw this variety at Gunton Park last October it will "take a deal of beating," for the canes there were heavily laden with large fruits equal in flavour to the best summer produce. But may it not be with this type of Raspberry as it is with Strawberries and, in a greater degree, with Potatoes—i.e., a variety which succeeds admirably in one garden may be a comparative failure in another, so that the "best" variety for any garden can be ascertained only by experiment? *A. C. B.*

SCHIZANTHUS.—This flower, grown in most gardens in recent years, has a very pretty effect in houses, and with careful attention provides a mass of bloom for many weeks. The seed is usually sown in pans or pots and placed in a pit or other convenient place. It is not very long germinating, and seedlings when an inch or so

high are nicely rooted, and ready for thumb-pots or 60's. They should then be put into a cool frame or span-roof house, as close to the glass as possible. It is not long before they make a mass of fibrous roots and are ready to be re-potted into 48's. This plant is not so particular as a great many, but of course needs certain properties in soils. It should be potted in good turfy loam, a twelve-month-old leaf-mould, a little fine lime-rubble and sand, and any addition of patent manures helps the growth. Occasionally they are potted into 18's and 20's, making very tall plants; but if left in 32's make a much more stocky growth and the bloom is in thicker clusters *R. F. Legge.*

GAS TAR AND MEALY BUG.—The correspondence on this subject has been most interesting. There is no doubt that if hydrocyanic acid gas could be used at all times of the year it would prove a perfect cure for this pest on vines. We have here a vinery badly infested with mealy bug. I used hydrocyanic acid gas last autumn twice, with an interval of ten days between the treatment, which killed all the bugs one could see. My formula was 1½oz. sodium cyanide 130 per cent. (I believe this is about 90 per cent. stronger than the ordinary potassium cyanide), 3oz. sulphuric acid, and 6oz. water, to 1,000 cubic feet. Throughout the spring, and especially during the thinning time, I kept a sharp look-out for bugs, but saw no sign of the pest till the grapes began to colour. If one could have gone continually over the vines at this period, killing the bugs with methylated spirit, the pest could have been kept under. But few of us have time for this, and the result was that by the time we finished cutting the grapes at the end of December, the vines and grapes were as badly affected as ever. Now, if hydrocyanic acid gas could have been used at the time the grapes began to colour I am confident that we should have had no trouble from mealy bug. Are there any readers of this journal who have used the gas at that stage? If so, what was the effect on the grapes? I think no gardener would mind what he "smeared" on the vines if it would clear them of bug. Hydrocyanic acid gas has proved a great boon to many of us. Used at the rate of 1oz. sodium cyanide, 2oz. sulphuric acid, and 4oz. water to 1,000 cubic feet, it proves absolutely fatal to mealy bug, scale (especially), and other pests on Crotons, Stephanotis, Clerodendrons, Dieffenbachias, etc., with no injury whatever to the plants if necessary precautions are adopted. My plan is to select a calm day and I water any plant requiring water immediately after breakfast. I open the top and bottom ventilators to create a circulation of air, and so dry the atmosphere of the house. At this time of the year I use the gas at about 3 p.m. In the summer at about 5. But it is somewhat hard to understand why the tenderest young leaves of the plants mentioned above, and which might also include Ferns, *Gloriosa superba* and others, are quite unharmed by the gas, while the young leaves of Palms and *Pandanus Veitchii* are burned. Of course, once having found out the plants that will not stand it they can easily be removed before cyaniding. One other point is worthy of notice. Since using hydrocyanic acid gas the number of cockroaches has become less and cricket have disappeared. *F. J. Rose, South Stoneham Gardens, Swaythling.*

—In regard to the proportions of cyanide recommended by *A. J. H.* (p. 462) for fumigating dormant vines, it ought to be pointed out that these proportions are too strong for vines in active growth. The proportion I used for stove and other plants was 2 ounces sodium cyanide, 4 ounces sulphuric acid, and 6 ounces water per 1,000 cubic feet. This strength was effectual in killing the bug without injuring the plants. With reference to *Spider's* inquiry as to whether hydrocyanic gas will kill spider on Crotons without injury to the plants, I may say from experience that it has killed spider and all other insects, and did not injure the Crotons when I used it. But care must be taken that the foliage and the atmosphere of the house are thoroughly dry before cyaniding, or the plants will be injured. The proportions must be per 1,000 cubic feet as given above, and the number of generators according to the cubic space of the house. For

instance, if a house contains 3,000 cubic feet space, it is better to employ three generators, with 2 ounces cyanide in each, than to use one with 6 ounces, as the gas would in that case be more evenly distributed. Referring to Mr. Blakey's remarks (see Vol. LIV., p. 462), he states that my assertion that there is no danger in using the gas is a bold one, but he leaves out one important part of my statement, viz., "if the proper precautions are taken," which I explained. If these are strictly carried out, I still maintain there is no danger. As the head gardener is responsible he would make it his duty to understand the nature and proper use of this or any other fumigant, and would instruct his subordinates in their proper use; if this is done, the operator will soon gain sufficient knowledge of the nature of the gas to enable him to guard against any accident when using it. Your correspondent asks why vineries and other houses containing fruit should not be cyanided. It was for safety that I recommended they should not be cyanided, as many people contend that fruit absorbs poisonous gas in a confined atmosphere, but of this I have no practical knowledge, neither should I care to try it. There would be no necessity to cyanide houses containing fruit if cyaniding were done thoroughly when the trees or canes are in a dormant state, as there would not be any bug left. Fruit, too, contains more moisture (proportionately) than the foliage, in consequence of which it is more susceptible to injury by the gas. If a vinery, after being kept sufficiently warm for two or three days to hatch the eggs, is cyanided a second time, there will be no danger of the newly hatched female bugs becoming old enough to lay eggs. Your correspondent must be more clever than most gardeners claim to be if he can find every nest of eggs on vine rods to saturate them with methylated spirit, as these are often laid under the bark and in crevices where it is difficult to see and to get at them, while hydrocyanic gas penetrates every cavity. Mr. Shakelton (p. 13) reminds me that I give no new cure for mealy bug by the use of hydrocyanic gas, a circumstance of which I was fully aware, as I well know it has been recommended in the *Gardeners' Chronicle* for the last eight or ten years. I did not suppose for one moment that what I said about hydrocyanic gas would be any benefit or enlightenment to those who have a practical knowledge of the use of this gas. I wrote for the benefit of those who had no experience with this method of destroying mealy bug. What I stated I am prepared to verify, as I cleared bug by this method from a number of plant and fruit houses, and I have no doubt that if everyone who is troubled with this pest treated the pest in the same way there would be but little bug left in the kingdom to experiment on. Your correspondent appears to have been unfortunate in having plants injured by this gas, which I cannot understand, unless they were not quite dry, as, should any part of the foliage be damp, it is sure to be injured. The condition of the atmosphere of the house and the foliage of the plants is the all-important point—all must be perfectly dry for the plants to come through without injury. I have never had occasion to use this gas for the destruction of bug on Cucumbers and Melons, so cannot give the safe proportions for these plants. *J. H. Y.*

JOURNEYMAN GARDENERS.—I was very much interested in the remarks of Mr. Norris with regard to the knowledge of journeymen at the present time. I should like to hear the opinion of Mr. Norris concerning head gardeners, as all the fault is not likely to be with the journeymen, and none with the gardeners that employ them. *R.*

—The remarks made by *E. L.* in the issue of January 3 are, to my mind, ridiculous. The scale of wages he suggests is absolutely impossible, being far more than many head gardeners receive, much less under men. Supposing journeymen were paid that amount, they would be content to stop as journeymen, and would not trouble to reach higher positions. Then again, where would you find employers to pay such high wages? The majority of them would rather close their gardens, and buy what produce they required, for it would be cheaper for them. We

must not forget that gardens are hobbies, and their owners are not dependent on them for profit. As regards the conditions of other trades, some are better, and some worse. For my part, I think that 18s., with bothy, etc., is a fair wage, equal to 25s., and journeymen receiving that amount are as well off as those in most trades, besides enjoying steady employment. *E. L.* adds that vegetables cost little or nothing to grow. Then why, I ask, does he advocate such high wages for those who grow them? Many thanks are due to Mr. Norris for his letter in the same issue, who puts the case before us plainly and simply. *Contented Journeyman.*

—On the subject of *L.'s* statements in your issue of December 13 last, with reference to gardeners and their wages, I feel inclined to inform him that it is entirely the gardeners' own fault that the wages are low. He need not be downhearted over the advertisement in the columns of the gardening Press on December 13, "Members of the B.G.A. need not apply," because the members of that association were warned not to accept the situation. Members of the B.G.A. are thoroughly qualified to take any position of trust, and very many good places have been filled by the Association recently. It keeps out the unskilled and under-cutting impostor from the profession, it places good gardeners in touch with good employers, it stands out for the payment of overtime and Sunday duty. Further particulars can be obtained of the general secretary. If *L.* is not already a member, may I persuade him to join our band? *A Member of the Watford Branch.*

—If Mr. Sidney Legg refers to my previous letter on this subject (p. 426) he will see that I spoke of youths about the age of 21, and no mention was made of full-fledged journeymen. If he would take the trouble to look up the *Gardeners' Chronicle* for October 4 he would see six journeymen's situations offered at an average wage of 15s. 8d. a week, with bothy. In reply to Mr. Thos. Beeson I will give what I think are the usual hours in the majority of private gardens. In summer, 6 a.m. to 6 p.m., less ½ hour for meals. This does not include Saturday, when the hours are 6 a.m. to 4 p.m. In winter the work is usually carried on from daylight to dark; an average of nine hours a day exclusive of meals. Add to this three or four hours for Sunday morning work, and odd jobs in the evening, and the average will be found to be about 60 hours per week without duty. I know of cases where men have put in twelve hours a week extra during the busy months, for which they were not paid; and I venture to suggest that where there is one garden with eight men in the bothy there are a dozen of the same size with three or four. In consequence extra duty is more often necessary. I am ready to admit that there are employers who pay a fair wage, but they are exceptions, I am sorry to say, few and far between. In fairness I should like to say that in the garden in which I am engaged the whole staff is well paid. *A. M.*

—Mr. Legg appears to be championing the cause of the employer, by inferring that the low wages received by the average journeyman to-day represent proper remuneration for his exacting duties and long hours. I might agree with him were it true that the average journeyman with five or six years' good experience was only equal in ability to an improver. Perhaps your correspondent's reference to the respective ability of improver and journeyman concerns some one under his immediate notice. Annually we lose some of the most promising young men of our profession. Why? Because our Colonies offer far better inducements to ambitious young men in return for their labours. Men who in the future would make their mark and be a credit to horticulture are thus led to emigrate. My experience in eight bothies is that there are many so-called "good bothies" which are little better than hovels, where anything in the nature of comfort is conspicuous by its absence. The opportunities afforded bothyites of improving their knowledge by study are very inadequate in their isolated surroundings. I believe the head gardener is in many cases to blame for his indifference to the conditions affecting his subordinates, who have to endure them, or if they complain are told to go. *A Bothyite.*

STREPTOCARPUS CYANEUS.

THE *Streptocarpus* is now to be classed with the most useful greenhouse flowering plants. In recent years hybridisers have raised strains that flower abundantly and have leaves of moderate size, whilst wonderful improvements have been obtained in the form and colour of the flowers. Several new species have also been introduced recently, so that gardeners may look for still greater improvement by crossing. One of the latest of these newcomers is *S. cyaneus* (see fig. 16), discovered by Mr. E. E. Galvin in South Africa in 1891. The plant is very attractive, the rosy flowers being nearly 2 inches long and set off by handsome foliage. Already seedlings have exhibited colour variation; in some the blooms are a pale lavender or blue shade, whilst the corolla tube is blotched with yellow. Like other species and varieties of *Streptocarpus* in cultivation, *S. cyaneus* is short lived, and the plants are most



FIG. 16.—STREPTOCARPUS CYANEUS: A NEW SPECIES FROM SOUTH AFRICA. [Photograph by C. P. Raffill.]

attractive in their second year. The plant we illustrate flowered in the collection at Kew.

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

DECEMBER 18.—*Committee present*:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Cypher, A. G. Ellwood, J. Evans, A. Hanmer, J. Howes, J. Lupton, D. McLeod, W. J. Morgan, C. Parker, W. Shackleton, Wm. Thompson, H. Thorp, Z. A. Ward, G. Weatherby, and H. Arthur (Secretary).

Gold Medals were awarded to R. ASHWORTH, Esq., Newchurch (gr. Mr. Gilden), who staged a magnificent group of plants, and O. O. WRIGLEY, Esq., Bury (gr. Mr. Rogers), who had a large group of finely-grown *Cypripediums*. A Silver-gilt Medal was awarded to A. WARBURTON, Esq., Haslingden (gr. Mr. Dalglish), for a group composed principally of *Cypripediums*; large Silver Medals to WM. THOMPSON, Esq., Walton Grange (gr. Mr. Howes), for a group; H. J. BROMIELOW, Esq., Rann Lea (gr. Mr. Morgan), for a group;

O. x purpuratum, a massive flower of good shape, ground colour light purple heavily blotched with deep purple, white margin round sepals and petals, lip broad; *O. x rubens*, a large flower of fine broad lip, sepals and petals of a dull reddish colour shaded with purple and margined with white; *O. x Our Queen* (*crispum* *Hycanum* x *eximium*), ground colour white, sepals and petals heavily blotched; *O. amabile* var. "*Illuminator*," a large flower, of fine shape, pure-white ground, sepals and petals finely marked with bright purple, lip very broad and finely spotted; *O. crispum* *Xanthotes*, "*Walton Grange*" var., a round flower of good substance, sepals blotched with yellow, petals spotted, lip broad and blotched with yellow; *O. Bradshawae* "*Sander's* var."; *Cypripedium insigne* *Snow Queen*. All shown by WM. THOMPSON, Esq.

O. amabile "*Ashworth's*" var., a good round flower of brilliant colour; *Vanda coerulea* "*Ashlands*" var., a large flower of good colour; both from R. ASHWORTH, Esq.

Cypripedium Nivina (*Alcibiades* x *aureum* *Virginale*), a magnificent flower, good shaped and evenly marked; *Odontoglossum Arachne* (*Vuylstekei* x *eximium*), noble flower, well marked; both from W. R. LEE, Esq.

O. eximium "*The King*," from Messrs. CHARLESWORTH AND CO.

AWARDS OF MERIT.

Odontoglossum Lambeauianum Hesperum, *O. crispum* *Graphicum*, *Cypripedium Hera Mostyn*, *C. Curlew*, *C. Draco* "*Walton Grange*" var., and *C. Alice Mary*, all from WM. THOMPSON, Esq.

Odontoglossum Lady Evelyn James (*Lavertonianum* x *aureum* *Virginale*), *Cypripedium Palladium* (*aureum* *Virginale* x *villosum* *auriferum*), *Calanthe Veitchii* "*St. Nicholas*" var., all from the Hon. ROBT. JAMES.

Odontoglossum eximium Zenith, *Cypripedium Estella* (*Hindeanum* x *concolor*), both from RD. ASHWORTH, Esq.

C. Lady Evelyn James (*Lavertonianum* x *aureum* *Virginale*), and *C. Hecla*, both from W. R. LEE, Esq.

Odontoglossum x *Meteor*, from J. BUTTERWORTH, Esq.

Cypripedium Actaeus var. *Ethel* (*Lecanum* *Clinkaberryanum* x *Harefield Hall*), from Messrs. CYPHER AND SONS.

Vanda coerulea var. *Fairu Queen*, shown by Messrs. STUART LOW AND CO.

DEBATING SOCIETIES.

BRITISH GARDENERS' ASSOCIATION (North London Branch).—A special meeting will be held at the "Railway Institute," 111, Fonthill Road, Finsbury Park, on Tuesday, the 13th inst., at 8 o'clock. Speakers: Mr. Cyril Harding (general secretary), Mr. F. J. Baker, and Mr. G. W. Butcher. Members and non-members are cordially invited.

DUMFRIES AND GALLOWAY GARDENERS.—A meeting of this association was held in the Wesley Hall, Dumfries, on the 3rd inst., Mr. S. Arnott in the chair. Mr. C. G. Murray, gardener to Henry Keswick, Esq., Cowhill Town, Dumfries, read a paper on "Sweet Peas." Mr. Murray, who is a successful exhibitor of these flowers, gave full details of the cultivation he had found successful, and enumerated a selection of varieties. The next meeting will be held on January 31, when the subject of the lecture will be "Roses."

BRITISH GARDENERS' (Cardiff Branch).—At the meeting of the Cardiff branch of the B.G.A., held on the 3rd inst., Mr. W. W. Pettigrew, chief officer of the Cardiff parks, delivered a lecture on "Soils." Mr. F. G. Treseder occupied the chair.

BURNLEY AND DISTRICT HORTICULTURAL.—The monthly meeting of this association was held on the 1st inst. Mr. W. J. Hargreaves occupied the chair. Mr. J. Bayley, Queen's Park, Burnley, delivered a lecture on "Landscape Gardening." Mr. Bayley described methods of laying out large estates to secure artistic landscape effects, as well as the re-modelling of extensive grounds, and gave valuable hints concerning the formation of villa gardens.

CATALOGUES RECEIVED.

Seeds.

WM. PAUL AND SON, Waltham Cross.
EDMONDSON BROTHERS, 10, Dame Street, Dublin.
G. H. PLANT AND CO., The Eastgate, Chester.
ROBERT SYDENHAM, LTD., Tenby Street, Birmingham.
BROWN AND WILSON, 10, Market Place, Manchester.
W. DRUMMOND AND SONS, LTD., Stirling.
E. WEBB AND SONS, Wordsley, Stourbridge.

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum x *fulgidum*, parentage unknown, a fine round flower with broad lip of dark bronze shade, with creamy margin round sepals and petals; *O. x The Egyptian*, sepals and petals dark chocolate colour, having a shining velvety surface margined with white, lip broad and marked with crimson brown and white front;

GARDENING APPOINTMENTS.

- Mr. Walter Bristowe, for the past five years Foreman at Madresfield Court, as Gardener to Sir HENRY LOPES, Bart., Maristow House, Roborough, South Devon.
- Mr. T. C. Grinham, for the past 2 years and 10 months Gardener to E. P. STEPHENS, Esq., Taplow Priory, Taplow, as Gardener to W. H. BUCKLER, Esq., Rocques, Taplow, Buckinghamshire. [Thanks for 1s. for R.G.O.F. box.—EDS.]
- Mr. James A. Paice, as Gardener to Sir J. D. REES, M.P., Aylwards, Stanmore, Middlesex.
- Mr. G. Weston, for the past 2 years Foreman at Bonningtons Hunsdon, near Ware, Hertfordshire, and previously at Tregwainton, Cornwall. The Friary, Old Windsor, Moor Hall, Harlow, Essex, and Stevenon Manor, Hampshire, as Gardener to Captain BANBURY, Pippingford Park, Nutley, Sussex. [Thanks for 1s. 6d. for R.G.O.F. box.—EDS.]
- Mr. Motherselse, as Gardener to A. INGHAM WHITAKER, Esq., Grayshott Hall, Haslemere, Surrey. [Thanks for 2s. for R.G.O.F. box.—EDS.]
- Mr. A. Avery, for the past twelve months Foreman, and previously Carnation Grower, to LADY GREY, Enville Hall, near Stourbridge, as Gardener at the same place. [Thanks for 1s. 6d. for R.G.O.F. box.—EDS.]

Z. A. WARD, Esq., Northenden (gr. Mr. Weatherby), for a group of *Odontoglossum*s; Col. J. RUTHERFORD, M.P., Blackburn (gr. Mr. Lupton), for a group; Messrs. SANDER AND SONS, St. Albans; and Messrs. CYPHER AND SONS, Cheltenham, for groups. Silver Medals to the Hon. ROBERT JAMES, St. Nicholas, Yorks (gr. Mr. Benstead), for a group composed principally of *Calanthes*; A. E. PENNY, Esq., Preston (gr. Mr. Sumner), for a group of *Cypripediums*; J. BUTTERWORTH, Esq., Burnley (gr. Mr. Wilson); W. R. LEE, Esq., Plumpton Hall (gr. Mr. Branch); and a Bronze Medal to H. ARTHUR, Esq., Blackburn. Other exhibitors were Messrs. A. J. KEELING AND SONS, Bradford; Messrs. STUART LOW AND CO., Enfield; Messrs. CHARLESWORTH AND CO., Haywards Heath; and Mr. W. SHACKLETON, Great Horton, Bradford.

G. A. BUNTING AND CO., 3, Bucknall Street, New Oxford Street, London.
HARRISON AND SONS, Leicester.

Miscellaneous.

MORLE AND CO., 150, Finchley Road, London.—Liliums, Begonias, and Gloxinias.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending January 7.

A Week of Variable Temperature.—This was a week of variable temperature. The first day was very cold, both during the daytime and at night. Then came four warm days, followed by two cold ones. On the two warmest days the temperature in the thermometer screen rose to 47° and 48°, whilst on the two coldest nights the exposed thermometer registered respectively 15° and 11° of frost. The ground temperatures, which have been also variable, are now 1° colder at 2 feet deep, and 2° colder at 1 foot deep, than is reasonable. Rain fell on three days, but to the total depth of less than ¼ inch. There was still a little snow on the ground in places during the first two days of the week. Percolation through both the soil gauges recommenced after the 4th inst. The sun shone on an average for 2 hours 36 minutes a day, which is twice the average duration for the beginning of January. On the sunniest day the sun was shining brightly for as much as 5 hours 38 minutes. During the first four days calm and light airs alone prevailed, but during the remainder of the week the winds were moderately strong, and came from some westerly point of the compass. The mean amount of moisture in the air at three o'clock in the afternoon fell short of a seasonable quantity for that hour by 6 per cent.

DECEMBER.

Warm, Sunny, and Remarkably Dry, with a Rather Calm and Exceptionally Dry Atmosphere.—Taken as a whole, this was a warm December. The first half of it proved very warm. In fact, there then occurred only two unseasonably cold days, and virtually no cold nights, whereas during the last fortnight there were but three warm days and but one warm night. On the warmest day the highest reading in the thermometer screen was 53°, and on the coldest night the exposed thermometer registered 16° of frost. Neither of these extreme readings are exceptional for the time of year. Rain fell on fifteen days, and to the total depth of only ¾ inch, which is less than a third of the average quantity for the month. With only four exceptions the closing month of 1913 was drier than in any of the previous fifty-seven Decembers. The last December as dry was in 1890, or twenty-three years ago. The ground was at no time completely covered with snow. The sun shone on an average for 1 hour 24 minutes a day, which is 14 minutes a day longer than is usual in this month. It was rather a calm December, and in no hour did the mean velocity of the wind exceed twenty-one miles, direction W.N.W. The average amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by 3 per cent. We have to go back twenty-three years in order to find a December with as dry an atmosphere.

THE YEAR.

Very warm, Very Dry, and Sunless.—Taken as a whole this was a very warm year. In fact, there were only three months, April, July, and August, when the mean temperature was in any way below the average, and in only one of those months, July, did the variation from the average amount to more than a degree in temperature. The most unseasonably warm month was November, and the most unseasonably cold one July. On the hottest day, June 16, the temperature in the thermometer screen rose to 83°, and on the coldest night, February 23, the exposed thermometer indicated 20° of frost. The total rainfall fell short of the average quantity for the previous fifty-seven years by 4½ inches, making this the driest year for eleven years. The wet months were January, March, April, October, and November, and the dry ones February, June, July, August, September, and December—while in May the rainfall was about average. Taking the year as a whole, the sun shone on an average for eighteen minutes a day less than is usual. The sunniest months of the year, compared with the average, were May, June, October, November, and December, and the most sunless January, February, March, April, July, August, and September, July, considering the season, was the most sunless month of the year.

THE UNDERGROUND WATER SUPPLY.

The total rainfall for the last three months has fallen short of the average for the same period in the previous fifty-seven years by 1½ inch, which is equivalent to a loss of 26,240 gallons on each acre in this district. Last year at the same time there was a deficiency of 4,300 gallons per acre. *E. M., Berkhamsted, January 7, 1914.*

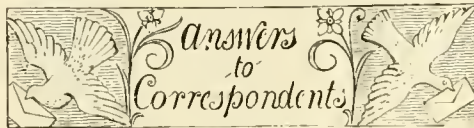
SCHEDULES RECEIVED.

County Clare Horticultural Society.—The spring show of this society will be held in Ennis, the provisional date being fixed for April 16, and the summer exhibition will be held on July 30. Secretary, Mr. H. Bill, Lifford, Ennis, Ireland.

Borough of Reigate and District Horticultural Society.—The twenty-eighth annual show of this society will be held in The Priory, Reigate, on Wednesday, July 8. Secretary, Mr. F. Phillips, The Gardens, Craigeadowie, Reigate.

Obituary.

THOMAS SAMPSON.—We regret to record the death of Mr. Thomas Sampson, who passed away in his eightieth year, after a short illness, at the residence of his son-in-law, Mr. Theo. Feilden, Stratford Lodge, Watford, at 5 a.m. on Saturday, the 3rd inst. Thomas Sampson was born at Brympton House (the present seat of Sir Spencer Ponsonby-Fane) at Brympton D'Everci, Somerset, on March 11, 1834. He was an ardent horticulturist and a Fellow of the Royal Horticultural Society. He had the finest show of flowers ever exhibited at the Bath and West of England Show, having on view many new species, when the Society visited Yeovil some forty years ago. Mr. Sampson was a prolific writer, and contributed a number of short articles and letters to the Press upon archaeological subjects. A standard little work written by him was *The History of the Holy Thorn of Glastonbury*. Mr. Sampson's eldest daughter was married in 1887 to Mr. Theodore Feilden, who is a prominent member of the London *Times* staff and a well-known newspaper man.



APPLE SHOOTS FOR EXAMINATION: *J. L.* The Apple shoots are not affected with a fungus, but are thickly covered in places with the bright red eggs of certain mites. The mites in question belong to species of the so-called "Red Spiders," and are referable to the genus *Bryobia*; they are frequently found on fruit trees, but probably are of small economic importance except in the case of the Gooseberry. The recognised treatment is in the form of a sulphur wash, and liver of sulphur has been largely used in this connection. A heavy spraying with the above wash or with strong paraffin emulsion (up to 5 gallons of paraffin in 100 gallons of wash), towards the end of February, would be beneficial.

LEAVES TUNNELLED BY GRUBS: *C. P. M. D.* The leaves are tunnelled by the larvae of a small fly, but no definite statement as to its specific identity can be made from the immature forms received.

LIME SULPHUR AND IRON SULPHATE: *Tenrab.* Lime sulphur is prepared as follows:—Take flowers of sulphur, 10 lbs.; stone lime, 10 lbs.; water, 50 gallons. Slake the lime slowly in about 3 gallons occasionally. As the heat develops add more water, and when the lime is completely slaked dilute to 50 gallons with water. Use sulphate of iron crystals dissolved in water.

MAGGOT ATTACKING PEACH TREES: *G. H. N.* Send specimens for identification. In the mean time spray the trees with an insecticide.

MICE DAMAGING SHRUBS: *A. Grant.* It is a difficult matter to prevent mice from destroying your Hollies, Laurels, and other evergreens. Clear away the Ivy that covers the ground, as this is where their nesting-places are found. If this is not practicable paint the stems of the shrubs with gas-tar, although this application may have the effect of stunting the growth of the plants until its effects wear off. Because of the presence of game it will not be safe to resort to poison, though spraying the plants with arsenate of lead paste might be useful. This should be mixed with a solution of soft soap, and syringed on the bark. In the interests of game the natural enemies of mice, such as cats, hawks, and owls, are rigorously kept down, and in consequence the mice flourish. When the balance of nature is disturbed in this way there is always a toll to be paid.

NAMES OF PLANTS: *W. H. D., Grantham.* *Ornithogalum lacteum*, native of South Africa. The

blooms last fresh for a very considerable time. The plants are often used for decoration on outgoing mail steamers at Cape Town, and arrive in England with the flowers still fresh, and capable of lasting for some weeks.—*F. F.* (1) *Pteris longifolia*; (2) *Adiantum hispidulum*; (3) *Lastrea varia*; (4) *Oncidium flexuosum*; (5) *Calanthe vestita*.—*E. S. W.* *Epidendrum fragrans*. The *Pancreatium* (*Hymenocallis*) grow well with *Eucharis*. If the plants are not in a good condition turn them out of their pots, and re-pot them in turfy loam, starting them into growth again.

ORANGE RUST OF ROSES: *H. W.* Gather all fallen leaves and burn them, as they may contain the resting-spores of the disease. Next spring drench the trees with sulphate of copper, 2 ozs. in 3 gallons of water, before the buds expand. If the disease is noticed after this treatment spray with dilute Bordeaux mixture of ammoniated carbonate of copper, 1 oz. of carbonate of copper and 5 ozs. carbonate of ammonia in 16 gallons of water, or proportionate strength.

SCORPION ORCHID: *Dummy.* The Scorpion Orchid of the Malay States is said to be *Arachnanthe moschifera*, illustrated in the *Gardeners' Chronicle*, October 13, 1894, p. 435, but the description you send does not agree with that species. The two with "gnarled roots" if leafless may be *Aphyllorchis*; but if with leaves a *Cymbidium* as you suggest. The other we cannot identify by your description. Whether terrestrial or epiphytal, it would be better to put them in pots with "corks" only until they start into growth. Place then in a warm house, and water them as other plants. If not more than a degree or two below 50° Fahr. at any time the cool house you mention would suit your *Odontoglossum Uro-Skinneri*, otherwise the cool end of the intermediate house would be safer. Do not water the plants overhead.

STRAWBERRIES: *P. S., Kamenz.* An alternative course may be followed, in accordance with the health and vigour of the plants. If the plants are strong and vigorous the spikes may be allowed to remain provided the pots be put into an intermediate house, such as one that is used for Strawberries when forcing is commenced. In such a house it will be better to place them upon a shelf, close up to the glass. Should the plants, on the contrary, be somewhat weakly, then remove the spikes at once and keep them rather dry at the roots. These adventitious trusses on the Strawberry often occur after such a season as that of 1913.

WASPS: *Correspondent.* All the wasps seen in spring are queens. All the drones or males and the workers die at the end of the year, the only survivors being the newly-born queens, and the probabilities are that the majority of the last-named build a nest and rear the first brood of worker wasps.

YEW BUDS EATEN BY PHEASANTS: *J. Verdon.* The enlarged buds on the Yews are caused by a fly which lays its eggs in the buds in the early summer. The eggs hatch, and the small grubs cause the deformation of the end of the shoot. The pheasants most probably like these grubs and take the whole bud to obtain them, with the consequence that they are poisoned by the quantity of Yew they eat. In the early autumn pick off and burn all the deformed buds you can find. In spring syringe the trees with a fairly strong solution of Quassia water, adding just sufficient soft-soap to make it stick to the foliage. The specimen enclosed is *Juniperus virginiana* (Red Cedar).

Communications Received.—A. G.—T. W. R.—E. B. Sussex—F. C.—C. T.—W. M., Queen's Co.—J. D.—H. R. B.—F. J.—A General Foreman—G. M.—E. T. C.—C. R.—J. D.—A. H., Surrey—F. G.—J. B.—M. E. M.—C. H. P.—J. L. S., Washington—C. G. G.—E. C., Versailles—F. O. P., California—C. N. and Cie., Como—G. W. H.—F. W., New Jersey—M. D. G.—R. McC.—A. P.—C. T. M.—H. A. S.—J. F.—W. M.—C.—J. B. A.—E. R. J.—Sir Frank Crisp—A. G.—Ang. Henry—C. H. P.



THE
Gardeners' Chronicle

No. 1,412.—SATURDAY, JANUARY 17, 1914.

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LILIES IN 1913.

HE has a longer memory than most who can recall a better year for Lilies than that just gone by. From beginning to end the previous year had brought them but few crumbs of comfort, hardly anything, in fact, but gloom and almost ceaseless deluge, and as it drew to a close, one felt—naturally enough, but quite wrongly, as it afterwards turned out—that a good many bulbs must inevitably have gone to a watery grave.

1913 led off with a month of brimful ditches, warm blustering winds from south and west, and a general preliminary voice trial by feathered friends in every bush: for two weeks February dealt out the same unseasonal fare, then, suddenly remembering itself, gave us the wonted spell of shrivelling wind.

March brought back the mild and humid days, and passed them on to April: many a trusting shrub and plant was deluded into premature activity, and just as one chuckled at the thought that winter had been beat at last, back came its tail, to lash us with the icy blast all gardeners dread once Lady Day is past, and leave the usual sorry score of blackened bud and stricken blossom in its trail.

The month sped on, and had all but run its course ere the longed-for day at last arrived when the warm west wind brought on its wings that indefinable taste, smell, feeling, call it what you will, that stirs the sluggish pulse, sends the song thrush to the topmost bough, and tells one spring is in the air.

May dipped its fingers in the wet again, and brought the Thames bank high: day followed day of rain, and one groaned at

the prospect of another soaking year of deluge. Then came summer with a burst, and while May ebbed out, gardens steamed with luscious shimmering heat. The rest of this memorable season will still be green in the grateful gardener's heart: for once in a way Lilies have had all he could wish for them, a warm wet spring, long arid flowering season, with sun enough for bloom, but not to parch the earth or scorch the flowers, and, above all, a dry and genial resting time in September and October. The only shadow on the picture has been cast by Botrytis, of which more anon.

Many gardeners will have observed that in the last two years numbers of plants have thrown the conventional time-table to the winds, choosing the most unusual season for the business of life. In no genus has this been more noticeable than *Lilium*, and the sequence of flowering which many normal years have brought one to regard as immutable seems now to have gone by the board.

In casting about for some explanation of the change, which we may suppose is only temporary, it is difficult to resist the conclusion that the tropical heat of 1911 is at the bottom of it. But whatever the unseen forces were that have been at work they brought *L. speciosum*—first as a rule to come and among the last to 'go—head-long out of the ground by the middle of February, a full month before the usual time, and at the other end of the scale these self-same forces made a sluggard of *L. chalcedonicum*, so that it did not come into flower till the second week in August.

L. testaceum found itself in bloom a fortnight before *L. candidum*, a most unusual proceeding; the characteristically twisted foliage of this Lily is well shown in fig. 17.

During the year *L. regale* has kept on its glorious career, seemingly impervious to winter wet and indifferent to the worst that our climate has yet given it: it has still to bear the brunt of a hard winter, but with that reservation one can almost say that nothing seems to matter to this accommodating Lily.

It ought not to be long before the bulbs are available for as many pence as shillings are now demanded by the dealers, for the propagation of *L. regale* is as simple as that of the homely cabbage: an average capsule will carry 500 seeds, and if these are given ordinary attention the greater part will soon germinate.

L. Sargentiae, another of the many fine plants we owe to "Chinese" Wilson, has also flourished, but does not seem so easy to manage as *L. regale*: in common with *L. sulphureum*, it is more impatient of wet when flowering is over than is the former Lily, and that means that everything possible should be done to get the autumn rains quickly past the bulbs. It cannot be insisted upon too often that neither *L. regale* nor *L. Sargentiae* will give of its best in peat or humus: they are lime- and loam-loving Lilies.

L. Sargentiae is exceptionally variable in the character of the foliage, and of a score of bulbs one may hardly find two quite alike.



FIG. 17.—LILIAM TESTACEUM. COLOUR OF FLOWERS, NANKEEN.

L. Parryi, born and bred in its English home, has proved more robust than the wild parent bulbs from California, and if intelligently managed this Lily, popularly supposed to be very difficult, need cause the gardener no concern. In common with all the Lilies of the Western United States, except perhaps *L. pardalinum*, which stands a deal of fooling, one cannot keep *L. Parryi* too dry in early autumn: this is a point seldom sufficiently appreciated by would-be growers, and as a rule is one of real practical difficulty: salvation lies in quick drainage, but this is a synonym for death in times of prolonged drought; if subterranean moisture is not available.

A well-balanced head of this splendid Westerner nodding over *L. regale* is a joyous sight, warranted to drive many a rankling garden failure away to the back shelf of memory's cupboard: incidentally it is a standing testimony to the extraordinary range and industry of the modern plant collector, and provides an object lesson in the marvellous adaptability of Dame Nature, who enables us moderns to cultivate plants from opposite sides of the earth in a climate and under conditions as different from those obtaining in their native haunts as chalk is from cheese.

Of the uncommon Lilies, *L. Kelloggii*, *Bolanderi*, *occidentale*, and *polyphyllum*, all not so very many years ago almost as rare as the hoopoe, have been hard at work reproducing themselves, and each can point to a small colony of nurslings. *L. kewense*, too, rescued from oblivion by Mr. Mallett a few years ago, is thriving apace, while the tiny Black Lily (*Fritillaria camschatcensis*) has made a welcome reappearance.

In 1913 all the American Lilies—from east and west—gave a good account of themselves, excepting only *rubescens*, a difficult plant to acclimatise and stubborn as a mule: and though one must confess to having attended the obsequies of quite a number of *L. rubellum*, drowned no doubt in the second half of the previous year, the Japanese and Chinese Lilies generally have come through the wet winters of the last two years astonishingly well.

Even *L. Brownii*, with bulb scales seemingly shaped on purpose to retain every drop of water that falls on them, has passed safely through the ordeal. This is by no means an easy Lily to keep, though not hard to propagate: in the absence of seed, which is almost unobtainable, it is readily raised from scales or by leaf-cuttings, as, indeed, are nine-tenths of the genus. As with all the Chinese Lilies at present in cultivation, lime seems essential to the true welfare of *L. Brownii*, though one may sometimes see a colony of the Dutch-grown bulbs doing well in woodland soil where the drainage is sharp.

For once in a way, *L. sulphureum* has had its opportunity, and has made the most of it: in five years out of six this Lily comes into flower too late to escape the withering effect of night frosts in mid-September, and for all the good it does,

might as well be left out of the garden altogether. Last year it was in bloom half-way through August, and the flowers remained in perfection till the end of that month. Bulbs of this Lily collected in Western China seem to be hardier than those received from Burma.

One of the most remarkable features about Lilies in a remarkable year has been the prolongation of the normal period of flowering, and the perfection of the individual flowers. In a typical English summer we have alternations of hot sun and rain, with the result that Lily blooms are seldom at their best for more than a few days at a time: they are either baked and soon spent, or else draggle-tailed and spoilt beyond

increasingly difficult to uphold the time-honoured theory that high cultivation and a sturdy constitution are factors in the power of Lilies to resist this dread disease, for while it has not yet been possible to arrive at a positive conclusion, close observation undoubtedly tends to show that the fungus attacks strong and weak alike.

That with the aid of the chemist the fungus can be kept in check is certain, but one must be ever on the watch for the smallest sign of this insidious hydra-headed plague, and act immediately. If it is once allowed to obtain a footing in the soil of the garden, even the optimist may as well ring down the curtain, at any rate for a time.

There is no panacea for this evil, which is



FIG. 18.—BULB OF *LILIUM PARRYI*, SHOWING NEW AND OLD GROWTH.

recall. In the writer's little garden hardly a drop of rain fell from beginning to end of the Lily season of 1913, and the sun was never really fierce. As a direct result of this happy combination of circumstances many individual plants of *L. Parryi*, *Roezlii*, *Hansonii*, and *Bolanderi* were in bloom for from 26 to 29 days, while numerous other species were in perfect flower for as much as three weeks.

The comparative coolness of the summer following a very wet spring, was doubtless responsible for the persistent way in which *Botrytis cinerea* marked out its victims all through the season of 1913. As the years go by it becomes

not peculiar to liliaceous plants; such remedies as are available at present take the form of spray solutions, the use of which is largely empirical: the main thing seems to be to apply the solutions in as strong a form as each plant will bear, and exactly what that strength is the gardener must ascertain for himself. If he is wise he will begin with a weak solution and gradually increase the concentration to the desired point.

In the experimental process a few of his patients will probably succumb to the treatment, and if they do he may cozen himself into a recognition of their death as a tribute to the cause of horticultural science.

Bordeaux mixture is undoubtedly of value as a preventive, and though by no means a perfect remedy, the aseptic spray solution of Evans appears to have the effect of staying the progress of the fungus in individual cases. The spray mixture, of whatever nature it may be, should never be used stone cold, and must be applied to the under side of the leaves as well as to the upper surface.

So far as the writer is aware no new species of Lily made a public appearance in 1913. At the R.H.S. meeting on October 7, Mr. Elwes exhibited a fine specimen of the wild *L. speciosum*, grown from a bulb which he himself gathered in Formosa the previous year.

Though neither the latent beauty of the specimen nor the importance of the exhibit appears to have commended itself to the authorities at Vincent Square, they will at once have been apparent to botanists and students of the genus, for the distribution of the wild plant has never yet been satisfactorily determined. Prior to the discovery of this Lily in Formosa it had only been recorded in a restricted area at Kiangiang, in Kiangsi, first by Hance and later by David, and, so far as is known, a wild plant had not been exhibited before last year.

Now one of the commonest Lilies in commerce, *L. speciosum*, is cultivated and exported in thousands from Japan and Holland, and though Japanese tradition makes Formosa the home of it, the origin of this Lily is lost in the mists of the past. It is true that a fine form, known as *speciosum magnificum*, was discovered some few years ago in the small group of islands south of Nagasaki, where it is cultivated as a vegetable, but this is not identical with the Lily exhibited by Mr. Elwes. There does not appear to be any record of it in Formosa till 1908, when, according to Mr. W. R. Price, it was discovered by Konishi and named after him by Hayata.

During the year a Korean species of *Lilium* sent by Mr. Wilson has flowered, and so has a Western Chinese species collected by Mr. Forrest (No. 692) and received from Messrs. Bees. One of a batch of Chinese Lilies sent by M. Maurice L. de Vilmorin has also bloomed, and has proved to be a remarkably fine plant, bearing in many ways a strong resemblance to *L. Sargentiae*.

A hybrid between *L. tenuifolium* and *L. sutchuenense* has flowered, but is not of much account. The following little-known Lilies are in cultivation:—*L. ochroleucum* and *L. Delavayi*, from the Edinburgh Botanic Garden; *L. Brownii* var. *kansuense*, from Professor Scheubel, a Korean species, and *L. Brownii*, of Western Hupeh, from Mr. Wilson; a species brought by Mr. Elwes from Kiushiu, a form of *L. philippinense*, as well as bulbs of the *L. speciosum* already referred to, both gathered by Mr. W. R. Price in Formosa; *L. warleyense* and several Chinese species from M. Maurice de Vilmorin. *A. Grove, Kentons, near Henley-on-Thames.*

ORCHID NOTES AND CLEANINGS.

ORCHIDS AT MESSRS. SANDER AND SONS.

It is not a light task to traverse the forty large houses devoted entirely to Orchids at the St. Albans Orchid Nursery, but the journey is rendered pleasant by the large number of showy and interesting plants, both species and hybrids, which are to be seen there. In the matter of species the establishment is exceptionally fortunate, for the famous collectors, Micholitz and Forget, who have travelled for the firm for hard on thirty years, have sent numerous collections containing a high proportion of new or rare

species, of which many, even not yet identified, have accumulated at St. Albans.

The older part of the establishment, with its broad and lofty span-roofed structures, has been reconstructed, houses of lower pitch and with modern improvements having been erected; and generally the accommodation has been increased with evident benefit to the many hybrids, which are in grand condition.

The old wood trellis work for paths placed over the natural earth in the houses has been done away with almost entirely. In order to encourage evaporation from the natural moist earth, and to provide clean, dry paths, a layer of granite chips instead of wood trellis is employed, with the result that, no matter how much water may be used on the path, a clean surface is maintained. By this means the cost of wood trellis and the unsightly appearance of partially decayed wood are avoided.

Corridors at each end of the ranges give shelter. At the one end some very fine rockeries planted with rare foliage plants, *Cymbidiums*, *Phaius* and other semi-terrestrial species, make an interesting display. In one nook there is a huge plant of *Odontoglossum coronarium* with about forty growths, which should be a fine sight when in bloom, situated as it is beneath the long, plume-like fronds of the crested *Poly-podium Knightae*. The corridors are planted with *Epidendrum O'Brienianum*, *E. Boundii*, *E. Burtonii*, *E. radicans*, and other trailing species, which give bright flowers, and the bright mauve *Bougainvillea Sanderiana*, in green and variegated forms, which have now become popular "market plants," give variety. Of plants at present in bloom the *Cypripediums* are in the majority, and many houses are filled with them. One house contains new crosses flowering for the first time, and among them are many very pretty and distinct blooms. Distinct things continue to hold their own for a great length of time, as witness a houseful of varieties of *C. insigne* in bloom, the batch of the lovely yellow-and-white variety *Sanderae*, that of the stately *Harefield Hall* variety, and a few others, each of which is in constant demand. In the same charming class as *C. insigne Sanderae*, *C. Mrs. F. Sander*, *C. Eve*, *C. aureum Surprise*, and some pretty light forms of *C. Actaeus*, are in bloom.

A batch of crosses of *C. Fairieanum* show some good things, but all have that deflected pose of the petals and the narrow outline which are evident in most *C. Fairieanum* crosses. Forms of the old *C. Hera Euryades* are still as fine as ever and not yet displaced in their sections, some in bloom here being even better than the variety *splendens*. White flowers are given by *C. niveum*; and *C. Godefroyae*, with the hybrids *C. Venus* and its ally *C. Boltonii*, are of the best clear whites. *C. Venus Rann Lea* variety is of an exceptional tint, being of a Primrose-yellow shade in the earlier stage of the flowers. Some *C. glaucophyllum* crosses in bud show an interesting peculiarity. *C. glaucophyllum* was thought by some to be a form of *C. Chamberlainianum*, but the progeny of the former are wonderfully free in growth and flower, while seedlings of the latter are not so tractable.

C. Vennel var. *Perfection* (*venustum* × *bellatulum*) is a fine, handsomely-marked flower; *C. caudatum Sanderae*, like a large form of *C. c. Wallisii*, *C. Minnie*, *C. Villebois Mareuil*, forms of *C. Thalia*, *C. Germain Opoix*, a batch of the pretty *C. callosum Sanderae* and its hybrids; a very fine *C. Miss Louisa Fowler*; *C. Alcibiades magnificum*, the finest of its section; *C. Niobe nigrescens*, a dark, claret-coloured flower; *C. Actaeus Undine*, a charming yellow-and-white; *C. Alabaster*, *C. Caruso*, *C. Gaston Bultel*, *C. Atlas*, a very large flower; and some exceptionally fine *C. Lecanum* and *C. Charlesianum* may be mentioned out of the large number in bloom.

Cattleyas, *Laelio-Cattleyas*, and *Brasso-Cattleyas*, and secondary hybrids of them,

occupy about one-third or more of the long ranges of houses, and the plants are in large batches of all sizes, the cases in the seedling house containing many thousands of seedlings in their early stages, with those in their first pot on the stages. Six houses side by side contain unflowered seedlings either of new crosses or improved old crosses to flower within the next year or two. Of favourite known hybrids much is expected from the new batch of *Laelio-Cattleya Fascinator*, in the production of which a *C. Schröderae*, better in some points than *The Baron*, was used.

In these houses but few are in bloom, but among a showy lot of *C. labiata*, including white and blush-white varieties, exceptionally good are the handsome deep-yellow *Laelio-Cattleya Charlesworthii*, still one of the best of its class; *L.-C. Golden Oriole*; *L.-C. Mauretania*, *L.-C. Minnie* (*aurea* × *exonensis*), and other pretty hybrids. In another house some finely-coloured forms of *Cattleya Maggie Raphael* have broad and richly-coloured labellums, inherited, it is said, from the *C. Trianae* used with *C. aurea* to obtain it; some *Brasso-Cattleyas*, *Brasso-Laelio-Cattleyas*, and, not in flower, a good batch of various crosses of *Sophrontis grandiflora*. A house of *Cattleya Iris* and *C. Adula*; a large batch of *C. Mantinii*, which had flowered well earlier; a house of *Laelio-Cattleyas*, with some *L.-C. Kathleen* and *Cattleya Percivaliana* in flower, with a fine specimen of the white *C. Dusseldorferi Undine*. Some *Laelio-Cattleya Britannia* and showy hybrids of the *L.-C. Ingramii* class, and, returning by the long corridor, in which large batches of *Dendrobium Wardianum*, *D. Regium*, and other showy *Dendrobiums* are resting, we come to the houses in which the imported Orchids and rare species are grown, and find in each section some attractive things in bloom. *Cymbidiums* are represented by *C. Sanderi* and its hybrids, *C. eburneum* in quantity, and most of the others, *C. Tracyanum*, *C. grandiflorum*, and *C. giganteum* being in bloom. A very large collection of *Masdevallias*, including the blackish purple *M. calura*, the white *M. tovarensis*, the very handsome *M. Bella Sander's Variety*, *M. nidifica*, and many of the botanical species in bloom. Among the *Bulbophyllums* and *Cirrhopetalums* also a number are in flower, the finest being the charming copper-orange *C. Mastersianum*. *Saccolabium acutifolium*, *S. bellinum* and *S. calceolare* were noticed; the new *Phaius Cooperi*, which is quite an acquisition to the genus; and beside it, a very fine Primrose-yellow lipped form of the handsome *Chondropetalum Fletcheri*. A small collection of *Anoectochilus*, a good house of *Vanda coerulea*; a stage of *V. tricolor* varieties, a batch of *Oncidium splendidum* in spike, and many other things promise a good show.

The *Odontoglossums* and *Miltonia vexillaria* hybrids are chiefly grown at the *Bruges* establishment, but several houses at St. Albans contain plants that are thriving well.

In one house the bright mauve-purple *Laelia Gouldiana* and some *L. anceps* are well in bloom, in another a fine lot of *Calanthes* give their pretty pink rose and white flowers, and a cool house has a fine lot of the hybrids of *Odontoglossum Edwardii*, and a fine collection of *Odontodas* with a few of their scarlet sprays still remaining.

THE MARKET FRUIT GARDEN.

ABORTIVE SPURS ON PLUMS.

A LAMENTABLE habit of growth in some varieties of Plums is that of sending out slender and elongated spurs from thick and vigorous branches. Most of these spurs are bald near their bases, sometimes for an inch or two. If they are left entire many of them die off at the end of the season, and I am not sure that those cut back to two or three buds nearest their bases do

not share the same fate. If shaved off closely the branch is made bald where they grew for all future time, as there are no signs of buds near the bases of such shoots, which emerge from tiny hollows in the branch. Last spring some of these elongated spurs on vigorous and well-furnished Presidents, then three years from the planting of them as maidens, were crowded with blossoms, but failed to bear a single fruit, whether cut back or not. The other parts of the trees were almost entirely devoid of blossom. In pruning the trees a few weeks ago nearly all these slender spurs were found to be dead, and many a branch has been thus left bald for a foot, or, in some cases, 18 inches. In addition to the elongated spurs there are large thorns; but these are less objectionable, as some of them develop a fruit bud or two near their bases. When the trees were pruned last April, the leaders of some of the best-furnished and most symmetrical trees were left unshortened. These, I notice, have not formed nearly so many of the elongated and slender spurs as those which were cut back. But a very curious result is noticeable on some of the trees. The leaders not shortened instead of continuing to grow up-

one orchard, has a great number of cankered fruit spurs, as well as many shoots affected with scab near their ends. Now, many thousands of these spurs and portions of shoots are being cut off in the pruning of nearly an acre of Cox's Orange in two parts of the orchard, and it would be a great expense, and almost impracticable, to pick every one up and burn it. Large cuttings are taken away to be burnt in the ordinary course of proceedings, but not tiny pieces, and, without being certain that these, if left on the ground, will convey infection to healthy trees or healthy portions of trees, I am not disposed to attempt the tedious task of picking up the minute pieces. My impression is that fungus infection does not arise from diseased spurs or twigs lying on the ground, or at least not in the case of scab or canker. These fungi are not saprophytes, and the cuttings at this time of year quickly die and rot on the wet ground. Mycologists recommend gathering and burning; but they recommend many things impracticable to a grower of fruit on a large scale, such as the gathering off the ground of all leaves from trees or bushes affected with leaf-spot or any other disease—an abso-

gracillipes and Mazus rugosus of the WARGRAVE Co., Roscoea cautiloides and Trollius patulus of BEES, LTD.; Paeonia l'Espérance (KELWAY AND SON); Stachys corsica (Messrs. R. WALLACE AND Co.); Crocus chrysanthus E. A. Bowles (Messrs. BARR AND SON); forms of Primula viscosa shown in spring by Mr. J. DOUGLAS; Papaver Perry's Unique, Primula Excelsior, P. Maximowiczii, P. Purdomii, Lonicera tragophylla and Androsace tibeticum of Messrs. JAS. VEITCH AND SONS; Meconopsis Delavayi, a very pretty plant shown at Chelsea from the EDINBURGH BOTANIC GARDEN, Aethionema armenum from Miss WILLMOTT; and Saxifraga Faldonside and other Saxifragas from Sir EVERARD HAMBRO.

Roses have yielded an extraordinary number of first-class novelties, and these are referred to in the *Gardeners' Chronicle* report of the National Rose Society's exhibition, July 4, and in the issues of July 12 and November 1, p. 301, November 25, p. 355, November 29, p. 377, and December 6, p. 395.

ORNAMENTAL AND FLOWERING PLANTS.

Messrs. SANDER AND SONS, St. Albans and Bruges, through their collectors have exceptional facilities for obtaining new decorative plants and Palms, and with them the past year has been specially prolific. For general utility and for growing in quantity the new brilliant-red, semi-double Camellia Fred Sander, which was so much admired at the Ghent Quinquennial, stands first. Among ornamental foliage plants *Alocasia Wartelii* with large bronzy leaves, with lighter veining; *Heliconia insignis*, Musa-like in habit; *Polypodium irioides corymbiferum*, bright green and heavily tasselled; *Trevesia elegans* and *T. annamensis*, remarkable species with ornamental foliage; *Dieffenbachia Albertii*, from Central America, with large, thick, green leaves marbled with white; *Bromelia tricolor compacta*; *Rhodospatha Forgetii*, a new Aroid of distinct habit from Costa Rica, and a very fine set of new Palms, and other ornamental plants, which were fully described in the *Gardeners' Chronicle*, May 3, 1913, and some of which will be found in the accompanying list of plants illustrated.

Messrs. JAS. VEITCH AND SONS, in their speciality of winter and spring-blooming Begonias, add *B. Julius*, a bright rose-pink double, and *B. Rosalind*, one of the best and showiest of the series. *Hippeastrum Eurasian*, a fine carmine-crimson flower, secured an Award of Merit, and the very handsome strain of *Gloxinia*, shown on July 29, was given a like Award. The reports of the special exhibitions of Dahlias, Narcissus, Carnations, Chrysanthemums, Sweet Peas and other popular flowers show that marked progress has been made in each class, and if no startling new departures have to be recorded some worthy advances have been made.

The principal novelties of the year will be found in the following list of new and rare plants illustrated in the *Gardeners' Chronicle* in 1913. It is considered desirable also to give references for the figures of destructive insect and fungous pests which have been illustrated during 1913, in continuation of the large number of illustrations of similar subjects which had been previously given. The illustrations show the pests in the various stages of their life-history, and are helpful to gardeners in their attempts to grapple with the pests in the earlier stages of development.

PLANTS ILLUSTRATED IN 1913.

Abutilon insigne (Coloured Supp.), October 4.
Abutilon roseaeflorum, October 4, p. 240.
Abutilon vitifolium, October 4, p. 241-2.
Acantholimon venustum, March 1, p. 138.
Aesculus parviflora, August 23, p. 132.
Aethionema cordifolium, January 18, p. 42.
Agave Leopoldii, January 4, pp. 10-11.
Allamanda Hendersonii (Coloured Supp.), January 11.
Althaea ficifolia, August 23, p. 140.
Alyssum alpestre, January 23, p. 52.
Amaryllis Belladonna *blanda*, June 28, p. 441.
Ananas sativus variegata, March 22, p. 182.



(Photograph by W. J. Vasey.)

FIG. 19.—PENRHYN CASTLE, CARNARVONSHIRE, SHOWING THE WEST FRONT.

(See p. 37.)

wards came to a stop at about the height at which they were left last April, and sent out crowded bunches of side-shoots from their tips. This occurred on only a few trees, and possibly the destruction of the tips of the leaders by aphides caused the deformity. But I was much surprised to find generally as much branching out from uncut as from cut leaders. Fortunately there were good laterals a little below the bunches of shoots, and the latter were cut off bodily, thus restoring the symmetry of the trees. My experience leads me to the conclusion that it is a great mistake to prune Plums severely, excepting the extra gross leaders which some varieties produce. These, if not cut back severely, rob the other branches of their due share of nourishment. Where there are smaller leaders which would replace the gross ones, I believe it is advisable to cut the latter out entirely.

DO FUNGUS SPORES RISE FROM THE GROUND?

This question has been asked in a previous pruning season; but it is of such great importance that I return to the subject. It is recalled by the pruning of Cox's Orange, which, in

lately impossible feat. Do they know for a fact that disease spores float up from the ground and infest trees? Or is their advice based simply on surmise? I suspect the latter. This is one of the many points upon which research is urgently needed. *A Southern Grower.*

NOVELTIES OF 1913.

PLANTS OF GENERAL CHARACTER.

The past year has been a good one for new and interesting additions to garden plants. Novelties in herbaceous and Alpine plants and shrubs have been shown at the Royal Horticultural Society's meetings from time to time, and many fine acquisitions have obtained awards.

THE WARGRAVE HARDY PLANT Co., Messrs. BEES, LTD., Messrs. WALLACE AND Co., KELWAY AND SONS, and other specialists have each secured honours for desirable exhibits, most of which will be found enumerated in the appended list of new and rare plants illustrated in 1913. Among those specially noteworthy are the *IRIS*

- Androsace glacialis, March 22, p. 187.
 Androsace primuloides, March 22, p. 187.
 Androsace pyrenaica, August 2, p. 78.
 Androsace tibetica, May 31, p. 362.
 Anemone narcissiflora, January 25, p. 57.
 Anemone pulsatilla rosea (Coloured Supp.), January 25.
 Arenaria purpurascens, January 18, p. 43.
 Arthropodium cirrhatum, September 13, p. 184.
 Arundo conspicua, August 9, p. 100.
 Asperula nitida (Supp.), March 8.
 Aster Climax, November 15, p. 344.
 Aster Lil Fardel, November 15, p. 338.
 Aster Miss Southall, November 15, p. 343.
 Banksia integrifolia, November 29, p. 376.
 Bauhinia variegata, June 7, p. 379.
 Begonia Apricot, November 22, p. 365.
 Begonia Emita (Coloured Supp.), November 1.
 Begonia Florence Nightingale (Supp.), August 9.
 Begonia Julius, February 1, p. 75.
 Begonia socotrana, November 1, p. 303.
 Berberis Gagnepainii, November 15, p. 335.
 Berberis Wallichiana, November 15, p. 336.
 Berberis Wilsonae (Coloured Supp.), November 15.
 Bougainvillea Sanderiana (Coloured Supp.), March 29.
 Brachyichilium Horsfieldii, January 4, p. 12.
 Camoensia maxima, September 27, pp. 214-15.
 Campanula alpina, August 23, p. 142.
 Campanula isopyllia alba, August 30, p. 150.
 Campanula spicata, March 29, p. 207.
 Campanula Stevenii nana, May 24, p. 342.
 Campanula thyrsoidea, March 29, p. 206.
 Carnation Yellow Stone, October 11, p. 260.
 Chrysanthemum Mrs. E. Luxford, January 4, p. 5.
 Chrysanthemum Wm. Turner, January 4, p. 4.
 Clematis Armandii, May 17, p. 322.
 Clematis indivisa lobata in Devon, September 20, p. 199.
 Congea tomentosa, December 6, p. 399.
 Crataegus Genesensis, February 22, p. 115.
 Crocus Fleischeri white, July 19, p. 45.
 Cyclamen latifolium St. George (Coloured Supp.), December 20.
 Cytisus supranubius, August 16, pp. 121-22.
 Dahlia Cardinal (Coloured Supp.), April 12.
 Dahlia Dungeness, September 27, p. 217.
 Dahlia Goldfinch (Coloured Supp.), April 12.
 Dahlia Mrs. Joynson Hicks (Supp.), April 12.
 Dahlia Modesty (Coloured Supp.), April 12.
 Dendromecon rigidum, August 2, p. 93.
 Dianthus, seven species of, April 19.
 Douglasia laevigata, June 7, p. 381.
 Dracaena Massangeana, March 22, p. 182.
 Echinium Bourgeauanum, January 11, p. 25.
 Echinium Pinaiana, January 11, p. 20.
 Echinium simplex, January 11, pp. 18-19.
 Edraianthus dalmaticus and Edraianthus Pumilio, July 12, p. 31.
 Erinus alpinus, January 25, p. 58.
 Eriobotrya japonica variegata, May 3, p. 293.
 Eryogonum alpinum, March 1, p. 133.
 Eryngium pandanifolium, November 1, p. 302.
 Erythraea Massonii, November 8, p. 319.
 Eucryphia pinnatifolia (single and double), October 25, pp. 284-5.
 Euphorbia Eustacei, November 22, p. 355.
 Furcraea Bedinghausii, September 6, p. 167.
 Genista horrida, March 1, p. 140.
 Globularia bellidifolia (Supp.), March 8.
 Helicrysum bellidoides, April 26, p. 266, and June 28, p. 436.
 Ipomaea rubro-caerulea (Coloured Supp.), February 15.
 Iris iberica ochracea, June 14, p. 399.
 Iris sofarana, November 29, p. 377.
 Iris trojana (Coloured Supp.), March 15.
 Kalphoia multiflora, November 22, p. 356.
 Ligustrum japonicum coriaceum, April 26, p. 265.
 Liliun auratum, October 18, p. 269.
 Liliun Martagon album, July 26, p. 63.
 Liliun regale, June 21, p. 416-17.
 Liliun sulphureum, July 19, p. 53.
 Liliun sutchuenense, August 16, p. 114-15.
 Liliun Thayerae, August 16, p. 116.
 Limonia Poggei latifolia, June 7, p. 378.
 Lindenbergia graciflora, January 11, pp. 27-8.
 Linum salsoloides, July 19, p. 42.
 Loiseleuria procumbens, May 24, p. 343.
 Matthiola pedemontana, March 8, p. 149.
 Mazus rugosus, March 29, p. 210.
 Meconopsis cambrica, July 19, p. 52.
 Meconopsis Wallichii, March 8, p. 147.
 Mutisia Clematis (Coloured Supp.), November 29.
 Mutisia ilicifolia, November 29, p. 383.
 Myosotidium nobile, July 19, p. 47.
 Myrtus Luma (Eugenia apiculata), October 25, p. 287.
 Narcissus Evangeline, May 17, p. 330.
 Narcissus St. Olaf, May 17, p. 329.
 Narcissus White Emperor, April 12, p. 239.
 Nephrolepis exaltata (plumose varieties), December 13, pp. 424-5.
 Nymphaea Conqueror (Coloured Supp.), July 19.
 Nymphaea Galatee (Coloured Supp.), December 13.
 Nymphaea gigantea Hudsoniana (Coloured Supp.), June 21.
 Nymphaea Masaniello (Coloured Supp.), September 20.
 Odontadeia speciosa, August 9, p. 106.
 Oenothera rubricalyx, March 15, p. 165.
 Olearia Chathamica, May 31, p. 363.
 Omphalodes cornifolia, June 7, p. 380.
 Pachira macrocarpa, November 8, p. 325.
 Paeonia Delavayi, June 14, p. 403.
 Paeonia l'Espérance, June 21, p. 424.
 Paeony La Lorraine, May 3, p. 296.
 Phoenix Roebelinii, March 22, p. 182.
 Polygonum polystachyum (Supp.), May 17.
 Populus Maximowiczii and P. suaveolens, March 23, p. 198.
 Primula Allionii, February 8, p. 85.
 Primula Fortunei, April 12, p. 238.
 Primula Jean Douglas, April 26, p. 267.
 Primula Listeri, April 26, p. 271.
 Primula malacoides plena, December 13, p. 428.
 Primula Maximowiczii, April 26, p. 267.

- Primula pseudo-denticulata, April 26, p. 264.
 Primula Purdomii, March 29, p. 200.
 Primula Rusbyi, September 13, p. 190.
 Primula vincaeflora, September 20, p. 198.
 Prunus cerasifera Moseri fl. pl., March 22, p. 190.
 Prunus subhirtella, May 3, p. 285.
 Puya chilensis, July 5, pp. 2-3.
 Randia maculata, August 2, p. 79.
 Ranunculus glacialis, February 22, p. 117.
 Red Sunflower, August 9, p. 108.
 Rhodochiton volubile (Coloured Supp.), May 10.
 Rhododendron Clorinda (Coloured Supp.), July 5.
 Rhododendron concinnum, May 24, p. 341.
 Rhododendron dauricum, flowering at Christmas, January 25, p. 51.
 Rhododendron yunnanense, December 6, pp. 396-7.
 Rodgersia sambuifolia, August 23, p. 131.
 Rodgersia tabularis, August 23, p. 130.
 Rosa sertata, single wh., September 6, p. 166.
 Rose Annie Crawford, August 9, p. 99.
 Rose Ellen Poulsen, May 16, p. 302.
 Rose Irish Fireflame, May 31, p. 365.
 Rose Mrs. Chas. Russell, January 25, p. 61.
 Rose Mrs. Godfrey Brown, July 26, p. 69.
 Rose Queen Mary, July 12, p. 34.
 Saxifraga ambigua, September 13, p. 183.
 Saxifraga Faldoaside, April 5, p. 214.
 Saxifraga lingulata Bellardii, August 23, p. 135.
 Saxifraga longifolia, June 7, p. 390.
 Saxifraga pyramidalis and S. longifolia in Sir Everard Hambro's Gardens, June 7, pp. 369-90.
 Socratea Forgetiana, May 3, p. 286.
 Solanum jasminoides, August 2, p. 89.
 Solanum capsicastrum Melvillii, February 15, p. 101.
 Strelitzia kewensis, August 2, p. 87.

PENRHYN CASTLE.

(See Figs. 19, 20, 21 and 22 and Supplementary Illustration.)

To those who have never visited North Wales the name may suggest perhaps a cold and mountainous region, a wild, inhospitable land, where swift mountain torrents, fed by mountain snows, speed seawards, rushing through rocky land, where only the hardiest trees and shrubs can find sustenance.

This would be a true description of parts of North Wales, but a country which is mountainous has also valleys. No richer vegetation can be grown anywhere in our islands than is produced by the fertile valleys of North Wales. With a rich soil is combined a mild and equable climate, giving full opportunities for a varied flora. Generally speaking, the climate of our country is regulated by longitude rather than by latitude, and the beneficial influence of the Gulf Stream which washes the western shores is more apparent in the West of Scotland and in North Wales than in the south-east of England.



[Photograph by W. J. Vasey.]

FIG. 20.—SUNDIAL AND FLOWER BEDS IN THE GARDENS AT PENRHYN CASTLE.

- Strelitzia Reginae (Coloured Supp.), August 2.
 Thladiantha dubia (fruit), July 19, p. 54.
 Trevesia Sanderi, May 3, p. 295.
 Trillium rivale, July 19, p. 43.
 Veronica Traversii, March 15, p. 172.
 Viola gracilis valderia, January 25, p. 53.
 Wahlenbergia Pumilio, January 25, p. 59.

DESTRUCTIVE INSECTS AND PESTS.

- Aspidiotus perniciosus (San José Scale) on Pear, February 1, p. 69.
 Bacillus Lathyri on Sweet Pea, April 5, p. 215.
 Bacillus on Clover, April 5, p. 216.
 Brown Tail Moth (Euproctis chrysorrhoea) (Coloured Plate), March 1.
 Ceratitis capitata (Mediterranean Fruit Fly) (Coloured Supp.), August 16.
 Cherry Fruit Fly (Coloured Supp.), October 18.
 Colorado Beetle, October 4, p. 233.
 Liparis dispar (Gipsy Moth) on Oak (Coloured Supp.), April 26.
 Liparis monacha (Nun Moth), Coloured Supp., June 7.
 Mosaic disease on Sweet Pea, July 12, p. 21.
 Mycosphaerella citrullina (Cucumber and Tomato Canker), September 6, p. 168.
 Nematus erichsonii (Large Larch Saw Fly), (Coloured Supp.), September 13.
 Phthorimaea operculella (Potato Moth), May 3, p. 284.
 Plowrightia morbosa (Black Knot Disease) May 24, p. 340.
 Root rot and Collar rot, July 12, pp. 22-3.
 Septoria petroselinii (Celery Blight), June 21, p. 415.
 Sweet Pea diseases, July 12, pp. 24-5.
 Tomato Leaf spot, December 13, p. 418.
 Vine Louse (Phylloxera vastatrix), March 15, p. 161.

In the broad valley at Penrhyn the wonderful variety of uncommon trees and shrubs which is usually associated with the "Cornish Riviera" may be seen growing in luxuriance. At Penrhyn many half-hardy shrubs are growing as standards in the open ground, away from the adventitious protection of walls, and their grace and beauty are enhanced by a setting of closely-mown grass or of spreading trees. These valuable shrubs are grown in several distinct sets of conditions; for example, as lawn specimens (see Supplementary Illustration) in front of the conservatories, and planted in a mature wood somewhat in the fashion of a wild garden. In the first-mentioned position specimens of Eucryphia cordifolia may be seen fully 15 feet high and bearing quantities of seeds. E. pinnata also flowers freely as a standard. There are fine examples of Styrax Obassia, Eugenia apiculata, 20 feet high and 15 feet across, Eriobotrya japonica, Camellia Sasanqua, close to a fine example of Magnolia stellata, nearly 10 feet high and as many broad. Camellia Thea, a rarer shrub, makes a broad, low pyramid, contrasting with a 25-foot-high Eugenia apiculata of more graceful outline, the brown bark peeling in sec-

tions, and disclosing the greyish-white under-bark in an effective manner. A pergola of Fuchsias (see fig. 22) strikes an uncommon note and tells how favoured is this district, for the huge bushes of *Fuchsia Riccartonii* meet overhead 9 feet from the ground. The red shoots and leaf-stalks of *Actinidia arguta*, which cling around the railings of a flight of steps (see Supplementary Illustration), give a dazzling display of colour amongst the green of the other subjects, but their hue is almost equalled by that of bushes of *Desfontainea spinosa* nearly 10 feet high, and bearing strange gold and scarlet bell-shaped flowers amongst small, Holly-like leaves. Near by a tall deciduous Cypress (*Taxodium distichum*) serves as a support for *Stauntonia latifolia*, which has climbed 50 feet towards the top, and now hangs down in graceful festoons. Magnolias of many kinds, Azaleas of sorts, and a great variety of Camellias grace the scene; and Mr. Speed, the head gardener, points out a tall *Griselinia littoralis*, which he remembers seeing grown, when it was less understood, as a stove shrub.

The formal flower garden on the other side of a broad gravel terrace is quite small. The central feature is a set of beds (see fig. 20) radiating from a sundial, bearing the date 1797 and the family crest, with the inscription "He stretcheth out the North over the empty place and hangeth the Earth upon nothing." During the summer these beds are gay with tuberous Begonias, scarlet Salvias, Pentstemons, and Heliotropes. Long, narrow beds containing central pillars of Dorothy Perkins Rose (see fig. 21) flank this centre and contrast gaily with the sober but tropical-looking leaves of the tall Australian *Dracaenas* on the opposite side of the broad walk.

(To be concluded.)



THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

GARDEN ROSES.—If any planting of Roses, either in beds or groups, remains to be done, let the work be completed as soon as the conditions are favourable, for Roses planted early form roots at once, and nearly a year is gained over those planted later. A few of the newer varieties should be planted annually to keep the collection up to date, but it must be remembered that some of the newer sorts have weak constitutions and soon wear out. Select only those that have strong, healthy growth of stout, leathery foliage. Amongst red varieties I have found none equal to *Ecarlate*; indeed, had it not been for 20° of frost on December 31 we should now be gathering good, useful blooms. Up to that date several large dinner tables had been decorated nightly with that variety, and even now there are dozens of unopened buds on plants out-of-doors. Other good red sorts are General McArthur, Richmond, C. J. Grahame, Warrior, Rhea Reid, *Etoile de France*, *Avoca*, *Papa Gontier*, and *Corallina*, all of which I have proved to be first-rate bedding plants. Amongst those having pink flowers *Grand Duc de Luxembourg*, G. Nabonnand, *Prince de Bulgarie*, Mrs. E. G. Hill, *Caroline Testout*, *Madame Abel Chatenay* may all be recommended; whilst good whites are found in *Frau Karl Druschki*, *Viscountess Folkestone*, *Madame Antoine Mari*, and *Pharisaër*. Of yellow shades select *Lady Hillingdon*, *Le Progrès*, *Madame Chédane*, *Guinoisseau*, *Madame Ravary*, and *Marquise de Sinety*, for these are all well proved and good growers. Those named include Teas and hybrid Teas. They may be grouped in a series of beds on grass by themselves. The older H.P.s may also be planted in similar but separate positions, and of these Mrs.

J. W. Grant, Chas. Lefebvre, Captain Hayward, *Général Jacqueminot*, Mrs. John Laing, *Merveille de Lyon*, and Ulrich Brunner are a selection. The *Polyanthas* and *Chinas*, such as *Jessie*, *Léonie Lamesch*, Mrs. N. H. Cutbush, *Orleans*, *Madame Eugène Resal*, *Perle d'Or*, *Anna Marie de Montravel*, *Madame Laurette Messimy*, and *Hermosa* are suitable for beds. A few weeping or fountain standards, 4 to 5 feet tall, may be used as foils and trained on frames. Roses of the *Wichuraiana* type, such as *Lady Gay*, *Hiawatha*, *Lady Godiva*, and *Jersey Beauty*, may also be employed, but generally standard Roses are far less satisfactory than well-grown dwarfs, being short-lived.

CLIMBING ROSES are indispensable for covering pergolas or fences. At Madresfield Court we have an inexpensive rustic boundary screen, so simply constructed as to be worthy of imitation. It was constructed as follows:—Earthenware pipes were buried in the ground, and in these were set in cement old 3-inch iron pipes in lengths of 12 feet and upwards. These uprights were braced together with four to six ordinary wires of the same gauge as that used for cattle fencing, the wires fixed horizontally. It forms an imperishable and permanent structure. Old tree-tops or rough stakes are fastened to the wires, and on these the Roses are trained. Evergreen Roses, such as *Félicité et Perpétue*, *Dundee Rambler*, and *Bennett's Seedling*, were planted, and form a permanent and pleasing screen. Roses of another beautiful section, such as *Madame Abel Carrière* (white), N. A. Richardson (yellow), *Fellenberg* (magenta-red), and *Gloire de Dijon*, require plenty of room, and will spread themselves over old tree stumps or roots, placed roughly together in heaps, in prominent places on the turf. Where any old fences or low walls exist, these may be utilised to good effect by planting such Roses as *Grüss an Teplitz* (red, one of the sweetest and best of cluster Roses), J. B. Clark (red), and any of the multi-flora section. We have long hedges of *Rosa rugosa*. The blooms are very beautiful in the bud stage, and are useful for cutting, the foliage is very handsome, and the fruits also are beautiful in autumn.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKSON, Oakwood, Wylam-on-Tyne.

DECIDUOUS CALANTHES.—When the flowering is over the plants should be rested, either on a shelf near to the roof-glass or in a dry, light position on the stage. At this season of the year space in the glasshouses is limited, and there may not be room to stage the *Calanthes*; in such circumstances it is a good plan to turn the plants out of their pots and place the pseudo-bulbs, carefully labelled, close together in shallow boxes. Cover the bottom of the box with a thin layer of materials composed of about equal parts of chopped Sphagnum-moss and broken leaves intermixed with sand. Cut away the majority of the roots, leaving only sufficient to hold the plants in position, and pack the materials about the pseudo-bulbs sufficiently firmly to secure them in an upright position. Water will not be required until the plants commence to grow again in the spring. It is not advisable to place the plants where the temperature varies much; a temperature of about 55° will be suitable until the new growths develop. Late-flowering species, such as *C. Regneri*, *C. Williamsii*, and *C. Sanderiana*, also their hybrids, should be afforded conditions that will favour the development of the flower scapes during the next two or three weeks; it is surprising how rapidly the flowers expand as soon as the days become brighter.

PHAILO-CALANTHES.—These semi-deciduous bi-generic hybrids are not the easiest plants to cultivate; as soon as they pass out of flower it is advisable to place them in a warm but rather dry house. Afford only sufficient root moisture to keep shoots plump, for an excess of moisture, either in the atmosphere or at the roots, favours the development of black "spot," that may cause rotting from the base upwards. Dry conditions and cutting out the affected parts are the best means of checking the disease.

PHAIUS.—Many early-flowering hybrids of the *P. simulans* section are producing their flower-scapes from the bases of the new growths. If it is desirable to have the plants in flower early in the season they should be hastened into growth, but if not required to flower before April or May they must be retarded. If the plants are kept cool the atmosphere must be moderately dry, especially towards evening, when the temperature declines. By the end of the present month or early in February more liberal conditions may be afforded, but the watering must be done very carefully. The plants should be examined at frequent intervals, for the presence of scale insects and red spider may prove troublesome if much fire-heat is employed. Sponging the foliage with warm soft water is the best means of destroying red spider.

PLANTS UNDER GLASS

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

STOVE PLANTS.—Fine foliage stove plants, such as *Aralia elegantissima*, *A. Veitchii* and *A. Veitchii gracillima*, *Codiaeums* (*Crotons*), *Cordylines* (*Dracaenas*), *Pandanus* and *Panax*, should not be excited into growth at this season by high temperatures, as the extra heat would encourage weak growth and the spread of insect pests, such as thrip, red spider and mealy bug. A temperature of 60° is quite sufficient on cold nights and 65° on mild nights. The temperatures during the day must be regulated in accordance with the weather conditions, but as a rule temperatures between 65° and 70° will tend to keep the plants healthy. Avoid overwatering, but do not hesitate to syringe the plants on bright mornings, remembering that on dull days only damping of the paths will be appropriate. If the plants are thoroughly sponged at this period with soapy water to which a few drops of petroleum or other insecticide have been added, it will improve the appearance of the plants and will be a check to red spider, which is troublesome if much fire heat is used. Flowering plants, such as *Coleus thyrsoides*, *Euphorbia pulcherrima* and *E. jacquiniæflora*, *Plumbago rosea*, *Begonia Gloire de Lorraine*, *B. socotrana* and its hybrids, will still be full of flower. Maintain a fairly dry atmosphere to prevent damp. As the *Euphorbias* pass out of flower the plants should be removed to a warm pit to rest. *E. jacquiniæflora* should be examined occasionally whilst at rest, as it must not be allowed to become excessively dry at the root.

TREE CARNATIONS.—Although autumn-rooted cuttings are strongly to be recommended, many do not raise their plants for autumn and winter blooming until the turn of the year. In gardens in the South of England the latter system answers well, but in colder districts the climatic conditions are not generally favourable for rooting plants in December or the early part of January, so that October is a more suitable month for inserting the cuttings. The propagation of Carnations from cuttings may be effected in various ways. Where a large stock is required I strongly recommend the sand-bed system. Arrange a frame in a house over hot-water pipes or a mild hot-bed, and place sharp sand or a sandy compost in it to the depth of about 4 inches. When the bed bottom heat is about 55° the cuttings may be inserted; greater warmth may result in the cuttings rooting quicker, but it weakens the constitution of the plant. Select strong, sturdy side shoots from the base of the flowering stems, make a clean cut below a joint, and remove the two bottom leaves. A vertical cut may be made through the joint to encourage root to form. Insert the cuttings at 2 inches apart, water the soil, and maintain an even temperature of 50°, keeping the bed uniformly moist. After a week has elapsed the lights may be taken off the frames at night and replaced in the morning. Cuttings rooted in October are filling their pots (2 inch) with roots, and should be potted on as required. Employ less leaf-mould at each successive potting, but increase the quantity of wood ash and lime rubble. The shoots of flowering plants should be tied neatly, and the surface soil stirred lightly with a pointed stick. It is not advisable to feed the plants with fertilisers until after January.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOE, Eastwell Park, Kent.

THE ORCHARD.—Many orchards are allowed to become neglected, whilst the trees in the kitchen garden receive suitable attention in such matters as pruning, training and manuring. Orchard trees that are not so old as to be altogether worthless are often thickets of growth, and, full of filth and pests, are sources of infection to all fruit trees in their immediate neighbourhood. Under such conditions the fruit is not of even medium quality. The next few weeks offer a suitable time for dealing with neglected orchards, as the work can be carried out in all but the most inclement weather. First grub up all old, worthless trees. Others that are of inferior varieties, but comparatively healthy, should be headed back, ready for grafting with better sorts at the proper time. The remaining trees should be thinned in their centres, cutting out weak and badly-placed boughs, leaving only a moderate number of clean, healthy, straight branches. Thoroughly thin the other parts of the tree to allow the sunshine and air to enter freely. The dead wood, prunings and rubbish should be burnt, mixing the wood-ashes with the top-dressing to be applied afterwards.

SPRAYING THE TREES.—When the work of pruning is completed choose a calm, mild day and spray the trees thoroughly with an alkali wash, and see that every part of the tree is wetted by the specific. There are several good spraying machines on the market, and where there are large numbers of trees to deal with it will be a good investment to purchase one. It may be necessary to spray a second time, and this should be done just before the buds expand. The spray will kill every particle of lichen and moss, and destroy the eggs of many of the insect pests. The operator should wear rubber gloves and work with his back to the wind, otherwise the fluid may be blown on to his face.

TOP-DRESSING AND MANURING.—Where the orchard is under grass the turf over the roots should be dug under the ground, and the area treated should extend as far as a yard beyond the spread of the branches. A dressing of lime will be beneficial and will help to purify the ground. This application should be followed by a mulching of farmyard manure. If the latter cannot be procured artificials may be mixed with wood-ashes and fresh soil, unless poultry, calves, or other stock are allowed the run of the orchard.

YOUNG ORCHARDS.—The pruning and spraying of trees that have always received proper attention is a much simpler task. Prune to spurs all young growths not required for extension, always remembering that the head of the tree should be kept thin of branches. Fork the ground lightly up to the edge of the grass, and afford manure according to the requirements of the trees. No general rule can be laid down with regard to manuring, as much depends on the nature of the soil and whether stock is fed in the orchard. Unless young trees have borne good crops of fruit they should not be too liberally manured, or growth may be gross and unfruitful.

THE FRUIT ROOM.—Provided a properly-constructed fruit-room is available, or even a suitably converted room, there is no great difficulty in keeping certain sorts of Apples until late in the spring. The fruits should be examined carefully at intervals, and those that show the least sign of decay removed for use at once. Fruit-rooms are often constructed as part of a scheme of buildings without the architect or builder considering the suitability of the site; sometimes they are connected with the stove-hole, or the hot-water pipes may pass under or behind them, rendering it an impossibility to keep fruit much after the New Year. In such conditions varieties that ripen late in the season shrivel and become quite useless. As a rule too many early and mid-season varieties of Apples are planted in the same garden. In selecting late culinary varieties for use after this date the following should be included:—

Newton Wonder, Alfriston, Lane's Prince Albert, Chelmsford Wonder, Annie Elizabeth, Striped Beaufin, Dumelow's Seedling (syn. Wellington) and Bramley's Seedling. Late dessert sorts include Allen's Everlasting, D'Arcy Spice, Brownlee's Russet, Cockle's Pippin, Lord Hindlip, Claygate Pearmain, Wyken Pippin and Northern Spy. Fruits of these, if stored in a cool and not excessively dry room, will furnish a supply late in the spring.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

THE ORCHARD HOUSE.—The unheated orchard house should receive a thorough cleansing. Any arrears of potting left over from October should be completed at once. Protect the roots from frost by covering the pots well over the rims with litter or other protective material. Where desirable a few of the earlier Peaches, such as Early Louise, Early Beatrice, Duke of York, Early Rivers, or Earliest of All, may be placed in a house where the temperature does not exceed 45° to 50°. The trees will develop slowly and furnish an early or second early crop. The orchard house at this season may be used for various purposes, such as growing winter saladings, either in deep boxes or planted out in the borders.

POT CHERRIES should not be too hastily dealt with in the early stages of growth. Ventilate freely during mild weather, exciting the trees very gently with artificial heat. Maintain a temperature of not more than 40° to 45° at night, and 50° to 55° by day. If through sun heat the temperature rises above 55° close down the house at that point and reduce the fire heat. Cherries should never lack moisture at the roots; during bright weather the trees should be sprayed in the morning and early afternoon, and the house ventilated to prevent a close atmosphere. Under continued favourable conditions trees so treated and started at this time of the year should mature their fruit during April or early in May. Black Tartarian, Early Rivers, Elton, Frogmore Early Bigarreau, Werders Early Black and Early Red Bigarreau are all excellent varieties to grow for early forcing.

TOMATOS.—Fruiting plants of the varieties Winter Beauty or Dwarf Red should be grown in a warm house. Let the air circulate as freely as the climatic conditions will admit, and exercise much care in watering, keeping the roots on the dry side. When roots appear on the surface, top-dress lightly with fresh soil mixed with a suitable artificial manure, and at each watering use weak manure water. Plants raised from seed late in the autumn, with a view to fruiting in the spring, should be potted into 6-inch pots, using soil of a light nature. Afterwards place the plants near to the roof-glass in a house having an atmospheric temperature of 60°. During mild weather ventilate freely, and take other measures to prevent the plants from growing spindly.

CUCUMBERS.—If Cucumbers are required early in the year make a sowing at once. Transplant the seedlings as soon as they develop their rough leaves and plunge the pots to their rims in a bottom heat of about 75° to ensure a quick root action. If the plants are plunged in hotbeds in brick pits add fresh fermenting materials directly it is seen that the heat is declining below 75°. If the bottom heat is supplied by hot-water pipes, or if the hot-bed is made in a heated structure, little or no difficulty will be experienced in this respect. January is a more favourable month for plants in bearing than November or December. Maintain a moist atmosphere and a temperature of about 75° to 80° by day, and about 65° at night. Do not pour water on the hot-water pipes, but syringe the walls and pathways frequently each day and keep the evaporating troughs filled with manure water. The shoots may be allowed to develop four or five joints before they are stopped; should the plants be in a weakly condition do not pinch the growths for the present, but remove decaying foliage.

THE KITCHEN GARDEN.

By R. P. BROTHERTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

SCOTCH KALE.—This green vegetable is an excellent substitute for Spinach at this time of the year. In any case it is a mistake to cut over the tops of the Kales if the most is to be made of the crop; rather gather one or two leaves off each plant. The side-growths, which are invaluable in April, will be produced all the same, though some think it is essential to top the plants to induce their production.

JERUSALEM ARTICHOKEs.—It is my practice to lift the tubers at this time of year and store them for use. The re-planting is done at once in ground that has been recently trenched; if manured for the previous crop the soil will need no enriching for the Artichokes. Medium-sized tubers are best for planting, and they should be set in double lines at a foot apart in the rows with 3-foot spaces between the latter. The ground on which the Artichokes were grown will be much exhausted and should receive an extra large dressing of manure when it is cultivated.

MUSHROOMS.—If new beds are made up at short intervals of time very little fire-heat will be required to maintain a suitable warmth in the Mushroom house, and this system has the further advantage of lessening the amount of damping which the use of artificial heat necessitates. I prefer to have a covering of straw over the surface of the beds in order to equalise the conditions of moisture, etc. A little ventilation will keep the atmosphere sweet without lowering the temperature. There are several varieties of Mushrooms, but the most prolific that I have grown are dark-coloured. At best the Mushroom is an erratic crop, for our first bed last year came into bearing behind two later ones.

ROUTINE WORK.—We have just experienced a sharp frost accompanied with snow. As soon as the soil is dry enough to permit of working, the crops of Broccoli and Brussels Sprouts should be examined and all damaged foliage removed, so that air may circulate freely amongst the plants. The first opportunity should be taken to stir the surface of the soil in which young Cauliflowers and Lettuces are growing with either a fork or a hoe.

CARROTS.—Early crops of Carrots may be produced with facility by sowing in boxes sufficiently deep to hold a 5-inch layer of very light friable soil, germinating the seeds in a moderate temperature, and growing the plants in a well-ventilated pit. The thinnings should not be destroyed, because they succeed very well when transplanted, and provide a succession to those produced entirely in boxes.

SPINACH.—A sowing of Spinach may be made as soon as the soil is in a suitable condition. If moderately dry run a Dutch hoe just under the surface early in the day, and in a few hours, if the day continues fine, the soil will be in condition for planting.

HERBS.—Beds of Spearmint and Sorrel are much improved by a layer of soil laid evenly over the surfaces to a depth of 2 inches. Sorrel will soon be growing again, and the work should be done at an early opportunity.

LIME.—An application of lime is beneficial to the soil even where limestone abounds, and on some soils it is essential. The present month or February is suitable for applying it, and where quicklime is used it is much to be preferred to place the "shells" in a shed till they are air-slaked, after which the quantity to apply can be more easily determined, and far more equally distributed. A rough-and-ready method is to just whiten the surface, a ton going a long way towards dressing a medium-sized garden, say one of 4 or 5 acres. Besides neutralising acidity, lime disintegrates soil, making it more amenable to cultivation, destroys numbers of garden pests, and reduces the labour of weeding to some extent. Farmers who cultivate highly find lime valuable for Turnips and Potatoes, and it is a poor garden which is less highly cultivated than the very best type of farm; hence do not neglect to use lime in the garden.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER, 41, Wellington Street, Covent Garden, W.C.**

APPOINTMENTS FOR THE ENSUING WEEK.**MONDAY, JANUARY 19—**

Surveyors' Inst. Junior meet. (Paper by Mr. H. J. Smith on "The Housing and Town Planning Act in Working.")

TUESDAY, JANUARY 20—

Scot. Hort. Assoc. annual meet. Roy. Inst. meet. (Lecture by Prof. W. Bateson on "Animals and Plants under Domestication.")

WEDNESDAY, JANUARY 21—

Royal Meteorological Society meet.

THURSDAY, JANUARY 22—

Gardeners' Roy. Ben. Inst. annual meet. and election of pensioners at Simpson's Restaurant, Strand, at 2.45 p.m. Roy. Botanic Soc. meet.

FRIDAY, JANUARY 23—

Roy. Inst. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 58.7°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, January 14 (6 p.m.): Max. 36°; Min. 33°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, **Thursday, January 15 (10 a.m.):** Bar. 30.1; Temp. 40°. *Weather, —Dull.*

PROVINCES, —Wednesday, January 14: Max. 42° Shields; Min. 34° Aberdeen.

SALES FOR THE ENSUING WEEK.**MONDAY AND WEDNESDAY—**

Rose Trees, Shrubs, Perennials, Lilies, etc., at Stevens' Rooms, King Street, Covent Garden.

MONDAY AND FRIDAY—

Herbaceous Plants and Perennials, Lilliums and other hardy Bulbs, Roses and Fruit Trees, at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.

WEDNESDAY—

Hardy Bulbs and Roots, Border Plants, Perennials, etc., at 12: 1,389 c/s Japanese Lilliums at 2.30, preceded at 12 o'clock by thousands of miscellaneous Bulbs, in lots to suit the trade; Palms and Plants at 5, at 67 and 68, Cheapside, E.C., by Protheroe and Morris.

THURSDAY—

Special Sale of Roses at Protheroe and Morris's rooms, at 1.

FRIDAY—

An importation of *Odontoglossum crispum*, also other imported Orchids, at Protheroe and Morris's rooms, at 12.45.

John Gilbert Baker.

Of the many and well-won honours which have fallen to the veteran botanist and horticulturist, John Gilbert Baker, none has been more happy than the presentation by distinguished men of science of an address of congratulation on the occasion of his eightieth birthday, which occurred on Tuesday last. The address, the felicitous terms of which we quote, was signed by the Director of Kew, Sir David Prain, the late director, Sir W. T. Thiselton-Dyer, and by his old colleagues and friends at Kew and elsewhere.

"To-day you complete the eightieth year of a long and useful life, the best part of which has been intimately connected with Kew. Enthusiasm, love, and a keen sense of duty in your work and unflinching courtesy and affection to your colleagues have been yours. You have been an example to us in our common service, and a friend whose personal charm has won our hearts. Active and vigorous through all these years, you now rest from toil with interest still unabated in the progress of our science, and with that serenity of outlook which has marked your life. May you enjoy many more years of health and happiness."

Old readers of this journal will, in particular, recognise the appropriateness of the use of the Daffodil, Crocus and Iris in the illumination of the Address, first for

the reason that among the many genera of plants which Mr. Baker studied with such luminous effect, these three were the subjects of his especial enquiries, and secondly because the results of his masterly investigations into their taxonomy were published in large part in these pages.

Mr. Baker joined the staff of the Kew Herbarium at the invitation of Sir Joseph Hooker so far back as 1866. After twenty-four years of service as first Assistant he succeeded Professor Daniel Oliver as Keeper of the Herbarium. To those of the vitality of Mr. Baker the rules made for lesser men may well appear severe, for it is now fifteen years since he retired "under the age limit" from the post which he had adorned for so long a period.

Not the least of the great services which Mr. Baker has rendered to science lies—if we may so phrase it—in the horticultural attitude which he took



JOHN GILBERT BAKER, F.R.S., V.M.H., WHOSE EIGHTIETH BIRTHDAY ON TUESDAY LAST WAS CELEBRATED BY A PRESENTATION.

up and maintained throughout his work on systematic botany. Before Ecology was invented Mr. Baker, like all the great botanists, was an Ecologist. He studied his plants as living things, and by no means confined himself to the contemplation of their remains as they appear in the "mortuary." Of him it may in truth be said that he looked at life and saw it whole.

Coloured Plate.—The subject of the Coloured Supplement to be published in the next issue is *Impatiens Herzogii*.

LAWES AND GILBERT CENTENARY FUND.—During the Christmas holidays the Lawes and Gilbert Centenary Fund Committee ceased work so as not to interfere with the ordinary Christmas appeals. The Committee has ascertained that a satisfactory laboratory can be erected and equipped for £12,000. In order to complete the

fund only £1,600 is required; and an urgent appeal is addressed to all interested in agricultural science to aid the committee to collect this amount, so that the work can be put in hand at an early date. Subscriptions should be sent to the Secretary, Rothamsted Experimental Station, Harpenden, Herts.

NURSERY FIRM'S ROYAL WARRANT.—Messrs. GEORGE BUNYARD AND CO., LTD., have been appointed fruit-tree nurserymen to Her Majesty QUEEN ALEXANDRA. The firm held the Royal Appointment as nurserymen to Her Late Majesty QUEEN VICTORIA.

LONDON NATURAL HISTORY SOCIETY.—The City of London Entomological and Natural History Society and the North London Natural History Society have amalgamated as the London Natural History Society, the first meeting of which was held at Salisbury House, London Wall, on the 6th inst. The meeting was well attended, and the retiring Presidents, Mr. A. W. MERA and Mr. A. BACOT, gave some reminiscences of the old Societies. The City of London Society dates from 1858, and was formed in Haggerston, when that district was much less in the midst of houses than it is now. The society has numbered many well-known entomologists among its members. The North London Natural History Society is of much more recent date. It was originated about 21 years ago by several young naturalists who were members of the Grocers' Company School Science Club at Hackney. Mr. F. J. HANBURY, who presided at the first meeting of the North London Society, was present at the first meeting of the London Natural History Society. Mr. L. B. PROTUE, a member of both the old Societies, has been elected President. The new Society starts with about 190 members and 60 associates; it has branches at Chingford and Woodford.

NATIONAL DIPLOMA IN HORTICULTURE.—The Secretary of the Royal Horticultural Society informs us that in view of the many arrangements which must be made in advance for the 1914 Diploma Examinations, and the necessity for fixing suitable centres, the President and Council would be glad to hear as soon as possible from all candidates wishing to register themselves for the Diploma. The 1914 examinations will be held during the week June 22 to 27. Registration, under the rules, must, therefore, be made before February 22. Holders of 1st or 2nd class Certificates in the R.H.S. General Examination in Horticulture are exempted from the qualifying examination.

LEGACY TO A GARDENER.—Under the terms of the will of the late Canon ARTHUR BARWELL, of Bletchingley House, Redhill, who died on November 15, aged 79, a sum of £100 is bequeathed to his gardener.

PERPETUAL-FLOWERING CARNATION SOCIETY.—The Perpetual-Flowering Carnation Society invites other horticultural bodies to become affiliated to it, offering to supplement the awards at shows in the provinces by placing medals at the disposal of affiliated societies of the same design and of equal value with those awarded by the society at its own shows. Particulars may be obtained from the hon. secretary, Mr. T. A. WESTON, Floradale, Orpington.

NATIONAL VIOLA AND PANSY SOCIETY.—At a meeting of Viola and Pansy growers held at Moseley on the 7th inst., it was decided to form a National Viola and Pansy Society. Mr. W. WATERS BUTLERS was elected President, and Mr. J. BASTOCK Hon. Secretary. Monthly meetings will be held, and conferences have been arranged to take place in June, July and August, when certificates will be awarded to new varieties. An exhibition will take place in June, the details of which are to be announced later. The President has offered a ten-guinea Challenge Cup for competition. Particulars may be ob-



[Photographs by W. J. Vesey.]

PENRHYN CASTLE GARDENS, CARNARVONSHIRE, THE RESIDENCE OF LORD PENRHYN.

tained from the Hon. Secretary, 75, Springfield Road, Moseley.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—We are requested to announce that the seventy-fourth annual general meeting of the members and subscribers of this institution will be held at Simpson's, 101, Strand, London, on Thursday, January 22, 1914, at 2.45 p.m., for the purposes of receiving the report of the committee and the accounts of the institution (as audited) for the year 1913, electing officers for the year 1914 and electing fifteen annuitants on the funds. The chair will be taken by Sir HARRY J. VEITCH, V.M.H., treasurer and chairman of committee, at 2.45 o'clock. The poll will be open at 3 o'clock and close at 4 o'clock precisely, after which hour no voting papers can be received. During the year 1913 MARTHA M. HOBBS, ANNA HUDDY, ELIZABETH SMITH and HANNAH BRYAN, widows of annuitants, were placed on the funds without election, in accordance with Rule III., 13. The voting papers were issued on December 31 last. Any subscriber not having received a copy should communicate with the secretary, GEORGE J. INGRAM, at the offices, 92, Victoria Street, Westminster, S.W. The annual Friendly Supper will be held at Simpson's, 101, Strand, London, after the annual general meeting. The chair will be taken at 6 o'clock by Sir HARRY J. VEITCH, V.M.H.

PRESENTATION TO A GARDENER.—Mr. JESSE TUCK having resigned his position as gardener at the Hengrave Estate, Bury St. Edmunds, after 43 years' service, has been presented with a souvenir by his employer, Mr. Wood, and the members of his family. Mr. TUCK is also granted a pension.

THE RAINFALL IN 1913.—Many gardeners are keen meteorologists, taking daily records of the temperature and other data concerning the weather, and, as is their custom, several have sent us the record of the rainfall in the past year. Mr. W. MANN, writing from The Observatory Gardens, Penllergare, Swansea, gives the year's rainfall as 55.75 inches, and the number of rainy days 234. From October 19 to December 11, that is 54 days, only 3 days were without rain. April, 1913, was the wettest April for 30 years past, the amount of rainfall being 6.44. But November was wetter with 8.93 inches, and there were only two days in the whole 30 that were dry. The rainfall in Davenham Gardens, Malvern, for the year was 30.87 inches. Mr. BAYFORD, the gardener, informs us that rain fell on 176 days, the greatest fall in the twenty-four hours being on September 4, when 1.28 inches were measured. October was the wettest month, with 4.76 inches, March following closely with 4.58 inches. In June, the driest month, only 0.67 inch of rain was recorded. At Osberton Gardens, Worksop, the total rainfall for the year amounted to 22.57 inches, or 10.04 inches less than in 1912. The heaviest rainfall occurred on January 11, when 1.15 inches of rain was recorded. June was the driest month, with only 8 rainy days, and a fall of .41 of an inch. In January the rainfall amounted to 3.58 inches, which was the wettest month in the year. There were 166 rainy days. Mr. ALLAN, the gardener, also gives the following interesting weather items:—The hottest day was on August 3, when the thermometer registered 88° in the shade, being 1° less than the warmest day of 1912, and the coldest day December 28, when there was 22° of frost. Mr. W. CRUMP, writing from Madresfield Court Gardens, Malvern, informs us that the total rainfall was 30.56 inches, and that rain fell on 176 days. June and July were both dry months, with 0.69 and 0.68 inch respectively, but December was only a trifle wetter with 0.87 inch. The rainfall at Rotherfield Park, Alton, amounted to 39.44 inches, spread over 202 wet days. On September 4 1.93 inches of rain fell in 24 hours, a record for the year. Mr. YATES sends a tabulated list, which shows that January was unusually wet,

with 6.49 inches. Mr. W. R. ROBERTS gives 37.05 inches as the total rainfall at Bailrigg, Lancashire. There were 208 rainy days, that is days on which .01 or more rain was registered, the wettest months being November, when rain fell on 26 days. The total rainfall at Greenhill Gardens, Warminster, was 32.68 inches, and .01 inch or more was registered on 149 days. Mr. J. B. LOWE informs us that the heaviest fall in 24 hours occurred on September 4, when 1.15 inch was registered. The wettest month was January, with 5.29 inches, and the driest June, with .66 inch, although July was only slightly wetter with .69. The records of Mr. GEO. KENT, Norbury Park Gardens, Dorking, show that 30.50 inches fell, which is about 3 inches below the average for the past six years. There were 144 rainy days, January and March being the wettest months, with rain recorded on 20 days in each. Mr. FREDERICK CLARKE states that at Lowther Castle Gardens, Westmoreland, 36.45 inches of rain fell, spread over 184 days. March with 25 wet days and November with 24 rainy days were the wettest months, and July the driest. Mr. G. BENTLEY, Shughborough Gardens, Stafford, states

crossing took place; his reply was that he did not know, but that he had received his information from Kew. It would be of very great interest to know if ever such a cross actually took place. *M. E. Mills, The Gardens, Coombe House, Croydon.*

A GARDENER'S LONG SERVICE.—During recent travels through the Midland Counties I met Mr. E. Simpson, gardener to Lord Wrottesley, Wrottesley Hall, Wolverhampton, who went to Wrottesley as gardener on August 4, 1851. He has served under three Lord Wrottesleys, and is now in his 63rd year of service. He is well preserved, and still carries out his daily duties. It would be interesting to know if this is a record. *R. Greenfield.*

CHRYSANTHEMUM MADAME CASTEX DESGRANGES.—It is but natural that Mr. C. Harman Payne, in tracing the origin of the above-named Chrysanthemum (see p. 28), should, with the evidence before him, put the "experience and recorded facts of the greatest early-flowering specialist of his time, Mr. W. Piercy," against my own. Your correspondent is, however, ignorant of, or has overlooked, the important fact that I took exception to Mr. Piercy's "1879" theory when it first made its



FIG. 21.—THE ROSE GARDENS AT PENRHYN CASTLE.

(See p. 37.)

that the total rainfall for 1913 in those gardens was 30.65 inches, March being the wettest month with 4.79 inches, and February the driest month with 0.77 inch. The heaviest rainfall occurred on October 5, when 1.44 inches was recorded.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

JASMINE FRUITING (see pp. 13, 29).—In the autumn of 1911 an old plant of *Jasminum officinale* trained on a west wall in my garden here produced a plentiful crop of berries. In the following summer several seedlings with the cotyledons still attached were noticed growing close to the stone edging in a gravel pathway, which the plant overhangs. Two of these were saved and have since made strong plants. *A. W. Darnell, Norman Lodge, New Malden, Surrey.*

EVOLUTION OF THE CHRYSANTHEMUM.—I was disappointed to see that in the report of Mr. Davis' paper at the Chrysanthemum Conference you had omitted his reference to the crossing of some variety of Chrysanthemum with the Ox-eye Daisy. I attended the conference, and asked Mr. Davis at what date this

appearance in the gardening Press. A year or two subsequently the late Mr. Richard Dean made a similar misstatement with regard to the date, which was obviously based on that of Mr. Piercy's, and this, too, I also promptly challenged in the press. Unfortunately, these challenges brought neither confirmation of the original statement nor a denial of my own; the latter then, as now, based upon facts within my personal knowledge and experience, rendering a refutation of them a somewhat difficult task. Then, so recently as the spring of 1913, a further misstatement as to the date appeared in a contemporary, with the addition—new to me at the time—that the variety in question was first "discovered" in a churchyard at Egham. These theories I also challenged, giving at the same time a correct rendering of the name of the variety as at the head of this note, by which also it was known and grown at Tooting. Further, in the early autumn of 1881 I believe. I saw in flower in a Birmingham nursery a lovely pot-grown batch of the variety under the provisional name of "Maize." Maize was, I believe, subsequently bracketed with *Madame Castex Desgranges* by the N.C.S. as a synonym, and recognising the variety at a glance I gave the owner the correct name, with the information that "the variety was grown at Tooting in my day." These plants had been raised from unlabelled stock found when the nursery changed

hands some year or two previously, and were purposely saved for proving because it was known that the former owner paid periodical visits to Continental nurseries in search of novelties. The plants in this instance, it would appear, came from France direct, and from enquiries made by me at the time it was clear that they were in Birmingham prior to 1879. From these data it will be obvious to Mr. Payne that so far from having trusted to memory for forty years I have consistently endeavoured to keep up to date. Even though I had trusted to memory, the date of the appearing of Madame Castex Desgranges in the specimen beds at Tooting could be abundantly confirmed by the fact that in the year 1875 I left Mr. Parker's employ. The conversation I had with Mr. Parker took place not less than 22 years ago. The time, also based on circumstantial evidence, while of no importance here, is also irrefutable. It is but fair to say that Mr. Parker gave me his version of finding Madame Desgranges without hesitation, and with great clearness; doubtless the finding of so important a variety having impressed itself on his memory. Then, it appears to me, there is important additional confirmation of my "1873" statement in the details sent to Mr. Harman Payne by M. Boucharlat's son-in-law, viz., that "a set of early-flowering

one has been affected with leaf disease. *George Ferrington, Cloverley Gardens, Whitechurch.*

NATIONAL DIPLOMA IN HORTICULTURE.—You have been so good as to give publicity in your columns to the National Diploma in Horticulture, which has been established by the society with the approval and authority of His Majesty's Government. The first examinations are to be held from June 22 to 27, 1914, and as candidates must register their names four months in advance, all who wish to sit in June next must send in their application before February 22. This Diploma will become recognised as the highest indication of professional ability in gardening. It is not intended for amateurs, but only for those whose life work is to be gardening, under which term we include florists, fruit growers, horticultural inspectors, horticultural instructors (not school teachers engaged in teaching other subjects), landscape gardeners, market gardeners, nurserymen, public park gardeners and seedsmen, but no amateur gardeners. The examinations will be both written and practical, and they will, so far as possible, be held at centres convenient for the candidates. As the preparations, particularly in the first year, require very careful organisation, the President and Council of the society will be glad to hear from

back wall of a Peach-house here, on a Saturday afternoon at the end of May looked the picture of health, and the following morning every leaf on a large branch of it was "silvered." On Monday the branch was cut clean off, and to this day I have never seen a single "silvered" leaf on that tree. The border, which I believe was the same age as the tree, is of a poor, sandy nature, and only received the usual annual top-dressing and two or three dustings of artificial manure throughout the season. We grow a large number of Plum trees in pots, and I have seen several trees slightly affected, but they have recovered the following season. We lost, however, a large tree of Oullin's Golden Gage, growing in a border. The evidence in the case of the Peach tree goes to prove, in this instance, that the fungus entered through a wound in the bark, and not through the roots. *H. Low, Braemore Gardens, Garve, Ross-shire.*

DECEMBER FLOWERS.—Since a second year has now closed marked until the last week by an almost entire absence of frost, a comparison with last year in this district may be of interest. This can be made by means of a record now kept for some years of flowers observed in December, and also in the fortnight from the Sunday before Christmas to that after New Year's Day. This includes anything "out," even if but a most sorry specimen. Wild flowers include any seen in the district, but the garden list is confined to the plants in my garden at Asgarth, an exposed north-east slope, dropping from about 380 feet to 340 feet above sea level. More sheltered spots would doubtless give larger numbers, but we are well above valley frosts. Hence, until New Year's morning, when a minimum of 24° cut off everything tender, plants such as Nasturtiums and Verbeena still had bloom. The values for 1910, a comparatively normal year, are added for comparison, and the number of kinds which may properly be regarded as blossoms normally belonging to the fresh season. The "½" stands for a curious case, the Red Campion. Besides last season's blossoms at the top of the stem, specimens were found on which the low-down side-shoots had developed and were in bloom, looking just like new shoots from the stock, though, as a fact, none such were found. Hazel (male), Primrose, Dog Mercury and *Lamium Galeobdolon* were the only other fresh-season wild flowers, setting aside the ordinary winter all-the-year-round bloomers. Last year ten "fresh" were recorded. Garden flowers also indicate less forward conditions. Neither Christmas Rose, Aconite, nor Hepaticas have appeared, and as yet very few Snowdrop blooms.



FIG. 22.—AVENUE OF FUCHSIAS AT PENRHYN CASTLE.

varieties, of which Madame Castex Desgranges was one, was, in 1873 or 1874, sent out by M. Boucharlat." The former date is significant, and, while confirming what is within my personal knowledge and experience, would also account for the presence in Bristol of the two plants from which Mr. Parker's original stock came, and possibly also those in Birmingham to which I have referred as being there prior to 1879, the usually accredited, if erroneous, date of the introduction of this remarkable variety. I am much indebted to Mr. Harman Payne for giving the name of its raiser, which I had long sought for in vain. *E. H. Jenkins.*

TOMATO LEAF DISEASE.—Having been troubled for about eight consecutive seasons with Tomato leaf disease, as described on p. 417, Vol. LIV., and having adopted various methods of treatment advised by different gardening friends, I had begun to despair of again being able to obtain a clean, healthy crop. But whilst looking through the *R.H.S. Diary* of last year I saw Strawsonite advertised as a specific remedy for various diseases, etc. I obtained 28 lbs., and not only did I spray the plants with it, but I also watered with it, mixing about a teaspoonful to each gallon of water, and when planting mixed about 2 ozs. with the soil in which each plant was permanently placed. The result has been that out of about 270 plants not

all wishing to register themselves as candidates as early as possible, but certainly not later than February 22. *W. Wilks, Secretary, R.H.S.*

UNUSUAL GROWTH OF CHRYSANTHEMUMS.—I have never known of a case of Chrysanthemums not blooming, as related by Mr. Kearn (Vol. LIV., p. 426), unless it were an occasional plant or two; but I noticed a curious behaviour in single-stem Chrysanthemums last season. Several varieties—*F. S. Vallis*, *Mrs. G. Drabble*, *Pockett's Crimeon* and *Reginald Vallis*—were inserted as cuttings on January 6, 1913, and allowed to make their natural "break," which they did on May 10, June 7, June 16, and July 1, in the order named. First crown buds appeared during the first ten days of September. Early summer was exceptionally wet and cold with us, hence the lateness; but instead of growths round the bud, flower buds appeared, making what should have been first crowns, terminals. It would be interesting to know if any of your correspondents have noticed a similar occurrence. *H. L.*

SILVER-LEAF DISEASE.—I have read with interest the remarks of your various correspondents on silver-leaf disease and would like to relate my experience. Nine years ago a large old Peach tree (I think it would be forty years old), of the variety *Royal George*, growing on the

	All December.			Christmas and New Year Fortnight.		
	1910.	1912.	1913.	1910.	1912.	1913.
Roses, Asgarth ..	18	42	47	3	29	33
Other flowers, Asgarth ..	51	80	92	38	73	82
Wild flowers in district ..	31	58	63	25	43	57
Total (excluding duplicates) ..	98	179	199	65	149	170
Fresh season's blooms ..	15	49	39½	—	—	—

The effect of the last week of frost, chiefly that on January 1, is shown by the list of garden flowers to-day, which is now reduced to *Roses* 22, others 55. But if the mild weather now recurrent continues some further *Rose* blooms will open. Only one flower (*Red Primrose*) has come out this month by to-day. Last year nine were added for the fortnight, of which, curiously, five opened earlier this season. One, the *Laurustinus*, has been flowering this year since September. Since last year *Petit Constant* lasted just into March, and as in both years the *Banksian* began flowering in April, *Roses* ("of sorts" in the winter!) have been out in every month from April, 1912, until now. There are still a few (*Gloire de Dijon*, *Grüss an Teplitz*, *Jessie*, *Marie Parvie* and *Comtesse du Cayla*) fit for "buttonholes." *J. Edmund Clark.*

JOURNEYMAN GARDENERS AND LOW WAGES.

—Your correspondent, Mr. Norris, seems to think that because journeymen are paid better wages than he and his contemporaries were paid years ago, their present remuneration must be good. But the increased cost of living makes their 16s., 18s., or £1 of no more value to them than his 12s., 14s., or 16s. was to Mr. Norris. Therefore these times, in that respect at least, are no better than those he is "thankful to have seen an end to." His sweeping condemnation of present-day journeymen—"never, perhaps, was their ability less"—will not be taken for fact by anyone who is any judge of the quality of the exhibits at the shows, which could not be produced by the best of head gardeners without competent understudies. That damage is done by so-called experienced young men is no doubt true, but one would think that the young men "who knew their work and did it thoroughly" ten or so years ago would have developed into good enough head gardeners to be able to discriminate between good and bad men before placing entire confidence in them. It is quite true that there are plenty of situations where 18s. per week and bothy—worth say, a total of 23s.—is paid. This for skilled labour. In Birmingham last year unskilled labourers struck work for, and got, that amount per week, for fewer hours than journeymen have to work. Whatever the cost of the upkeep of bothies may be to employers, they are only worth, at most, 5s. per week to a journeyman, as equal accommodation could be obtained in lodgings for that sum. Anything over that figure must be put down to the cost of the necessity of having the journeyman near his work night and day. That head gardeners have to teach the secrets of the profession to journeymen for nothing is not correct, for if the secrets are worth anything the teaching of them must result in better produce, to the credit of the head gardener. If Mr. Norris and others were to use their influence to better the conditions in which journeyman gardeners work, they would do far more towards raising the status of the great and honourable profession of horticulture, than by writing columns of depreciation of men who are, generally speaking, of far better value than the wages given to them. *Modern Journeyman.*

—I often question the wisdom of head gardeners employing and training so many young men as is the case in many establishments. Your correspondent Mr. Beeson (page 462) evidently has eight employees under him, known as journeymen, and they all hope eventually to become head gardeners. Can one wonder that the wages are low in the gardening profession? The root of the evil is the low standard of wages paid in general to gardeners, not in the low wages paid to a journeyman, who often does the work of an average labourer. I fully admit the bothy man is a most efficient man, and keen to succeed. But let an employer advertise for a head gardener, and experienced head gardeners who apply will find competitors in a host of young men, and often those whom he has trained. The younger man is given preference. It is a case of the head gardener cutting the ground from under his feet. That is one point against too many bothy men. Many establishments only employ local men as labourers, with a trained man under glass and one or two outside, according to the size of the place. An apprentice is often trained in such places. Now, this practice does not drug the profession with a host of journeymen and foremen aspiring to be head gardeners. The Horticultural Directory enumerates over 8,000 places where a head gardener is employed, but probably only 4,000 are suitable for efficient head gardeners. Now, what number of bothy men are we training to fill the 4,000 places? Referring to Mr. Beeson's wages table, I take it 23s. is paid to his foreman, and six journeymen receive an average wage of 17s. 8d. I do not expect the bothy and other advantages are worth more than 5s. per man, making an average remuneration of 22s. 8d. Each journeyman would probably have seven or eight years' experience. What other profession or trade requiring so much exactness pays so low a wage as 22s. 8d. per week? Indoor servants or car-drivers are better paid, and get better attention, for less skillful

work than is required of the average journeyman gardener, or gardeners in general. *M. A., Co. Kerry.*

—*Contented Journeyman* raises one or two points which will bear a little discussion. I agree with him that a wage of 25s. to 30s. for journeymen is, at present, impossible. I do not agree with him when he states that gardens are hobbies. Although, of course, the owners are not depending on them for profit, I should think there are many gardens which are a source of profit to their owners. If a strict account of the garden produce is kept, and the vegetables, fruit and flowers are valued, and their respective prices entered in a ledger (as should be done in all gardens), *Contented Journeyman* would doubtless be more content to find that the result of his labours were not wasted on hobbies. Far from it. Then the value of a garden to the owner cannot be reckoned entirely in this way. A garden is, to many, a place for solace, rest and the enjoyment of pure air, amid peaceful and beautiful surroundings. It is difficult indeed to fix a value in £ s. d. upon these benefits. In reference to the note from *A Member of the Watford Branch of the B.G.A.*, if the Association can keep out the unskilled and undercutting impostor from the profession it will be a decided boon to employers and to employees. I am afraid we cannot, many of us, enter for the National Diploma in Horticulture owing to the various expenses. I maintain, however, that there are men who have served terms of apprenticeship, and who have afterward worked up through the various departments, and are holding positions of great responsibility who are not receiving a wage sufficient to meet the present high cost of provisions. *Roamer.*

—In reply to *A Member of the Watford Branch*, it is not the fault of the journeyman gardener that wages are low, but it is very often due to the head gardener, who, I believe, could, in most cases, improve the conditions of those under him. I should like to know what qualifications a man must possess before he can become a member of the B.G.A. So far as I can learn he has only to pay an annual subscription and show a reference for four years in some garden. At present I am satisfied to remain a non-member. I should like to see some examination set by the B.G.A. to prove each man's capabilities before he be accepted as a member, then, no doubt, we should all want to join. *A Non-Member.*

—As regards the rate of wages received by journeymen, I find that this varies according to the locality. A few years ago I was employed in a garden in Hampshire. There were a foreman and five journeymen living in the bothy—which, by the way, left much room for improvement. The foreman's wage was £1 weekly, and that of the journeymen from 12s. to 15s. I could name several other gardens where the wages are no better. A journeyman who accepts such a situation does so with the intention of staying only long enough to get a reference, and then passing on to a better-paid post. Can he, with such an intention, take a keen interest in his work? *A. H., Surrey.*

—The remarks which have lately been made on the subject of journeymen's wages are very interesting, but I think it is time some of our leading men had something to say—men who have been in the profession all their lives, and have had dozens of journeymen under them. It is only the veterans who can tell us whether the journeyman of to-day is as good as his prototype of twenty, thirty, and forty years ago. For my own part, I consider that young men do not now get the opportunities they formerly enjoyed of learning their work in a practical manner. They are scarcely allowed to do any Grape-thinning or Peach-tying or potting until they are well on in years; then they take a first journeyman's place, and find, naturally, that they are unable to do the work which is expected of them. As for bothies, I think it is time some of them were burnt down, for they are not fit for human beings to live in. *Foreman.*

—Mr. Norris complains of damage done by so-called experienced journeymen; but in such instances it is head gardeners who are really

to blame for giving journeymen references implying their ability to do more than they are capable of doing. *Journeyman.*

—Mr. Norris states that every bothy he has entered is fit for any reasonable workman, by which I should judge that he has entered very few. I note that there is a scarcity of journeymen; but the reason is that they are offered a mere pittance in return for their work. When they are given a living wage journeyman gardeners will again become plentiful. The sooner they begin to co-operate to obtain such a wage the better. *W. Hunt, Bicester.*

NURSERY EMPLOYEES.—I am sure most of your readers can fully endorse what has been said by *L.* and other correspondents as regards the wretched conditions existing in certain firms in the trade. There are doubtless many firms who treat their employees with fairness and consideration, but there are others which do not. I have had personal experience of one of these latter firms, in which the hours are from 6 a.m. till 6 p.m., with "duty" twice nightly every other week, and also "full" duty every other Saturday and Sunday. These hours were the same summer and winter, and we received nothing extra for such long "duty." All duty, especially Sunday work, should be paid for overtime. It seems to me that what is urgently required in our trade is an active association run on lines similar to the "National Union of Teachers," or, say, the "Merchant Service Guild." These organisations have improved the conditions of service of their members, and that without the aid of any organised strike. Such a result has been realised by agitation and the "pillorying" of the worst employers, and I believe similar results could be obtained in our trade by the establishment of a good, strong society. *P. C.*

THE ABNORMAL SEASON.—Mr. Robinson's experience with Royal Sovereign Strawberry is interesting, but up to the present no one seems to have recorded quite the same as we have in these gardens. Plants in a three-year-old bed, which will be done away with this year, have been showing bloom since October, and good-sized berries have formed. They failed to ripen, but a fruit which was picked on December 19 weighed just over an ounce and had started to colour. I am afraid that Strawberries will be very scarce next June, as practically every crown has thrown a truss, although two-year-old plants, and those put out last August, have not shown a bloom. *C. E. Bridgett, St. Helens Gardens, Hampton Wick.*

PYRETHRUM GOLDEN MOSS.—Where a bright edging is desired, gardeners should not forget to order seeds of Pyrethrum Golden Moss. The variety is a great advance on all other Golden Feathers, making a beautiful little tuft four inches high and through. The plants do not need stopping, for they only develop a few flowers late in autumn, which barely top the foliage, and many plants do not bloom at all. For that reason seed is dear, but once a stock is obtained the plants may be easily increased by division. Here we treat the plant as a perennial; during the winter it remains where planted, but it can be lifted and replanted in any odd corner. In the early spring the plants are taken up and divided. Nearly every side shoot has roots, and will soon form a specimen. *C. E. Bridgett, St. Helens Gardens, Hampton Wick.*

SKIN POISONING BY PRIMULA OBOCNICA (see pp. 13, 29).—I had been immune from the effects of this plant until last summer, when I had occasion to handle the new *Primula oboconica* variegata. My arms and wrists became covered with irritating patches, which were soon cured by applying boracic powder. As my shirt sleeves were buttoned at the wrists and my coat on, it follows that the poison worked up from the hands; so the next time I had occasion to handle the plants I made a solution of permanganate of potash crystals, and dipped my hands in it, allowing it to dry on. After handling the *Primulas* I washed my hands with ordinary soap. This precaution proved effective, and having tried it several times since in varying temperatures, I claim it as a sure preventive. Permanganate of potash may be purchased very cheaply. *E. Conway, St. Albans.*

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 13.—The opening meeting of the calendar year was held on Tuesday last in the Vincent Square Hall, Westminster. The exhibition was of a varied character, but there were fewer novelties and imposing groups than usual. The finest display was of Orchids, a large exhibit, principally of *Cypripediums*, shown by Mrs. RAPHAEL.

The Orchid Committee granted one First-class Certificate and five Awards of Merit.

The Floral Committee conferred one Award of Merit to a variety of *Cyclamen*, and awarded thirteen Medals for groups.

The Fruit and Vegetable Committee granted

James Hudson, R. W. Wallace, R. Hooper Pearson and W. D. Cartwright (Secretary).

Messrs. SUTTON AND SONS, Reading, contributed one of the brightest floral displays in their exhibit of *Cyclamens*, for which a Silver-gilt Banksian Medal was awarded. The plants were splendidly cultivated, and were perfect specimens of flower and foliage. In the centre of the group was a batch with ornamental leaves of the type illustrated in colours in the *Gardeners' Chronicle* for December 20. The varieties Salmon Pink, Giant White, Vulcan (deep red) and White Butterfly were shown in batches, and there were some in shades of pink. White Butterfly has more spreading flowers than the type, whilst others had fringed petals, some edged with rose or rosy-purple being exceedingly pretty.

Rev. H. BUCKSTON, Sutton Hall, Derby (gr.

Belangeri, *Nephrolepis exaltata* *superba*, *Hymenodium crinitum* and *Pteris cretica* Childsii.

Messrs. W. CUTBUSH AND SON, Highgate, showed miscellaneous greenhouse plants, both flowering and ornamental-leaved kinds, and a showy group of Carnations. White *Hydrangea hortensis* were very fine, as were also batches of *Liliums*, *Begonias*, *Ericas*, and the sweet *Daphne indica rubra*. The finest Carnations were Mrs. Lucy MacKinnon, scarlet; Lady Ingestre, salmon-pink; and Mrs. L. D. Fullerton, mauve and cerise. Although not remarkably large in size, the blooms of Mrs. Fortescue, cerise, and White Swan, white, are very pretty, and the plants exceedingly free bloomers. (Silver Flora Medal.)

Messrs. JAMES VEITCH AND SONS, Chelsea, showed many pretty flowering plants suitable for the conservatory and greenhouse. In the centre, the blue-flowered *Erlangea tomentosa*, associated with the white *Eupatorium vernale*, made a striking feature: in general appearance these plants have a strong resemblance. Another fine feature was a batch of pot plants of *Lily-of-the-Valley*, all in splendid bloom. Other subjects included *Azalea amoena* Hexe, *Freesias*, *Lindenbergia grandiflora* (like a yellow Musk) and the old, double-flowered *Primula sinensis*. (Silver Banksian Medal.)

Messrs. STUART LOW AND CO., Enfield, were awarded a Silver Flora Medal for Carnations and *Cyclamens*. The former were arranged as a very attractive group and included fine blooms of the Gorgeous, rosy-cerise, R. F. Felton, pink, British Triumph, clove-coloured, Baroness de Brien, Salmon Enchantress, Salmon King and Satin Robe. The *Cyclamens* were shown in distinct varieties in large pans, such as Giant White, Salmon King, Vulcan, crimson; Eileen Low, a charming crested variety of vinous red shade, with a white edge; and others in mauve, pink, red and other shades.

Messrs. WILLS AND SEGAR, Florists, South Kensington, showed stove foliage plants—*Codiaeums* (Crotons), *Dracaenas*, Palms, *Aglaonema*, etc. At either end was a magnificent specimen of the handsome *Phoenix Roebelinii*. (Silver Flora Medal.)

Messrs. H. CANNELL AND SONS, Swanley, were awarded a Bronze Banksian Medal for bunches of Zonal-leaved *Pelargoniums*. A new variety, named John Watts, has bright red flowers.

Messrs. W. WELLS AND CO., LTD., Merstham, showed Carnations and *Chrysanthemums*. There were several novelties amongst the former flowers, including a fine yellow variety named Yellow Prince; Philadelphia, a pretty pink variety; and an unnamed sport from Benora of brick-red colour. *Chrysanthemums* Bertha Lachaux, a pink Japanese variety, and Kathleen May, a crimson-coloured Single, were shown in good form.

Carnations were also shown by Mr. H. BURNETT, Guernsey (Silver Banksian Medal), and Messrs. ALLWOOD BROS., Haywards Heath (Silver Banksian Medal.)

Messrs. R. WALLACE AND CO., Colchester, filled a long table with dwarf conifers and shrubs, such as are valued by builders of rock-gardens. Of the very large numbers we may enumerate the following selection:—*Juniperus hibernica*, *J. procumbens*, *J. tamariscifolia*, *Cedrus Libani pendula* Sargentii, *Abies Hudsonia*, *Cupressus lycopodioides*, *C. minima glauca*, *C. argentea*, *Picea Maxwellii*, *P. Remontii*, *Pinus aviflora*, *P. a. glauca*, *P. Strobus mana*, *Taxus Cavendishii*, *Retinospora Sanderi*, *R. filicoides* and *R. obtusa gracilis*. (Silver Banksian Medal.)

An exhibit of a similar nature was shown by Messrs. PULHAM, Elsenham, Essex, and the Award of a Silver Banksian Medal was made.

Messrs. PIPERS, Bayswater, exhibited miniature shrubs and pans of *Saxifragas* and other Alpines. There was a wide selection of the choicer *Saxifragas*, including Faldonside, Boydii, S. Kotschyi, S. Burseriana Gloria, splendens, L. G. Godseff, Pauline and S. scardica. (Silver Banksian Medal.)

Mr. L. R. RUSSELL, Richmond, Surrey, filled a long table with dwarf ornamental shrubs, including some in berry, and many variegated Ivies. *Grevillea Prieisii* and *G. rosmarinifolia* were shown in bloom. (Silver Banksian Medal.)



(Photograph by R. A. Malby.)

FIG. 23.—ODONTOGLOSSUM "CANARY": COLOUR OF SEPALS AND PETALS PALE YELLOW WITH SPOTS. (R.H.S. Award of Merit, Jan. 13, 1914. See p. 46.)

one Award of Merit for a variety of Orange, a Silver-gilt Banksian Medal for a collection of Apples and Pears and a Silver Knightian Medal for an exhibit of vegetables.

Floral Committee.

Present: H. B. May, Esq. (in the Chair), Messrs. G. Reuthe, John Dickson, Chas. T. Druery, W. J. Bean, George Gordon, Chas. Blick, Wm. Howe, J. F. McLeod, Thos. Stevenson, J. W. Moorman, John Jennings, C. R. Fielder, John Green, R. C. Notcutt, E. A. Bowles, B. Crisp, W. B. Cranfield, Geo. Paul, W. J. James, E. H. Jenkins, W. P. Thomson, Chas. E. Pearson, Chas. E. Shea, W. Cunthbertson, Chas. Dixon, H. J. Jones, Arthur Turner,

Mr. A. Shambrook), showed, as in former years, a splendid exhibit of *Cyclamens*, for which a Silver Flora Medal was awarded.

Messrs. H. B. MAY AND SONS, The Nurseries, Edmonton, filled a large table with stove and greenhouse Ferns, for which a Silver Flora Medal was awarded. The collection was a very varied one, and the plants of the various kinds exhibited great diversity, not only in form, but even in the tones of green; some being almost golden, whilst others were glaucous, and still others silvery. There were numerous varieties of *Nephrolepis exaltata*, which make excellent room plants. A selection of the choicer plants included *Davallia brasiliensis*, *D. polyantha*, *D. fijiensis*, *Adiantum trapeziforme*, *A. peruvianum*, *A. reniforme*, *Asplenium nobilis*, *A.*

Messrs. BARR AND SONS, King Street, Covent Garden, showed various bulbous plants in flower, the principal subject being the Polyanthus Narcissus known as the "Jos" Lily. They were grown in howls filled with water and pebbles, and each bulb bore several fine spikes of the fragrant blooms. There was a good selection of Early Crocuses, such as *C. Imperati*, *C. chrysanthus*, of which the variety *E. A. Bowles* was conspicuous with its rich yellow cup shaded with maroon colour at the base; and *C. biflorus*. *Galanthus Elvesii*, *Cyclamen coum* and *Freesias* were also noticed. (Bronze Banksian Medal.)

Messrs. WARE, LTD., Feltham, showed numerous pans of Alpines and a few early bulbous plants in bloom, with dwarf shrubs as a background. A clump of the elegant blue-flowered *Iris stylosa* made a showy centre-piece. (Bronze Banksian Medal.)

Pans of Alpines were also shown by Messrs. WHITELEGG AND PAGE, Chislehurst, and Mr. G. REUTHE, Keston, Kent.

Mr. JAMES BOX, Lindfield, had a very vigorous and deeply-coloured plant of *Primula malacoides*, in a batch of these pretty flowers; also *Iris histrioides*, *I. Krelagei*; and sprays of *Hammamelis arborea*. The *Primula* was submitted for an Award, and the Committee desired to see the plant again. The flower stem and inflorescence are very stout, compact and rigid. The individual blooms are closely arranged, larger and of better form from the florists' point of view than the type. It has the promise of making a good garden plant.

Messrs. HERBERT CHAPMAN, LTD., Rye, showed seedlings of *Cyclamen ibericum*, many of which exhibited great improvements over the type. There were others of *C. neapolitanum* not in bloom, but the beautiful markings on the foliage shows that leaf-variegation is common in the members of this genus.

Mr. CLARENCE ELLIOTT, Stevenage, exhibited a small rock-garden, in which the beautiful *Gentiana acaulis* figured conspicuously.

AWARD OF MERIT.

Cyclamen Mrs. L. M. Graves.—A form notable for its fine colour rather than size of flower. It is a pure rich carmine: a deep shade when fresh, and especially around the eye, passing to a paler shade, but still pure, with age. It is finely matched in sheet 116 (carmine) of the *Répertoire des Couleurs*, shades 2 and 3. Shown by the ST. GEORGE'S NURSERY CO., Haslington.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair), and Messrs. Jas. O'Brien (hon. secretary), W. Bolton, Gurney Wilson, S. W. Flory, W. H. White, C. Cookson, A. Dye, W. P. Bound, J. E. Shill, H. G. Alexander, W. H. Hatcher, J. Cypher, C. H. Curtis, A. McBean, T. Armstrong, Stuart Low, R. A. Rolfe, J. Charlesworth, and Sir Harry J. Veitch.

The flowering season of the *Cypripedium* having commenced, this popular Orchid occupied a prominent part in the display, which, for the season, was a good one. Sixteen entries were made of plants to go before the Committee, and five of these were given Awards of Merit and one a First-class Certificate.

The largest exhibit was a very fine group from Mrs. RAPHAEL (gr. Mr. H. Brown), Castle Hill, Englefield Green, which filled the staging at the end of the hall with admirable effect. The group was principally of well-grown forms of *Cypripedium insigne* and *C. Leeanum*, with occasional plants of other varieties. At intervals were batches of hybrid Calanthes, chiefly *C. Veitchii superba*. The whole was well-arranged, and a Silver-gilt Flora Medal was awarded.

Messrs. FLORY AND BLACK, Orchid Nursery, Slough, were voted a Silver Flora Medal for an excellent group of showy hybrids, some of them flowering for the first time, and giving great promise when developed. Among the *Cypripediums*, the finest new forms were *C. Pliny* (*Victor Hugo* × *Leeanum Clinkaberryanum*), a perfect and large flower with a fine dorsal sepal; and *C. Comorin* (*Bassano* (*Reynaldii*) × *Hera Euryades*), a fine improvement on *M. de Curie*, with distinct nearly black blotches on the dorsal sepal. *C. Snowden*, an improved form of *insigne Sanderæ* Veitch's Variety of which was also shown, *C. Aeson giganteum*, etc. Some

good *Laelio-Cattleyas*, including three plants of *L.-C. Bola*, *L.-C. Lucasiana*, *L.-C. Barbarossa*, and some good seedlings; a pretty new pink *Brasso-Cattleya*; a very large form of *Brasso-Laelia Helen*; a selection of good *Odontoglossums* and *Odontiodas*, including *Charlesworthii* and *Devossiana*, were also noted.

Messrs. SANDER AND SONS, St. Albans, were awarded a Silver Flora Medal for a fine group, in which the feature was made by 80 plants of the deep rose-purple *Laelia Gouldiana*, bearing together over 200 spikes, each of from five to eight flowers. Staged with them were two plants of *Cattleya Percivaliana Albatros*, a white form with orange coloured tube to the lip, a selection of hybrid *Odontoglossums*, *O. igneum* (*cirrhosum* ×

charming cream-white flower spotted with purple; *C. Actaeus Drewett's Variety*; *C. Gaston Bultel*; the handsome *C. Queen Alexandra*, and other fine *Cypripediums*, were also noted, and, in front, a very pretty and interesting lot of hybrid *Odontoglossums* flowering for the first time, and each with but one or two finely-blotched flowers. *Odontioda Wickhamensis* (*Odontoglossum crispum* × *Cochlodora sanguinea*), with its pretty pink-spotted flowers, was very effective.

Messrs. J. CYPHER AND SONS were awarded a Silver Banksian Medal for an effective group of *Cypripediums*, which included the best forms of *C. insigne*, *C. Leeanum*, *C. Rossettii*, *C. Curtmanni*, *C. triumphans*, forms of *C. Euryades*, the fine white *C. Boltonii*, etc. At the back were



(Photograph by R. A. Malby.)

FIG. 24.—CYPRIPEDIUM JULIAN.

(R.H.S. First-class Certificate on January 13, 1914, see p. 46.)

Wilkeanum), being an elegant white flower profusely spotted with dark red. Among *Odontiodas*, *O. Hemptinneana* was a brilliant scarlet, and a form of *O. Bradshawiae* of good shape was of very remarkable colour. Others noted were *Cattleya Trianae Princess Patricia*, white with a pink flush on the lip, *Cymbidium Mastersianum*, *C. Winnianum*, and other hybrids.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, had a small but select group, for which a Silver Banksian Medal was awarded. At the back were two plants of their fine strain of *Cattleya Maggie Raphael alba*, the white *C. Susannæ Hye de Crom*, and two of the true white *Laelia autumnalis alba*. *Cypripedium Holdenii* Orchid-hurst Variety (*callosum Sanderæ* × *Maudiae*) was a nearer approach to an albino than either parent; *C. Helen II. Armstrong's Variety*, a

hybrid *Calanthes* and *Laelia anceps*, and in front a selection of *Masdevallias*.

Mr. G. W. MILLER, Clarkson's Nursery, Wisbech, secured a Silver Banksian Medal for a very varied and interesting selection of *Cypripediums*, in which the forms of *C. insigne* and *C. Leeanum*, *C. Guy Gordon*, *C. Andromeda*, and varieties of *C. Hera Euryades* were noted.

Messrs. W. BAYLOR HARTLAND AND SON, Cork, were voted a Silver Banksian Medal for a group of *Cypripediums*, including *Maudiae*, *callosum Sanderæ*, *Wm. Lloyd*, *Actaeus* varieties, forms of *Leeanum* and *insigne*, *Prospero*, etc. With them were *Cymbidium Tracyanum*, and some hybrid *Odontoglossums*.

Messrs. HASSALL AND CO., Southgate, showed a very interesting selection of choice plants, which included their *Lycaste Tunstillii*, illus-

trated in the *Gardeners' Chronicle*, December 13, p. 415, a good example of their fine, white *Brassica* *Cattleya* *Menda* (Queen Alexandra \times *labiata* *Virginea*); the new *Laelio-Cattleya* *Cecilia* (*C. Trianae* \times *L.-C. luminosa*), a pretty bronze-rose flower with bright reddish purple lip; *Cypripedium* *Beryl* *Westonbirt* Variety, *Cymbidium* *Wiganianum*, and others.

His Grace the Duke of MARLBOROUGH, Blenheim Palace (gr. Mr. Hunter), showed his *Cypripedium* *Iona* (*bellatulum* \times *Fairrieanum*), which had previously secured an Award of Merit.

Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O. (gr. Mr. H. G. Alexander), showed *Cymbidium* *Nada* (*eburneum* \times *Lowio-grandiflorum*), a large, cream-white flower, with purple spotting on the lip, and two other novelties. (See Awards.)

Baron BRUNO SCHRODER, The Dell, Englefield Green (gr. Mr. J. E. Shill), showed a very fine plant of the handsome *Cypripedium* *Moonbeam* (*Thompsonii* \times *nitens* *Sallerii*), *Cypripedium* *Maudiae* *gigantum*, a grand flower, the rich scarlet *Odontioda* *Lambeauiana* *Dell* Variety, and *Odontoglossum* *illustrissimum* *Dell* Variety. (See Awards.)

A. J. HOLLINGTON, Esq., Forty Hill, Enfield (gr. Mr. Ayling), sent *Cypripedium* *Mrs. W. R. Lang*, a hybrid of *C. Leeanum* of good variety.

PANTIA RALLI, Esq., Ashted Park, Surrey, sent *Cymbidium* *Schlegelii* *punctatum*, the pretty yellow *Odontoglossum* *Canary* (see Awards), and the brilliant dark red *Odontioda* *Keighleyensis* *Firefly*.

E. H. DAVIDSON, Esq., Orchard Dene, Twyford, showed *Odontoglossum* *Jasper* *Orchid* *Dene* Variety, a beautiful flower, profusely spotted with dark red; a very finely blotched seedling *O. crispum*, and another distinct hybrid flowering for the first time.

AWARDS.

FIRST-CLASS CERTIFICATE.

Cypripedium *Julian* (*Vandyke* \times *Aureum* *Oedippe*) [see fig. 24], from Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O. (gr. Mr. H. G. Alexander). A massive hybrid with the large dorsal sepal broader than long, pure white with a small Apple-green base and a median line of purple with some slighter purple spots. The broad petals and lip greenish-yellow tinged with purple, the petals having a dark line up the middle. The purplish back of the dorsal sepal showing through to the face gives a very effective tint.

AWARD OF MERIT.

Odontioda *Royal Gem* *Westonbirt* Variety (*Oda* *Vuylstekoe* \times *Odm. ardentissimum*), from Sir GEO. L. HOLFORD. Beautiful in form and bright in colour, the broad sepals and petals being rose-tinted copper colour, darker in the centre, the lip broad, reddish-rose with a well defined yellow crest. A charming flower of various tints.

Odontoglossum *illustrissimum* *Dell* Variety (*Lambeauianum* \times *ardentissimum*), from Baron BRUNO SCHRODER, The Dell, Englefield Green (gr. Mr. J. E. Shill). One of the darkest hybrid *Odontoglossums*, the sepals and petals being dark claret-red with lighter tips, and a white lip with dark red blotches around the yellow crest.

Odontoglossum *Canary* (*Oakwoodiense* \times *ardentissimum*) [see fig. 23], from PANTIA RALLI, Esq., Ashted Park, Surrey. Flowers in form and size equal to a good *O. crispum*; clear canary-yellow with a few dark spots.

Cymbidium *Schlegelii* *punctatum* (*insigne* \times *Wiganianum*), from PANTIA RALLI, Esq. Flowers large cream-white, with a slight rose tint, the lip being spotted with dark red.

Cymbidium *Coningsbyanum* (*grandiflorum* \times *insigne*), from G. HAMILTON-SMITH, Esq., Killooran, Seymour Road, Church End, Finchley (gr. Mr. Coningsby). A very fine *Cymbidium* with the wax-like sepals and petals of *C. grandiflorum* well displayed; greenish-white, the large lip cream-white with red spotting.

Fruit and Vegetable Committee.

Present: Joseph Cheal, Esq. (in the Chair), Messrs. Edwin Beckett, A. R. Allan, Geo. Kelf, J. Davis, A. Grubb, J. G. Weston, A. Bullock,

P. D. Tuckett, John Harrison, H. Somers Rivers, W. Poupart, and C. G. A. Nix.

Messrs. GEORGE BUNYARD AND CO., LTD., Maidstone, were awarded a Silver-gilt Bankers' Medal for a collection of Apples and Pears. There were 140 varieties, chiefly of Apples, and the fruits were in a remarkably fine condition for a January show. Taking dessert Apples, the pick of them were Lord Hindlip, a pretty, russet-red variety of fine flavour; Sturmer Pippin, the latest keeper of all, now greenish flushed with red, but mellowing with age until in May it becomes quite yellow; and Wagner, which will also keep good until May. Rosemary Russet, Adams's Pearmain, Claygate Pearmain, possessing good, all-round qualities; Cornish Aromatic, of excellent flavour; and Beauty of Stoke. The culinary varieties included such excellent sorts as Annie Elizabeth, Bramley's Seedling, Newton Wonder, Belle du Pontoise, Alfriston and Smart's Prince Albert.

Messrs. SUTTON AND SONS, Reading, contributed a collection of excellent vegetables attractively staged. There were New Year Savoys, Superb Early White Broccoli, Sutton's A1 Kale, Early Purple Sprouting Broccoli, Mushrooms, Scarole or Batavian Endive, Sea Kale, Matchless Spinach and Chicory.

Lady LOVELACE, Ockham Park, Ripley (gr. Mr. H. J. Towes), was awarded a Cultural Commendation for bunches of Tomatos.

AWARD OF MERIT.

Citrus japonica *Round Fruited* Variety.—This very ornamental plant appears to have more value as a decorative subject than a fruit for the dessert table. The specimens were about 9½ feet high, and bore numerous yellow fruits, about 1 inch across and perfectly round. The leaves are oblong-lanceolate, and 2½ inches long. Shown by Messrs. JAMES VEITCH AND SONS, LTD.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending January 10, is furnished from the Meteorological Office:—

WEEKLY REMARKS.

January 13, 1914.

Weather.—The general condition was very unstable. The sky was seldom free from cloud, and few days passed without a measurable quantity of precipitation even in the driest parts of the Kingdom. Sleet, snow, and hail showers were experienced in the North and East, and on the 5th or 6th, thunder and lightning or thunder only occurred in some Irish and Scottish localities, as well as at Southport.

Temperature was above the normal, the excess being about 2° in the West and North, and increasing to nearly 5° in the Midland Counties. The maxima were registered, at most stations, between the 8th and 10th, and ranged from 56° in the Midland Counties and Ireland S. to 50° in Scotland E. The lowest of the minima were recorded earlier, very commonly on the 7th, and varied from 17° in Scotland E. (at West Linton on the 7th), and 22° in England S.E. and N.W. to 28° in England E. and Ireland N., and to 37° in the English Channel. The lowest grass minima were 12° at Raunds and Hampstead, 13° at Newton Rigg, 15° at Wisley and Marlborough, and 16° at Buxton and Aspatria. The earth temperature readings were below the average in a large portion of the Kingdom at a depth of 1 foot, and below it in several localities at a depth of 4 feet also.

Mean Temperature of the Sea was below the normal on most parts of the coast, and in almost all localities it was lower than during the corresponding week of last year. The means for the week ranged from 48° at Scilly and Plymouth to about 40° at Scarborough and Cromarty.

Rainfall was above the normal except in England S.E. and Ireland S.; in Scotland and the North of England the excess was large. As much as 1.2 inch fell at Cally, Gatehouse, on the 4th, 1.1 inch at Burnley, 1.8 inch at Lancaster, 2.1 inch at Stonyhurst, and 1.5 inch at Poltalloch on the 8th, and 1.2 inch at Great Yarmouth on the 10th.

Bright Sunshine differed little from the average amount, being slightly above it in several English districts, but rather below it generally. In the eastern half of England the daily mean was about 1.5 hour, and a similar figure was recorded in the English Channel and Ireland S., but in some extreme northern and north-western districts it was less than 1 hour; in Scotland N. only 0.5 hour. The percentage of the possible duration ranged from 21 in the English Channel and 20 in England S.E. to 5 in Scotland N.

Barometer and Wind.—Large cyclonic disturbances moving eastward to Northern Europe and extending over these islands maintained the wind between S.W. and W. or N.W. very generally until Friday, when the development and extension south-westward of an anti-

cyclone over Scandinavia caused easterly to south-easterly breezes to set in in the East and North-East of Great Britain. Gales were experienced early in the week on many parts of the Northern, Western, and South-Western Coasts, and a similar increase of wind was reported later in the extreme North-West and North, while at the end of the week the south-easterly wind which set in on the coast of Shetland blew with the force of a gale.

THE WEATHER IN WEST HERTS.

Week ending January 11,

A Sudden Change in Temperature.—The first four days of the week were very warm, and also two of the nights, but after that a rapid fall in temperature took place. In fact, the last three days were very cold, but at night the exposed thermometer only indicated 11° of frost. On the warmest day the temperature in the thermometer screen rose to 55°—an unusually high reading at this, the coldest, period of the whole year. The sudden change in temperature was very marked, the highest reading in the thermometer screen on the 11th being 47°, and on the following day the temperature never rose above the freezing-point—a drop of 15°. The ground is at the present time 1° warmer at 2 feet deep, but 1° colder at 1 foot deep, than is seasonable. At the latter depth the ground four days ago was 5° warmer than is seasonable. Rain fell on three days, but to the total depth of less than ½ inch. On the morning of the 13th the ground was nearly covered with snow. There was some percolation through both the soil gauges on each day of the week. The sun shone on an average for 1 hour 44 minutes a day, which is about a quarter of an hour a day longer than is usual at the same period in January. The winds were as a rule of moderate strength, and the last three days have come exclusively from some north-easterly point of the compass. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by 2 per cent. E. M., Berkhamsted, January 11, 1914.

GARDENING APPOINTMENTS.

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

Mr. Thomas Gamage, for the past 2 years Gardener to Sir ANTHONY WELDON, Bart., at Kilmoroney, Athy, Co. Kildare, and previously at Bowood, Curraghmore, and Ballyfin, as Gardener to the Hon. W. C. TRENCH, Clonduff Castle, Kilmallock, Co. Limerick.

Mr. S. Littleproud, for the past 3 years Second Gardener to Mrs. CLEASLEY, Cecil Lodge, Abbots Langley, Hertfordshire, as Gardener to A. BABINGTON, Esq., Densworth Cottage, Chichester, Sussex.

CATALOGUES RECEIVED.

Seeds.

JOHN K. KING AND SONS, Coggeshall, Essex.
JOHN R. BOX, Derby Road, Croydon.
THOMAS S. WARE, LTD., Feltham, Middlesex.
JAMES CARTER AND CO., Raynes Park.
KENT AND BRYDON, Darlington.
HOWDEN AND CO., Old Post Office Buildings, Inverness.
THOS. DAVIES AND CO., Waverley, Liverpool.
W. DRUMMOND AND SONS, LTD., 57, Dawson Street, Dublin.
WATKINS AND SIMPSON, LTD., 12, Tavistock Street, London.
WM. THOMPSON AND CO., LTD., Londonderry.
BARR AND SONS, 11, King Street, Covent Garden, London.
J. R. PEARSON AND SONS, Lowdham, Nottinghamshire.
JOHN MCKERCHAR, 35, Giesbach Road, Upper Holloway, London.
DANIELS BROS., LTD., Norwich.
CARTER, PAGE AND CO., London Wall, London.
R. H. BATH, LTD., Wisbech.
E. P. DIXON & SONS, LTD., Hull.
THE WARGRAVE PLANT FARM, LTD., The Arcade, Liverpool Street, London.

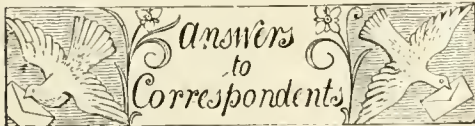
Miscellaneous.

CHAS. H. BUCK, Tresco Nurseries, Ipswich.—Tomato Buck's Tresco.
THOMAS S. WARE, LTD., Feltham.—Begonias.

Foreign.

DAMMANN AND CO., San Giovanni a Teduccio, near Naples, Italy.
FRIEDR. C. POMRENCKE, Altona-Hamburg.
GEORG ARENDS, Ronsdorf (Rheinland).
HENRY A. DREER, 714, Chestnut Street, Philadelphia, U.S.A.
HAAGE & SCHMIDT, Erfurt, Germany.

PUBLICATIONS RECEIVED.—*Problems of Genetics*. By William Bateson, M.A., F.R.S. (London: Humphrey Milford.) Price 17s.



ACACIA BAILEYANA: *R. McC.* There seems no reason why the leaves and flower buds of your plant of *Acacia Baileyana* should drop, as the tree usually flowers very freely. In the neighbourhood of London and other large towns fog and smoke sometimes cause the flower buds to drop, but that should not happen in country districts. Dryness at the root would have the same effect, but as your plant is growing very strongly it may be that the growths are not properly ripened. If such is the case the roots may, as you suggest, have reached the vine border, and in consequence the plant is making too gross wood. In this case the only remedy is to restrict the roots.

APPLES FAILING TO CROP: *W. M., Queen's Co.* There are three main causes of Apple trees failing to crop well, namely, excessive wood growth, unfavourable weather (including frost) during the blossoming period, and lack of pollination. As you state that the trees have not grown well the first cause does not apply. What you say of frost may indicate the cause of failure. If too many trees of one variety are in a great block lack of pollination in the cases of varieties which are not self-pollinating may be a further cause of insufficient fruiting, but from the size of the orchard this does not seem probable. The presence of a few hives of bees in the orchard, if not there or near by already, would help pollination greatly. Grass over the roots checks wood growth, but not fruiting, though it reduces size of fruit. Some of the varieties you name, including Cox's Orange Pippin, Ribston Pippin, Irish Peach, and Peasgood's Nonesuch, are shy bearers in many places. Spraying with gas lime is uncommon, and may possibly do harm. Wash made with the best quicklime from limestone, $\frac{1}{2}$ cwt. to 100 gallons of water, applied when hot immediately after slaking would be safer; or lime-sulphur of the winter strength as prescribed by the makers. You do not give details about insect or fungous attacks. The Apple Sucker (*Psylla mali*) or the aphid will often prevent fruiting to a great extent, while brown rot (*Sclerotinia fructigena*, often called *Monilia fructigena*) kills fruit spurs and twigs. For aphid spray the trees with 10 lbs. of Quassia chips and 10 lbs. of soft soap, boiled together for one hour and made up to 100 gallons, or any of the ready-made aphid washes, as soon as the pest begins an attack. The same wash will kill the sucker, if applied when the fruit buds stand well apart, shortly before they expand. The provision of shelter from the north or north-east wind, which often prevent the full setting of blossom, would be useful, and, so placed, would not shade any trees materially; but it should be on the outside of the orchard. It is doubtful whether a screen or wall no higher than 12 feet would do much good. A double row of evergreens, such as the Arbor vitae (*Thuja occidentalis*) or Cupressus Lawsoniana, or one of either and a row of Damsons inside it opposite the vacant spaces between the evergreens would make a better wind-break, but would require some time to grow.

BULBS ROTTING: *F. E., Ireland.* The rotting is caused by a bacterial disease known as yellow stripe. No cure is known. The soil in which bulb have grown should be sterilised by heat or gas-lime.

CARNATION PRINCESS OF WALES DISEASED: *R. H., Tyrone.* The Carnations are attacked by *Helminthosporium echinulatum*. As a preventive spraying with potassium sulphide is recommended. But the best results cannot be obtained from your plants unless the disease is stamped out altogether; therefore you should endeavour to pick off every diseased leaf as soon as it is seen. The plants will then appear to be disfigured by the loss of so many leaves, but if this is persisted in and the diseased leaves burned the disease will cease to trouble you. Guard against the pest being reintroduced by fresh stock.

CATERPILLARS: *A. J. J. G.* The box arrived without its contents. Send fresh specimens better packed.

GRAPE MUSCAT OF ALEXANDRIA: *Bulbo.* The wood of your Muscat vine, which lost its leaves in the summer, is very poor in quality, and not worth retaining. Cut it back to a point where there is more substance. Removing some of the glass to place the rod outside would do no good. The leaves of young vines after the roots become active should be able to bear, with advantage, all the sunshine we have in this country, provided ventilation is attended to properly. Muscat vines will grow well in a house where a shaded thermometer runs up occasionally to 95°, or even higher, if the leaves are kept clear of the glass and the atmosphere is not allowed to become too dry. You probably allowed the temperature of the house to rise considerably before affording ventilation, and after the ventilators were opened the plants suffered from a chill owing to the rapid evaporation of moisture condensed on the leaves and other surfaces. Your house with a southern aspect should be much easier to manage than one facing east.

LIME FRUIT TREES: *Paddy.* Freshly slaked lime applied to the trees profusely when they are quite wet (not otherwise) would do some thing towards killing moss and lichen; but it would be much better to spray the trees thoroughly with hot limewash, as thick as it can be got through a spraying machine or a large syringe. The quantity of lime commonly used for 100 gallons of wash is $\frac{1}{2}$ cwt. Easier stuff to spray is the lime-sulphur solution now advertised by several makers, to be applied in the winter strength which they respectively recommend. Every part of the tree should be thoroughly wetted.

MYRTLE: *Shortlands.* The larger leaf is *Myrtus communis* of the typical form; the small-leaved variety is called Jennie Reitenbach. It is catalogued by Messrs. Jas. Veitch and Sons.

NAMES OF FRUITS: *A. G.* The specimen was somewhat discoloured and bruised on arrival. It is either a small Peasgood's Nonesuch or Blenheim Pippin. We think it is a Peasgood's Nonesuch. Send earlier next season.—*G. M., Lincoln Codlin.*

NAMES OF PLANTS: *T. W. R.* *Cotoneaster rotundifolia* (also known as *C. disticha*).—*J. Clark.* *Crassula albiflora*.—*C. Robinson.* *Lachenalia Nelsonii*.—*H. T. A. 1.* *Lomaria discolor*; 2, *Selaginella laevigata*; 3, *Lygodium japonicum*; 4, *Onychium japonicum*; 5, *Woodwardia radicans*; 6, *Cyathea dealbata*.—*R. J.* *Sparmannia africana* of the order Tiliaceae, an African plant which grows well in a greenhouse or conservatory, and is often seen in cottagers' windows flowering well.—*C. S. P., Devon.* Both varieties of *Cypripedium insigne*, No. 1 being of the *C. insigne Maulei* class; 3, *Adiantum cuneatum elegans*, a garden form.—*Iris.* *Ornithogalum lacteum*, a very durable flower for decorative purposes. It may be grown in a rather dry greenhouse, or a heated pit or frame will be a suitable place. Cape bulbs, as a rule, do not like moisture. After flowering the bulbs should be rested dry and cool until the growing season. The plant seeds freely, and there is very little trouble in raising seedlings.

POTATO DISEASED: *G. M.* A typical example of potato disease—*Phytophthora infestans*.

SUB-TROPICAL AND HALF-HARDY PLANTS FOR BEDDING. *S. S. S.*—Large numbers of plants that can be raised from seed early in the year are suitable for sub-tropical or summer bedding. *Kochia trichophylla* makes a fine bed, with a carpet of *Alyssum maritimum*, or it may be carpeted with *Centaurea candidissima*. A bed of dwarf *Ageratum* with *Leucophyta Brownii* dotted over it is also very effective. *Ricinus Gibsonii* looks well with an undergrowth of *Abutilon megopotamicum variegatum*. *Abutilon Thompsonii* and *A. Savitzii* are both useful plants for producing foliage effects. A pleasing bed may be made with *Coleus Verschaffeltii*, overplanted with *Nicotiana coelestis* var. *variegata*. Another scheme is a large bed of *Nicotiana sylvestris* with an edging, if required, of a broad band of *Coleus*; but edgings to

large beds of foliage plants are often in doubtful taste, and should be used with discretion. *Polygonum lanigerum*, with silvery foliage, is a handsome plant for a large bed; whilst *Cannas*, with green or coloured foliage, are always effective; these plants may be edged with *Centaurea* or *Chlorophytum elatum* var. *variegatum*. Large beds are very effective if planted with a mixed arrangement of foliage plants. Subjects suitable for this purpose are *Solanums*—such as *S. pyracanthum*, *S. marginatum*, and *S. Balbisii*; *Melanthus major*, *Grevillea robusta*, *Albizia lophantha*, *Eucalyptus Globulus*, *Perilla nankinensis*, *Nicotianas*, *Chamaepeuce Casabonae*, *C. diacantha*, *Ricinus*, *Wigandias*, *Humea elegans*, and *Zea japonica variegata*. These, with the exception of *Humea*, can be raised easily from seed sown early in spring. Plants suitable for edgings include *Centaurea*, *Mesembryanthemum cordifolium variegatum*, *Gnaphalium lanatum*, *Pyrethrum* (Golden Feather), *Fuchsia Golden Treasure*, *F. gracilis variegata*, and *Chlorophytum elatum variegatum*. A good dark-coloured form of Beet is very effective either for an edging or groundwork. *Begonias* of the *semperflorens* type are very suitable plants either for borderings or as individual beds with other foliage plants; *Begonia semperflorens* var. *Triomphe de Lorraine* has fine dark foliage, whilst such forms as *rosea*, *alba*, *Ruby* and *Primadonna* may be raised from seed, and bedded out the same season as raised. *Veronica Andersonii variegata* is useful for edgings, and small standards of this plant are effective over a groundwork of *Heliotrope*. Some of the hardier Palms may be used, also *Cordylines*, *Phormiums*, and *Musa Ensete*. The above suggestions may be helpful to you, but without a knowledge of the situation of the garden, its surroundings, size of beds and other details we cannot give planting schemes.

TOMATO: *H. R. B.* The Tomato is a native of the warmer parts of America, and was introduced into Europe in the sixteenth century, some authorities fixing the date at 1596. An analytical chemist could furnish you with an analysis of the fruit.

VINE SHOOTS FOR EXAMINATION: *Quarterian.* Discoloured pith is attributed to an excess of nitrogenous matter in the border. Discontinue the use of nitrogenous manures and dress the border with freshly-slaked lime, using about a peck to the perch, kaint, at the rate of six pounds to this area (or a good dressing of charred vegetable rubbish or wood ashes), also a good coating of steamed bone flour or basic slag. These ingredients should be applied to the surface as soon as possible, and lightly worked in to the depth of an inch or two. Nitrogenous manure such as sulphate of ammonia or nitrate of soda should be used very sparingly during the coming growing season, say half a pound of one of these manures to the perch just before the flowers expand, and again a month later, or you might apply half the usual dose of one of the well-known fertilisers twice during the season. Apply no mulching, and do not damp excessively during the next season, but keep the surface soil stirred frequently. Ashes from coal or coke are not to be recommended for garden purposes. They contain little or no manurial properties, and when applied to a light soil especially make it less retentive and less productive.

WOODLICE IN VINE BORDER: *M. E. A. M.* To catch these pests traps should be prepared by hollowing out pieces of Potato, Turnip, etc., and placing these hollow side downwards in its haunts. When the baits are examined each morning woodlice will be found therein, which should be destroyed and the baits replaced. Similar baits may be poisoned by soaking them in Paris green or white arsenic if desired.

Communications Received.—*J. L.-C. P.*—*W. G. S.*—*P. H., Rotherfield-K.*—*J. C.*—*A. Journeyman Reader-W.*—*E. E. A.*—*W. L. M.*—*A. W. G.*—*C. R. M.*—*F. W.*—*G. W. H.*—*C. T.*—*F. O. P.*—*Head Gardener-A. H., Dover-W.*—*D. J. H.*—*T. H. C.*—*T. E. W.*—*H. & Co.*—*R. A. M.*—*J. G. W.*—*F. J.*—*C. B.*—*W. C.*—*Nita-G.*—*E. G.*—*M. E. M.*—*J. D. J.*—*Bucks-Tarpoley-F.*—*G. A.*—*S. B.*—*C. H. C.*—*E. A. N.*—*S. L.*—*H. B.*

THE

Gardeners' Chronicle

No. 1,413.—SATURDAY, JANUARY 24, 1914.

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BRAZIL'S BOTANIC GARDEN.

ALTHOUGH the Botanical Garden at Rio de Janeiro has been in existence for over a century, it is not so well known in Europe as its merits deserve, and even among the comparatively small number of people whose travels have led them to the fascinating capital of Brazil it is only the single feature of the great central avenue of Palms which has attained celebrity.

Yet the Garden at Rio de Janeiro may justly claim to rank alongside its better-known counterparts at Peradeniya, in Ceylon, and at Buitenzorg, in Java, as one of the best botanic gardens in the Tropics. At the beginning of last year the Government of Brazil appointed Dr. J. C. Willis, who for sixteen years had been Director of the gardens at Peradeniya, to be Director of the Rio Garden, in succession to the Prefect of Rio, the previous Director. Dr. Willis is animated with the desire of spreading the fame of his new charge among all those interested in botany and horticulture, in order that the resources of the garden and laboratories may be put to the fullest use for the advancement of knowledge. In accordance with his invitation, very kindly extended through Prof. Seward, of Cambridge, the present writer spent a most delightful winter in the enjoyment of the lovely surroundings that the Garden and its neighbourhood afford.

Rio de Janeiro (which means "January River") was named by its discoverers under the false impression that the enormous bay, or rather inlet of the ocean, upon which Rio stands was the estuary of a river, and in accordance with this name the Garden is often yet entitled the "Hortus Fluminensis," or the "River Garden."

The bay itself is of great extent, running some forty miles inland, and terminated by the range of the Organ Mountains, the native home of many lovely species. Round the mouth of the bay rise a multitude of precipitous granite peaks, bare above, forest-clad below, and at the foot of these mountains, spreading itself for many a mile over hill and dale, lies the city itself, occupying what is perhaps the most beautiful, and certainly the most extraordinary, site of any metropolis in the world.

Although Rio is nearly 23° S. lat., and is consequently only a short distance inside the tropic line, it enjoys a perfectly tropical climate. This is partly owing to its sheltered position, but is chiefly due to the warm equatorial current which sweeps the coast and carries the zone of tropical vegetation far south of the actual geographical tropic. There are only two seasons in South Brazil—the dry season, which is also the cold season, and the wet season, which is hot. The climate is never really dry, but from March to September rain is decidedly less frequent, the sky is clear and the temperature lower; while in October the rain begins to increase in amount by periodical downpours, after each of which the sun comes out a little higher and a little hotter. January and February are the height of summer.

It is remarkable, however, that in tropical South America the sun, even when vertical in a cloudless sky, has nothing of that scorching power which is so inimical to plant life in Eastern lands. The atmosphere during the hot season verges continually upon saturation, and the moisture acts as a screen to the heat, without greatly diminishing the light of the sun's rays. Consequently the precautions against sunstroke which are so necessary in the East are here unneeded, and even an exposure of an hour in the sun with one's head bare hardly produces more than a slight headache. The climate is, in general, as incalculable as that of an English summer. Whatever season of the year it may be, when the wind blows off-sea clouds and rain follow—not torrential downpours either, but gentle English rain.

These moderate conditions of climate reflect themselves in the aspects of the vegetation, as well as in the habits of the population. The feature of Rio city and of the Garden which would most likely first strike the attention of an English horticulturist is the quality and extent of the lovely lawns which are to be seen everywhere. From a distance they appear smooth as the finest velvet, and of a purity which is hardly ever equalled in temperate climes, because these lawns are not sown—grass-seed will not grow at all—but actually hand-planted, each root of grass being dibbled in separately with infinite patience. It is not Poa which is used in their composition however, but Stenotaphrum, and the resulting lawns, although so beautiful, are much too soft and turfy to be of any use for games. To anyone who has ever realised the difficulty of cultivating grass outside the temperate zones, these lawns speak eloquently of mild sun and perennial moisture.

The Botanic Garden lies upon the fringe of the city, on a space of flat ground—a somewhat scarce commodity—lying at the mouth of a valley, and surrounded upon three sides by mountains, the highest of which, Corcovado, is a sharp peak about the same height as Snowdon. In front of the Garden is a lagoon, and beyond that the open ocean. All over the hills behind stretches the virgin forest, very little interfered with, in spite of its proximity to the city.

The Garden is divided into two portions by a road; the first and much the smaller portion, lies between the road and the lagoon, and remains in a wild condition. The soil is swampy and unsuited for cultivation, therefore the jungle is left standing, and the ground is covered with Bamboos, Sensitive Plant (*Mimosa pudica*), and other moisture-loving herbs and trees, which do not reach any considerable height.

The other portion of the Garden, which is much the larger of the two, is practically bisected by the main Palm avenue.

There is not much open ground, and the wonderful collection of Palms gives quite a woodland aspect to the views, an aspect which is increased by the alleys of Mango trees. These last are large and handsome, and impress the visitor with a strong sense of the prevailing magnitude of the trees. A full-grown English Elm looks insignificant if measured in imagination against one of the giants of the jungle.

The last Director but one, Dr. Barbosa Rodriguez, was a great authority on the Palmae, and the collection of specimens, comprising nearly 400 species, which he got together in the Garden is undoubtedly the finest in existence. From the spectacular point of view they are a great adornment; indeed, such another combination of grand natural surroundings and cultivated beauty as the Gardens of Rio provide could hardly be found anywhere else in the world.

The chief object of general interest in the Garden is, as has been before mentioned, the great Palm Avenue, a splendid colonnade, half a mile in length and composed of individuals of *Oreodoxa oleracea*, which are over 150 feet in height. The original Palm, from which those forming the avenue are descended, was introduced by one of the Emperors and is still in the Garden. No photograph or picture does justice to this wonderful spectacle. It is size and colouring which lend grace and dignity to the bare poles of the Palm stems, and redeem the avenue from the imputation of the ugliness with which critics sometimes charge it. This avenue runs from the main entrance right across the Gardens and terminates in a little temple, dedicated to "Dea Palmaris." From the main entrance two similar but smaller avenues diverge, so that the effect of the three combined meets the visitor immediately upon his entrance. Grouped together at one end of the Garden and approached by a special gate, stand the offices, including the library and the herbarium, the Director's new house, the laboratories, and the Director's old house, a building dating from the seventeenth century and now divided up among several families of workpeople.

It is intended that the herbarium shall soon be accommodated in a more worthy manner in a building of its own. The laboratories, including those for vegetable physiology, agricultural chemistry and bacteriology, are under competent direction, and are furnished with an equipment of apparatus, material and funds which render possible the accomplishment of the very best work. Under Dr. Willis' direction the quarterly *Contributions du Jardin Botanique de Rio* has been recommenced, therefore much more may be expected from these laboratories in the future than the past has produced.

From the hill behind there descend two little cascades, the water of which is led everywhere throughout the Garden in rippling channels which cool the air even in the height of summer. Mosquitos are rather rife, but are fortunately

not infected with yellow fever (a disease now extinct in Rio), so that no danger is to be apprehended from them.

Another feature of the Garden is the pond, rich in aquatics and surrounded by groves of Bamboos and of the huge *Ravenala madagascariensis*, the "Traveller's Tree." There is a group of the giant Bamboo, *Dendrocalamus giganteus*, and an avenue of Agaves—*Fourcroya*—striking in their rigidity, as well as the alleys of Mangos already mentioned. A numerous collection of Cycads, 22 species, has just been installed, and special sections for characteristic Orders such as Aroideae and Marantaceae have been set aside. Everywhere one is struck by the profusion of the epiphytes, some large trees being scarcely visible under their load of *Tillandsia*, *Rhipsalis*, Orchids, and other epiphytes. There are three glasshouses in the Gardens, not to keep things warm, but to keep them dry, and in one of these is housed the fine collection of Orchids made by Dr. Frazao. The Garden has, of course, a certain amount of statuary, and there is an old gateway, now the gate of the nurseries, which is one of the best remaining examples of the Portuguese Colonial period. Little has been said of the surroundings of the Garden, but in every direction, in the wonderful forests which cover every slope in gorgeous profusion, or on beach or mountain or lagoon, there is lavish interest, enough perhaps for anyone's lifetime. *R. C. McLean.*

NEW OR NOTEWORTHY PLANTS.

NEW GARDEN PLANTS FROM NEW MEXICO.

NEW MEXICO is one of the United States, bounded by Colorado on the north, Arizona on the west, Mexico and Texas on the south, Texas and Oklahoma on the east. It is a region of extremely varied topography and climate, with a remarkably interesting flora. In 1910, Mr. P. C. Standley published (*Contr. U.S. Nat. Herbarium*, vol. 13, part 6) a list of 690 species and varieties of plants described as new from material collected in New Mexico. In 1913 Messrs. Wooton and Standley published a paper (*Contr. U.S. Nat. Herbarium*, vol. 16, part 4) describing no fewer than 203 additional new species from the same State, and a few others have been added since. Among all these plants there are many which should be available for horticultural purposes, but comparatively few have as yet been utilised. I offer here a few notes on certain species which have done well in my garden at Boulder, Colorado.

ROSA STELLATA WOOTON.

This is the type of a very distinct subgenus, *Hesperhodos* (cf. *Nature*, 1913, p. 571), characterised by the large, prickly, thick-walled fruits, widely open above, the smooth non-angular seeds, and the small and very peculiar leaves. The flowers are large and very beautiful, of a deep rose-purple colour.* This is perhaps the most local Rose in the world, occurring only in a very limited area in the mountains east of the Mesilla Valley. It has grown very well at Boulder, and has been grown in England by Dr. A. R. Wallace. Probably it will only do its best in a rather dry climate. About sixty-five miles north-west of the locality for typical *R. stellata* is another limited area occupied by an apparently distinct race of the same species, *Rosa stellata mirifica* (*Rosa mirifica* Greene, 1910), which I found in fruit near the Mescalero Agency many years ago, before either species or race had been published. The behaviour of true *R. stellata* in cultivation suggests that probably some of the characters of *R. mirifica* are due to

the direct action of the environment, but it is desirable to grow the two forms side by side. It may well be that *mirifica* possesses some distinct gametic characters having to do with the size of the plant and the character of the trichomes; for although the plants live in the same general region, they are separated by a desert, and the seeds are not adapted to be carried by birds. The term "topomorph" has been suggested for isolated forms slightly different from the nomenclatural types, and seems to be entirely applicable to the present case.

ROSA PECOSENSIS COCKERELL.

Rosa pecosensis, from the Upper Pecos region, is a very pretty Rose of the *Cinnamomeae* group,

ORCHID NOTES AND CLEANINGS.

CYMBIDIUM SCHLEGELII PUNCTATUM.

The illustration in fig. 25 represents the fine variety of *Cymbidium Schlegelii*, shown by Pantia Ralli, Esq., Ashted Park, Surrey, at the Royal Horticultural Society meeting on January 13, when the Orchid Committee granted it an Award of Merit.

The original was raised by Messrs. J. and A. McBean, Cooksbridge, who received the R.H.S. Award of Merit when the cross was first shown on January 23, 1912, so that the fact of it being a winter-flowering kind is well established.



[Photograph by R. A. Mulby.]

FIG. 25.—CYMBIDIUM SCHLEGELII PUNCTATUM: PETALS AND SEPALS CREAM-WHITE TINTED WITH ROSE, LIP SPOTTED WITH RED.

the petals deep crimson, white at base. It is not yet in cultivation.

CYPRIPEDIUM VEGANUM COCKERELL AND BARKER.

This is a large form with very bright yellow lip, allied to *C. pubescens* of the Eastern U.S. Standley says of it: "A beautiful and abundant plant, common not only in the Las Vegas Range, but in the Santa Fé mountains as well. The plants often form large masses several feet across." My friend Mrs. S. Viveash kindly sent me some living plants, which have done very well at Boulder. An attempt to raise some from seed in the greenhouse was not successful. *T. D. A. Cockerell, University of Colorado, Boulder, Colorado.*

(To be continued.)

Like all other hybrids of *C. insigne* it is of elegant habit, and a good decorative plant even when not in bloom. The flowers are cream-white, with a slight blush tint, and faint rose lines on the sepals and petals, the variety *punctatum* having the labellum spotted with dark red.

CYPRIPEDIUM HANBURYANUM.

At the Royal Horticultural Society's meeting on December 16, 1913, Frederick J. Hanbury, Esq., Brockhurst, East Grinstead, showed a very large and handsome *Cypridium* under the above name, but which was said to be probably a good form of *C. Alcibiades* (*Leeanum giganteum* × *Mons. de Curte*), no trace of *C. Maudiae* being visible. Mr. Han-

* Decidedly more vinaceous than the "rose pourpré" of G. Averaux, *Manuel pour la Description des Roses*, 1906, pl. III. It is perhaps nearest to Gravereaux's "cramoisi," pl. IV.



IMPATIENS HERZOGII (NAT. ORD. GERANIACEAE)

Warm greenhouse plant from New Guinea.

bury is kind enough to write that he maintains the name and parentage as perfectly correct. It is from one of the first crosses he ever made, and at that time he had not the material from which to produce *C. Alcibiades*. Later he raised the *Alcibiades* cross, but although good, his flowers bore so little resemblance to the certificated *Alcibiades* that he should doubt the now recognised parentage of it. It is, however, probable that *C. Lee-anum giganteum* provides the dominant factor both in *Hanburyanum* and *Alcibiades*, and hence the similarity. Confirming his view that the correct parentage of *C. Hanburyanum* is *Lee-anum giganteum* × *Mandiae*, Mr. Hanbury says

bright reddish-purple, with gold lines from the base.

ODONTOGLOSSUM HYBRIDS.

WILLIAM THOMPSON, Esq., Walton Grange, Stone, Stafford (gr. Mr. J. Howes), kindly sends flowers of four very handsome hybrid *Odonto-glossums* raised at Walton Grange. Where the parentage is not known and the flowers are not positively identified Mr. Thompson simply puts a name for the purpose of identification.

O. illustrissimum Creole is of rich claret colour with white tips to the segments. *O. amaranthum* resembles it, but has a narrow

Choccensis alba), a good white flower with broader petals than *C. Trianae alba*. Disc of lip chrome-yellow.

Laelio-Cattleya Wilfrediana (L.-C. *cinnabrosa* × *C. Aclandiae*), a distinct flower with lanceolate sepals and petals nearly 4 inches across; gamboge yellow with purple spots. Lip with an expanded front lobe bright rose-purple, with yellow blotch from the base.

Laelio-Cattleya Orient (*C. labiata* × L.-C. *Adolphus*), a three-flowered inflorescence of bright copper-orange flowers with deep ruby-crimson front to the lip. L.-C. *Adolphus* was raised from *L. cinnabarina* × *C. Aclandiae*, and is usually spotted on the sepals, but no trace of the spotting appears in the hybrid.

PENRRHYN CASTLE.

(Concluded from page 38.)

MANY interesting wall plants grow against the spaces between the glasshouses, including *Camellia reticulata*, *Berberidopsis corallina*, *Lapageria rosea*, *Nerium Oleander*, *Lardizabala biternata*, *Eugenia Ugnii* (see fig. 27), *Vitis dissecta*, *Punica Granatum* (Pomegranate), the fragrant *Rhynchospermum jasmynoides*, and, most strange wall plant, an old Maidenhair tree (*Ginkgo biloba*), which develops uncommonly large leaves.

Below this charming terrace, in a little valley, a delightful bog garden has been constructed, and provides a congenial home for the huge-leaved *Gunnera manicata*, *Astilbe Davidiana*, and a great variety of Bamboos. Along the banks of the stream clumps of *Hydrangea hortensis* bear large trusses of rich, blue flowers—so blue that Maries, though well acquainted with the species in its native habitat, expressed surprise at the colour. The production of blue flowers in place of the normal rose-coloured blooms on certain bushes of *Hydrangea hortensis* has several times been the subject of discussion in the *Gardeners' Chronicle*, and in this instance the phenomenon may be attributed to the very dark bog soil on blue clay in which they are growing. Plants raised from these and planted elsewhere produce flowers of the customary pink colour. This same soil also gives an unusual intensity of colour to the blooms of *Magnolia Soulangeana*.

THE WILD GARDEN.

The scene changes from the trim yet graceful orderliness of the terrace garden, with its closely-mown grass slopes and intersecting winter garden, to a large natural wood, composed chiefly of magnificent specimens of *Pinus Laricio*, Scots Pine, Cedar of Lebanon, and broad-leaved deciduous trees. They have now developed into fine specimens, which provide shelter and protection but not dense shade. It is an ideal place for the accommodation of the large numbers of uncommon, half-hardy plants and shrubs which here find a home. Although planted in the similitude of what is termed a wild garden there is no suggestion of a wilderness, but rather of a natural garden, beautifully and thoughtfully planned. Groups of *Cordylone* (*Dracaena*) *australis* of many forms and types—one from Tresco, distinguished by very broad leaves with dark midrib and by erect flower-stalk—extend their sword-like leaves with majestic dignity. Lofty, slender, silvery-barked *Eucalyptus* (*E. coccifera*, *E. coriacea*, and *E. cordata*) add grace and lightness to the sober hues of the stalwart Conifers, and dense masses of Ghent Azaleas richly perfume the air throughout the long early summer's day. *Choisya ternata*, *Pernettya mucronata*, and various *Andromedas* are planted in bold groups, interspersed with specimens of rarer shrubs, such as *Nandina domestica*, the sacred Bamboo of the Japanese, which is richly coloured in autumn, *Caesalpinia japonica*, *Gre-*



(Photograph by W. J. Vasey.)

FIG. 26.—CUPRESSUS SEMPERVIRENS AT PENRRHYN CASTLE.

that several showing the petals of *C. Maudiae* have bloomed.

LAELIO-CATTELEYA NERVA.

A FLOWER of this pretty cross between L.-C. *Nysa* (*L. crispa* × *C. Warscewiczii*) and *C. Warscewiczii* is sent by Mr. Jones, Orchid-grower to Mrs. Bischoffsheim, The Warren House, Stanmore, where it is flowering for the first time on a comparatively small plant. As is to be expected, the hybrid bears a strong resemblance to *C. Warscewiczii*, but the labellum is narrower, longer and much crimped, a feature which it gets from *L. crispa*. The flower is 7 inches across, white slightly tinged with rose, the labellum being

white margin and broad lip showing the influence of *O. Harryanum*.

O. Papilium is a grand white flower 4 inches across, and blotched over all the segments with rose-purple.

O. Hercules is still larger, very broad in all the segments, white, tinged with rose, but with quite three-fourths of the sepals and petals covered with reddish-purple blotches.

HYBRIDS FROM SCAMPSTON HALL.

Mr. F. C. PUDDLE, The Gardens, Scampston Hall, Rillington, Yorkshire, kindly sends flowers of three hybrids flowering there for the first time. *Cattleya Madonna* (*Trianae delicata* ×

villea rosmarinifolia, and *Metrosideros florida*, the bottle-brush tree, all of which flower freely in their season. A huge group, 30 feet long, of *Phormium tenax* bears numerous tall spikes of quaint flowers, and a smaller clump of the variety *atropurpureum* bears a part in the charming scene.

THE CASTLE.

Penrhyn Castle is one of the most prominent landmarks along the Menai Straits and the western road from the town of Bangor, for it stands on an eminence 150 feet above the sea-level amid luxuriously wooded surroundings. From the terrace walk entrancing views of North Wales scenery delight the eye. Along the carriage drive large bushes of Sikkim *Rhododendrons*, vividly reminiscent of Tremough and other West Cornwall gardens, are happily placed and bloom profusely. Across the park there stands an interesting group of the upright Roman Cypress (*Cupressus sempervirens*), shown in fig. 26, with bare trunks and quite distinct in character from the densely-clothed cylindrical pyramids one usually sees. Towards the

times remarks, manure is none too plentiful. The long walls which enclose six acres of the kitchen garden are covered with various fruit trees, all of flourishing appearance and trained with almost mathematical exactitude. Espaliers border many of the walks, and an uncommon feature is the long lines of large slabs of slate stood on edge for training Pears on the south side and Morello Cherries facing north. Strawberries are so largely grown that some 5,000 layers are planted annually. The Gooseberry is another fruit cultivated largely in these gardens, and to ensure regular crops in a breadth of bushes 36 yards long, wire netting has been erected over the Gooseberry quarter; this affords ample protection from birds and from spring frosts. Besides storing a large proportion of the crop of Apples and Pears in the fruit-room, such good use is made of the ice-house for prolonging the season of these fruits that Cox's Orange Pippin Apple is usually placed on the table in a fresh and plump condition so late as the second week in May. Many glasshouses are devoted to the culture of Vines, Peaches, Nectarines and other fruits, all

better than to exhibit the Penrhyn treasures to sympathetic visitors. In fig. 28 the veteran gardener may be seen on the path leading to his house.

THE ROSARY.

INDOOR GRAFTING.

This work should now be done if it is desired to increase the stock of any novelty. It is only for this purpose that grafting is to be recommended for the amateur, as plants of the older sorts may be purchased so cheaply it scarcely pays for the trouble.

Seedling Briars are the best stocks for the purpose, and although established specimens are best, the seedlings may be potted up now into small 60 sized pots. After about a week or ten days the tops of the plants may be cut off, and the stock grafted. Those with stems of about the size of an ordinary lead pencil are to be preferred. After grafting them place the stocks in a close propagating frame, where a temperature of about 83° can be maintained night and day. No ventilation should be afforded for the first six days, but after this period raise the lights one inch twice a day for half an hour. Increase the amount of air gradually until the fourteenth day, when the lights may be drawn up, and in about three weeks from the time of grafting the little plants may be placed on a stage in the same house.

Rose seed should be sown now in pots or boxes, and germinated in a greenhouse. I am using rather deep boxes—12 to 15 inches in depth—this year, as I find the soil can be maintained more uniformly moist than when shallower ones are employed. The compost consists of good fibrous loam with silver sand added.

It is essential that the seed-capsules never become dry. If they fall from the plant before opportunity affords for sowing they should be stuck in pots of silver or river sand, with the pod immersed in the sand.

When the boxes are ready break the pods and lay each seed on the surface at about 1 inch apart each way. Then push them under the soil with the blunt end of a lead pencil to a depth of not more than half an inch. Cover the surface with silver sand, and afterwards water the soil and see that it is never allowed to become really dry. The earliest seedlings will appear in about eight or twelve weeks.

SEASONABLE WORK OUT OF DOORS.

In the absence of frost or snow land intended to be planted in February and March should be dug over or trenched if needed. Digging among established Roses cannot be done too early. The ground between budded standard Briars should also be dug between the rows as soon as the side branches that were budded have been cut back.

Do not cut the shoots close up to the buds, but leave about 4 or 5 inches of the Briar growth until June.

The tops of dwarf stocks budded last summer may be cut off, close to the eye or bud, by the end of the present month.

Hedges of Roses may receive attention now; cut out the oldest wood, and tie down some of the growths to thicken the hedge where necessary. It will be an advantage to dig manure in on both sides of the hedge.

The planting of standard Briar stocks should be finished at the earliest opportunity.

Tonks' manure should be applied during February. It is slow in action and needs to be applied early if to be of use during the current season.

It is prepared as follows:—Superphosphate of lime, 12 parts; nitrate of potash, 10 parts; sulphate of magnesia, 2 parts; sulphate of iron, 1 part; sulphate of lime, 8 parts. It should be applied at the rate of $\frac{1}{2}$ lb. to the square yard, and be given in addition to the annual dressing of farmyard manure. *Experience.*

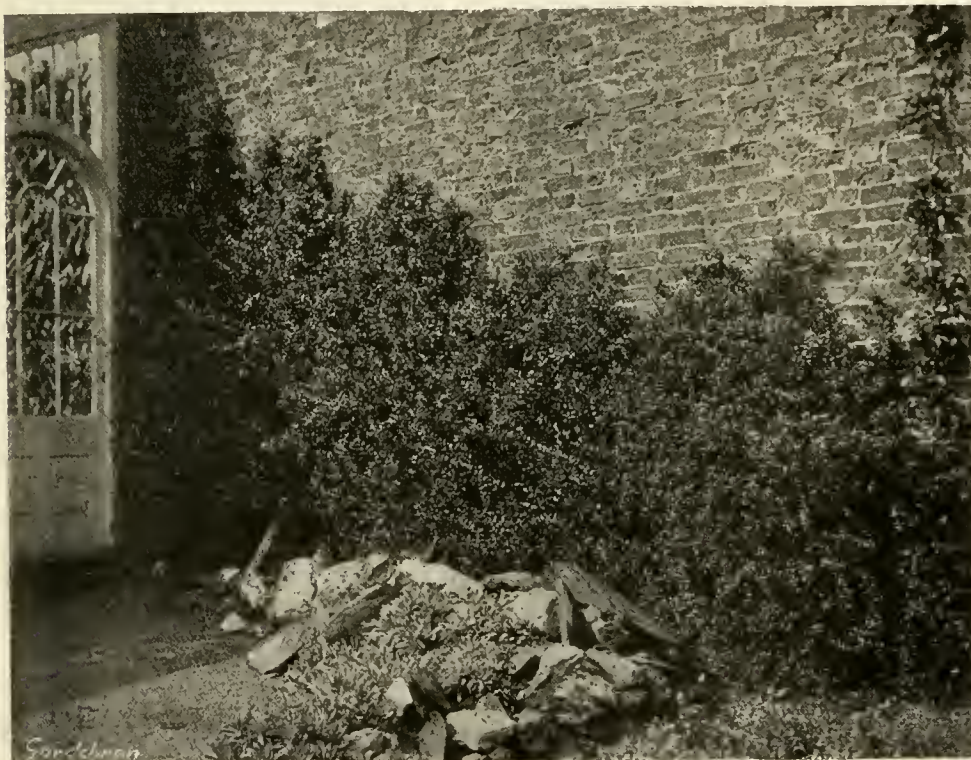


FIG. 27.—EUGENIA UGNII IN A SHELTERED CORNER AT PENRHYN CASTLE.

[Photograph by W. J. Vasey.]

old chapel there are many trees which were planted by Royalty whilst on visits to Penrhyn Castle. Of these "Royal trees" mention may be made of a vigorous spreading Turkey Oak, planted by the late Queen Victoria; a graceful Silver Birch, planted by King Edward VII. when Prince of Wales; and a companion tree of the same species, planted by his Royal Consort.

THE KITCHEN GARDEN.

The kitchen garden is of exceptionally large dimensions, and the excellence of the produce grown by Mr. Speed has long been justly famed. Onions are always of unusually fine quality, and the plot of ground devoted to this vegetable is very large. Celery also is grown extensively, and the long rows of trenches form an imposing feature of the garden. Mr. Speed is a past-master in the art and practice of crop rotation, and the observance of this, together with deep digging and frequent hoeings, is responsible for much of the success of this part of the gardens, for, as he some-

of which promise to do as well in the coming season as they have done in many past years. One vinery contains rods of Black Hamburgh Grapes, which were planted over half a century ago; they were mature rods when Mr. Speed took charge, and, thanks to skilful cultivation, still bear excellent crops.

The plant houses all evidence the same high cultivation and thoughtful management. Carnations are grown in thousands, and the condition of these, the Orchids, the stove and other plants are all worthy of this great establishment.

Mr. Walter Speed has directed the management of these gardens for fifty years. Throughout this long period he has held the full confidence of his employers and the respect of every horticulturist who has had the privilege of meeting him. Few gardens have given us greater pleasure than our summer visits to Penrhyn have provided, where every interesting feature is the result of Mr. Speed's thought and labour. He has planted most of the shrubberies and almost all the exotic trees, and he likes nothing

NOTICES OF BOOKS.

GARDEN CRAFT IN EUROPE.*

THE history of garden craft in Europe, remote as well as recent, has been the theme of many writers at different periods, but with a few exceptions the more recent records have been fragmentary compared with the comprehensive character of this latest contribution by Mr. Inigo Triggs. The present work is supplementary to the author's *Formal Gardens in England and Scotland* and *The Art of Garden Design in Italy*. That he has made an intimate study of his subject is evident from the thorough way in which he deals with the matter in his new book, and the enormous amount of historic records he has gathered from all available sources is testimony to his industry and love of the subject.

The compilation of a work such as this necessitates a great amount of research. A list of over two hundred works, many of them extremely rare, is appended to the book, and reference to these alone must have been a heavy task. The book deals purely with garden design as distinct from horticulture, although to a great extent one is intimately connected with the other. The historic account commences with the earliest times at which the decorative arts were fostered by civilisation; but these records, apart from their antiquarian interest, do not much concern us. Neither do the succeeding chapters on the gardens of the Middle Ages. The descriptions and illustrations of these gardens, though quaint and interesting, cannot in the nature of things be much more than imaginative or traditional.

The chapters that follow treat of early garden design in the Netherlands, Germany, Austria, Spain, Italy and France. Then follow chapters on English gardens from the sixteenth to the eighteenth centuries, and the concluding chapters are a dissertation on the English Landscape School and its influence on the gardens of the Continent.

When the author leaves mediæval gardens and deals with those of more recent times interest is quickened. He begins with the accounts of the French gardens, planned in the spacious days of the seventeenth and eighteenth centuries, the period during which there were more outrageous follies created in Continental (and especially French) gardens than at any other time in history. The middle of the seventeenth century saw the rise of the celebrated Lenôtre, a man who had the greatest influence on the gardens of France and the design of gardens in other Continental countries, while England also came under his influence. It was during the time of Lenôtre that French gardens displayed their greatest extravagances, and yet we owe to him a debt of gratitude for the magnificent conceptions of his brain in the many stately places that one sees to-day, albeit that many are in decay. The glory of most of these creations is a memory of the past; we all admire the broad, bold conceptions found in places like Versailles, the Trianons, St. Cloud, Chantilly, and many others, designed by Lenôtre and his followers.

The chapters devoted to French and Italian gardens comprise the bulk of the work, and are profusely illustrated by recent photographic productions as well as by copies of old prints, plans and diagrams. Indeed, the book throughout is admirably illustrated, and these illustrations serve their purpose well in elucidating the text.

In the chapters on English gardens the author has dealt in a comprehensive way with the periods of the sixteenth, seventeenth and eighteenth centuries. He describes and illustrates a selection of our English gardens which by common consent are considered the finest, and these—though less grandiose than Italian and French gardens—compare favourably with any Continental garden.

The concluding chapter, upon the "English Landscape School and Its Influence on the Continent," is of much interest to English readers. It traces the history of the art of garden design from the middle and latter half of the eighteenth century, which period saw the dawn of English landscape gardening. It was then that the first efforts were made to break away from the conventional lines of formalism, which had become the subject for ridicule and criticism, chiefly on account of the excesses in topiary work or "verdant sculpture" which had disfigured so many of the most important gardens. A violent change of taste had set in, the result being a school of practitioners who revolted against the ruling principles established by Lenôtre and his followers.

Bridgeman and Kent, an architect of eminence who laid out the gardens at Claremont and Esher, appear to have been the first to practise the new or landscape style. These were followed by "Capability" Brown, who about 150 years ago was at his zenith of popularity. Then came Repton, and these men originated what the author describes as "the ridiculous fancies of the landscape gardener." They had much to

"It is precisely because our noble mansions in the country are in a setting of their own, absolutely incomparable, of park and grove, that they are unsurpassed for loveliness anywhere. Framed as they are by evergreen and deciduous trees in every range of foliage tint, and shrubberies displaying every range of brilliant colour from early-spring to late autumn—why, the very framing makes an ugly country house look sweet and homelike."

This is the tradition that we are jealous of maintaining in our English gardens, and notwithstanding the present-day efforts to re-introduce old-time formalism, the true characteristic of a beautiful English garden will always be the blending of the natural style with the adjunct of seductive sheltered enclosures, formal or otherwise, which in this climate are so essential to the enjoyment of a garden at all seasons and so necessary for the luxurious growth of plant life. W. G.

THE MANURING OF MARKET GARDEN CROPS.*

THE new edition of this valuable work gives the results of the experiments in manuring carried out by the authors during the past 20 years.



FIG. 28.—THE GARDENER'S HOUSE AT PENRHYN CASTLE.
(See p. 52.)

answer for in their condemnation and destruction of many really fine places in their zeal to create a new style as opposed to the straight-lined and chess-board-like planning of gardens. They swept away the stately avenues, the glory of many fine places; they destroyed many charming enclosed gardens in order to carry out the natural style, as they termed it.

Without doubt Brown and his followers were vandals to a great extent in their efforts to establish a new fashion in garden-making, and probably they deserve the condemnation of present-day writers who still cling to the old-time formalism as the only possible mode of garden planning. Nevertheless, these early landscape gardeners succeeded in creating the English garden style, or what is called on the Continent the *Jardin à l'anglais*, of which we as a race of gardeners are so justly proud. The answer to the disciples of formalism is that the English style has been and is appreciated the world over, and even at the present time Continental formal gardens are being changed to the English style. We all know what is meant by the English style, which has been briefly but well described by a recent writer when he says, in allusion to the charm of English country gardens:

The prime object of these experiments is to determine how far the large quantities of stable manure purchased and used by market gardeners are necessary, and how this manure—if necessary—may be used to the best advantage. The importance of such an inquiry is manifest to everyone, and need not be insisted upon here. To those gardeners who pin their horticultural faith to an exclusive use of farmyard manure we commend a careful study of these experiments. The records can scarcely fail to convince them that a moderate use of dung, combined with applications of suitable artificials, gives better results. Take for example the results of experiments with Savoy Cabbage. Fifty tons of London dung per acre has given during eighteen seasons an average of 23 tons 6 cwt., whereas half that quantity of dung, plus phosphates and nitrate of soda, has given an average of 26 tons 16 cwt. during the same period. The costs of the two manures are respectively £10 and £8 2s. The records include the result of experiments not only with vegetables, but also with fruit trees.

* *The Manuring of Market Garden Crops*. By Bernard Dyer and F. W. L. Shrivell. New edition. London: Vintners and Co. 1s. post free.

* *Garden Craft in Europe*. By H. Inigo Triggs. (B. T. Batsford, 94, High Holborn. 35s.)

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

CYPRIPEDIUM.—The late autumn and winter-flowering *Cypripediums* having passed out of flower, the plants should be examined to ascertain if re-potting is necessary. Specimens in pots smaller than 6 or 7 inches diameter should be re-potted annually, but larger plants in bigger receptacles may remain for two or more seasons without affording them a shift. In re-potting large specimens the compost should be of a more durable quality than that used for those re-potted annually. All varieties with green foliage grow well in a compost consisting of two parts turfy loam and one part peat, with sufficient broken crocks and sand added to render the materials porous. For small plants it is an advantage to mix a quantity of finely-chopped Sphagnum-moss on the surface. In re-potting large specimens, especially those with matted roots or with roots adhering to the side of the pots, take care to injure the roots as little as possible. It is a good plan to water root-bound plants copiously the day before they are re-potted, for the roots adhere less firmly to the receptacles when moist. Large specimens frequently become bare of shoots in their centres, a condition which growers term hollow in the centre. Such plants should be divided carefully and the growths arranged in such a manner that their centres may be properly filled. The pots should be filled to about one-third their depth with clean, broken crocks. Press the compost moderately firmly about the roots and base of the plants, and arrange it so that the surface forms a mound, rising to the centre. The few *Cypripediums* possessing tessellated leaves flower during the winter months. These do not always thrive well when loam is included in any quantity in the potting compost. The situation of the garden as well as the locality must be taken into consideration when potting these Orchids, for evaporation of moisture is greater in a bright atmosphere and places where fogs are infrequent than, say, in the neighbourhood of London or smoky manufacturing districts, where a heavy moisture-retaining compost would be inimical to success. In damp districts and where the houses are built at a low altitude, causing less evaporation, it is desirable to employ plenty of peat or materials that does not retain moisture for a long period. The stock of any of the *Cypripediums* mentioned may be increased at the time of re-potting by cutting the rhizomes asunder between the growths and removing the back shoots, which may be placed in pots only just large enough to accommodate them.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP,
K.C.M.G., Madresfield Court, Worcestershire.

ANNUALS.—A display of annuals affords one of the brightest and most charming features of flower gardening: the various kinds offer a wide range of colours, and an assortment will provide blooms over a long period. To raise the necessary stocks preparations should be made at once. First prepare a rough plan to determine how the varieties may best be planted, and what quantities will be required. Sow the seeds thinly either in pans or in soil placed in a frame with a layer of fermenting materials 2 feet thick at the bottom. If the hot-bed and frame method is employed the plants will require very little water, as the litter will keep the soil moist, which gives them an advantage over seedlings sown in pans, for, in the latter case, should the atmosphere become very dry a second watering may be necessary before the seedlings have grown much above the surface, and this may cause damping. Admit as much air as possible whenever the conditions are favourable and grow the plants slowly to obtain healthy and sturdy specimens.

ANTIRRHINUMS.—The nurserymen have improved *Antirrhinums* from a garden point of view so much in recent years that they are almost indispensable subjects in the flower garden, and are especially valuable for colour schemes. Furthermore, the *Antirrhinum* will continue in bloom long after such subjects as *Fuchsias*, *Begonias*, *Ageratums*, *Pelargoniums* and *Calceolarias* are destroyed by frost. At Madresfield Court we utilise the taller varieties for massing in large groups, and those of intermediate height for furnishing smaller beds. Of the former Golden Chamois and Cloth of Gold, Coral (red), Carmine (pink), and White are utilised, whilst of the intermediates we select Orange King, Fire King, Crimson and White. Some obtain their best results by growing the plants as perennials, sowing the seed in July and August; but we prefer to treat them as annuals, growing them on from the commencement of the season without a check.

SELECT LIST OF ANNUALS.—Apart from the *Antirrhinums*, which cannot be regarded as true annuals, we employ *Alonsoa Warscewiczii*; *Single Asters*, which may be had in a variety of colours; *Cosmos*, crimson; *Coreopsis grandiflora*, *Dianthus Eastern Queen*, *Crimson Bell* and *Salmon Queen*; *Eschscholtzia californica* and the variety *Mandarin*; *Gaillardia grandiflora*, *Helichrysums Fireball* and *Silver Globe*, *Phlox Drummondii*, *Mignonette*, *Love-in-a-Mist*, *Nigella Miss Jekyll*, *East Lothian Stocks*, *Larkspurs*, *Lupins*, *Zinnias*, *Nemesias*, *Petunias*, *Pentstemons*, *Salpiglossis*, *Tagetes*, *Statice sinuata*, *African Marigolds Orange* and *Lemon King*, *Verbenas*, *Scabious* and *Godetias*. Those named we have proved to be most reliable kinds, and each year a few new ones are added for trial. We have a special quarter set apart for annuals only, and in the season it forms a veritable surprise garden. It is in the shape of a Greek M, and is surrounded by clipped Yew hedges 6 feet high. There are continuous borders around and against the outer hedges and a series of spaces for bedding in the middle, with grass paths 5 feet wide between them. The Yew hedge forms admirable shelter, and the flowers show to advantage in such a secluded spot.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

STRAWBERRIES.—Plants in pots must not be allowed to suffer from lack of moisture at the roots, for the trusses of bloom are developing. As the flowers expand dust them with a rabbit's tail or a fairly large camel-hair brush to assist fertilisation, and maintain a drier atmosphere whilst this operation is performed. Ventilate the house freely on all favourable occasions, as this also will assist fertilisation and prevent the fruits becoming deformed or ill-shaped. As soon as it can be determined which fruits are the strongest remove the others and use liquid manure each time the plants require watering. On warm, sunny days spray the plants overhead with warm water, and use other means to cause the fruits to develop rapidly. An atmospheric temperature of 65° or even 70° by sun heat during the daytime will be suitable, but allow it to drop to 55° or 60° at night.

CUCUMBERS.—Fresh batches of Cucumbers should be planted for a succession; where plenty of house room is available a fresh batch of plants may be started in houses, pits, or heated frames at least once a fortnight. When the latest batch of the earliest variety has been set a corresponding number of plants of a second early or mid-season variety should be started, otherwise there may be a break in the supply.

VINES IN POTS.—As soon as the bunches have been thinned and the berries started to swell, water the roots freely with liquid manure. Where roots are visible on the surface cover them with a top dressing of fibrous loam and well-decayed manure. This will form an excellent medium through which the vines may be fed until colouring of the berries commences. A fair amount of growth may be permitted beyond the bunches, but not sufficient to unduly

shade the fruit. Maintain a brisk temperature of 70° to 75° by day, allowing a rise of 5° or 6° by sun heat, and a night temperature of 65° to 70°. Unless perfectly clear rain-water is obtainable it is safer not to practise overhead syringing, otherwise a deposit from the water may disfigure the berries. The requisite atmospheric moisture should be maintained by damping with tepid water on frequent occasions.

EARLY HOUSES.—As the shoots grow they should be brought down to the trelliswork and tied, for they must not come in contact with the glass. See that cold draughts of air are not admitted into the house. At the proper time stop each growth at a suitable stage, according to the strength of each individual shoot, retaining a sufficient quantity of foliage to ensure the full development of each bunch of fruit. Severe stopping is more detrimental to early vines than a superabundance of growth; both the root and branch system should balance as nearly as possible.

MELONS.—If Melons are required early in the season sow seeds at once and get in readiness the fermenting materials for maintaining the necessary bottom heat. Sow the seeds singly in 60-size pots, using moderately moist soil, so that water will not be required before they germinate. If the plants are to be grown in large pots the latter should be got in readiness and, with the soil, placed in the pit or house beforehand to become warmed, or the plants may suffer from a chill. The soil should consist of friable, turfy loam mixed with a small quantity of leaf-mould and coarse sand, or, as substitutes for the latter, either crushed charcoal, brick, or lime rubble may be used. Perfect drainage of the pots is very essential.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY,
Knowsley Hall, Lancashire.

ROSES.—Hybrid Tea Roses under glass have started into growth, and should be fed with a little stimulant. Regulate the growths and retain only one flower-bud on each shoot. Use fire heat as little as possible, and spray the plants on fine days, closing the house early to make the most of the sun's heat. Maintain a night temperature of 55°, and regulate the ventilators so that air is admitted without causing cold draught. Dust the leaves with flowers of sulphur to prevent mildew appearing. Hybrid Perpetuals should still be grown under cool treatment, and syringed on bright days. A later batch of plants may now be housed. Examine and regulate the drainage of these plants, and if the roots are found in a good condition a top-dressing only will be sufficient. The compost should consist of good loam, lime rubble, and bone dust. Ram the soil fairly firm. When the potting is completed wash the pots and stand them in a house or pit having an atmospheric temperature of 45°. Spray the stems, but do not water the roots until growth commences.

CHRYSANTHEMUMS.—Cuttings that are rooting should be placed on a shelf near to the roof-glass, but not where cold draughts can reach them. Endeavour to have the plants as sturdy as possible. Continue to propagate decorative and single varieties.

PELARGONIUM.—Repot *Pelargoniums* as required, and admit plenty of air on all favourable occasions. Green fly is sure to appear now, and must be checked in good time.

LACHENALIA.—These plants are showing their flower spikes, and should be fed with a little fertiliser. Grow the plants under cool conditions close to the roof-glass.

FORCING PIT.—Force gradually early-flowering shrubs, such as double-flowering *Prunus*, *Kalmias*, *Azaleas*, *Rhododendrons*, *Lilacs*, *Dielytra spectabilis* and *Astilbes*. Forced bulbs passing out of flower should not be neglected, but placed in a frame to be planted out in the spring. Examine bulbs still in the ashes and remove to cold frame such as are ready. A batch of *Lily-of-the-Valley* (*Berlin* crowns) may be

placed in a gentle heat. Clumps from outdoor beds may be lifted and placed in boxes for later flowering.

ZONAL-LEAVED PELARGONIUMS.—These plants are passing out of flower and should be removed from the plant-house to an airy pit sufficiently warm to keep them growing. Let the plants become fairly dry at the roots to encourage the development of short-jointed growth. Root the cuttings singly in small pots on a shelf near to the roof-glass in a temperature of 50° to 55°. The old plants may later on be top-dressed and grown on. They can be turned to good account for summer bedding or for use as stock plants.

HIPPEASTRUM.—Prepare a second batch of Hippeastrums for forcing as advised in a previous calendar.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

THE PROTECTION OF FIG TREES.—In gardens in the colder parts of the country and in exposed situations it is advisable to afford a certain amount of protection to Fig trees out-of-doors during very cold weather. This is especially desirable in winters following a cold and wet summer or autumn, for then the points of the young shoots do not become sufficiently ripened to withstand much frost. But the protecting material must not remain on the trees during times of mild weather, as coddling will tend to make the branches excessively tender, and consequently more susceptible to damage from spring frosts after they have been trained in position. In many cases Fig trees are not properly treated in the summer and autumn to secure well-ripened shoots, which can only be brought about by an intelligent method of pinching or thinning during the growing season. Proper thinning of the shoots is the most important detail in the cultivation of the Fig, and though the evils of over-crowding are sometimes seen in the case of young trees, it is generally very old-established trees that are most neglected in this respect.

ROOT-PRUNING THE FIG.—Fine old Fig trees are to be met with in some gardens, and although they are very ornamental subjects many seldom or never produce good crops of fruit. This is the result of mismanagement on one or two most important details. The roots of these very large trees have probably found their way into a border or quarter that has been manured year after year for vegetable crops, the rich soil, combined with a free root-run, favouring the production of large numbers of strong, sappy growths. Such trees should be root-pruned at once. Take out a deep trench at a distance of 3 or 4 feet from the wall, sever all the strong roots with a sharp knife, and remove any that are growing downwards in the sub-soil. Afterwards restrict the roots to the limits of a moderate-sized border either by building a wall or by filling the trench with a quantity of chalk, stones and poor soil. The materials should be rammed firmly as the work proceeds, and this treatment will result in growth of much more moderate size the following season, which should ripen well and eventually produce fruit.

PLANTING YOUNG FIG TREES.—Where the planting of young Fig trees is contemplated the borders should be prepared now, so that there may be no delay when the time for planting arrives in the spring, when danger from severe frosts is passed. Prepare the borders in such a manner that the roots are restricted from the first, thus avoiding the evils arising from the roots getting into a rich border. Avoid the use of rank manures and rich materials generally. Ordinary garden soil is quite suitable, and this should be mixed with a good quantity of old mortar rubble and wood ash. A warm, light soil is the best rooting medium. In planting ram the soil very firmly. After the trees are planted mulch the roots with light materials and give the trees every attention, syringing and watering as required. Fig trees in a good bearing condition are best fed when carrying a plentiful crop of fruit. Such trees, with their roots restricted in narrow borders, require regular dressings of manure, and the manurial properties washed

down to the roots by copious waterings during the growing season. A warm and sunny position on a south wall is an ideal position in which to plant Figs. Varieties to be recommended as most suitable for outdoor culture are Brown Turkey, Brunswick and White Marseilles.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of Haddington, Tynninghame, East Lothian.

BROAD BEANS.—A full sowing of Green Windsor may be made without further delay. An economical method is to plant in double drills at 1 foot apart, with 3 or 4 foot spaces between, the Beans being close enough at 9 inches apart. Plants from the November sowing will be benefited by having the surface soil deeply stirred and a little earth drawn up to the stems to steady the plants. Thin them if growing closer to each other than 9 inches.

BOXING POTATOS.—Early varieties should be removed from the shelves they have occupied for some months, sorted and arranged rose end up in boxes to be prepared for planting. If medium-sized tubers from the best plants were selected in summer, these will give better results than either small "seed" or cut tubers. They must not be forced in any way. In the meantime prepare the ground by digging it thoroughly, a broad tined fork being a preferable tool to a spade. Make the soil as fine as possible, and if not manured in autumn apply a dressing of either rotted manure, old hot-bed materials, or, in the case of heavy soil, decayed leaves. When planting whiten the surface of the soil with superphosphate of lime, but do not allow the material to come in contact with the tubers. Though the soil be very deeply worked, the tubers should be planted rather shallow, say 3 inches deep, to be covered deeper with fine soil later. A position on a border near a south or west wall should be chosen for this crop.

MANURES AND MANURING.—Almost all the manure for the current year was incorporated with the soil last autumn, but every year it is not so, much of the manuring being left over until an opportunity occurs in January or February, when it is either carried in by manual labour or by horse, at once spread and dug in as soon as the soil and weather permits. I do not favour the practice of burying manure in the bottom of trenches, unless in the case of special crops, such as Leeks; consequently it is perhaps the better plan to reserve the manure until the spring. But one has to manure the ground when convenient, therefore I do not hesitate to apply it in autumn if time permits. Superphosphate of lime is of much value for garden crops, and of this I use about 4 cwt. annually, applying it just before the crop is planted, and also dissolved in water when it is necessary to irrigate. Of sulphate of ammonia 1 cwt. is, on the average, sufficient for a year for all purposes, and is used for vegetables only as a stimulant. These fertilisers and a sufficiency of animal manures, supplemented with soot, poultry manure and soils, will serve to enrich the ground in a suitable manner. Land may be improved by the addition of imported soil: clay loams by lighter material and shallow, light soils by that of a heavier kind, though in the latter case it is important not to add soil with too much clay in its composition, for it will remain in the condition of intractable clods. Soil and other material that have been superheated, as well as the ashes of the rubbish heap destructor, furnish valuable manurial substances; and even heaps of vegetable refuse that have been allowed to ferment, turned and well shaken up in the process, if limed provide plant food not to be despised by the cultivator. It has always happened that this time of the year has been that in which I have found it convenient to carry such materials into the garden, to be spread evenly on selected portions and incorporated later with the soil. For Rhubarb, Asparagus, small fruits, and some kinds of flowers it is best applied as a thin surface dressing. For Rhubarb such material is far superior to the quantities of animal manure that some consider essential for these crops.

WINTER DIGGING.—There is a pressing necessity in many instances to dig and trench ground in the winter months. I have known these opera-

tions performed with snow on the ground, and with the surface so hard it had to be broken with a pick. If the most important object gained by digging is the pulverisation of the soil, so increasing its capacity for absorbing heat, then it is clear that cultivation of this kind is not only worthless, but it is bad, and far better to wait even till crops are ready to put in, a system which has its advantages.

THE "FRENCH" GARDEN.

By PAUL AQUATIUS.

HOT-BEDS.—The weather has been very favourable for the work of making hot-beds, which should be nearly completed. The planting of Lettuces may be undertaken after the beds have been made a few days. As the weather is not exceptionally cold, placing the lining of manure in the rows between the frames may be deferred until the first week in February, but it is essential to arrange fermenting materials in the outside path around the frames at an early date. With the edge of a spade consolidate the manure, and straighten it wherever it bulges. Short manure which has been previously shaken may be put against the frame level with the top of the light and beaten with the flat of a spade or a shovel. This will in time cake and form shelter from frosts and winds. Dry, strawy manure is to be preferred for lining between the rows of frames, as it will not unduly increase the fermentation, which would cause spindly growth in the seedlings and Lettuces. Dry manure also absorbs any excess of moisture in the soil in the frame and use of excessive water is always prejudicial to tender plants at this time of the year. After having prepared the manure spread mats over the lights to prevent breaking the glass when the manure is placed by hand between the frames level with the light. The mats will not be necessary at night when the outside temperature is higher than freezing point. Keep the mats in a good condition until growth advances, when their shelter will be specially beneficial to the crops. Though growers are naturally anxious to complete their beds at the earliest possible date, they should reserve one day each week to tidy and straighten the quarter where the hot-beds are formed, and put the manure heap in order; not only will the workmen do their work in more comfort, but it will save a quantity of manure that would otherwise be rendered unsuitable for hot-beds by constant treading.

UNHEATED FRAMES.—The planting of crops in the unheated frames is now completed. It is usual to place in the paths between the frames some dry material, such as long straw, bracken, fern, or even old mats, to prevent an accumulation of mud through constantly passing over these narrow paths in all weather. These details may appear unimportant, but experience has proved that they are well worth the consideration of those who value expediency in labour. The bulk of the cloches used for the nursery beds are at liberty, and those required for cold work should be placed in their new position. The planting of Lettuces under the cloches should be arranged to suit requirements. Where Cos Lettuce have a ready sale four Lettuces Little Gott or three Lettuces Passion may be set with a Cos Lettuce in the centre. If Cabbage Lettuces are preferred five or four plants should be set respectively instead, and one Cauliflower planted in the centre early in March.

NURSERY BEDS.—As the beds are cleared of the Lettuce plants rake over the soil and cart the rubbish away. Where the ground has been manured in the autumn a thorough digging now should suffice. Spread the soil from the path evenly in the trench and replace with some from the bed. Afford ventilation freely to Cauliflowers in frames whenever the weather is favourable. The plants are tender and very liable to damage from frost, therefore precaution must be taken to spread the mats at night when necessary. If the stock of Cauliflower plants is short, a sowing may be made now in boxes, placing the latter on a shelf in a temperate house. When the seedlings appear watering must be done with extra care or "black leg" disease may appear.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are mis-directed.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

Local News.—Correspondents will greatly oblige by sending to the Editors 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.

TUESDAY, JANUARY 27—

Roy. Hort. Coms. meet. (Lecture at 3 p.m. on "Some Aspects of American Forestry"). Roy. Inst. meet. (Lecture by Prof. Bateson on "Animals and Plants under Domestication").

THURSDAY, JANUARY 29—

Manchester and N. of Eng. Orchid Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 39.5°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, January 21 (6 p.m.): Max. 36°; Min. 33°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, January 22 (10 a.m.): Bar. 29.9°. Temp. 38°. Weather, —Dull.

PROVINCES.—Wednesday, January 21. Max. 34°, Eastbourne; Min. 44°, Valencia.

SALES FOR THE ENSUING WEEK.

MONDAY—

Herbaceous Plants, Lilliums, and other Hardy Bulbs. Roses and Fruit Trees, at 12. By Protheroe and Morris.

MONDAY AND WEDNESDAY—

Rose Trees, Shrubs, Lilies, Perennials, etc., at Stevens's Rooms, 58, King Street, Covent Garden.

WEDNESDAY—

Lilliums and other Hardy Bulbs, Perennials and Border Plants, at 12; Palms and Plants, at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

THURSDAY—

Special Sale of Roses at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 1.

FRIDAY—

Miscellaneous Plants and Bulbs. At 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 1.

The Cultivation of Flax in Great Britain.

In 1911 the Development Commissioners set on foot an inquiry into the possibility of reviving the Flax industry in Great Britain. With commendable despatch Dr. T. Vargas Eyre, who was entrusted with the inquiry, has issued his report, which is published as a supplement to the *Journal of the Board of Agriculture*.

The conclusion arrived at by Dr. Eyre is a favourable one—"there is strong reason for believing that the judicious revival of the Flax industry, managed according to improved methods, would be

productive of benefit to British agriculture, and would induce people to find regular employment in rural districts by creating a demand for skilled labour." Dr. Eyre expresses the further opinion that Flax is to be regarded as a crop particularly well adapted for the smallholder. The evidence brought forward in the Report lends support to these conclusions. Flax used to be cultivated in England on a considerable scale during many centuries. So early as A.D. 1175 it was included among produce subject to tithe. The agricultural development of other countries, and the introduction of cotton, in the early years of last century, were among the causes which led to a decrease in the area under this crop, and it so happened that when, about 1820, steam-driven Flax-spinning machinery was perfected, the farmer found in Wheat a more profitable and less troublesome crop. Dr. Eyre illustrates the rapid decadence of the industry by the records of the county of Dorset; in 1810 there were from 4,000 to 5,000 acres under Flax; in 1850 there were but 300 acres.

After the 'sixties a revival of Flax-growing took place, and in 1875 there were about 30,000 acres under this crop in Great Britain; but for various reasons—bad seasons, competition from other fibres and the high price of Wheat—the area shrunk again very rapidly.

At the present day a revival of this crop is to be desired, if only for the fact that apart from its fibre, and owing to the increase in the price of linseed, Flax appears likely to be profitable as a seed crop. Indeed, as pointed out in Leaflet No. 278 of the Board of Agriculture, linseed as food for stock may be grown more cheaply than it can be purchased at the present time. In its favour Dr. Eyre mentions that, contrary to the common impression, Flax is not a greedy crop; it makes less demands on the soil than Barley. It matures quickly, is on the land only from 10-12 weeks, and is ready for pulling between the hay and corn harvests. In a dry, early season Flax can be removed in time to allow of a catch crop being taken. It does well on light soils under climatic conditions which are not unusual in English summers—a moist atmosphere, frequent showers, and moderately low, uniform temperatures.

From remarks made by Dr. Eyre on the subject of varieties of Flax and their changes when grown in different situations, it would appear that the seed commonly used is by no means pure. Thus blue-flowered Flax (*Linum usitatissimum* vulgare) from Russia is said to give, when grown elsewhere, the white-flowered form, and short-growing, branching Flax from South Russia, when taken north, is said to yield in the course of years tall-growing plants. These statements require investigation, and although they are unimportant from the immediate point of view from which the Report is written, they may become a new nuisance if they get into the textbooks as examples of changes of form induced by changes of climate. All they mean is that the races of cultivated Flax have not been bred true to certain characters of colour and of form, which char-

acters are probably a matter of indifference to the fibre-producer. The large number of processes to which Flax has to be subjected after the crop is ripe is the chief obstacle to the re-institution of this crop in Great Britain. The plants must be pulled by hand, dried, the seed must be separated by "rippling," the stalks must be retted, the retted straw dried, the woody part got rid of by "breaking," and, finally, the fibre must be cleaned.

Although the variety and tediousness of these operations must tell against the adoption of Flax-growing by the farmer, they provide Dr. Eyre with an added reason for the cultivation of this crop by the smallholder; for in their conduct a considerable amount of employment is to be found for a rural population.

It is doubtful, however, whether under present conditions these operations are likely to be undertaken by individual growers, and it is all but certain that, if Flax is to be rehabilitated as a crop, depots—as suggested by Dr. Eyre—will have to be established wherein the preparation of the fibre is carried out. Dr. Eyre suggests that Lincolnshire, Cambridge, and Suffolk, where there is among farmers an inclination to return to Flax-growing, might form a centre for the attempt, and the fact that in the past the industry survived longest in those districts which possessed central retting depots, indicates that the establishment of such depot is advisable, or even essential, for success. Given a system of co-operation in production between growers and fibre producers Flax might well become a very useful auxiliary crop to the smaller farmers and holders of this country.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will be held in the Vincent Square Hall, Westminster, on Tuesday, the 27th inst. At the three o'clock meeting in the lecture room Professor W. SOMERVILLE will deliver an address on "Some Aspects of American Forestry."

FINSBURY PARK.—All Londoners will learn with regret that an avenue of Black Poplars, comprising some thirty-eight trees 40 to 50 feet high, has been removed at the instance of the Parks Committee from the grounds of Finsbury Park. The trees which have been cut down were about forty years old, and it is no wonder that men like Mr. SMALLWOOD, who remember their planting, should deplore their destruction. The reason which is given officially for the removal of the avenue is that more space is required for games. This raises a subject too important to be discussed in the present note; it raises broad issues with which we will deal on an early occasion.

A NOVEL OBJECTION TO GLASSHOUSES.—We have just come across an amusing campaign which is being pursued in Belgium. A society known as the Friends of the Forest (connected with the Association for the Protection of Sites) considers that the increase in Grape culture under glass is likely to spoil the beauty of the landscape around La Hulpe and Hoeylaert. They have, therefore, decided to conduct a vigorous campaign against this "pest," and have arranged a grand demonstration to take place at Hoeylaert.

NATURE RESERVES IN FRANCE.—It will be gratifying to supporters of the National Trust to learn that a society—L'Association des Parcs

Nationaux—has been formed recently in France in order to carry on work similar to that of the British Society. As the first result of the efforts of the French Society an area of some fifty square miles in the French Alps has been acquired. It is to be hoped that the success with which this movement is meeting, both at home and abroad, will encourage the National Trust to yet more ambitious efforts towards preserving the amenities of our land to the people and "to their heirs for ever."

THE PRODUCTION OF SULPHATE OF AMMONIA.—Although it has had to cede first place to Germany, this country still continues to increase its manufacture of sulphate of ammonia at a rapid rate. Thus the production has risen from 367,587 tons in 1910 to 384,976 tons in 1911, and 388,308 tons in 1912. Germany's output in 1912 was 484,000 tons, and the total world production 1,325,000 tons. Of the 388,308 tons produced by the United Kingdom in 1912, no less than 287,000, or nearly two-thirds, was exported—principally to the United States, Japan, Spain, Dutch East Indies and Italy.

CRATAEGUS IN NEW YORK.—In Bulletin 167 of the New York State Museum, Professor SARGENT summarises recent investigations into the taxonomy and distribution of *Crataegus* in the State. The list of species, with descriptions of their characters, is preceded by a key.

IRON PYRITES AS A FERTILISER.—Experiments carried out by MM. VERMOREL and DANTHONY (*Journal d'Agriculture Pratique*, Nov. 20, 1913, summarised in *The Journal of the Board of Agriculture*, No. 10, Vol. 20) indicate that sulphur has a definite and beneficial effect when applied as a top-dressing to soils. When added at the rate of 45 to 90 lbs. per acre, sulphur, so it is claimed, increased the yield from plants which received also organic manure by 30 per cent. in the case of Wheat, and by 60 per cent. in that of Beans. Encouraged by these results, the authors tried the effect of iron pyrites, which, of course, contains sulphur in combined form, and is cheaper than that element. They find that a dressing of from 90-180 lbs. of pyrites with nitrate of soda instead of with organic manure leads to increases similar to those obtained by the use of sulphur. It is interesting to observe, though difficult to explain, that when either sulphur or iron pyrites is used together with nitrate of soda instead of with organic nitrogenous manures, no increase of yield is obtained.

TO CHANGE THE SEX OF DATE PALMS.—The statements made by Mr. P. B. POPEOE in an article on the Date Palm (*Tropical Agriculturist of Ceylon*, No. 6, Vol. 41) will excite no slight interest among students of genetics. The author of this article avers that of 100 Date Palms 80 are male trees. The redressing of the balance of the sexes presents no difficulty to the ingenious inhabitants of the southern oases of Algeria. They claim that alteration of sex is readily brought about by tearing off all the leaves of the footstalks when the plants are 2 or 3 years of age; the tearing being such that the median vein is split in two from the centre of the sheath of the leaf.

"THE ORCHID REVIEW."—With the January number this well-known Orchid journal celebrates its twenty-first birthday. It now appears in a new cover, with a spray of *Odontoglossum* over the title. The number contains a review of the events of the past year, an enumeration of new plants, and a variety of interesting and cultural notes, together with illustrations of nine hybrids of *Brassavola Digbyana*.

BOARD OF AGRICULTURE LEAFLETS.—The following are among the leaflets published or revised during the past year:—No. 10, *Wireworms*; No. 20, *Maggie Moth*; No. 86, *Brown Rot of Fruit*; No. 137, *Varieties of Scab in Potatoes*;

No. 169, *Cultivation of Mangolds*; No. 242, *Bacteriosis in the Potato and Tomato*; No. 253, *Isle of Wight Bee Disease*; No. 275, *Improvement of Poor Hill Pasture*.

UNSKILFUL TREE-FELLING.—At the Clerkenwell County Court recently, an action was brought claiming compensation for damage to an Apple tree and a fowls' run by fallen boughs, which resulted from tree-felling operations in an adjoining garden. The plaintiff was awarded 30s. damages and costs.

CARBON-BISULPHIDE FOR THE STERILISATION OF SOIL IN ORCHARDS.—Writing in the *Revue Horticole* (1913, p. 493), M. L. CHASSET advocates the use of carbon-bisulphide as an agent for the sterilisation of soil in orchards. He recommends the preliminary removal of fallen leaves, and then the tracing of shallow furrows (about 1½ to 2 inches in depth) on the ground after the latter has been well worked. Carbon-bisulphide is poured into the furrows from a fine rosed watering-can, and the soil raked immediately over the furrows.

AMERICAN GOOSEBERRY MILDEW IN FRANCE.—This serious pest has recently made its appearance in the centre of France. As is now well known it first appeared in Ireland in 1900, reached Russia in 1902, Germany in 1904, Sweden in 1905, England in 1906, and Belgium in 1910. In a note on the outbreak in France, M. ETIENNE FOEX (*Journ. d.l. Soc. Nat. d'Horticulture de France*, Dec. 1913) summarises the history and modes of elimination of this pest. He points out that the remedial measures are of two kinds:—(1) autumn and winter treatment; and (2) spring and summer treatment. In the former is comprised the destruction of prunings and the digging of the soil, so as to bury deeply—8 inches or more—the spore-bearing remains of the plants. In addition autumn spraying with sulphate of iron (3 per cent.) or with Bordeaux mixture is practised, the soil as well as the plant being treated. In the spring treatment sulphur pulverisation may not be practical, as it causes the leaves to fall, but spraying with liver of sulphur (potassium sulphide, a quarter to half an ounce to the gallon of water) has proved useful. The spraying should only be done in early morning or late afternoon, lest the leaves be injured, and it must be repeated at intervals, the first spraying being undertaken when the buds burst. It is claimed also that the simpler remedy of spraying with 3 grams of soda to a litre of water (about ½ oz. to a gallon) is productive of good results. Why this pest should have been so slow in invading France is at first sight not very evident; but it is perhaps due to the fact that the French people are not fond of Gooseberries, and grow them in relatively small quantities.

"THE ORCHID WORLD."—This work is kept well up to the standard of its former excellence in the matter of Orchid lore, and well illustrated with pictures of *Odontoglossum crispum* F. McBean, *O. Thompsonianum*, *Odontonia Langoi*, and a coloured plate of Messrs. SANDER AND SONS' group at the last Holland House show. A portrait is given of Sir HARRY J. VEITCH in Court dress.

MR. W. W. NAUNTON.—Horticulturists will offer their hearty congratulations to Mr. W. W. NAUNTON, of Shrewsbury, and Mrs. NAUNTON on the celebration this week of their golden wedding. Mr. NAUNTON is well known to our readers as one of the founders of the Shropshire Horticultural Society, of which for nearly forty years he was joint hon. secretary with his business partner, Mr. H. W. ADNITT. Mr. NAUNTON has been associated with other successful undertakings in Shrewsbury, notably the Kingsland Bridge Company, which has done so much to develop the corporation's beautiful estate, alongside which Shrewsbury School is situated, and he was also one of the promoters of the Shrewsbury

Electric Light Company, which was subsequently acquired by the municipality. On Monday last the employees of Messrs. ADNITT and NAUNTON presented Mr. NAUNTON with an illuminated address and handsome gifts in celebration of the happy event. In acknowledging these Mr. NAUNTON commented with pride on the fact that amongst the employees who had subscribed were some who had been associated with the firm for close on fifty years. Mr. NAUNTON a year or two ago had a serious illness, but we are glad to be able to say that at present he is enjoying excellent health. Mr. NAUNTON is an enthusiastic amateur photographer, and some of his prints have been published in these pages.

BETROOTS AND CARROTS IN RUSSIA.—According to the *Board of Trade Journal*, issued on the 15th inst., the seed of Beetroots, which root is growing in favour as a winter food for cattle, gave a satisfactory yield and sells at 26s. 3d. per cwt. The seed of Carrots for the same use experiences difficulty in finding purchasers, which is due to considerable over-production. There is a quantity of seed over from last year, which, to a considerable extent, has lost its power of germination, and this presses on the market.

OPPOSITION TO WIMBLEDON'S PROPOSED NEW PARK.—A public meeting having opposed the suggested purchase of the Wimbledon Park Estate and adjoining lands by the municipal authorities of Wimbledon for providing an open space, a special meeting of the Town Council was held on the 19th inst. to consider the matter. The Mayor presided, and stated that a poll had been demanded by about 1,000 of the inhabitants. It was stated that many who were opposed to the scheme were not residents in Wimbledon, and it was resolved to take a poll of the electors on the 31st inst. The Council decided to issue an official statement, drawn up by the Town Clerk, explaining the scope and objects of a Bill intended to be introduced in the next session of Parliament, empowering the Council, amongst other matters, to acquire the land for the proposed park.

THE CAMBRIDGE SCHOOL OF GENETICS.—Following on the establishment of the Balfour Professorship for the study of Genetics, the announcement is made that Mr. ARTHUR BALFOUR and Lord ESHER have offered to the University certain land and buildings which have been acquired and erected to serve the purposes of genetical research. The buildings include a residence (Whittingehame Lodge) for the professor and a laboratory.

NURSERY EMPLOYEES' ANNUAL DINNER.—The employes at Mr. AMOS PERRY'S nursery, Enfield, held their annual dinner on the 3rd inst. The chair was taken by Mr. AMOS PERRY. The toast of the evening, "Prosperity to Perry's Hardy Plant Farm," was proposed by Mr. REDMAN, who stated that the annual outing of the employes will be held during the summer, when a visit will be made to Marlow, and a river trip to Windsor, where dinner will be served. He asked the company to join with him in offering best wishes for health and prosperity to Messrs. A. and W. PERRY. The chairman returned thanks for the very enthusiastic reception of the toast, and expressed the great pleasure it gave him to be present at these annual dinners.

MURDER OF A PLANT COLLECTOR.—The *Florists' Exchange* states that it is reported that Mr. C. B. ROBINSON, a botanist in the science section of the Department of the Interior of the Philippine Islands, has been put to death by the natives of Amboyna Island, in the Malay Archipelago. Mr. ROBINSON, who is said to be an Englishman, was engaged in botanical researches on the island and has done considerable work

on the flora of the Philippines, being the author of several books on the subject. He was connected with the New York Botanical Garden for more than a year.

JOURNAL OF THE R.H.S. GARDENS CLUB.—This modest little brochure, now in its sixth number, consists of some fifty pages. It is a record of the present happenings of the garden staff, including the students, of the Royal Horticultural Society's Gardens. Although the journal is read by a relatively small number, it is nevertheless of interest to all engaged in gardens and gardening. Young gardeners who may lament their present hard lot should read the reminiscences of an old Chiswickian, for they will find that long hours and unsuitable bothies are no new things, and that there are compensations in an under-gardener's life, for, although "the bothies were very ancient and considerably out of repair . . . what did that matter? we were as happy as sandboys." An excellent article on "Some South African Plants" is contributed by Mr. H. G. FORSYTH, who describes many well-known garden plants growing in their native homes, and shows how much we are indebted to the flora of South Africa for many of the finest species in cultivation. The remarks on *Gerbera Jamesonii* are particularly informative, especially on how to raise the plants from seed, and the conditions best suited to their culture. Others write of their experiences in Holland, Belgium, India, California, Switzerland, and the United States. But even the stay-at-homes have much to say that is interesting, and both Mr. MACKINTOSH's story of "Gardening in the Iron Country," and Mr. A. ATHEY on "A Day in Lakeland," will be read with pleasure. Additions to the Flora of Wisley by Mr. W. V. PITTS and the illustrated article on Earwigs will appeal especially to those of a botanical or entomological mind. The volume contains a record of the doings of the various clubs at Wisley, personal paragraphs, and much else that is concerned with the family affairs of the Guild.

AFFORESTATION.—In an article written by Major H. G. JOLY DE LOTBINIERE, and published in the *Quarterly Review* for October, the author indicates the general lines on which the work of afforestating the sixteen million acres of mountainous and heath land in this country should be undertaken, and urges the necessity for immediate action. Like other experts, Major LOTBINIERE predicts a serious shortage in our timber supply in the near future unless some such scheme is attempted.

Kew Gardeners' Social Evening.—The members of the garden staff at Kew held their 17th annual social evening on the 16th inst. at the Boat House, Kew. The company numbered close on 150, including ladies, and many old Kewites. The programme included dancing, a musical entertainment in the billiard room, a smoking concert, and a billiards competition.

POWDERY SCAB OF POTATOS.—We learn from the *Florists' Exchange* that the U.S. Secretary of Agriculture at Washington has issued two orders relating to the admission of foreign Potatos into the United States. One of these orders provides for the admission of disease-free Potatos from uninfected foreign districts under proper regulation and inspection. The other order, to protect American Potatos from the powdery scab and other diseases, temporarily extends the quarantine effective since September 20, 1912, against the importation of Potatos from Newfoundland; the islands of St. Pierre and Miquelon; Great Britain, including England, Scotland, Wales and Ireland; Germany, and Austria-Hungary, to include also the rest of continental Europe and the Dominion of Canada. This quarantine became effective on December 24, 1913, except that shipments

covered by consular invoices issued on or prior to December 24, 1913, will be admitted up to January 15, 1914. The necessary conditions governing importations are (1) freedom of the country or well-defined district from the diseases quarantined against, such freedom to be determined by adequate field inspections conducted by recognised experts of the countries concerned; (2) agreement of the country or district to maintain yearly such field inspection, and to examine and certify all Potatos offered for export, in compliance with the regulations of the Department of Agriculture.

M. ALBERT TRUFFAUT.—M. ALBERT TRUFFAUT, sen., whose distinguished services to horticulture are well known, has just received a signal mark of appreciation at the hands of his colleagues of the French National Society of Horticulture. Finding himself for reasons of health unable to continue active work on behalf of the society he determined to retire from the post of vice-president. This decision, when communicated to the meeting held for the election of officers, evoked a general expression of sympathy and regret. At the same meeting M. TRUFFAUT was elected unanimously to the



M. ALBERT TRUFFAUT, SEN.
(Late Proprietor of the Versailles Nurseries.)

office of honorary vice-president of the society. During the past thirty-four years M. TRUFFAUT has held office in the National Society as secretary of the Council, and from 1890 as vice-president. In 1899 he succeeded the late HENRI DE VILMORIN as "premier vice-president." M. TRUFFAUT has been for twenty-five years the president of l'Union Commerciale des Horticulteurs et Marchands-Grainiers de France, and is known as well in this country as abroad by reason of his services to international horticulture. In order to mark their appreciation of his remarkable services the executive of the French National Society of Horticulture has decided to give a banquet in his honour on Sunday, February 15, at 12 o'clock at the Hotel Palais d'Orsay. During the course of this function a work of art will be presented to M. TRUFFAUT. Horticulturists who wish to take part in the banquet and presentation may do so on subscribing the sum of twenty francs, or if unable to attend the banquet ten francs. Subscriptions should be addressed to the secretary, M. EMILE THIEBAUT, 30, Place de la Madeleine, Paris.

IMPATIENS HERZOGII.

(See Figs. 29, 30 and Supplementary Illustration.)

IMPATIENS HERZOGII was raised at Glasnevin five years ago from seeds sent by Dr. R. Schlechter from German New Guinea, and is the best species in cultivation. Sir Frederick Moore gave one of the seedlings to Kew, where it grew well and flowered freely in a tropical house in 1910. A figure of it was published in the *Botanical Magazine* in September, 1911, where it is described as a free-growing, free-flowering species of easy cultivation. Its nearest allies are *I. Hawkeri* and *I. Holstii* (see fig. 29), both well-known garden plants, and these species also produce large scarlet flowers. Of these three, *I. Hawkeri* is the least manageable, mite and other troubles often spoiling it; but the other two are quite as decorative and much better natured. A fourth species, *I. Sultanii*, ought to be mentioned here, as it possesses some of the qualities found in the three already named.

Impatiens is a very large and remarkably varied genus. It includes annuals and perennials, some large shrubs with fleshy stems, others wide-spreading, bushy herbs, and many diminutive, uninteresting weeds. The species occur in most parts of the world, the best-known, perhaps, being *I. balsamina*, an Eastern plant, the parent of the common garden Balsam. The largest species is *I. Oliveri*, from Uganda, which at Kew forms bushes 9 feet high and the same in diameter, with stems as thick as a man's wrist, evergreen leaves, and rose-pink flowers 2½ inches in diameter. This plant is always in flower. It has been used with fair success as a summer border plant. There is no better plant for a large conservatory, and as it is very easy to multiply by means of cuttings or seeds, which it produces very freely, it may be said to have come into our gardens to stay. Another remarkable Balsam is *I. mirabilis*, from Sumatra, which has a trunk-like stem, "as thick as a man's leg," crowned with a tuft of large, fleshy, cabbage-like leaves a foot long, and bearing erect racemes of golden-yellow flowers, curiously bellied and spurred. It was in cultivation at Kew about twenty years ago, but it did not live long, probably because it longed for the limestone rocks on which it was found by Mr. Curtis when on a collecting visit to Sumatra. Another noteworthy Balsam is *I. grandiflora* (see fig. 30), a native of Madagascar, which was in cultivation at Kew twelve years ago, when Sir Joseph Hooker described it as "by far the largest-flowered Balsam hitherto discovered." It had stout, terete branching stems, leaves 6 inches long, and axillary flowers 3 inches long and as much wide, succate and hook-spurred, rose-pink with purple blotches, not unlike a very large *tropeolum* flower, but, of course, much more fleshy. There is no end to the story of the Balsam family. Its botany occupied the attention of Sir Joseph Hooker during the closing years of his long life, and he found the genus a source of absorbing interest. Although the species (there are over 500 in Asia alone) show such a wide range of variation in stature, habit, and foliage the stamp of the family is plainly evident in the shape of their flowers, all of them having the hollow spur or sac, and the column-like arrangement of the stamens and stigma. Another peculiar character is that of the spring-like behaviour of the ripe fruit when touched.

As a garden plant first place must be given to *I. Herzogii*. When well-grown it is a bushy, leafy specimen 18 inches to 2 feet high, and the bright glistening scarlet flowers are arranged in axillary clusters, as many as six or eight of them all open together on a single branch. The pity of it is the plant is too tender to thrive out-of-doors here in summer, for it has been tried as

a bedding plant at Kew, but, like its cousins, *I. Sultanii*, *I. Holstii*, and *I. Hawkeri*, which were also tested in the same way, it could not stand the spells of low temperature which occur often enough even in summer. As a warm house plant, however, *I. Herzogii* is perfection. It only requires to be known to become generally popular.

SCOTLAND.

THE PROPOSED WINTER GARDEN FOR EDINBURGH.

THE scheme for the building of a Winter Garden in the Princes Street Gardens, Edinburgh, is meeting with a large amount of opposition in influential circles in Edinburgh, and opinion on the subject is sharply divided. The Earl of Rosebery and Lord Dunedin have both written condemning the proposal. An alternative proposal, to form a sheltered loggia, next to Princes Street, has been made, and the latest suggestion is to plant the Castle Rock with flowers. Suggestions for other sites are also being made. The opposition has had the effect of bringing again to the front the suggested removal of the fruit and vegetable market to the old gasworks site, and the conversion of the Waverley Market into a place of resort during wet weather.

EDINBURGH UNIVERSITY FORESTRY LECTURES.

THE Highland and Agricultural Society of Scotland, which has for some time given the sum of £50 per annum towards the salary of the lecturer on forestry in the University of Edinburgh, has decided to withdraw the grant, on the ground that other public bodies were taking such work out of their hands. The lectures will not be likely to suffer from this, other support being forthcoming.

TREE PLANTING IN EDINBURGH STREETS.

A PROPOSAL that trees should be planted along some of the streets in the Dalry district of Edinburgh has been favourably received, and the committee has agreed to recommend that the work be carried out.

THE HIGHLAND SOCIETY.

THE Highland and Agricultural Society of Scotland has again agreed to give two medals each to four Scottish district shows for cottage gardens. *Corres.*

M. HENRI CORREVON.—The 27th volume of our Paris contemporary *Le Jardin* is dedicated to this well-known lover of Alpine plants. M. Correvon is 59 years of age, and was born at Yverdon, Canton of Vaud, Switzerland. His family is an ancient one, dating back to the year 1142, and derives its name from the village of Correvon, near Yverdon. At 16 years of age he went to Geneva to learn gardening. From 1871 to 1874 he was at Froebel's, at Zurich, where the first Alpine plants raised for sale on the Continent were grown. In 1874-75 he went to Germany, and in 1875 to Paris, and worked at the Jardin des Plantes, returning to Switzerland the following year, where he started a nursery for Alpine plants. A hailstorm devastated the country and brought ruin in its track, and he consequently moved to Geneva. There he founded the Jardin Alpin d'Acclimatation, the first of its kind. He also started the Association for the Protection of Alpine Plants, of which he was President for 25 years. From that time his activity in his favourite pursuit developed rapidly, and he founded the Alpine Gardens at Val d'Anniviers, La Linnea, Les Rochers de Naye, La Chanousia, Le Petit St. Bernard, and La Rostania, while Champrousse and Le Lantaret were the results of lectures by him at Grenoble. About 1882 he began to contribute to various English and American journals, and as an author it may be mentioned that his eighteenth work has recently been published. In 1903 he started the Alpine garden Floraire, and last year a smaller one called Florarina, not far from and facing Mont Blanc.

VEGETABLES.

FORCING FRENCH BEANS.

FEW forced vegetables are more appreciated than French Beans, which furnish a choice dish when other vegetables are not very plentiful. Unless suitably heated houses are available I do not recommend the forcing of French Beans until after Christmas, but in January, with the lengthening days, they may be grown in a house having an atmospheric tempera-

can be afforded the plants. I have grown it with excellent results trained on wires, which afterwards supported a late batch of Cucumbers. If an upright wall is available better results would be obtained by training the Beans up strings in a similar manner to Smilax. I usually sow 8 to 10 seeds of dwarf varieties in each 9-inch pot, which is half filled with fresh loam, to which is added a little leaf-mould or well-decayed manure to keep it open. Many people use discarded potting soil in the belief that anything is good enough for Beans, but I find that few crops pay



FIG. 29.—*IMPATIENS HOLSTII*: A TROPICAL AFRICAN SPECIES WITH SCARLET FLOWERS. (See p. 68.)

ture of 60° to 65°. Pods will be ready for gathering early in March, and by making sowings fortnightly a succession may be easily maintained until the out-door plants are in bearing. The Climbing French Bean is useful where the shoots can be trained to wires or strings. The pods are long, straight, and hang in clusters, the plants continuing in bearing for a very long time. I consider this is the most economical Bean to grow if sufficient head room

better for good treatment. When the seedlings are tall enough to permit of top-dressings being applied, I thin the plants out to 5 or 6 per pot, and fill the latter with loam and decayed manure mixed. Up to this stage the climbing varieties receive similar treatment, but three plants per pot are as many as can be grown with success. After top-dressing, the tall varieties should be placed in the position they are to occupy permanently. The dwarfs, and of these I find a

batch of two dozen pots generally sufficient, should be staked either with tall Birch twigs or four sticks, around which raffia tape or string is tied. I prefer the former system as being much neater. Plenty of light and air must reach the plants, and the syringe must be used twice a day at least, and oftener on bright days. When the flowers are open a slightly drier atmosphere is advisable, but immediately the pods have set the syringing should be resumed, otherwise thrip and red spider will quickly infest the plants

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

CHRYSANTHEMUM MADAME CASTEX DES-ORANGES (see pp. 28, 41).—A few more words and I think this question may be considered as settled for all time. Since writing my former article I have communicated with Boucharlat's son-in-law and explained the question under discussion. His reply will be of great interest to Mr. Jenkins and others who know the flower and

When twenty-five years ago I gave you particulars about it, he told me exactly the facts, but he is now dead. But I remember that the seed was sved at the end of the year 1872 and sown in 1873. The plant flowered the same year (1873), and was probably sold as a novelty in the spring of 1874. It was named after the wife of the great Lyons artist, Castex Desgranges, who often came to pay M. Boucharlat a visit and to get flowers from our nursery in order to paint them. This celebrated artist is now the director of the School of Fine Arts at Lyons, and is about seventy-eight years of age." So far as is possible this seems to be the fullest and most authentic information, direct from the fountain-head, that we can obtain and should be taken note of by those who deal with historical matters relating to the Chrysanthemum. In this flower, as with others, there are unfortunately too many writers who, disregarding any attempt at original research, too often adopt previous authors' errors, and thus help to perpetuate them. In floricultural history there are many such; they are to be found repeated over and over again by writers who never take the trouble to verify dates for themselves. A glaring instance of this may be found in the oft-repeated statement that the Pompon Dahlia was originated in 1808. A little independent search through the available records would soon show that it was not known till about fifty years afterwards. But that is another story. *C. Harman Payne.*

LILIUM PARRYI (see p. 34).—The conditions under which this Lily grows in its Californian home have been admirably described by Mr. Carl Purdy and often repeated; but following Mr. Groves' interesting review of the Lily season of 1913 and his special reference to this species, the following note, which we had last year from Mr. Purdy, will be read with interest: "I am at last making *Lilium Parryi* a success. It is only light shade, a cool place and a light, loose, moist, but not boggy, soil that the plants need. After seeing them at home in South California two years ago I saw that anything like bog conditions were a mistake. I have one fine bed of young ones that was quite dry all summer." *R. Wallace and Co.*

TRICUSPIDARIA LANCEOLATA (see p. 25).—The beautiful coloured plate of this fine Chilian plant—better known perhaps by its synonym *Crinodendron Hookerianum*—published on the 10th inst., reminds me of a splendid example of it that grew in the old Parsonage garden at Ryde, and of which the late Rev. H. Ewbank was justifiably proud. While not comparable in its dimensions with the example measured by Mr. Bean at Kilmacurragh, the Ryde specimen was a particularly compact, free-flowering one, and when I last saw it, some three years ago, would be 9 feet or so in height, and a dozen or more feet through. The specimen, grown from a small plant, greatly treasured by Mr. Ewbank during his life-time, and since carefully tended by his daughters, was a picture of rare beauty when adorned with many hundreds of the drooping crimson-scarlet flowers so faithfully depicted in the coloured plate. The Ryde specimen was growing in a mixture of leaf-mould, peat, and light loam—the last in a quite small proportion—and gave no sign of a certain leaf rustiness which seems more or less inseparable from the species when cultivated in gardens more inland. Whether this rust is of a fungous nature or not I am not sure, but an apparently similar rust on *Carpenteria californica* in the same garden quite crippled the growth of this handsome flowering shrub. The *Crinodendron* at Ryde ripened seeds with comparative freedom, and I have on several occasions brought away supplies, but was never able to get them to germinate. I believe others have had a similar experience. The seeds are exceedingly hard-coated, and possibly "chipping," as is done in the case of Sweet Peas, or "bush-firing," which is said to hasten the germination of other hard-coated seeds, would have to be resorted to to bring it about. I confess, however, I have not tried either operation on the plant under notice. Seed-raising, however, is by no means an essential method of increase in this case, since every shoot that comes in contact with the soil—and many others separated therefrom by one or



FIG. 30.—IMPATIENS GRANDIFLORA.

Axils of upper leaves are bright deep rose, the petals being conspicuously blotched with deep blood red, the upper petal alone being unspotted.

(See p. 58.)

and soon ruin the crop. White fly is sometimes troublesome, but this can be destroyed by fumigating with a preparation of nicotine. From this stage onwards the roots should be fed liberally, stable dung or manure from cow-sheds being suitable. I prefer to substitute for this occasionally an artificial fertiliser. For the later batches a lower temperature is more desirable. Of the many varieties I have tried Progress stands pre-eminent. *F. A. Edwards.*

its value as the forerunner of the early-flowering Japanese section. This is what my correspondent says: "In reply to your favour, I can only confirm what I wrote to you twenty-five years ago or thereabouts. Unfortunately, it is far less easy for me to state precisely the exact date when the *Chrysanthemum Mme. Castex Desgranges* was sent out by M. Boucharlat aîné for the following reason: Between 1870 and 1875 I was doing my military service, and it was during that period that our head man, M. Jules Charton, raised it.

two inches, will develop roots from the under sides of the branches as freely as the well-known Portugal Laurel in like circumstances. Hence, seeing that the plant spreads quite near to the ground, and also in a lateral direction, there should be no difficulty in securing an abundant stock where good plants already exist. Should the above remarks on the difficulty of seedling raising meet the eye of anyone who has successfully raised the plant from seeds I should be glad to know if it has been achieved by the adoption of any special method. *E. H. Jenkins.*

MICE DAMAGING SHRUBS (see p. 32).—If Mr. Grant will procure some gin-traps and bait them with Hemp seeds he will soon catch all the mice, as they cannot resist eating the Hemp seeds. Put two traps into drain pipes, one at each end, with a few seeds between the traps and examine them night and morning. If the Ivy will cover the traps he may discard the drain pipes, as the latter are used to hide the traps and seeds from small birds. Wooden and wire traps in the open are often carried away short distances by owls, hence another value of using the drain pipes. *Jas. Hamilton, Gattonside, Melrose.*

TIMBER FOR CLOG SOLES (see page 4).—Your correspondent, *A. D. W.*, errs greatly in his prices of timber for clog-making. I have been in the trade for upwards of thirty years, and have worked in the business in Scotland, England, Ireland and Wales, but in no part have I known Alder to realise 9d. or 10d. per cubic foot. I herewith quote prices paid in my undertakings in various parts of the kingdom:—Shropshire, 6d. to 7d.; Herefordshire, 6d. to 7d.; North Wales, 6d. to 7½d.; South Wales, 4½d. to 6½d.; Yorkshire, 6d. to 8½d.; Scotland, 8s. to 10s. per ton of 30 cubic feet; Ireland, 6s. to 10s. per ton of 30 cubic feet; all wood felled and under bark. German Alder may be much more easily worked, but is too soft and spongy. It is also inferior in its lasting qualities when converted into the finished article, the "clog." As for a man making twenty pairs in the hour, I have yet to meet him. That man need never lack a situation in the trade. Twelve pairs made in the hour is good average work, and that when the lengths are cut off and roughly prepared for the dressing bench. Ireland takes second place in *A. D. W.*'s return as an Alder or suitable timber-producing country for clog-making, but in what part of Ireland could he get 3d. or 4d. per sack for refuse chips, seeing the Alder grows in bogs or in the vicinity of bogland? Finally, he over-estimates the number employed at clog-making: but I agree in stating that more attention ought to be given in planting up some of our water-logged districts with Alder, and in a decade or so there would be no demand for foreign supplies of this wood. *William Nuttall, Dromod, Drumlish, Co. Leitrim.*

—During a period of ten years I got 10d. per foot for Alder and Birch of good quality in Carnarvonshire, North Wales. At a sale in Leicestershire a similar price was obtained lately. Of course, the price varies according to the accessibility of the timber. *A. D. W.*

JASMINUM OFFICINALE FRUITING.—Your correspondent, writing in the issue of the 10th inst. (p. 29), states that he cannot tell if the seed of *Jasminum* will germinate in this country. Two years ago I sowed seeds and they produced a good pan of seedlings that grew away quickly. *Frances A. Geoghegan, Eversham, County Dublin.*

WINTER-BLOOMING ROSES.—Nothing in this anomalous autumn and winter has been more remarkable than the persistent flowering of Roses of various kinds, in spite of cold winds, frost, and a little snow. At least, in fifty years' gardening I cannot remember anything like it. The following varieties have now (January 19) really well-formed, half-opened, or even in two or three cases (such as Pharisæa) fully-opened blooms of good form: Bardou Job, General Macarthur, Laurette Messimy, China, and perhaps two or three more. And this in the open border in the very middle of Kent, and 350 feet above sea level, with the thermometer since the 11th inst. ranging from 25.3° in screen lowest to 39°

highest, and N.E. winds up to a "moderate gale." Can anybody explain this? I doubt the mild autumn being sufficient to account for it. *Alfred O. Walker, F.L.S., Ulcombe Place, near Maidstone.*

FAILURE IN CHRYSANTHEMUMS.—After careful examination of soil, plants, etc., by experts the principal trouble in the failure of my late Chrysanthemums was eelworm. I was reading Mr. C. Robinson's report under above heading, and he is right in one respect, that of housing early. I did do so—that is, in September—dreading a recurrence of early frosts, as in 1912, but I had no heat on them; on the other hand, plenty of air. The only manure used was half a load of cow manure on about 10,000 plants. While digging up the plants from the borders I find the bark is eaten clean away, causing loss of base cuttings. I may add that I am a firm believer in firm potting of Chrysanthemums, using a rammer for the purpose. We are now sterilising all soil and hope to eradicate the trouble in future. *W. E. Kearns, Horsforth, Leeds.*

ROSES IN DECEMBER.—I enclose a photograph (see fig. 31) of a vase of Edu Meyer Roses picked in a Wicktownshire garden, Corn-



FIG. 31.—ROSES GATHERED ON DECEMBER 18 LAST.

wall, on December 18 last.—*D. W. R. Carrick-Buchanan, Corsewall, Stranraer.*

THE RAINFALL IN 1913.—The total rainfall for the year at Orwell Park amounted to 22.28 inches; the number of days upon which rain was measured were 188. January, with 3.61 inches, was the wettest month, whilst August was the driest with 0.60 inch. *A. Turner, Orwell Park Gardens.*

—The rainfall in these gardens during 1913 amounted to 41.01 inches, or 3.55 inches more than the average of the past six years. January, March, April, May and October were all wet months, but December, with 2.54 inches, was drier than for six years past. Rain was recorded on 232 days, or seven more than the average. The amount of rain recorded to end of May was within 1.48 inches equal to that usually gauged in eight months. July, August and September were very favourable for harvest work. The heaviest fall in 24 hours for the past six years was recorded on October 5, when 1.86 inches fell. The range of temperature for the year, at 4 feet from the ground, in shade, was 83° on July 29 and August 3, and 14° on December 31. The last frost in May was on the 16th and the first on October 22, or ten days less than usual. The mean temperature of October, November, and to December 24 were above the average; on the last date we had snow for the first time this season. During December a large number of hardy plants were in flower, including *Cytisus multiflorus*, *C. Scoparius*, *Clematis Duchess of Albany*, *C. Jackmannii alba*; Webb's Prolific Cob Nut (female blooms expanded on the 19th); *Gentiana aculais*, *Galanthus nivalis*, *Jasminum nudiflorum*, *J. Wallichianum*, *Kerria japonica*, *Kniphofias*, *Omphalodes verna*, *O. v. alba*, *Primulas* in variety, *Papaver nudicaule*, *Pear Beurré Clairgeau* in an orchard, *Roses*, *Solanum jasminoides*, *Strawberries* in several varie-

ties, *Spiræas Marie Van Houtte* and *Reecesiana*, *Saxifraga apiculata*, *Scabiosa caucasia*, *Tunica Saxifraga* and *Mignonette*. The "Kaffir Lily," *Schizostylis coccinea* has been particularly useful and floriferous this late autumn and early winter. *John Edwards, Sylfaen Gardens, Welshpool.*

JOURNEYMAN GARDENERS AND LOW WAGES.—In reading the remarks of your correspondents on this subject in the issue for January 17, I did not notice any reference to the subject of young gardeners paying a premium to the head gardeners. To my mind this is most objectionable, and I do not believe in premiums of any kind. I have had many offers of premiums made to me during my forty-four years' experience as a head gardener, but I have never taken money from any young man who has served under me. I prefer to stand perfectly independent of any such consideration. Thus no distinction whatever enters into the question either in engaging or in the leaving of a young gardener. Premiums were more frequently paid in the past than at the present time. No doubt there are still survivals of this system, but the sooner it is abolished the better will it be for all who are concerned with the conduct of gardens. It has been the custom in some establishments to notify a young man just before he has completed his term of two years that he would be expected to leave when his two years had expired. This leaves the place open for the gardener to take another premium and a younger man with less experience is consequently engaged. I do not find any difficulty in obtaining reliable young men, and, in my opinion, the standard is quite as high, if not higher, than it was in years gone by. If our young gardeners would apply themselves more closely to thinking out various problems with which they come into contact the better would it be for them. *Jas. Hudson, V.M.H., Gunnersbury House Gardens, Acton.*

—I have been somewhat interested in the correspondence regarding the scarcity of young men for garden work. I don't think we have to look far for the cause. A friend of mine recently applied to one of our leading nurseries for a couple of young men. He received a reply saying that they had none on their books, and that young men were not such fools as to go in for gardening nowadays. If this scarcity should be the means (as I believe it will be the only means) of getting better wages and conditions for young gardeners, and also for head gardeners, then I for one hope it may long continue, for there is still plenty of room for improvements. Surely those who now complain about the scarcity of young men do not want to see a return of the days which existed a few years ago, when head gardeners put in advertisements thanking the 60, 70, or 100 applicants for the situations advertised by them? No; let us hope those days have gone, and may it be long years before they return again. For my part, I am always pleased and ready to help any young fellow that has the grit to go out and try his luck in our Colonies, for surely it is better for our Empire that our Colonies should be populated by our own countrymen than those of foreign nations. And what are the prospects for those who take up gardening as a means of living in this country? That there are some really good situations for gardeners no one can deny, but unfortunately there are not enough to go round, and for every good head place advertised to-day I venture to say there will be well over 100 applications, and most of these from good men who have had years of training and sound, practical experience. What of the majority of those young lads who start as outside garden lads? How many of these who, after years of hard and continuous work for what has been in the past scarcely a living wage, are able to secure one of these "plums"? One sometimes hears a complaint that young men are all anxious to work under glass. One of the reasons, in my opinion, is that in the past it was the one who had the best experience and knowledge of inside work who generally stood the best chance when after a head place. But I do not think myself that that will be the case in the future. The gardener whose hair turns grey early in life or happens to be blessed with five or six children will find these are drawbacks in securing a good berth in this country. Again, when a gardener reaches the age of 45 or 50

SOCIETIES.

ROYAL HORTICULTURAL

Scientific Committee.

JANUARY 13.—*Present*: Mr. E. A. Bowles, M.A., F.E.S. (in the chair), Rev. Canon Fowler, Messrs. W. Fawcett, G. Gordon, J. Fraser, W. E. Ledger, W. Hales, A. Worsley, R. A. Rolfe, and F. J. Chittenden (hon. secretary).

Hybrid Scented Pelargoniums.—Mr. J. FRASER continued his remarks regarding the origin of garden forms of scented-leaved Pelargoniums, dealing with the group to which *P. arifolium* belongs, and exhibiting specimens from the Wisley collection in illustration of his remarks.

Polypodium × Schneideri.—Mr. W. HALES showed a fruiting frond of this hybrid Fern, with three pinnae (very like those of *Polypodium aureum* in form) bearing numerous sori. This hybrid is derived from *P. aureum* × *P. vulgare elegantissimum*, and its spores, which are only very rarely produced, have hitherto proved infertile.

Variation in Galanthus Elwesii.—Mr. BOWLES exhibited several plants of *Galanthus Elwesii* in flower, selected from those shown by Messrs. Barr and Sons and Mr. G. Reuthe, and grown from imported bulbs. They showed remarkable variation in form of flower, and especially in the markings of both inner and outer perianth pieces.

Aristolochia sempervirens fruiting.—Mr. BOWLES also exhibited a fruit with ripe seeds of this plant from his garden at Waltham Cross.

HORTICULTURAL CLUB.

PLANT COLLECTING IN NEW GUINEA.

JANUARY 13.—On the above date, at the Hotel Windsor, this club held its usual monthly dinner, Sir HARRY J. VEITCH presiding over a company numbering 40. Subsequently, as is the custom of the club, a lecture was given, this time by Mr. A. F. R. WOLLASTON, who gave a most interesting account, illustrated by lantern-slides, from photographs taken by himself, of some results of plant-collecting in New Guinea. The description of the difficulties attending the exploration of an equatorial and mountainous country, densely covered by vegetation of the most luxuriant kind, plainly indicated, with the aid of the slides, the reasons why such a country remains practically virgin and unexplored. This is the more to be regretted from the botanical and horticultural point of view, since it was abundantly proved that where access was possible the flora is found to be abundant and beautiful, though mainly arboreal. The pioneer in this direction is, however, still more handicapped by the lack of transport facilities, there being no roads when once the coast was left, and, moreover, the plants or seeds collected had subsequently to suffer long periods of great heat, drought and its opposite, humidity, on the return journey, owing to the varied climatic conditions through which they had to pass en route. As one result of this nearly all seeds collected failed to germinate on arrival here. Many of the plants, however, carefully installed in Wardian cases, were preserved. Specimens for herbaria are also difficult of preservation, owing to constant humid conditions, under which they rot. The question of seed preservation became, indeed, one of the main questions involved in a subsequent discussion. Professor KEEBLE suggested that the reason of the general failure is probably that seeds produced under equatorial conditions, in which the climate was practically the same all the year round, without those marked seasonal changes which characterise other regions, are accustomed to germinate as soon as they are scattered, and hence are not endowed with a capacity for rest or dormancy during a period which permitted of their transport in a dormant state for several months. Mr. WOLLASTON himself, while recognising this possibility or probability, considered it might also be due to the scarcity, which he had particularly observed, of insect life necessary with most plants to ensure fertilisation of their seeds. Thus

his knowledge should be, and no doubt is, even greater than at 30; but I venture to say that, however thrifty he and his wife have been in the past, he will find his bank account getting near low-water mark should he by any chance get out of a place and stand out for another good "plum." I admit that this is not always the case, but these have been and still are some of the causes which make young men think twice before sticking to gardening as a means of livelihood. Again, what some of our heads do expect for their 16s., 18s., or £1 and bothy can be judged by scanning the advertisements of the garden papers. One can safely say that should these young men fulfil all the different requirements they ought to be applying for the head place. That there are indifferent under-gardeners no one can deny, but so there are indifferent head gardeners. *Agra*.

—I should like to point out that it is not only journeymen who are paid low wages, for I have found that in some cases they are paid more than responsible gardeners. I give here my own case. I was brought up in a fruit and vegetable garden, was sent out for two years' training under a good head gardener in a large establishment, for a third year under another good head, and then had two years with a landscape gardener. I have been in my present situation for six years, and am responsible for the glass, fruit, vegetables, lawns, flower borders, Roses, and rock-gardens. I hold the Royal Horticultural Society's certificate in Horticulture. My wages, be it noted, are 23s. 6d. a week, out of which I have to pay 8s. for rent. Yet I know gardeners of the most ignorant description who are getting 22s., 28s., or 30s. a week, with cottage. The only remedy for this state of affairs is for employers to insist upon all their gardeners having passed an examination in Horticulture (senior or junior, as the case may be), which will at least ensure that they have a certain knowledge of botany and chemistry—qualifications which are essential to a really intelligent grasp of the art of gardening.—*C. H.*

—If *Contented Journeyman* is contented on his wage of 18s. per week and bothy let him remain so. If a man possesses a good knowledge and is skilled in his work, and can be trusted to do it without much supervision, he is certainly worth 22s. per week at the least, with bothy. Why should young men spend their time and money from youth to early manhood studying the science and practice of horticulture for a labourer's wage on the chance some day of becoming a head gardener at 25s. to 30s. per week with house, when in the trades he can command from 25s. to 36s., and more, per week soon after he is twenty-one years of age? If *Contented Journeyman* considers that 18s. per week is equal to 25s. in other trades let him prove it; he seems to possess little or no knowledge of the condition of things in his own profession. Will he kindly show how 18s. per week is equal to 25s. in the following instances? Two or three young gardeners living in a bothy and receiving 18s. per week each (the foreman receiving 19s.) have to take duty in turn and receive nothing extra for this work, whilst a labourer receives 18s. per week and stops work at midday on Saturdays. Will *Contented Journeyman* tell us who is the better off under these conditions? He speaks of the steady employment in gardening, which is true as a rule; but employment in gardening fluctuates, as in every other profession. *Contented Journeyman* reminds us we must not forget that gardens are hobbies. In that I differ, for they are a necessity; but granted that they are kept up for a hobby, does that give the owner the right to under-pay his gardeners? I would prefer to pay men according to their ability. Some journeymen are dear at any price; some there are who lack both knowledge and enthusiasm. Take the wages of head gardeners and compare them with those paid in trades. Look at the hours of care and watchfulness, the knowledge they must possess for such miserable remuneration. Let the head gardener get thrown out of employment, then where is he? I know there are some splendid employers, but they are exceptions. Gardening is, as Mr. Norris says, a great and honourable calling, and the literature appertaining to it probably excels all others. And yet members of this great and honourable profession have little or no social standing whatever. Why? *Mayflower*.

he thought that many of the seeds might be infertile. The natives of the unexplored regions were few, and were only found in scattered villages. They constitute practically a surviving remnant of the people of the Stone Age, since they use no metals, and their weapons and tools are all of stone; fire is only obtained by friction; and their food is mainly vegetable. They cultivate the Banana, but on very primitive lines, and Tobacco also, which they utilise for smoking in a rude cigar form. Amongst the possible acquisitions of a future expedition is a magnificent climbing Rhododendron, robust and rampant, and very floriferous, bearing huge bunches of large and brilliantly coloured flowers. The collected plants, however, were accidentally lost on the return journey, and the seed failed when sown. Nearly all the photographs showed peculiarly precipitous views of densely-wooded mountains, largely of limestone, rising in some cases to over 16,000 feet. Numbers of Orchids were noted, a new *Thalictrum*, *Sarracenia*, and other plants; but, for the reasons given, the harvest of living acquisitions which reached here was unhappily but scanty. The difficulties of exploration may be imagined from the fact that the whole of the food required for the explorers and their attendants for several months had to be carried with them, and the return could only be effected by the Dutch Government arranging to send another expedition out to meet them at the end of the period fixed for return.

NATIONAL CHRYSANTHEMUM.

JANUARY 19.—A meeting of the Executive Committee was held on this date at Carr's Restaurant, Strand, Mr. T. Bevan presiding.

It was announced that the subject of Single Chrysanthemums will be discussed at the Conference to be held on December 9 in three papers, dealing (1) with the culture; (2) with the selection of the best up-to-date varieties; and (3) suggestions to future raisers of singles. It was stated that 10,060 visitors were present at the October show, held at the Crystal Palace, and 20,206 at the November show. The Floral Committee awarded 30 First-class Certificates and 19 Commendations to novelties in 1913. The annual meeting will take place on February 2 at Carr's Restaurant, Strand, at 7 p.m.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

JANUARY 12.—The monthly committee meeting of this society was held in the R.H.S. Hall, Mr. Arthur Bedford in the chair. Before the commencement of the business a vote of condolence with the widow of the late Mr. W. Collins was passed in silence. Nine new members were elected. The sick pay for the month on the ordinary side amounted to £58 14s. 8d., and on the State side £28 10s., whilst maternity claims totalled £4 10s. One member was allowed to withdraw interest from his deposit—viz., £2 12s.; the sum of £86 6s. 8d. was passed for payment to the nominee of a deceased member, and one member was allowed two weeks' pay from the Convalescent Fund. The treasurer gave his financial statement, which was very satisfactory, the trustees being empowered to invest a further sum. Owing to the date of the annual meeting falling on Easter Monday the committee decided to hold it on March 9 instead.

ROYAL CALEDONIAN HORTICULTURAL.

JANUARY 14.—The annual general meeting of this society was held in Dowell's Rooms, Edinburgh. Mr. D. W. Thomson, Vice-President, presided, and there was an attendance of 30.

The abstract of accounts submitted to the meeting showed a balance of income over expenditure of £70 16s. 3d., and that the funds had increased by £47 19s. 3d. It was announced in the report by the Council that a rock-garden competition had been introduced into the forthcoming schedule of prizes, and that the dates of the shows had been fixed for April 29 and 30, and September 9 and 10.

Reference was made to a rumour that there was an intention to abolish the section of Economic Botany in the Royal Scottish Museum, and a small committee was appointed to keep in touch with the matter and to watch developments.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

JANUARY 21.—As these pages are being passed for press we learn the result of the election of pensioners to the Gardeners' Royal Benevolent Institution.

The chair was occupied by Sir Harry J. Veitch, chairman and treasurer, and the attendance numbered twenty-four. The secretary, Mr. G. J. Ingram, having read the minutes of the last annual meeting and the annual report for 1913, the chairman referred to some of the more important items in the balance-sheet, more especially to the large donation of £1,532 1s. 7d.

RESULT OF ELECTION.

Table with columns: Name, Age, No. of Votes. Lists names like Sims, Jesse (77, 4,199) and Greenfields, William (78, 3,628).

Following the declaration of the Poll, Mr. Arthur W. Sutton kindly promised to make a donation of £20 to Walter Crossman, aged 66. Mr. Geo. Monro also made a contribution of £10 for the benefit of John E. Ellis, aged 65.

THE SPEAKER TO PRESIDE AT ANNUAL DINNER.

The Chairman announced that the Speaker of the House of Commons, the Right Hon. James William Lowther, P.C., had consented to preside at the next Festival Dinner, which will take place on Friday, June 26.

CEMETERY SUPERINTENDENTS'.

JANUARY 13.—A meeting of the above Association was held on the 13th inst. at the Hammer-smith Town Hall, the President, Mr. J. D. Robertson, in the chair.

The Secretary submitted the names of 25 applicants for membership, and these were duly elected.

The Deaths Registration and Burials Bill will come up again for further consideration in February. The Annual Convention was arranged to be held in July, at a place to be decided later.

PUBLICATIONS RECEIVED.—Maize : Its History, Cultivation, Handling, and Uses. By Joseph Brtt-Davy. (London: Longmans, Green & Co.) Price 25s. net.—Report on the Agricultural Department, St. Vincent, 1912-13. (Barbados: Imperial Department of Agriculture for the West Indies.) Price 6d.

MARKETS.

COVENT GARDEN, January 21.

Cut Flowers, &c.: Average Wholesale Prices.

Table of Cut Flowers prices including Arums, Azalea, Camellias, Carnations, Chrysanthemum, Daffodils, Gardenias, Liliun auratum, Lily-of-the-Valley, etc.

Table of Orchids and other flowers including Orchids, Pelargoniums, Poinsettias, Roman Hyacinth, Roses, Snowdrops, Spirea, Tulips, Violets, etc.

Cut Foliage, &c. Average Wholesale Prices.

Table of Cut Foliage prices including Adiantum Fern, Agrostis, Asparagus plumosus, Carnation foliage, etc.

Table of French Flowers and other foliage including Croton foliage, Eulalia japonica, Moss, Myrtle, Smilax, etc.

Guernsey and Scilly Flowers.

Table of Guernsey and Scilly flowers including Anemone fulgens, Narcissus, Ranunculus, etc.

Table of other flowers and foliage including Narcissus Continued, Ranunculus, Roses, etc.

very few Parma Violets are on sale. A few bunches of Lilac are received daily, but larger supplies are expected shortly from Holland. White Lilac is more plentiful than the coloured varieties.

Fruit: Average Wholesale Prices.

Table of Fruit prices including Apples, Apricots, Bananas, Cranberries, Dates, Figs, Grapes, Lemons, Peaches, etc.

REMARKS.—English Apples of the varieties Blenheim Pippin, Bramley's Seedling, Dumelow's Seedling (Wellington), and Newton Wonder are still available. Oregon and Wenatchee Apples in boxes continue a good supply.

Vegetables: Average Wholesale Prices.

Table of Vegetable prices including Artichokes, Asparagus, Beans, Cabbages, Carrots, Cauliflowers, etc.

Table of Potato prices including Bedford, Blacklands, British Queen, etc.

REMARKS.—Trade remains fairly good, and prices are about the same as those of last week. Consignments this week have shown a large increase, consequently stocks in London are heavy.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending January 17, is furnished from the Meteorological Office:—

GENERAL REMARKS.

January 20, 1914.

Barometer, Wind and Weather.—Throughout the whole of this week the weather was influenced by a large anticyclone, originally of great intensity, which advanced over the United Kingdom from Northern Europe. The region of highest pressure was situated, as a rule, over our northern districts, and the prevailing winds were therefore from some easterly quarter (north-east to south-east), gales from the north-eastward being experienced in the early part of the week on our East and South-East Coasts.

Over the country generally the weather was very dry, and in Scotland North, Ireland South and the English Channel the amount of bright sunshine was in excess of the normal. Over the more northern and eastern parts of England showers of snow or sleet, followed by cold rain, were, however, frequent, and at the close of the week rain was experienced also at most of the Scottish stations. Frost occurred in all districts, the lowest temperatures in the screen being 17° at Fort Augustus and Nairn, and 18° at Balmoral and Kilmarnock. Over a large portion of England and Ireland the sheltered thermometer did not fall below 25°, but on the surface of the grass a temperature of 17° was recorded as far south as Wisley.

THE WEATHER IN WEST HERTS.

Week ending January 21, 1914.

Ten Days of Uniformly Cold Weather.—The past week was cold throughout, and more particularly was this the case during the daytime. The present persistently cold weather began ten days ago, and has been more noticed than it otherwise would have been owing to its having been preceded by four days which were exceptionally warm for the time of year. On the coldest day of the present cold period the temperature in the thermometer screen did not rise above the freezing-point, but on the coldest night the exposed thermometer never indicated more than 11° of frost, which is 10° above the average minimum reading for that thermometer in the middle of January. The ground is still cold, being at the present time about 1° colder at 2 feet deep, and 2° colder at 1 foot deep, than is seasonable. Some rain fell on two days, but to the total depth of less than one-tenth of an inch. On one or two days a few flakes of snow fell. Up to the present time the winter has been remarkably dry, the total fall since the beginning of December only amounting to 1½ inch. There has been very little percolation through either of the soil gauges during the past week. The sun shone on an average for fifty-one minutes a day, which is three-quarters of an hour a day short of the average duration for the middle of January. Calms and light airs alone prevailed during the week, the light airs coming exclusively from some point of the compass between north and east. The mean amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by 2 per cent. *E. M., Berkhamsted, January 21.*

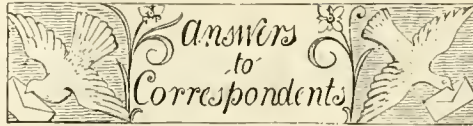
Obituary.

D. MCGILLIVRAY.—*Horticulture*, U.S.A., records the death on the 6th ult. of Mr. Donald McGillivray, gardener and florist at Brattleboro' and Newport, U.S.A. Mr. McGillivray was trained in Scotland, and like numerous other gardeners from Great Britain who have settled in the United States built up an important florists' and nursery business.

TIMOTHY O'CONNOR.—We learn also from *Horticulture* of the death of Mr. Timothy O'Connor, one of the most widely known florists in the State of Rhode Island, who died at his home in Providence, U.S.A., on Friday, 19th ult., after a long illness. He was in his 77th year. Mr. O'Connor was born in Fermoy, Co. Cork, Ireland, and settled in Providence when he was 16 years old and began work as a gardener. Shortly afterward he entered the employ of a florist. While still a young man he founded a florist business, which at the time of his death was one of the most flourishing in the state.

ENQUIRY.

CROWN OF THE BRIDE.—Can any reader give me the name of a shrub which grows freely in Argentina and is known to the natives as *Corona di Novia*, Crown of the Bride? It was described to me by a gentleman who owns large tracts of land there as growing about 4 to 5 feet in height, with a pure white flower, something resembling in shape a crown as shown on British arms. It makes a splendid hedge there, and is magnificent when in bloom. *C. B.*



CARNATIONS: *J. W. L.* The colour of the flowers on their arrival here did not appear specially attractive. You will do well to cultivate the plants until next season, and you may find by that time that the novelty is worth sending for the consideration of the Royal Horticultural Society's Floral Committee, or you may send blooms to the Perpetual-Flowering Carnation Society's exhibition for award.

CLEMATIS MONTANA: *A Dorset Gardener.* You may cut the old plant of *Clematis montana* down to the ground in April, and it will break again strongly, unless it has a very old and thick stem, in which case it should not be cut so severely, but the straggling growths should be cut away, leaving the main stems, which will break profusely from end to end. By this treatment you will find that the plant will improve in vigour and floriferousness.

CONIFER WITH SWELLINGS: *E. Ball.* The tree is attacked by the Spruce-gall aphid, *Chermes abietis*. As only one plant is affected it will be best to grub it up and destroy it by burning. If the galls are noticed on other trees spray them next season with kerosine emulsion.

FORCING NARCISSUS PRINCEPS: *C. H.* To your enquiry as to the "earliest date to get *Narcissus Princeps* in flower," a few blooms may be had so early as January 10, regular gatherings following about a week later. In the forcing of these bulbs, however, no two seasons' results are exactly alike, even when the stock is home-grown. Lack of sunlight and sun-heat during the forcing period affects their progress enormously, and in times of fog the plants make no progress. The conditions under which the bulbs mature are important factors in forcing, and bulbs maturing in an early district may be in flower a week in advance of others from colder parts. The time of planting and the subsequent introduction of the bulbs into heat also affect the time of flowering. Much artificial heat in the very early stages of forcing not infrequently has the opposite effect to that intended, retarding instead of forcing growth. Taking a score of years for a district south of London, regular gatherings have varied between the 12th and 18th of January. In your district the first blooms should be possible some days in advance of the first-named of these dates.

FUNGUS ON LAWN: *Bulbo.* From your description we suspect that the trouble is due to "fairy rings," caused by the fungus *Marasmius oreades*. Soak the turf and ground thoroughly with strong Bordeaux mixture four times at intervals of eight days, or use sulphate of iron at the rate of 1 lb. of sulphate of iron in each gallon of water. Loosen the turf with a fork to allow the liquid to enter freely.

NAMES OF PLANTS: *J. L.* The specimens are too scrappy to properly identify. 1 and 2, Garden varieties of *Coleus*; 3, *Pelargonium*, scented variety; 4, *P.* Ivy-leaved variety; 5, *Saxifraga sarmentosa*.—*Foreman.* 1, *Pteris geraniifolia*; 2, *Adiantum formosum*; 3, *Asplenium lucidum*; 4, *Blechnum corcovadense*.—*X. Y. Z. No. 1.* 1, *Sansevieria zeylanica*; 2, *Microlepia platyphylla*; 3, *Nephrolepis rufescens*, crested form; 4, *Hibiscus rosa-sinensis* variety; 5, *Aspidium coriaceum* capense; 6, *Asparagus decumbens*. (Other matter next week.)—*V. ?.* 1, *Oncidium excavatum*; 2, *Masdevallia simula*; 3, *Pleurothallis Scapha*.

OSAGA ORANGE: *M'Head.* (1) *Maclura aurantiaca* (Osaga Orange) is not a true Orange, but belongs to the same family as the Mulberry (*Urticaceae*). Its fruit has an outside resemblance to an Orange, but is of very different internal structure, and quite inedible. The fruit is rarely seen in this country, firstly, because our climate is too dull for its development, and, secondly, because the trees are unisexual, so that if both sexes are not represented no seeds are formed. The tree is of more interest than beauty with us, the flowers

being small and green. It has, however, been recommended as a hedge plant, its armature of spines being very formidable. It is so used in the South-eastern United States, where it grows wild.

PEAR DUCHESSE D'ANGOULEME: *A. J.* This variety is classed by Mr. Chittenden and Mr. C. H. Hooper among the more or less self-fertile Pears. *Beurré Hardy* is in the same class and blossoms nearly as early, but comes into season for eating at about the same time. If you prefer a variety for much later use *Easter Beurré* is another Pear in the same class and an early blossomer. Both Pears are of excellent quality, but *Beurré Hardy* succeeds more generally than *Easter Beurré*.

PEROWSKIA AND ELAEAGNUS: *M'Head.* As to whether *Perowskia atriplicifolia* or *Elaeagnus argentea* is "the prettier and more interesting the season through," that must depend largely on the taste of the planter, but we think the latter is more effective. Its silvery foliage is good for six months of the year, and its rich yellow flowers are very fragrant. The *Perowskia* is charming at its best, flowers late, and for a good long period. But it starts late into growth, and cannot be said to have any beauty, even in leaf, until late June.

R. H. S. SENIOR EXAMINATION: *G. P. B.* The date of the examination is April 1, and it will be held simultaneously in as many different places in Great Britain and Ireland as circumstances may demand, even if only one candidate be sitting at any particular place. The time allowed for the examination is three hours and a-half, the hour fixed being generally from 6 to 9.30 p.m. Those wishing to sit for the examination, who have not attended any particular series of lectures, must send in their name and address, and also the name and address of some responsible person willing to conduct the examination, to the secretary, R.H.S., Vincent Square, Westminster, at least three weeks before the date of examination. A capitation fee of 5s. is charged for every student (for the junior general examination the fee is 2s. 6d.) Each candidate must send in the name and address of a proposed supervisor, unless he can sit in London, in which case he must say so on his entry form, and the society will make arrangements for him at their hall in Vincent Square, Westminster.

RICHARDIA (ARUM): *E. D.* The development of three spathes is unusual, but not unique. Seeing that the spathe is not part of the flower proper, but merely a bract, or modified leaf, the occurrence is not so wonderful as many imagine.

SALVIA RUHLANDI: *A. Cotton.* There is apparently no *Salvia* of this name. What is probably meant is *S. rutikaua*, a greenhouse species which requires ordinary greenhouse treatment in loamy soil. It is called the "Pineapple-scented Sage" and is of sub-shrubby habit, growing from 2 feet to 3 feet high. The origin of this plant is uncertain, but it has been in cultivation for about thirty years.

WASPS' NESTS IN NOVEMBER: *A. Shalleton.* Your record of large numbers of wasps being found in their nest on November 26 of last year is most unusual. As a rule the nest is deserted by all the wasps with the exception of the old queen or foundress of the colony, who dies in her nest at the end of the season. The males and workers also die off, the only survivors of the colony being the new queens. In the nest you had under observation most of the workers had gone, but a large number of males and nearly all the new queens were in the nest. The 300 examples you separated and placed in the box are all queens. A number of the queens were infected by a large intestinal worm belonging apparently to the genus *Sphaerularia*, a parasite which is known to infest bumble-bees and wasps.

Communications Received.—*F. A. E.*—*W. O.*—*J. R.*, Edinburgh—*D. W. R. C. B.*—*G. E. J.*—*W. K.*—*J. C.*—*E. A.*—*Scotia*—*W. C. K.*—*W. M. G.*—*J. H. D.*—*A. C. T.*—*W. X. Y. Z.*—*M. H.*, Lancaster—*M. B.*, Java—*W. S.*—*G. W. H.*—*I. T.*—*F. J.*—*Dr. F. T.*, Italy—*C. E. W.*—*G. T.*, Versailles—*W. W. H.* & *Co.*—*F. B.*—*J. S. H.*—*A. J. L.*—*F. H.*, California—*C. H. H.*—*E. O.*—*Mrs. F. K.*—*H. W. J. T.*—*C. J. K.*—*F. J. O.*—*H. J. A.*—*R. B.*—*J. E. W.*—*H. J.*—*G. P. B.*—*Roamer*—*C. F. T.*—*J. J.*, Blandford—*W. G.*, Lewes—*G. H.*—*Vitis*—*H. J.*, Godstone—*A. H. F.*—*D. M.*—*W. J. B.*—*Nita*—*J. S.*—*K.*

THE
Gardeners' Chronicle

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JAPANESE LANDSCAPE GARDENS.

(See Figs. 32, 33, 34, 35, 37, & Supplementary Illustration.)

TO understand and interpret a Japanese garden of the landscape type, much more is needed than a mere aesthetic appreciation. The garden is the result of long centuries of nature-study and religious contemplation, and contains elements that carry us away to the banks of the Niranjara River in India. There it was, under a Bodhi tree, that Guatama Buddha found the truth that neither books nor penance had taught him. Truth lay in getting nearer the great loving soul of nature.

To this day a stone Buddha and a bowl carved in the shape of a Lotus flower—his favourite symbol, implying that the most exquisite life and beauty may spring out of shapeless mud—are congenial features in a Japanese garden. Like the elaborate tea ceremony, the landscape garden began in religious rites and contemplation.

It was Bodhi Dharma, twenty-eighth in descent from the great master Guatama, who carried his teachings to China, and founded Buddhism in the Middle Kingdom. There it came into contact with the newly-developed delight in tea, which was first esteemed because votaries of the Buddha cult found that it prevented drowsiness during their long hours of meditation. Fifteen centuries ago the Chinese people went into ecstatic raptures

over the soothing qualities of tea. With the Taoists it was regarded as an important element in the elixir of immortality. The southern Zen sect among the Buddhists framed an elaborate ritual of tea. These monastic people, living a secluded life, and given over to ascetic ideals, used to gather before the image of Bodhi Dharma, the Buddhist apostle of China, and drink tea out of a single bowl with the strict formality of a sacrament.

The later troubles of the great Chinese Empire destroyed any such idealistic customs and rituals; romance left for ever the drinking of the enchanting cup. But in the twelfth century these rituals were transferred to the island empire. A contemporary of Richard the Lion-Hearted, who had gone across to China to study the teachings and rituals of the Zen school, returned to the Japanese capital with a package of the celebrated Sung tea-seeds, some of which were planted at Uji in its neighbourhood. Ever since, this district has been noted for the peculiar excellence of its tea.

By the time of the Ashikaga regent Yoshimasa, who died a score of years before Columbus discovered America, the tea cult, which demanded a quaint and serene landscape for its due celebration, was established in Japan. The tea-garden became a haven of peace and relaxation to the harassed warrior and statesman. Just at the period when the country was torn asunder by rival factions, when, as in the English Wars of the Roses, every man of mettle had his sword sharpened and by his side, the cult of the garden and of the tea asserted itself as furnishing an Elysium. "Tea with us," says a charming modern writer, Okakura Kakuzo, "becomes more than an idealisation of the form of drinking; it is a religion of the art of life. The beverage grew to be an excuse for the worship of purity and refinement, a sacred function at which the host and guest joined to produce for that occasion the utmost beatitude of the mundane. The tea-room was an oasis in the dreary waste of existence where weary travellers could meet to drink from the common spring of art-appreciation."

The dust and din of the outer world were left behind as the visitors to the tea-garden entered the gate, and waited at the *machiai*, or rest-shed, until their host summoned them. From the *machiai* to the tea-room was the winding *roji*, or garden path, with its orderly but oddly-framed stepping stones, around which clustered dried pine needles. They would touch in passing some hoary moss-covered granite lantern, shaded by a gnarled evergreen tree. All conduced to serenity of spirit. A great tea-master, Kobori-Enshiu, who lived in the days of Queen Elizabeth, finds the idea of the garden path in the following verses:—

"A cluster of summer trees,
A hint of the sea,
A pale evening moon."

Absolute purity is demanded everywhere. Here is a story:—"Rikin was watching his son Shoan as he swept and dusted the garden path. 'Not clean

enough,' said Rikin, when Shoan had finished his task, and bade him try again. After a weary hour the son returned to Rikin and said: 'Father, there is nothing more to be done. The steps have been washed for the third time, the stone lanterns and the trees are well sprinkled with water, moss and lichens are shining with a fresh verdure; not a twig, not a leaf have I left on the ground.' 'Young fool,' chided the tea-master, 'that is not the way a gravel path should be swept.' Rikin then stepped into the garden, shook a tree and scattered gold and crimson leaves over the path—the wealth of autumn. Rikin demanded not only cleanliness, but also the beautiful and the natural."

Until their arrival in Japan, as a recent writer has remarked very justly, globe-trotters are under the impression that a Japanese garden means a paradise of flowers, outvying the American or European enclosure. Rather is it a paradise of rocks and stones, full of suggestion of remote valleys and hills. Flowering shrubs come in accidentally; while a blaze of colour could only appear as a background or contrast. The type of tree is that of some quaint evergreen with an individuality of its own, that seems—with its twisted roots and sinewy limbs—to tell of storms weathered successfully.

Like everything that comes from a Chinese source and retains its original flavour, there is the cult of the old and mature in the arrangement of the garden. It is our English poet Browning who speaks of the ideal man as finding truth and reality in the ripeness of his years:—

"Youth ended, I shall try,
My gain or loss thereby . . .
Young all lay in dispute,
I shall know, being old."

Every stone in the garden seems to have a meaning of its own, and the most guileless-looking rock from the river-bed may bear a name like Moon Shadow, Wild Wave or Flying Crane. The garden is an enclosure where perfect proportion reigns, and the eye is suffered to rest only upon what conveys an impression of serenity. Form and tone are everywhere; colour is merely accidental—if it be present. At no time is the Japanese garden more beautiful than by moonlight.

There are three essentials—a stone, a tree, and water or its suggestion. Thus a watercourse may be dry and yet suggest falling water. It is not necessary to have water that may be turned on when required. There is, indeed, a distinct type of garden known as the *Kare-Sunsui*, where water is not present.

The stone lantern is to be regarded as an ornamental stone, and has a place in every garden, however small. Unlike ninety-nine of every hundred Japanese articles of virtue, the stone lantern cannot be traced to a Korean or Chinese source. The first lantern we read of was erected early in the seventh century of our era by an emperor's son, Prince Iruhiko, who placed it by the side of a lake where some highway robberies had taken place. Its earliest intention was, therefore, of a social kind, to benefit

wayfarers. From the highway it found its way to the courts of temples, as a fitting decoration, and elaborate lanterns were presented to shrines by devout worshippers. At Nikko and other Buddhist centres the stone lanterns are crowded together like automobiles in Piccadilly of an afternoon. Among them are many bronze lanterns, and foreigners who have been fortunate in securing one have placed the lantern in the garden; but it does not properly belong thereto. Hanging lanterns, however, of bronze are often suspended by a chain from the verandah eaves of a house

usually hexagonal and curved at the extremities of the angles. Perhaps the best known of these pillared stone-lanterns is called the *Kasugakata*. Next comes the broader snow-viewing or *Yukimi* kind, with umbrella-like top and spreading feet. Again, there is the bracket form, where there is only one support of the nature of a leg, assuming a curved form, and allowing the fire-box to rest free over a pool. To many the appearance of instability in this form is an objection, but it can be used very effectively.

Lastly, there is the unassuming "Crouching Lantern," with neither pillar, feet, nor bracket.

This type is patterned after these fabled isles of the sea, peopled by monsters. The whole island takes the form of a tortoise, emblem of strength and longevity; on its back rests a rugged Pine tree. Stones, carefully selected, furnish the idea of the head, of the four feet, of the tail. There is also the *Fukiagejima*, or wind-swept island, with the tree branches bending to an imaginary breeze, so as to suggest mid-ocean. No fresh-water vegetation is in place with either of these forms, but a pebbly beach, sea sand and shells.

What is known as the Master's Isle is placed in



FIG. 32.—VIEW IN A JAPANESE GARDEN AT PASADENA, CALIFORNIA.

or tea-room, so as to be reflected in the garden basin, and they may be used without incongruity. Porcelain lanterns have been used on occasion, but they do not lend themselves readily to the production of the age- and weather-worn impression so desired in a garden. They are too fragile and ornamental in nature, demanding tracery and pictures of their own.

Lanterns are not much associated with actual lighting; but natural stones are often so arranged in the vicinity of standard stone lanterns as to lead up to a higher "lamp-lighting stone," often double-stepped. There are, broadly speaking, four patterns of lantern. First is the pillared lantern, with the roof over the fire-box,

It is placed upon some rude stone near a low water-basin.

The Japanese garden has also room for lamp-posts of wood. These stand on garden roads or in passages, adjacent to summer-houses or resting-sheds. The fire-boxes take a square or wedge shape, are roofed with boards or thatch, and are carried on high posts.

A garden lake of any size demands its island or islands. These are of two kinds—those that are reached from the shore by stepping-stones or bridge, and those that are out in the open, suggesting islands in the ocean. The chief of the latter kind is the *Horai-jima*, or Elysian Isle, the fairy or Brownie land of Chinese legend.

the foreground of the landscape and is reached by a bridge or a picturesque combination of bridge and stepping-stone. As often a peninsula (*deshima*) as an island, it usually has a resting-shed or rustic harbour for the visitor, as well as a Stone-of-Easy-Rest, set apart as a favourite spot for the master to take his ease. We also expect to see in the Master's Isle a Stone of Amusement (*Yukio-Seki*) on a headland convenient for angling.

Very similar to the Master's Isle is the Guest's Isle, which is placed more in the background and is likewise approached by bridge and stepping-stones. Its ornamental stones are chosen to denote hospitality. There is a

Guest-honouring Stone, which serves as a rest for an important visitor; an Interviewing Stone, of flat shape, in front of the Stone of Honour, where the host stands to salute visitors; and Water-fowl Stones for birds to rest upon.

The Master's Isle as well as the Guest's Isle may contain a Seat of Honour Stone, patterned after a sacred stone in India, and a choice old tree always grows beside it. This takes the mind back to the banks of the Niranjara River, when truth flashed upon Guatama's soul. I might also mention the *Yama-jima*, or Mountain Isle, containing two peaks, one somewhat higher than the other. Encircling this island is a stretch of flat beach with occasional rocks.

A well is an indispensable feature of a Japanese garden. While in itself useful, its chief end is often ornamental, helping to express the mood or sentiment of the whole place. The ordinary form contains a border or box-like frame of wood or stone, two buckets suspended on a pulley, one resting on the edge of the frame, the other in the water. The accessories are a drain, stepping-stones and ornamental rocks. Sometimes the pulley is of porcelain; the Oxford frame is popular for the box-frame, the sides being of artistically-grained wooden slabs.

There is a semi-religious sentiment hovering round the presence of water in a Japanese garden, as something pure and immortal, reminding us of the text in St. John's Gospel, iv., 14. "A well of water springing up into eternal life." An ornamental stone water-basin, taking the form of Fuji-yama, maybe, or, in statelier gardens, of a bronze Lotus bowl, is as common as the well. A running-water basin is also popular, the water being allowed to stream over the bowl.

There are several types of garden bridge. First comes a simple slab of granite or schist. Then there is the semi-circular Chinese arch, which, with its reflection in the water, makes a full-moon effect, giving it its name. A similar conceit is found in the name *Taiko-bashi*, or Drum Bridge, which is smaller and quaint, the circular interior combining with the reflection to suggest the head of a drum. A zig-zag bridge, with a succession of slabs at angles, is known as *Yatsubashi*, after the scenery of Yatsubashi, in Mikawa, noted for its beds of Iris flowers linked by a curious composite bridge. There are also bridges made of wattle-work covered with earth. Close to bridges of the granite-slab kind and the earth bridge it is usual to find a stone lantern.

Torii, or bird-perch gateways, come but sparingly into art gardens. In his elaborate work Conder finds space for but one passing reference to this decorative effect. It is more appropriate to temples, but can on occasion be used with good results in the private garden. The vermilion-coloured variety, with tilted cross-beam, is of later Buddhist origin; the original Shinto *torii* had straight beams of unpainted wood, white at the ends.

Let me discuss the essentials of garden construction. First comes the necessity of following and encouraging natural lines—assisting Nature, and not forcing her. Keep the geometrical and the artificial far away. Rigidly exact circles or ellipses, or rectangles, or squares—these have no place in a Japanese garden, as they have no place in actual outdoor life. Even the Parthenon, that miracle of architectural beauty, as recently shown by a capable writer, does not deal in straight lines. The apparent straight lines are delicate curves, so shaped as to give at a distance the appearance of forthrightness. And stone, it must be remembered, is not nature-life. Here must I make the exception: garden stone lanterns may always have geometrical curves, angles, and straight lines, for they come into a different category because of the material. The ease and grace of life are for the most part expressed in terms of subtle curves. To find these subtle curves demands both time and sym-

metry. Secure ease and grace of expression in the garden without the appearance of painstaking effort or studied labour. Here comes in the great principle of *Ars celare artem*, not manifest in the Dutch or Italian garden. The keynote of the Japanese garden is the spontaneity of life, which is Nature's secret that we may wrest from her by minute care and patience.



FIG. 33.—STONE JAPANESE LANTERN, SHIRA-TAYU (WHITE-ROBED CIVILIAN).

Rich design, the accumulation of ornament, savour of vulgarity. Even one graceful old Pine, with two or three *yamaji* Chrysanthemums, may make a garden of supreme taste. The garden must be given a soul.

Good taste has the effect of inspiring a feeling of truth and purity, while vulgar taste has a depressing effect. Refined taste in a garden consists not in the extent of its area nor in the

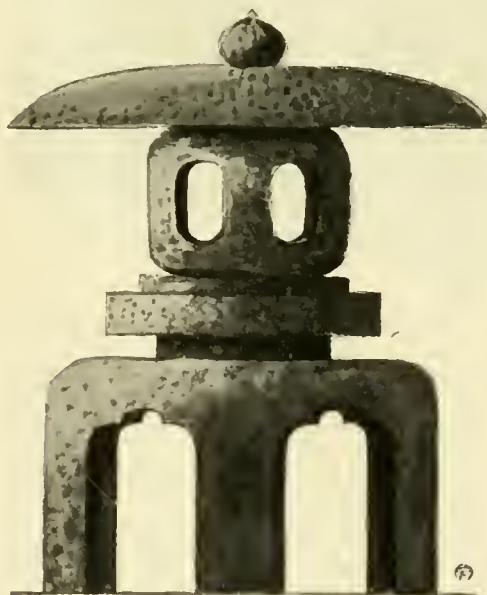


FIG. 34.—JAPANESE STONE LANTERN, YUKI-MI (SNOW-VIEW).

profusion of its shrubs and trees, but in the truthfulness of the setting or composition. In arranging the details for a garden it is well first to study the topographical features of the spot where you decide to make it. Then transplant thither the mood or aspect of some vale or stream or hill that is dear to your memory, and arrange all the single effects to suit the whole design.

Dispense with a fictitious mountain, says one good authority, if there is a fine waterfall. Eliminate a pagoda if there is an arbour. Study reticence, the "something left over," which leaves room for suggestion. A garden without suggestion is no real garden. Be ever careful to transcend artificial rules and enter as far as you can into the real spirit of Nature. *J. M. Dixon, Los Angeles.*

NEW OR NOTEWORTHY PLANTS.

NEW GARDEN PLANTS FROM NEW MEXICO.

Continued from p. 50.

SEDUM COCKERELII BRITTON.

This is a species found in the mountains near Santa Fé; it has white flowers with bright, pink styles. It prospered in the garden, and while small and not very conspicuous, it is a desirable addition to the rockery.

LEUCAMPYX NEWBERRYI GRAY.

This beautiful Composite, with large, white rays, abounds in the Las Vegas mountains, forming a conspicuous feature in the landscape. A single plant in the garden at Boulder has not as yet done itself justice, and indeed the species should be grown in masses for the best effect. The plant seems to be self-sterile like the sunflowers, as ours yielded no seed.

GAILLARDIA PULCHELLA Foug.

A well-known annual species, which I found growing in great abundance in loose volcanic soil at the Rito de los Frijoles. Very rarely a variety (*albiflora*, nov.) was found in which the yellow of the rays is replaced by white, faintly tinged with cream. Seeds from the white variety, undoubtedly crossed with normal plants growing all around, gave only the ordinary form in the garden; but next year we expect to see the recessive white again.

AQUILEGIA DESERTORUM (JONES) COCKERELL.

This is a dwarf species with red flowers of the type of *A. canadensis*, and with an enormous root. I found it growing in Santa Fé Cañon, and brought a plant home which has flowered well in the garden and produced seed. We shall use it in crosses with other species. *T. D. A. Cockerell, University of Colorado, Boulder, Colorado.*

TREES AND SHRUBS.

THE HAMAMELIS.

HAMAMELIS ARBOREA, the Japanese Witch Hazel, will, like others of the race, bloom well while still quite small. In Japan it is stated to reach a height of 20 feet, but nothing approaching this size is to be seen in this country. The species was introduced into England in 1862, but although it is one of the most characteristic shrubs we possess, it is still rare in gardens, a remarkable fact, as in the winter it is very handsome. It generally grows with a well-branched head, and, when every shoot is covered with its curiously-shaped blossoms, it is a sheet of yellow. The blossoms will endure several degrees of frost without being damaged, and are at their best during the months of January and February. The blossoms have narrow petals, which have the appearance of rolls of yellow ribbon before they are fully open, and when they are entirely expanded they suggest strips of twisted gold leaf. Each flower has four petals, and their bright yellow shows up well against the crimson sepals. The leaves, which are not perfected until the flowers are past, are very much like those of the Hazel, and in consequence Hazel has been used as a stock for the Hamamelis, but as the two plants belong to different genera this procedure has proved unsatisfactory. *H. arborea*

is seen to the best advantage when overtopping dwarf shrubs and when it is more generally grown it cannot fail to become popular. In this garden there is a specimen over 6 feet in height, every branchlet of which is studded with buds, which are now just showing yellow, so that in a fortnight or so it should be in full bloom.

H. japonica differs from *H. arborea* in being a less strong-growing shrub and a month or more later in coming into flower. The blossoms are also paler in colour. *H. Zuchariniana* much resembles *H. japonica*, but the calyces are darker in tint. These two are so much alike that, unless closely inspected, they cannot be distinguished. *H. virginica*, the American Witch Hazel, is not a winter but an autumn flowerer. The flowers of this shrub are smaller and less brilliantly coloured than those of the Japanese species. During the months of September and October, as the leaves begin to assume their golden colouring, it commences to flower. It is a robust shrub and soon attains a height of 10 feet.

and will also thrive in a peaty compost. It is naturally of a bushy habit, but can easily be pruned so as to form a small standard tree. *Wyndham Fitzherbert, Kingswear, Devonshire.*

NURSERY NOTES.

MESSRS. JAS. VEITCH AND SONS, LTD.

THE famous nurseries of Messrs. Jas. Veitch and Sons in the King's Road, Chelsea, have introduced to commerce a large number of the exotic plants which decorate our greenhouses and stoves; and hence it need scarcely be said that the nursery itself is interesting at all times. The *Nepenthes*, greenhouse *Rhododendrons*, winter-flowering *Begonias*, *Hippeastrums* and *Orchids*, in which the firm has specialised from the first, are as fine as ever, and even during the present dull season a good show of bloom may be seen.

the use of *B. socotrana* as a parent, are represented by the brightly coloured *B. John Heal* and still finer *B. Mrs. Heal*. The tints of the hybrids were at first deep rose and red, but careful breeding has resulted in the production of other bright colours in the same section. The stock is kept at the Feltham Nurseries, but examples at Chelsea show that sixteen distinct and brightly coloured varieties are now in bloom, specially bright being *Optima*, *Fascinator* and *Her Majesty*, with yellow and copper-orange tints, and *Exquisite*, of a rich rose-red.

The *Hippeastrums* are resting dry in their house, some pushing up spikes, and all in that vigorous condition which promises the fine display in spring which is one of the attractions of the nursery.

In the ornamental greenhouse is a good display of *Chrysanthemums*, *Erica hyemalis*, *E. melanthera* and other plants, with fruiting *Solanums*, etc. The warm houses have a very fine lot of *Codiaeums* (*Crotons*), their handsomely-coloured foliage being as bright as flowers. Standing above the delicate foliage of *Selaginellas*, with *Begonia Gloire de Lorraine*, both white and pink, to give flower, they are specially attractive.

Codiaeum B. Comte, with its very brightly coloured foliage of metallic lustre, is one of the best, and said to stand changes of temperature well. *C. F. Sander* has the basal halves of the leaves yellow, the tips green. *C. Thompsonii*, *C. Chantrieri*, and the different forms of *C. trilobus*, of which the variety *Disraeli*, one of the oldest, still appears to be among the best.

In the next stove house are the specimen foliage plants, the noble plant of *Dracaena Goldieana* with thirteen stems being a fine object, and the *Anthuriums* and *Alocasias* of the *Veitchiana* section are fine examples. On one side is a good collection of pretty-leaved *Marantas*, which are not now often seen.

Among good batches of decorative plants are some fine plants of *Asparagus myriocladus*, one of the best and most useful forms; a house of variegated *Aspidistras*; a fine lot of decorative Ferns, Mosses and Palms; a good lot of bushy *Otaheite Oranges* well furnished with fruit; *Dracaenas*, etc.

A feature at this nursery is the collection of stove and greenhouse climbing plants, and of pretty greenhouse plants once reigning favourites in gardens, but now scarce, owing to the needs of space for plants in batches. Nevertheless, the old species are as beautiful as ever, and are often wanted, though not in quantity. It is well to make known where they can be had.

The old *Camellia* house is now filled with Palms, which look well in the lofty structure.

THE ORCHIDS.

At the present time there is not a very great show of bloom, but some *Calanthes*, *Angraecum eburneum*, *Laelia autumnalis*, *Vanda Amesiana* and others are in flower; and in the *Cypripedium* house is a good show of bloom and bud on the forms of *C. insigne*, including the pretty yellow and white variety *Sanderae*, and the large *Harefield Hall*; forms of *C. Leeanum*, *C. Hera* and the hybrid raised here between it and *C. villosum*, named *Countess of Carnarvon*, which varies very considerably in the colour of its flowers, some being very fine; *C. Thompsonii* and others. Some plants of the handsome *Oncidium splendidum* have stout branched spikes 3 feet in height; a large lot of *Cattleya Schröderae*, *C. labiata*, *C. Trianae*, *C. Mendelii* and other *Cattleyas* are in fine condition, and well furnished with flower-sheaths, and the *Odontoglossum* house has a good show of spikes with some in bloom. The *Burmese Dendrobiums* grow very strongly, and *D. Wardianum*, forms of *D. nobile*, *D. crassinode*, etc., show well for bloom.



FIG. 35.—TAIKO, OR DRUM BRIDGE IN HUNTINGTON GARDEN, PASADENA, CALIFORNIA.

H. mollis is a native of China, and was not introduced into this country until 1898, a far later date than that of the entry of the better-known Japanese *H. arborea* and the American *H. virginica*, which were first introduced in 1862 and 1736 respectively. This new species, however, promises to take a leading place in the genus, as it is one of the most attractive of the various kinds. Owing to its recent introduction large specimens are not as yet to be seen here. Its oval, broad leaves are coated on the reverse with a dense covering of small, stellate hairs, which at once render it distinct from the other species. The golden petals of the blossoms are straight and flat, and have upturned ends, being quite unlike those of *H. arborea*. As a rule it attains the zenith of its beauty about the New Year, though it occasionally comes into bloom a trifle earlier, and is considerably in advance of the better-known *H. arborea*, which is usually not in full flower until towards the close of the month of January. A delightful feature about this plant is that its flowers have a delicate Primrose fragrance. It will succeed in light, fibrous loam,

One of the most interesting houses is that in which the famous collection of Pitcher plants is grown, the plants still bearing a fine lot of pitchers. *Nepenthes ventricosa*, *N. Mastersiana*, *N. Rafflesiana*, *N. Hookeriana*, *N. Mixta*, *N. Tiveyi* and most of the others are well set with pitchers. The very distinct *N. ventricosa*, which bears large urn-shaped pitchers, generally of a pale green colour, but often tinged with pale reddish rose, is specially attractive.

The house of greenhouse *Rhododendrons* has not been without flower for years, and the compact plants, well furnished with buds for flowering later, have among them a sprinkling of plants in bloom. A great advantage of these pretty plants is that they last a very long time in flower, and large specimens of some of the kinds continue to bloom more or less all the year. The best of those now in bloom are *Lord Wolseley*, copper orange; *Florinda*, deep rose; *Baroness Schröder*, flesh pink; *triumphans*, red; *Mrs. Heal*, white; several forms of *R. jasminiflorum*, and the deep red *Little Beauty*.

The winter-flowering *Begonias* so successfully raised and developed by Messrs. Veitch through

THE ROSARY.

CULTIVATORS NEED A GREATER VARIETY OF STOCKS.

THERE is one point in the cultivation of Roses that has always struck me as unprogressive—namely, the determined manner in which propagators stick to seedling, or cutting, Briar as stocks for budding purposes. The Rose is now grown extensively in gardens all over the country, and the nature of the soil must vary considerably. In some gardens the soil will be of a suitable character for the successful cultivation of the Rose, but in many other gardens, chiefly owing to light soils, growers have extreme difficulty in obtaining satisfactory results. Nevertheless, in face of these varying conditions, there is but one root-stock in general commerce, and that is usually derived from the seed of the Dog Rose, *Rosa canina*.

We hear a great deal, for example, about the success of a particular Rose in certain districts, while from other parts we have many complaints that the same variety will not thrive, and it is condemned as worthless. It is not the scion that is at fault, but the stock. The Dog Rose is not at home on every soil, and growing in a natural state it avoids soils of certain characters, and is rarely found upon them. When this is considered it seems strange that Briar stocks should be so largely used, and that little or no attempt should be made to discover another rooting medium for Roses that must be cultivated in gardens where the soil is not of the kind usually associated with the successful cultivation of the various types of Roses now so popular.

There are some members of the genus *Rosa* that are found in a thriving condition upon very light soils, and one of the most common is *R. pimpinellifolia*, our little native Scotch Rose. I know where thousands of plants of the Pimpernel Rose flourish most profusely in what is practically pure sand on the sea coast of the western district of East Lothian, and the Briar is comparatively rare in the immediate district. *R. pimpinellifolia*, however, is not suitable as a stock for Roses, owing to the enormous number of suckers which it produces from its roots.

Notwithstanding this, I would like to see some experiments carried out with this species of Rose as a rooting medium for cultivated varieties, and there is a natural hybrid between it and the Dog Rose that it might be possible to fix and use for budding purposes under certain soil conditions. There is no doubt, however, that *R. pimpinellifolia* and some of its natural hybrids do well upon soil on which no other Briar would thrive, and it suggests the possibility of some other species behaving in a similar way.

Such a species may be found in *R. laxa*, and an experience of three years with this stock has taught me that it may have enormous possibilities and prove of great benefit to those who must grow their Roses on light and dry soils. *R. laxa* was introduced by Retzius in 1803, and is a native of Siberia. It is not such a strong grower as the Dog Rose, and a bush that is now three years old has only attained a height of 3 feet. Its long, thin, green branches are almost devoid of thorns—one good point for the budder—and the flowers are pure white with just a suspicion of yellow at the base of the petals.

It is the wonderful root system, however, of this species which is of the greatest importance to the rosarian, and its value in this respect deserves the fullest investigation. On light soils this stock has given results of the greatest promise, and the immense quantity of fibrous roots which it produces gives the scion every opportunity to thrive and flourish. I have noted Roses upon Briar gradually degenerating upon a light, dry soil, whereas plants worked upon *R. laxa* have steadily improved. *Laxa* stock is easily worked, and on the whole is not prone to sucker. The sap rises earlier in the season than in Briar, and budding operations may be begun at an earlier date.

Apart from the question of soils, there is another matter that is of importance to the

grower. I think Major Hurst has pointed out in a recent note on the subject the heterozygous character of *Rosa canina*, and the immense variation found in a break of seedlings about to be used as stocks for budding purposes. He has drawn attention to the fact that some are strong and vigorous, while others are of a totally different character, many being weak and only producing indifferent growth and roots. The homozygous nature of *R. laxa* is very noticeable, and a batch of seedlings from this species planted up for budding will show practically no variation whatever from the type.

When it is considered that the modern cultivation of the Rose has altered considerably, and varieties that are esteemed for decorative purposes, as opposed to the old style of almost purely exhibition sorts, are now mostly in demand, it means that growers nowadays expect plants to stand and give of their best over a series of years. In this connection it is satisfactory to note that Manetti as a stock is now almost discarded, and

ORCHID NOTES AND CLEANINGS.

MESSRS. HASSALL AND CO.

IN the concluding paragraph on Orchid novelties in 1913 (p. 20) a comment on novelties in general appears in the same sentence as the appreciation of the new plants flowered by Messrs. Hassall and Co. The high reputation for good culture enjoyed by this firm, and our description of their collection published in a recent issue, make it scarcely necessary to point out that the sentence should be broken, and the latter half placed in a separate paragraph as a general comment.

ODONTOGLOSSUM AMABILE ASHLANDS VAR.

At the last meeting of the Manchester Orchid Society, December 18 last, Richard Ashworth, Esq., Ashlands, Newchurch, Manchester (gr.



FIG. 36.—ODONTOGLOSSUM AMABILE ASHLAND'S VARIETY.

no one who has the welfare of the Rose at heart will regret its disappearance. In like manner *R. rugosa* has come to the front of recent years as a stock for standard Roses. The splendid fibrous roots of this species produce and maintain enormous heads of bloom, and for plants grown in this style it seems disposed to oust the Briar. There is no doubt that Briar stocks are splendid upon certain types of soils so far as dwarfs are concerned, but there is now strong evidence that *R. laxa* is the stock of the future for those who must of necessity grow their Roses, either for exhibition or decoration, on soils that have hitherto been regarded as almost hopeless for this work. *George M. Taylor, Midlothian.*

Mr. Gilden), was given a First-class Certificate to his very handsome form of *O. amabile* (*crispum* × *crispo-Harryanum*), the plant shown having eleven flowers, each 4½ inches across, of a clear white, beautifully marked with violet-mauve colour. Mr. Ashworth kindly sends two flowers, which well demonstrate the beauty of his fine *Odontoglossum* and the correctness of the award. *O. amabile* as a second crossing of *O. crispum* shows the benefit of having a good species as a parent; and also the potency of *O. Harryanum* in giving good shape and form—a fact which is to be traced in all hybrids where it comes in directly or indirectly.

NATIONAL CHRYSANTHEMUM SOCIETY.—The annual general meeting of the members of the National Chrysanthemum Society will be held at Carr's Restaurant, Strand, on Monday, February 2, at 7 p.m. The President, Sir ALBERT ROLLIT, M.L.D., D.C.L., will occupy the chair.

PUBLICATIONS RECEIVED.—Notes from the Royal Botanic Garden, Edinburgh. October, 1913. Price 2d.—Annual Report of the Board of Regents of the Smithsonian Institution. 1912.—A Course of Practical Work in the Chemistry of the Garden. By D. R. Edwardes-Ker. (London: John Murray.) Price 1s. 6d.

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

THE COOL HOUSE.—The bulk of the plants of *Odontoglossum crispum* and allied genera are in their most vigorous stage of growth; the new pseudo-bulbs are forming, and the greatest care must be exercised to get them well developed and matured. It is the same with Orchids as with fruit trees: the growths must be well ripened to obtain the best results. The modern method of cultivating *Odontoglossums* is a great advance on that of, say, a decade ago, when the plants were grown in low temperatures at this time of the year, notwithstanding the fact that this is the season of most active growth. It may be admitted that the pseudo-bulbs were hard and the flowers of generally good quality, but there was little or no increase in the size and general robustness of the plants after they were imported. A temperature of 40° or 45° at night was at one time considered suitable, but most growers now do not allow the temperature of the cool division to fall below 50° when the weather is normal. I find 53° to 55° the most suitable temperatures during the winter months, for with extra warmth the plants may be afforded a liberal supply of moisture at the roots, and the atmosphere of the house may be well charged with moisture, and, more essential still, fresh air may be admitted more liberally. A greater development of the pseudo-bulbs will necessarily entail increased care in their ripening, upon which so much depends. During periods of dull weather, when moisture evaporates slowly, water must be used sparingly, whilst the atmosphere should be kept reasonably charged with moisture, not only to assist in keeping insect pests in check, but to prevent shrinking in the pseudo-bulbs. When moisture has to be applied to the roots it must not be overdone. Let the potting compost become fairly dry before watering, which should be done, if possible, on bright days. See that plenty of light reaches the plants; soot and dirt adhering to the roof-glass must be removed by washing the outside glass on frequent occasions.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP,
K.C.M.G., Madresfield Court, Worcestershire.

SWEET PEAS.—Make a sowing of Sweet Peas in small pots, placing three to four seeds in each receptacle. Germinate the seeds in warmth and transfer the seedlings to a cold frame, where they will grow slowly and make sturdy plants. Our system is to arrange two or three clumps of each variety, setting them at 4 feet apart.

CLIMBERS.—All climbers, whether growing on walls, fences, pergolas, or other supports, should be thinned of all weak, spindly growths. Cut the foreright growths back to three buds and train some of the shoots their full length, so that the plant may extend, which is very necessary to get the best results. I am referring especially to such shrubby species as *Wistaria* and *Berberidopsis*.

BULBS IN GRASS.—Crocuses, including *C. biflorus* and *C. Sieberi*, have been attractive in these gardens all through the present month, and other bulbs are unusually forward this season. The Snowdrops and Winter Aconites will soon follow in bloom. At Madresfield Court we have large masses of Snowdrops which were planted some years ago beneath the spreading branches of Cedar trees in an avenue where the grass does not grow very rank. The plants usually continue in bloom for about a month, and they are not much damaged by severe frosts. The Winter Aconites are planted chiefly under the branches of forest trees. Next to follow will be the Dutch Crocuses, which are very effective in bright sunshine. A warm corner against a wall facing south should be selected for planting *Iris*

stylosa, and the plants must be left undisturbed for several years. It repays to soak the roots of this *Iris* in summer-time with liquid manure, as this will strengthen the plants and favour the development of the delightful lavender-coloured blooms which appear from Christmas onwards. Here we have half a dozen plants close to the windows of the mansion, and, with the above treatment, they have given splendid results.

THE PAVED GARDEN.—Irregular pieces of stone arranged as a pathway with crevices between for planting dwarf-growing subjects make an attractive feature in the garden. In order to obtain the best results it is necessary to have a stock of plants in reserve, and now is a suitable time to undertake their propagation. They may be either increased by cuttings of healthy plants or large specimens may be taken up and divided. Many of these Alpines, including the Rockfoils, *Saxifragas* (including *S. Waljisi*, *S. lantoscana* and Guildford Seedling), *Sedums*, *Dianthus* of the Alpine section, *Gentians*, *Lithospermum*, *Veronica repens*, *Aethionema grandiflora*, *Omphalodes verna*, dwarf *Campanulas*, *Androsace*, *Saponaria*, *Silenes*, *Erinus*, alpine *Phloxes*, and the Australian *Cress*, *Ionopsidium acaule*, may be raised from seed sown now. The plants of the last-named will flower next winter in the open.

PLANTS BLOOMING OUT OF DOORS IN JANUARY.—Specimens of *Daphne corallina latifolia* trained on a south wall in these gardens are in bloom and the perfume of the blossom is most delightful. Another sweet-smelling shrub, *Chimonanthus fragrans*, planted in a group of eight specimens, is largely used here for furnishing cut sprays of bloom. The bushes are planted about 9 feet apart in an irregular manner and are situated entirely in the open. We have a similar group of *Erica codonodes* planted in a mixture of peat and loam, each specimen being about 5 feet high and as much through. The plants are now masses of flowers, which are almost white. Although we had 20° of frost on the 1st inst. the *Ericas* were only slightly damaged. The *Witch Hazels*, including *Hammamelis mollis*, *H. Zaccariniana* and *H. arborea*, furnish another charming group. The yellow blossoms show up best against a background of evergreen, but specimens do well planted in grass. *Sidonia nivalis*, *Colletia horrida* and *Lonicera fragrantissima* are also in flower. A long wall planted with *Jasminum nudiflorum* has been and is at the present time a mass of golden flowers. All these shrubs may be planted now in rich, deep soil. They should receive a mulching of peat-moss litter after they are planted. If good specimens are obtained they will furnish a display next season and provide one of the most pleasing features in the flower garden in winter.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOZE, Eastwell Park, Kent.

RED AND WHITE CURRANTS.—These small fruits should be pruned on the spur system, leaving only a few buds of the leading shoots for extension, or lower down for filling up a space, caused by the decay of a branch. Cuttings of these are prepared in the same manner as those of the Gooseberry. Red and White Currants as well as Gooseberries may be planted in a shady border or trained on the north side of a wall, as fruits from these will prolong the season.

GOOSEBERRIES.—Of late years the Gooseberry has advanced in favour as a dessert fruit, but choice berries are only produced under high cultivation. New plantations are usually made in the autumn, but bushes may be planted during the next few weeks with every prospect of success provided the ground is in a suitable condition. As the plants are likely to occupy the same site for a number of years the ground should be trenched and heavily manured, for strong-growing, healthy bushes always produce the best fruit. If the work of pruning established bushes is not already completed it should be finished as soon as possible. Keep the shoots thinned well apart so that plenty of light may reach them, and remove all sucker growth, keeping the stem clear for at least 9 inches. The

centre of the bush should be sufficiently open to enable the fruit to be gathered without tearing the hands. Reserve as many of the straight, new growths as are necessary to furnish the bush, remembering that the best fruits are borne on wood of the previous year. When the work of pruning is finished spray the bushes with an alkali wash. Lightly fork the ground and apply a mulch of farmyard manure.

PROPAGATING GOOSEBERRIES.—It is a good plan to increase the stock of the best varieties each season, and the cuttings are best inserted in the autumn; but if the work was not done then it may be proceeded with now. Select strong, well-ripened shoots of the previous year's growth and make them about 15 inches long, cutting away the weak wood at the tips. Remove all the buds from the lower two-thirds of the shoot, retaining about five or six "eyes" at the top. Insert the cuttings firmly in a shady border and examine them at intervals to see if they need treading firm, for they sometimes become loosened by the action of frost. One-year-old bushes should be transplanted in open ground, allowing increased room for each bush. Cut the shoots back to a few buds to lay the foundations of a good bush.

BLACK CURRANTS.—The pruning or thinning of Black Currants is best done after the fruit is gathered in the summer, as this will favour the development of strong young fruiting growths. But the thinning is often done after other bush-fruits are pruned in the autumn and winter. All old wood should be cut clean away at the base, leaving only the strong young shoots of the previous year. It well repays to apply an annual dressing of farmyard manure to Black Currants, and this should be spread between the bushes after the soil has been cleaned and forked lightly. In propagating Black Currants all buds on the cuttings should be retained, as those set underground eventually form strong suckers and provide the best of wood for furnishing the bushes. Neglected bushes may be renovated by cutting them to the ground level and allowing new wood to develop. Every alternate bush may be cut down now, and the remainder another season.

FRUITS UNDER GLASS.

By W. HENLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

APRICOTS, CHERRIES AND PLUMS.—These fruit trees may be started slowly into growth by keeping the day temperature of the house at about 50°, allowing it to fall to 40° at night. Spray the trees twice each day with tepid water to encourage the buds to swell. With a little artificial heat fresh air may be admitted freely to the house for so long as the requisite temperature is maintained; otherwise, not too freely until the leaves are forming and the fruit is set.

PEACHES AND NECTARINES.—Some of the trees that were started early are ready for disbudding, which must be done with extra care early in the season. Remove a few of the growths daily rather than a large number at one time at longer intervals, as this would cause a check that frequently results in the young fruits dropping wholesale. The night temperature should still be maintained at about 55°, as this warmth will ensure a firm, steady growth. Ventilate whenever possible during the day, for a stagnant atmosphere is harmful. On mild nights a little air may be admitted through the top ventilators. Watch the foliage carefully, and on the first appearance of Green or Black Fly fumigate lightly, using for preference a vaporising compound. On no account must the trees be syringed with an insecticide after the fruit has formed, or serious injury to the crop may result. Cleanse the trees daily with clear water and keep all inside borders in a moderately moist condition, for if the soil is permitted to become dry Red Spider and kindred pests will speedily appear. The work of pruning the trees in late houses should be completed as soon as possible. In cleansing the trees see that the swelling buds are not damaged or rubbed out. In fixing the branches to the walls or trellis allow plenty of

space between each shoot, and see that the ties are not drawn too tightly, but allow space for the swelling of the branches. Inattention to this apparently trifling matter frequently results in great injury by strangulation of the most important parts of the tree.

VINES.—The pruning of all vines should now be completed. If Grapes are still hanging on the rods cut the bunches with as much lateral wood attached as possible, and place the stems in long-necked bottles filled with clear water to which a few small pieces of charcoal have been added. Fix the bottles in such a position that the bunches hang quite clear of them and also of the shelves. The temperature of the room or house in which Grapes are stored should be about 40° to 45° with a free circulation of air. Examine each bunch periodically, as advised in the issue for the 3rd inst. Keep the bottles filled with water, for if this is neglected the berries will quickly shrivel and spoil.

PROPAGATING VINES.—The "eyes" may be inserted singly in square pieces of turf, or in small pots or pans filled with loamy soil. Select well-formed buds from matured wood of last season's growth. Cover each bud with about half an inch of soil and plunge the turves or pots in a hotbed or propagating case with a bottom heat of about 80°. Under such conditions the buds will quickly start into growth. Keep the soil in a fairly moist condition, and as the vines need increased root room pot them on, always staging the plants close to the roof-glass. Maintain a brisk temperature and a steady bottom heat throughout the growing season, reducing the amount of warmth as the rods arrive at maturity. Young canes raised last season may be pruned back, and as they start into growth remove a portion of the old soil and pot them on into suitable-sized pots, using a mixture of good turfy loam and well-decayed manure, to which a small quantity of bone-meal has been added. Grow the plants on in exactly the same manner as advised for those raised from eyes.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

GLOXINIA AND ACHIMENES.—For early flowering a batch each of these plants should be started now. The Gloxinias may be either potted or started in boxes. I prefer the latter method on the grounds that space is saved, and it can be better determined later the size of the pot most suitable, according to the strength of the individual plants. In starting the tubers in boxes place a layer of moss or leaves on the bottom and plant them in light, peaty compost, coconut-fibre, or other quick-rooting medium, which should barely cover them. If the compost is fairly moist water will not be required until growth commences. Practise overhead spraying, maintain a moist atmosphere, and a temperature of 50° increasing to 65°. Gloxinias grow best in a compost composed of equal parts fibrous loam, peat and leaf-mould, with one peck of manure from a spent Mushroom bed for every two bushels of the compost and sufficient sharp sand and charcoal to keep the whole porous. If started in pots use those of a diameter of 4½ or 6 inches, according to the size of the tubers. Pot moderately firmly, place the pots in a light position near to the roof-glass, and grow the plants on as directed above. If seed is sown now the plants will flower in July and August. Sow in shallow pans. Use ample drainage materials and fill the pan with a light compost of sifted loam (previously sterilised), peat and sand. Soak the soil with warm water, and when the superfluous moisture has drained away sow the seeds evenly on the surface. Place the pan in a propagating case and cover it with glass. The seedlings should appear in a few days, when the glass may be removed and the pan placed on a high shelf, but protected from sunshine. In the case of Achimenes the old soil should be shaken from the roots and the latter placed at 1 inch apart in a box containing a compost as advised for Gloxinias. Cover them with ¼ inch of soil and start them into growth in a house having an atmospheric temperature of 65°. Keep the soil and atmosphere moist. The

tubers will quickly form roots, and when the top growths are 2 inches long lift several in a clump with a good ball of soil, and either pot them or arrange them in baskets to hang in the stovehouse. Syringe the plants daily, but avoid over-watering the roots. When the flowers appear remove the plants to cooler quarters.

CLIMBERS.—Allamandas, Aristolochias, Cissus discolor, Bougainvilleas, Clerodendron Balfourii, Ipomeas, Rondeletia speciosa major and Stephanotis are a few of the many climbers suitable for growing in a warm conservatory. The plants, whether growing in pots or planted out in borders, should receive attention now. The new shoots of Allamandas, Bougainvilleas and Cissus discolor should be shortened to about an inch, the soil removed from the border to a depth of about 2 inches and re-placed by rich, peaty soil. Specimens in pots should be re-potted if necessary and the drainage put in order. In planting climbers in borders restrict the roots to a space measuring from 18 inches to 3 feet square, according to the strength of the individual plant. Fuchsias, Lapageria rosea and its white variety, Passifloras, Plumbago capensis, Swainsonias, Streptosolen Jamesonii and Brachysemas are all excellent subjects for training up pillars or for suspending from the rafters of greenhouses and cool corridors. Top-dress the roots with rich, fibrous loam, thin out the weakly growths of the Swainsonias and Lapagerias, and arrange the shoots as naturally as possible. *Luculia gratissima* should be pruned severely and kept fairly dry at the roots for a week or two. Specimens planted in an enclosed area in a border thrive better than those in pots. This plant resents disturbance at the roots, but it may be top-dressed with a mixture of loam, peat and silver sand.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

SHALLOTS.—These bulbs may be planted now in well-worked soil. Arrange the sets at about 5 inches apart and wide enough between the rows to permit of the Dutch hoe being freely used, but be careful not to cover them. Where Garlic is esteemed the cloves may also be planted now.

MINT.—This herb is much used in some establishments, and a sufficient number of the long, underground stolons should be lifted, placed in boxes among light soil, and stood in one of the forcing houses, where, with an abundance of water to keep the soil always moist, a supply of shoots will soon be produced.

RADISHES AND LETTUCES.—In warm situations seeds of these salads may be sown out of doors in a sheltered border and in the same drills, which should be somewhat wider than usual. Early Radishes do not always succeed, but a row is worth trying. If a Cos Lettuce is preferred Hicks's Hardy is one of the most reliable varieties for this or perhaps for any other season. It is very hardy, grows to a large size, and "cabbages" without it being necessary to tie the leaves together.

PARSLEY.—The main crop may be sown at any time. I have an abundance of Parsley from the produce of seeds sown a year ago, the plants having been transplanted when of a suitable size to move them 1 foot apart. As a rule they continue giving us leaves till those of the succeeding year's sowing are ready, though it is safer to have another sowing to meet any losses that may occur through winter failures than to rely on the one. Dobbie's Exhibition is the finest variety for all purposes. Well-grown plants are objects of great beauty when fully matured.

LEEKs.—The main crop of Leeks should be sown at the earliest opportunity. Like Parsley, the seeds are some considerable time in germinating; and of the Leek at least it may be said that the larger it is the better it is. From the very outset Leeks should be grown in highly-manured soil, and it is a by no means bad system to enrich the spot chosen for the seed-bed with some thoroughly decayed manure, but it must be placed deeply, so that the sprouting seeds cannot

be injured by its contact. Sow either broadcast or in wide, shallow drills, and rather thinly, otherwise a great number of the seedlings will be impoverished and stunted by the more robust ones.

THE APIARY.

By CHLORIS.

SEASONABLE WORK.—In some parts of England bees will soon be gathering honey from Crocuses. These beautiful flowers supply the first pollen of the season, and on warm days the bees go out in eager search of it to provide the nitrogenous matter necessary for the successful rearing of brood. The bee-keeper can assist the bees by supplying them with artificial pollen in the shape of peafour, and for this purpose Symington's is one of the very best, as it is ground to a very fine powder. Choose a sunny nook near to the hives, well sheltered from cold winds, and sprinkle the peafour in a box of shavings. The bees will be seen loading up and revelling in the rich store of easily-obtained food. They will continue to use this until the catkins of the Hazel and Willow appear, when the apiarist should cease to use the peafour.

FEEDING.—From now until the end of April a large proportion of the winter losses among bees occur, and in most instances this is due to starvation, although these winter dwindlings are often ascribed to other causes. To feed on syrup would be to court disaster, for the liquid is stimulative in its action and would thus cause the queen to deposit more eggs than the season will warrant, and the resulting brood would perish during cold weather. This being the case use only candy made from honey and powdered loaf cane sugar. Take some honey and warm it, mixing with it the finely-powdered sugar, until the whole assumes the consistency of a very stiff putty. Allow it to stand for a few days and work in more sugar until no liquid is left. Where honey cannot be obtained, the candy must be made wholly from sugar and water, and this is made into soft candy. Take a preserving or enamelled pan, in it place 10lb. of best cane white sugar, and pour over it two quarts of boiling water. Put the pan on a bright, clear fire and stir the liquid until all the sugar is dissolved. After it begins to boil draw the vessel aside and remove the scum. When all has been skimmed off return the pan to the fire and allow it to boil as quickly as possible without any stirring for quite twenty minutes. Many are afraid to do this, as they fear that it will burn. To ascertain if the syrup has boiled long enough dip the index finger into a basin of very cold water, and immediately place it, bent, into the boiling syrup; on withdrawing it roll up the adhering sugar, and if it makes a soft ball, like plasticine, it is ready for use. There is no fear of the finger being scalded in this operation. (Those who can afford it should purchase a sugar-boiler's thermometer, which is graded from 50° to 350° F. and can be purchased for 5s. 6d.) When a ball cannot be formed the liquid must be allowed to boil for a little longer. To secure smooth candy, after removing it from the fire pour it into a shallow tin and allow it to cool. While it is cooling on no account must it be stirred (or the grain will be rough) until the finger can be held in it for quite half a minute without being scalded, then stir until the candy is white and stiff. To remove the syrup from the tin it must be warmed, and when it has reached a creamy state stir it to get out the lumps, and just before it reaches boiling point (about 200° F.) pour it into boxes or section cases and allow it to cool. The candy may be stored in a cool, dry cupboard. Should the candy be over-boiled—and hence brittle—add more water and re-boil; and to prevent the liquid boiling over fill the pan only half full.

EXAMINING THE HIVES.—No attempt must be made to make an examination of the colony as there will be a great loss of heat, and such examination may cause the bees to kill the queen. When the candy is given to the bees choose a bright, warm day, just raise the quilt sufficiently to get it under, taking care to leave no gaping corners uncovered by the quilt, or heat will escape and reduce the temperature of the lower chamber so that the brood will die.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are mis-directed.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

Local News.—Correspondents will greatly oblige by sending to the Editors 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 FEBRUARY.

- TUESDAY, FEBRUARY 3—
Scottish Hort. Assoc. meet.
- WEDNESDAY, FEBRUARY 4—
B.G.A. Ex. Council meet.
- THURSDAY, FEBRUARY 5—
Linnean Soc. meet.
- FRIDAY, FEBRUARY 6—
Roy. Gardeners' Orphan Fund Ann. Meet. and Election of Orphans at Simpson's Restaurant, Strand, at 5 p.m. Roy. Inst. meet.
- SATURDAY, FEBRUARY 7—
Roy. Scottish Arboricultural Soc. Ann. meet. Soc. Française d'Hort. de Londres meet.
- MONDAY, FEBRUARY 9—
United Hort. Ben. and Prov. Soc. Com. meet.
- TUESDAY, FEBRUARY 10—
Roy. Hort. Soc.'s Show and Ann. Meet. Horticultural Club Annual Dinner, 6.30 p.m.
- THURSDAY, FEBRUARY 12—
Manchester & N. of Eng. Orchid Soc. meet.
- TUESDAY, FEBRUARY 17—
Broughty Ferry Hort. Assoc. meet.
- THURSDAY, FEBRUARY 19—
Linnean Soc. meet.
- TUESDAY, FEBRUARY 24—
Roy. Hort. Soc. Coms. meet.
- THURSDAY, FEBRUARY 26—
Manchester & N. of Eng. Orchid Soc. meet. Roy. Botanic Soc. meet.
- FRIDAY, FEBRUARY 27—
Finchley Chry. Soc. annual meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 39.5°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, January 28 (6 p.m.): Max. 49°; Min. 40°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, January 29 (10 a.m.): Bar. 29.7°. Temp. 49°. Weather—Sunshine.

PROVINCES.—Wednesday, January 28. Max 50°, Valencia; Min. 43°, Aberdeen.

SALES FOR THE ENSUING WEEK.

- MONDAY, TUESDAY, WEDNESDAY, THURSDAY, AND FRIDAY—
First half of 10 days' Sale of Nursery Stock, at Coombe Wood Nurseries, Kingston Hill. By order of Messrs. J. Veitch & Sons, Ltd. By Protheroe and Morris, at 12 o'clock.
- MONDAY AND WEDNESDAY—
Rose Trees, Perennials, Lilliums, etc. At Stevens' Rooms, 38, King Street, Covent Garden, at 12.30 p.m.
- MONDAY AND FRIDAY—
Herbaceous and other Plants, Lilies and Hardy Bulbs, Roses, Fruit Trees, etc. At 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.
- WEDNESDAY—
Border Plants and Perennials, Hardy Bulbs, etc., at 12. Palms and Plants at 5. Trade Sale of miscellaneous Bulbs and Roots, at 12. 1,119 c/s Japanese Lilliums, at 2.30. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.
- THURSDAY—
Roses, at Protheroe and Morris's rooms, at 1.
- FRIDAY—
Orchids, at Protheroe and Morris's rooms, at 12.45.

Selection and Pure Strains.

The first place in the current number of the *Journal of the Board of Agriculture** is occupied by an article which asks the question, "Can selection improve the quality of a pure strain of plants?"

To this question the authors, C. and A. Hagedoorn, of the University of Utrecht, give an uncompromisingly negative answer.

In support of their contention that a pure strain if self-fertilised will not deteriorate but will maintain its character unaided by selection, these authors point to Johannsen's well-known experiments and to the series of Wheats collected and preserved by M. Louis de Vilmorin, and recently re-discovered by a member of the firm. Johannsen's experiments, which were made with Beans, may be summarised briefly thus. By starting with single seeds "pure lines" may be obtained. The plants of each of these pure lines maintain their characters in generation after generation of their descendants, and these characters are not modified by selection. Thus Johannsen found that when he had isolated a line or race pure for a certain character—that of weight of individual seed—it made no difference to the weight of the seed of the offspring whether these offspring were obtained by sowing the somewhat larger or the somewhat smaller seeds of the previous generation. The strain had a certain range with respect to this character, and that range is maintained in successive generations. Louis de Vilmorin's observations on Wheat tend to confirm this remarkable conclusion. That distinguished horticulturist, who introduced the custom of breeding from single plants—a custom now all but universally followed—grew and preserved examples of different varieties of Wheat. From each variety a single daughter plant was preserved, and from that daughter plant in turn a single descendant was preserved. This invaluable series of pedigree plants has been discovered recently by M. Meunissier, the plant breeder to the firm of Vilmorin. The identity between the original plants and their descendants, after about 60 years of selection, is most impressive, and would seem to justify the contention of Messrs. Hagedoorn that a pure race remains pure if self-fertilised, whether selection be practised upon it or not.

Are we to assume, therefore, that all the labour of our seedsmen in maintaining and supplying us year by year with early, mid-season, and late varieties, with tall and dwarf and mid varieties, and so forth is but vain? We think not. Everything turns on the purity of the strain, and purity is an expression of constitution. Now certain characters of plants are simple. They depend on a single something present in the germ cells. Such characters are easily obtained in a pure state. Other characters are far from simple. They depend on not one or two "somethings" present in the germ cells, but upon four, five, and perhaps more of these character-bearing factors of the germ

cells. When this is the case it is probable that for one plant which is pure for this complex character there are many plants which display this character almost as conspicuously, and yet are not pure to it. The means of discrimination between the quite pure and the apparently pure are so slight that even the trained eye may be deceived.

From the practical point of view, however, Messrs. Hagedoorn's contribution is a timely one; for it will serve to emphasise to the seedsman the importance of pedigree cultivation; of starting from single seeds, and of observing the behaviour of the several families raised from these single seeds. For example, if the plant breeder discovers a desirable variety of Pea he should not only harvest and sow the seeds of that plant, but he should harvest the seeds of each first generation-plant separately in order to discover whether the desirable character is common to all the members of all the families, or whether it is confined to some families only, or even to some individuals of some families. If the character is exhibited by all the members of all the families it may be regarded as fixed. If it occur only in some families, but in all the individuals thereof, the next generation from these individuals will suffice to show whether the character is fixed. If, on the other hand, the character occur only among some individuals of certain families, the grower must be prepared for several years of "selection" before he can hope to light upon plants which are actually pure to the character. In this task isolation must again be practised.

Coloured Supplement.—The subject of the Coloured Plate to be published with the issue for next week is the Tree Lupin (*Lupinus arboreus*) from a colour photograph taken in the R.H.S. Gardens, Wisley.

HORTICULTURAL CLUB.—The annual meeting of the members of the Horticultural Club will take place in the Club Room at the Hotel Windsor, Victoria Street, Westminster, on Tuesday, February 10, at 5.45 p.m. The annual dinner will take place in the large dining-room of the hotel at 6.30. The president, Sir FRANK CRISP, Bt., will preside. The proceedings will include a musical programme, provided by the president. The following new members were elected at the last meeting: Messrs. G. NORMAN BUNYARD, A. DAWKINS, G. H. RICHARDS, and ROBERT WOODWARD, jr.

NATIONAL DIPLOMA IN HORTICULTURE.—The qualifying test for candidates wishing to take the National Diploma Preliminary Examination in June next will be held on Tuesday, March 10. Those desiring to register their names for the Diploma should make application at once on forms to be obtained from the Secretary, R.H.S., Vincent Square, Westminster, London, S.W.

THE CRYSTAL PALACE.—The proposal to devote only 20 acres of the grounds as an open space for the use and enjoyment of the public has caused disappointment, and the Metropolitan Public Gardens Association has addressed a letter to the Corporation of the City of London on the subject. It states that the Association views with serious concern the provisions of the Crystal Palace Bill, under which only 20 acres will be permanently dedicated as



GARDENS OF JAPAN.

ABOVE: SUMMER HOUSE IN THE GENKAKUJI TEMPLE GARDEN, KYOTO.

BELOW: GARDEN VIEW, SHOWING ARRANGEMENT OF STEPPING-STONES, BRIDGE, LANTERN AND PAGODA.

an open space for the use and enjoyment of the public, while access to a large area of the grounds may be curtailed by fifty days in each year; and records the opinion that the proportion of land to remain permanently open should be materially increased in view of Sir DAVID BURNETT'S pledge in his letter to the *Times* of March 11 last that the object of the scheme was to acquire the Palace and grounds for the purposes of an open space.

MUNIFICENT GIFT BY MR. LEONARD SUTTON.—At the meeting of the Council of University College, Reading, held on Tuesday, January 27, it was announced that Mr. LEONARD SUTTON, of the firm of Messrs. Sutton and Sons, had given a donation of £1,000 to the fund which is being raised for the purpose of providing adequate buildings and laboratories for the agricultural and other departments of the College.

BULBS AT HAMPTON COURT.—It is stated that the number of bulbs which have been planted this season in the Royal gardens at Hampton Court Palace exceeds one million, the weight being between two and three tons. There are 140 beds, with an average of about 3,000 bulbs to a bed; while the great 10-foot border, which extends from the river to the Hampton Court Road, takes more than all the beds.

SALE OF THE COOMBE WOOD NURSERY STOCK.—The second sale by auction at Messrs. JAMES VEITCH AND SONS' nursery, Coombe Wood, Kingston Hill, will be conducted by Messrs. PROTHEROE AND MORRIS on Monday, February 2, and nine following days. The catalogue includes Rhododendrons, Yews, ornamental, flowering and avenue trees, Roses, Clematis, Vitis, Magnolias, Bamboos and other stock. The sale will commence each day at 12 o'clock.

YORK CHRYSANTHEMUM SHOW.—Owing to the poor support which the York Florists' Society has received in the past few years in connection with the annual Chrysanthemum Exhibition, formerly one of the best shows in the North of England, the Committee has decided to discontinue the display, unless a sufficient sum is guaranteed to meet expenses. As an alternative it is proposed to hold a one-day members' show.

PROPOSED NEW PUBLIC GARDENS AT BLACKPOOL.—The Blackpool Corporation is considering the purchase of St. George's Gardens as a public open space, at a cost of £20,000. Although there are opponents of the scheme, on the score of expense, the matter has the support of the Chairman of the Finance Committee, who holds that it will not add to the burden of the ratepayers.

PROPOSED AMALGAMATION OF SCOTTISH HORTICULTURAL SOCIETIES.—If we may judge from the tone of the discussion of this subject that took place last week on the occasion of the annual meeting of the Scottish Horticultural Association, it really seems as if, after all, some practical result may come from the proposal to amalgamate the two Scottish societies. The matter has been before horticulturists for many years past, and in 1905, when the last International show was held in Edinburgh, it was thought that every means would be sought to overcome any difficulties that stood in the way of amalgamation. But the movement needed the help of a strong man, and there was none forthcoming. Directly difficulties were encountered, enthusiasm began to wane. Then or later a committee was appointed by the Scottish Horticultural Society, but it was appointed for one year only, and after discussing the matter for that period the committee left things as they were. As was pointed out by Mr. Taylor and Mr. Cuthbertson (see p. 80) the same men hold high offices in both societies, and most of them have expressed themselves on

one occasion or another in favour of amalgamation; yet nothing has been done. Neither the Scottish Horticultural nor the Royal Caledonian is remarkably strong, the Edinburgh shows are not all they might be, and Scottish horticulture is represented somewhat weakly by two voices. Amongst those who declared for union last week were Mr. KING (President of the Scottish Horticultural Society), Mr. JAMES WHYTOCK, Mr. J. W. McHATTIE, Mr. COMFORT, Mr. CUTHBERTSON, and Mr. TAYLOR. If something practical is not done soon the reputation of Scotchmen as organisers will suffer.

BEGONIAS AT CHERRYHINTON HALL.—Mr. E. DYSON, gardener at Cherryhinton, has forwarded photographs of Begonia Gloire de Lorraine, growing in a glasshouse. The plants are 8 feet in circumference and are growing in 7-inch pans suspended from the roof-rafters. They are masses of flowers, scarcely any foliage being visible beneath the great wealth of blossoms.

NEW CLASSES AT THE SHREWSBURY SHOW.—New classes have been arranged for the summer show of the Shropshire Horticultural Society, which will be held at Shrewsbury on August 19-20. One is for a collection of American Tree or Perpetual-flowering Carnations, arranged in a space measuring 15 feet by 5 feet. The first prize is a 50-guinea Silver Challenge Cup, presented by the President, ANNABELLE LADY BOUGHEY, together with £15 in money. The 2nd prize is £12 10s., the 3rd prize £10, and the 4th prize £7. The Cup will become the property of any competitor who wins it three times (not necessarily in succession). Prizes are also offered in three classes for (a) six pots of new varieties of Perpetual-flowering Carnations not yet in commerce; (b) a collection of cut Carnations occupying a space of 6 feet by 4 feet (Tree Carnations excluded); and (c) twelve vases of Picotees, white or yellow grounds, three blooms of each, staged with their own buds and foliage. A new class for nurserymen is one for a formal or informal flower garden arranged in a space 100 feet by 50 feet out-of-doors, entirely at the discretion of exhibitors, but ponds, streams and rockwork are not permitted in the scheme. The following awards will be made:—Coalport china dessert service, value £20; large Gold Medal; Gold Medal. The sum of £15 towards expenses will be allowed to each exhibitor whose exhibit the judges consider sufficiently meritorious.

THE SURVEYORS' INSTITUTION.—The annual dinner of the institution will be held at the Whitehall Rooms, Hotel Metropole, on Monday, February 23, at 7 p.m.

GIFT OF PLANTS TO THE BRITISH MUSEUM.—A second collection of Southern Nigerian plants has been presented to the Natural History Museum by Mr. and Mrs. P. AMAURY TALBOT. As stated by the *Times*, the collection comes from the Eket district, which lies along the Gulf of Guinea, stretching westward from Calabar and the Cross River. The country consists of Mangrove marsh lining the banks of creek and stream, and of fertile Palm swamp with Coconut, Pissava and oil Palms. Toward the seashore dwarf Dates fringe the low-lying lands. Mrs. TALBOT has prepared about 800 specimens of the flora of this district, and they are now being classified at the herbarium at South Kensington. Mrs. TALBOT has paid special attention to the *Napoleonas*, which belong to the Myrtle family. In some of them the flowers are about 2 inches in diameter, and white and pink in colour. The specimens include new genera of Leguminosae, whilst the Rubiaceae is represented by a number of new species. The *Randias* present interesting problems as regards insect visits for the purpose of fertilisation. *Cyclocotyla oligosperma* Wernham is a new species, hitherto known merely from a small fragment from the Congo. This, which is one of the most interesting plants in the

collection, is a member of the Apocynaceae, to which many rubber-bearing plants belong. Mrs. TALBOT has also brought back a new species of the Coffee plant and a number of Orchids, some of which are new.

OUTRAGE AT A BOTANIC GARDEN.—In the early hours of the 24th inst. a bomb exploded in the Botanic Gardens, Glasgow, breaking a number of panes of glass in the Kibble Palace, whilst a second bomb exploded near to a watchman, who fortunately escaped injury. The *Glasgow Herald* states that the Kibble Palace, or winter garden, was originally built by the late Mr. JOHN KIBBLE at his residence, Coulport, Loch Long, but was taken down and re-erected on an enlarged scale in the Botanic Gardens in 1871. It covers nearly two acres, is a handsome iron and glass structure, and comprises an entrance hall at the west end, transepts filled with flowers, and a lofty conservatory, 471 feet in circumference, which contains Palms and other tropical plants. The eastmost portion of the Kibble Palace closely adjoins the boundary of the grounds of Queen Margaret College, while a short distance to the south is the wall separating the Botanic Gardens from Hamilton Drive. Mr. JAMES WHITTON, the superintendent of parks and curator of the Botanic Gardens, who resides at Bellahouston, arrived in the gardens shortly after eight o'clock and made an examination, which revealed that twenty-seven panes of glass in the perpendicular and curved parts of the conservatory of the Kibble Palace had been shattered. Fortunately none of the plants was damaged.

REGULATING THE RAINFALL.—Sir OLIVER LODGE, in delivering the annual Kelvin lecture before the Institution of Electrical Engineers on the 22nd inst., referred to the electrification of the atmosphere, and pointed to the possibility of controlling the weather by discharging into clouds sufficient electricity to start a rainfall. Sir OLIVER said that in normal circumstances in fine weather the earth is negatively charged and the higher layers of the atmosphere positively charged. Lord KELVIN held the view that fine weather is associated with the positive condition of the upper atmosphere, and it is the fact that the electrical conditions are reversed in cloudy and rainy weather. If these things are associated as cause and effect, there is a hope that a control of the electrical conditions of the atmosphere may be the proper line of research to follow in any attempt to control the weather. Sir OLIVER thinks that the well-known influence of ultra violet light in coaxing the negative electricity of the earth into the lower air, whence it is carried by wind currents to a higher level, produces the conditions which cause thunderstorms. Experiments ought to be carried out as to the effect in countries where rain is wanted of flying kites at a high elevation and by that means discharging into the clouds sufficient electricity to start a rainfall.

BELGIAN HORTICULTURISTS AND THE ST. PETERSBURG EXHIBITION.—Belgian horticulturists, organised by their society, the *Chambre Syndicale des Horticulteurs Belges*, are busily preparing to take part in the International Horticultural Exhibition to be held at St. Petersburg next May. The Belgian Government has promised to provide the generous sum of Fs. 25,000 towards the expenses of those who wish to exhibit, out of which sum the *Chambre Syndicale* will have the disposal of Fs. 19,000, to be expended on behalf of horticulturists pure and simple. The remainder, Fs. 6,000, will be handled by a committee to be appointed to look after the interests of exhibitors of fruit and early vegetables. The money will be chiefly used in defraying railway charges (for the goods and for the fares of two delegates who will receive and unpack, etc., the exhibits), and out-of-pocket expenses at St. Petersburg. All expenses will first be paid by the exhibitors, and will be

refunded out of the grant. The two delegates who have been appointed to look after the interests of the Belgian horticultural exhibitors are M. CH. PYNART and M. FRANCOIS SPAE.

PROPOSED DEVELOPMENTS AT WISLEY.—With the annual report of the Royal Horticultural Society, which has just been posted to the Fellows, a slip is inserted containing a special notice relating to the Wisley Gardens. This notice is as follows:—"Notice is hereby given that at the annual meeting of the Society to be held on Tuesday, February 10, at 3 p.m., Sir DANIEL MORRIS, K.C.M.G., will propose, and Mr. W. CUTHBERTSON, J.P., will second a resolution to the effect that—"The Council of the Society be requested to create a Special Trust

to carry out its recommendations, there is every prospect of great developments taking place in the Society's work in the immediate future. This Report, which was only laid before the Council on December 9, will require much careful thought, for the scheme is of such magnitude and complexity, and touches so many different interests, that its mere consideration must of necessity take a considerable time before even an outline of it can be announced, so that for the present no more can be said beyond recording the fact. A new Committee has been formed to advise on the details of the Report."

ANIMALS AND PLANTS UNDER DOMESTICATION.—On the 20th inst. Professor BATESON, Director of the John Innes Horticultural Institution, Merton, gave the first of a course

only occur after hybridisation. The cross between the rock pigeon and the stock dove has now been made, and if such a cross is possible now may it not have occurred in the past? The study of the physiology of variation leads to the doubt whether there is anything to be called general variability, but variation of the type in which loss of characters occurs is very common. A case in point is that of the six-rowed Barley, which behaves as a recessive to the two-rowed form. The two-rowed form possesses a factor inhibiting the development of the six-rowed type, and it must be concluded that the latter has been derived from the wild type by the loss of this factor.

PHOSPHATIC MANURES.—Experiments carried out by Messrs. MUNTZ and GAUDECHON



[Photograph by H. N. King.]

FIG. 37.—JAPANESE GARDEN AT FRIAR PARK, HENLEY-ON-THAMES, THE RESIDENCE OF SIR FRANK CRISP, BT.

Fund to carry on and augment the Society's work at Wisley, and this meeting would approve of a part of the present surplus funds of the Society being allocated to that purpose." As bearing on the same question we extract the following paragraph from the annual report of 1913, a copy of which comes into our hands as these pages are going to press:—"The Research Committee was appointed to examine the large number of suggestions for the extension of the Society's work which are constantly being made, and to advise the Council on any reasonable ways in which the Society might assist and advance the more scientific aspects of horticulture. A very important report has been drawn up by this Committee, and, if it is found practicable

of lectures on "Animals and Plants under Domestication." He discussed the question whether the variation of domesticated animals and plants can be justly compared with that of the wild species, and considered that one grave difficulty is the fact that under domestication no new form has been known to arise which is sterile with the parent form. In the time of DARWIN but little progress had been made with the study of variation. Analysis of variation has been made possible by the Mendelian method of investigation, and the results of recent work had been to throw doubt on many of the assumptions made by earlier workers. DARWIN accepted the evidence that the numerous types of the pigeon came from a single original form. Now we would think that such variation would

(*Ann. Sc. agron. franç. et étrangère*, p. 200, 1912) have an important bearing on the application of phosphatic manures to soils. These authors find that the amounts of added phosphates absorbed by plants (Peas, Beans, Turnips, etc.), are greatest in the year during which the fertiliser is added, and that the amounts absorbed decrease markedly in the second year, and yet more in the third year. Wherefore it should be good practice to manure with small quantities of phosphates annually rather than to add larger quantities at longer intervals. The authors find, moreover, that mono-calcic phosphate is more assimilable by plants than either di- or tri-calcic phosphate, and that tri-calcic phosphate gives results slightly better than the di-calcic phosphate.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

CYANIDING TO DESTROY MEALY BUG.—The correspondence on this subject shows that the matter is both interesting and important to gardeners. Although the gas has been used in gardens for many years the process has never yet been put on a scientific basis. There are certain conditions that require definite elucidation to make cyaniding a safe and sure agent for the destruction of Mealy Bug and other pests of plants, both indoors and out. We require to know (1) how to bring about that condition of the host plant that will render it the least susceptible to the effects of the gas; (2) the life history of the pest we have to destroy; (3) to use cyanide of one uniform percentage strength; (4) to have a means of generating the gas that will not endanger human life. The first condition may, perhaps, be secured by a dry atmosphere, keeping the plants dry at the roots as circumstances will allow. A low temperature, below 55° if possible, is best, and the cyaniding should be done in the evening when light is absent or very weak. I believe it is generally known that there are two species of Mealy Bug that infest plant houses, *Dactylopius longispinus* and *D. citri*. Those who wish to know all about them should read Professor Newstead's *Monograph of Coccidae*. I have counted the eggs in many nests and have found them to be from 60 to over 200. I counted the eggs in two nests recently; one had 120, the other 145. Your correspondent, *J. H. Y.* (p. 30), seems to indicate that they hatch in two or three days, but I have not found them to hatch in so short a time, and I have known them to remain unhatched at this time of the year for a long period. Generally I have found the females are slow egg layers, when they ultimately die, if my observations have been correct. I would advise cyaniding dormant vines every ten days three or four times. I found a very fine specimen male bug last week. No doubt many of your readers will have seen the pictures from my photographs of the males and females in Professor Theobald's large book, *Pests of Orchard and Garden*, and in the practical book, by Mr. R. Hooper Pearson, *Garden Pests*, in either of which particulars are given for cyaniding. I am very pleased to say I have photographed the Mealy Bug, male and female, nests and eggs, in practically all stages, and I have a quantity of material under observation at the present time. Sodium cyanide should be used, as potassium cyanide is sold in so many strengths, whereas sodium is of one uniform strength and more soluble than the potassium salt. In the generation of the gas every precaution must be taken to ensure safety as well as the complete dissolving of the cyanide. There are cases on record where the cyanide has been dropped into the acid in paper and the cyanide has floated on the acid without dissolving. If cyanide is used at a certain strength not only will Mealy Bugs be destroyed, but their eggs also. *J. G. Blakey, Holmwood Gardens, Redditch.*

PREVENTION OF ACCIDENTS DUE TO BURNING.—In returning recently a verdict of accidental death in the case of a cook who had died from burns, the jury added a rider that all cooks should be provided with and wear unflammable aprons. To such an admirable precaution may I suggest another? One potential and not infrequently an actual factor in these distressing accidents, is the high kitchen mantel-shelf, upon which (maybe) are kept some cooking utensils. To reach these things, in a hurry probably, the cook must necessarily lean over the fire in a position so dangerous as seemingly to court disaster. The risk is undoubtedly always present; to do away with it is simple—remove the shelf. *Prevention.*

ANTS AND SEEDS.—Early last week I made a large sowing of Antirrhinums and other plants, placed the seed-pans on a stage in warm pit and covered them with paper. Some days afterwards I noticed a number of amber-coloured ants in the house, and on a closer inspection I was astonished to find that the ants were busy carrying off the Antirrhinum seeds. The insects

hunted around and when a seed was found it was lifted, carried away and eaten beneath the pan. *C. H. C.*

ROSES IN JANUARY.—With reference to the photograph of Roses reproduced in fig. 31, I am enclosing two photographs of Roses picked at Worthing on the 2nd and 6th inst. The plants are growing in the open with only a Privet hedge for protection. *G. F. Haskell.*

WAS LENOTRE EVER IN ENGLAND?—With regard to the reference to the famous landscape gardener in your last issue, p. 53, it is stated in Chalmers's *Biographical Dictionary* that Lenôtre came to England in the reign of Charles II. and laid out Greenwich Park and St. James's Park. I understand that in France no evidence has ever been found that Lenôtre visited England. Can any such evidence be found in English records of the time? *A. H.*

RAINFALL IN 1913.—The total rainfall registered in these gardens amounted to 23.80 inches. Rain was recorded on 195 days—the greatest amount on January 11, when .72 inch fell. April was the wettest month with 3.45 inches, and June the driest with .58 inch. *Alfred Wilson, Hadley Bourne Gardens, Hadley Bourne.*

TRICUSPIDARIA LANCEOLATA (see coloured plate in *Gardeners' Chronicle* for January 10, 1914).—We have found no difficulty in propagating this beautiful plant from cuttings of the half-ripe shoots; but as it is of arboreal habit, it is very desirable that it should be raised from seed, and I hope Mr. Jenkins will persevere in his endeavour. The tendency to leaf-rust which he has observed in this species may be due to excessive sun exposure. Canon Ellacombe warned me against this years ago, advising me to plant it in a north exposure, and I have realised the soundness of his counsel. Like so many Chilean plants, *Tricuspidaria* relishes moisture, rapid drainage and shelter from wind and excessive sun. Moreover, in a situation facing north or west, alternate frost and thaw are less liable to injure the flower-buds, which, forming in September, hang on long peduncles until the flowering time in June. *Carpenteria*, though a native of a very different region, seems to prefer similar conditions. *Herbert Maxwell, Monreith.*

UNUSUAL GROWTH OF CHRYSANTHEMUMS.—Many varieties of Chrysanthemums here have behaved like those described by *H. L.* (see p. 42). Both stopped and "natural break" plants of several varieties showed terminal buds instead of first crown buds with growth around the bud. The former, however, made their appearance about the proper time for taking the crown buds, opened well, and developed into excellent blooms. I think the colour of the majority of the flowers was rather better than usual, as is generally the case when terminal buds are taken. I also noticed that Chrysanthemums were more prone to sporting than usual; we had some flowers of the variety *Valerie Greenham*, one half yellow the other half its proper colour, and large blooms presented a very curious appearance. But then, many unusual things happened amongst flowering plants during the season of 1913. Annuals which dried off rather early started to grow again when the moist weather came, and flowered for a second time. A large red *Abutilon* growing here produced branches with yellow flowers which were much larger than the type. *Owen Moring, The Old House Gardens, Freshford, Somerset.*

PRIMULA OBSCURICA AND SKIN IRRITATION.—I never suffered any inconvenience from this plant until three years ago, when, in watering the plants, I was stung on the wrist and about half a dozen small pimples developed. My arm swelled up to the size of two and the irritation was dreadful, especially at night. It then infected my other arm. The doctor gave me a lotion to bathe the affected parts with, but all the skin peeled off from both arms. I was under medical treatment for four months. The next spring the complaint re-appeared in the form of a very irritable swelling in my face and arms, the attack lasting for about two weeks. Last year I had three or four attacks in the same

form; the irritation seemed to last for a week or ten days and then I got a rest, but it returned in about two months. *A. C. Thurlow, Landieu Gardens, Hartburn, Stockton-on-Tees.*

ORIGIN OF COVENT GARDEN MARKET.—The enclosed historical letter, which I contributed to the *Saturday Review*, on the origin of Covent Garden Market, may perhaps be of sufficient interest to be reproduced in the *Gardeners' Chronicle*: "It is not generally known that Covent Garden Market originated in the time of Oliver Cromwell, and at first consisted of only a few sheds, and they were temporary ones. Just eleven years after King Charles II. had been restored to the throne he made a grant of the market to William Earl of Bedford, and it has increased gradually in importance from that time. It was the fifth Earl of Bedford who was created Duke of Bedford in 1694 by William III., and this was the duke who married the daughter and sole heiress of the Earl of Somerset, who sold his house and furniture at Chiswick and nearly all he possessed at the request of the Earl of Bedford to raise a fortune for his daughter, and it amounted to nearly £13,000. But the match would not have been brought about if the King had not interposed." *B. R. Thornton, Granville Lodge, Hove, Sussex.*

JOURNEYMAN GARDENERS AND LOW WAGES.—Mr. Norris's remarks on the subject of journeyman gardeners are not very encouraging. One cannot wonder at young men not being very interested in their work, when in so many cases they receive little or no encouragement to do well. I wonder if in the former days described by Mr. Norris journeymen ever spoilt anything by inexperience? If not, they must have been unusually clever. My opinion is that if wages and conditions were better, you would not find so many young men leaving the ranks of gardeners and taking up other professions.—*H. S.*

—I read with interest the remarks of *A Non-Member* (Vol. LV., page 43), and I agree with him that an examination of some kind by the B.G.A. is necessary. But let it be some qualifying examination to run concurrently with the examination for the National Diploma in Horticulture. Surely the R.G.A. requires of its members more than an annual subscription and a reference if it is going to enrol all the gardeners in the kingdom. *C. R., Cowbridge.*

—On the subject of journeyman gardeners, *R.* (p. 30) suggests that the present generation of head gardeners does not afford enough help to journeymen, but the fact is that many places are now so inadequately staffed that the work has to be got through by the head and his foreman in as short a time as possible. Journeymen under these conditions have to keep their eyes very wide open if they are to acquire sufficient knowledge to qualify them for taking a foreman's situation, and only those who are both keen and intelligent can do this. Unfortunately, the poor conditions under which gardeners have to work have driven the best men away from gardening, into professions where their talents will meet with due reward; while those who are left are men who would probably get on very slowly in any position. With regard to the subject of wages, it is to be feared that a bad example is set by the owners of the small gardens in the residential districts just outside London. The owners (often City men) know little about gardening, but they engage one professional gardener as "head," and are satisfied to provide entirely unskilled labour to work under him, trusting to his knowledge to prevent disasters. The "under-gardeners," often mere labourers of rather more than usual intelligence, thus pick up a certain amount of rough-and-ready knowledge of gardening, and are prepared, after three or four years' work, to leave and take a place as "head" in a similar garden, at a wage much lower than that which should be asked by any gardener. I have lived in a residential district where such practices were pursued, and such cases have come within my own knowledge. *Vigornian.*

—It is interesting to read the opinion of the journeyman on the subject of his wages, but it

is also rather amusing to find how little he appreciates the difficulty which confronts the head gardener who wishes to suggest rises in the wages of the men. The head cannot say to the employer, "The men's wages must be raised." The employer pays out of his own pocket, and will not be dictated to as to what he pays. My advice to the journeymen who have written on the subject is, "Wait until you take your first place as head gardener; then we will hear what you have to say." II.

—With reference to *Modern Journeyman's* letter (p. 43), although I agree with some of his remarks, I should like to ask him where the chief interests of the young journeyman lie nowadays. For instance, does he discuss, while at work, the cultivation of plants, or the latest football match and the merits and demerits of a boxer? Which is read and studied with the greatest interest, the weekly gardening paper or the penny novelette? Far be it from me to deny these lads any pleasure outside their work—"All work and no play," etc. As regards the remarks of *M.A. Co. Kerry*, as to "head gardeners cutting the ground from under their own feet," I should imagine that the majority of head gardeners, on finding that a man of their own training had been preferred before themselves, on account of age, etc., would be the first to congratulate him and wish him well. *J. Evans, Lydham Manor Gardens, Bishops Castle, Salop.*

—I think that all fair-minded readers will agree that the present rate of pay to gardeners is too low; but how can it be remedied? There are some who think that the possession of a certificate such as the National Diploma of Horticulture will produce a better state of affairs. I am afraid, however, that success does not lie in that direction; the mere possession of certificates has never raised the wages of any body of men. I am inclined to think that until gardeners are properly organised their status and wages will remain in their present condition. *Cornubiense.*

—All praise and honour is due to your esteemed correspondent, Mr. James Hudson, for refusing to take premiums from young gardeners. It is a practice that should cease. I have myself had the offer of a premium more than once, and have served where premiums were taken from apprentices; but, curious to relate, I never knew any of those who paid turn out brilliant gardeners. Head gardeners who accept premiums are under an obligation to keep the young man, whether he is suitable or not. Enthusiastic under gardeners may not be so numerous as they were at one time; still, where good wages are paid, comfortable lodgings provided, and kind treatment afforded they are to be had. Wages have gone up rapidly and are still rising. In one of the departments in the gardens under my charge the weekly wage used to be 18s. per week, now it is 21s. If employers have a love for their gardens they will not demur at a few extra pounds per annum. My advice to young gardeners is: be diligent, studious, and exercise patience, for few, if any, have reached the top rung of the ladder without some reverses. *Forty Years' Head.*

PRESERVATION OF WILD FLOWERS.—

I have been keenly interested in this subject for a number of years, and have done my best towards bringing about the rehabilitation of wild flowers. Some time ago, when rambling with a friend, I came across a fine patch (about 200 plants) of *Paris quadrifolia* (Herb Paris), growing wild. On returning to the place some time after I was distressed to find that this patch had been ruthlessly trampled upon, and only a few specimens left alive. I found out afterwards that most of this damage had been done by school children. I was glad to see that the Director of Kew had made a public pronouncement on this subject, which I hope will result in the abolition of certificates, such as are being granted at Kew and Wisley, for 200 or more dried specimens of British flowers. There is no doubt whatever that the offering of such certificates has resulted in the disappearance of several valuable plants from districts where they were once fairly plentiful. *Cornubiense.*

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 27.—The most prominent exhibit at the meeting on Tuesday last in the Vincent Square Hall, Westminster, was a collection of Potatoes shown by Messrs. SUTTON AND SONS, who were awarded a Gold Medal. Another excellent exhibit in the Fruit and Vegetable Section comprised a collection of vegetables shown by Messrs. JAMES CARTER AND CO., who were awarded a Silver-gilt Banksian Medal.

The Orchid Committee granted one First-class Certificate and three Awards of Merit to novelties.

Medals were awarded by the Floral Committee for groups of Carnations, early bulbs, greenhouse plants, Ferns, and ornamental shrubs, but no award was made to a novelty by this Committee.

At the three o'clock meeting of Fellows an address on "Some Aspects of American Forestry" was delivered by Professor W. Somerville.

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. W. J. Bean, Chas. E. Shea, Chas. E. Pearson, John Dickson, William Bain, W. Howe,

Oranges, Hippeastrums, *Prunus sinensis alba*, with numerous *Dracaenas*, Palms, Ferns, and other fine foliage plants as a setting.

Messrs. STUART LOW AND CO., Enfield, showed Cyclamens and Carnations, for which a Bronze Banksian Medal was awarded. The Cyclamens included the novelty Mrs. Buckstone, with frilled petals of a clear salmon shade; Salmon King, and Victoria, which has waved petals stained with purple on a white ground.

Messrs. WILLS AND SEGAR, Florists, South Kensington, exhibited finely-flowered plants of Azaleas (*Rhododendron indicum*) and seedling Gerberas. Azalea purpurea grandiflora showed conspicuously with its bright lavender-coloured blossoms.

Mr. W. SEWARD, The Beeches, Hanwell, was awarded a Silver Flora Medal for a collection of finely-flowered Cyclamens.

One of the most dainty exhibits was a small group of Roman Hyacinths in fancy china bowls, staged by Messrs. SUTTON AND SONS, Reading.

Mr. W. A. MANDA, St. Albans, utilised Begonias and Ferns as a setting to an exhibit of Orchids. A new variety of *Nephrolepis* with golden-green fronds was shown under the name of M. P. Mills.

Messrs. JAMES CARTER AND CO., Raynes Park,



FIG. 33.—ODONTOGLOSSUM SANDHURSTIANUM (REDUCED). COLOUR OF FLOWERS BROWN-PURPLE.

(See p. 77.)

G. Gordon, G. Reuthe, W. P. Thomson, John Green, E. A. Bowles, W. J. James, E. H. Jenkins, R. Hooper Pearson, Charles Blick, C. R. Fielder, John Jennings, J. F. McLeod, Thos. Stevenson, F. Page-Roberts, Arthur Turner, Chas. Dixon, J. W. Moorman, James Hudson, and R. C. Notcutt.

Messrs. JAMES VEITCH AND SONS, King's Road, Chelsea, exhibited a collection of greenhouse flowering plants, for which a Silver Banksian Medal was awarded. Forced Lily-of-the-Valley, Freesias, Azaleas, *Erlangea tomentosa*, *Primula sinensis fl. pl.*, and *Kalanchoe Dyeri* were all flowering profusely.

Messrs. H. B. MAY AND SONS, Edmonton, showed 20 species and varieties of epiphytal Ferns in a groundwork of small stove and greenhouse varieties. The former included excellent specimens of *Polypodium vacinifolium*, *P. v. album*, *P. venosum*, *Drymoglossum carnosum*, *D. spatulatum*, *Davallia pycnocapa*, *D. heterophylla*, *D. canariensis*, *Asplenium obtusilobum* and *Niphobolus angustata*. (Silver Flora Medal.)

Messrs. W. CUTBUSH AND SON, Highgate, were awarded a Silver Flora Medal for Carnations and indoor plants, the latter including Azaleas, Camellias, *Daphne odora rubra*, well-fruited

exhibited Tulip William Copeland, under the name "Sweet Lavender," the only Darwin variety that forces well for flowering in January indoors. The fine purple blooms are borne on tall, stiff stems.

Messrs. R. GILL AND SONS, Falmouth, showed *Primula Winteri* and rare *Rhododendrons*. Of the latter we noticed *R. Wightii*, *R. Hookeri*, and an unnamed species raised from seeds collected in the Himalayas, having growth similar to *R. argenteum*, but with buff-coloured tomentum on the undersides of the leaves, which are 18 inches long.

Messrs. R. WALLACE AND CO., Colchester, showed dwarf Conifers and Shrubs, as at the last meeting.

Mr. L. R. RUSSELL, Richmond, Surrey, exhibited ornamental Shrubs and Ivies in pots. *Daphne Mezereum album* and species of *Hamamelis* were in flower, whilst *Aucubas*, *Pernettyas* and *Skimmias* were freely fruited and very ornamental. A red-tinted *Erica vulgaris*, named *Russelliana*, was very pleasing; a batch of this Heath would be very attractive in the rock garden in winter, whilst later, we were informed, the plant assumes a golden hue. (Silver Banksian Medal.)

Messrs. WHITELEGG AND PAGE, Chislehurst, Kent, exhibited small pot plants of Conifers, such as are used for planting on rockeries.

Messrs. ALLWOOD BROS., Wivelsfield, Haywards Heath, showed Perpetual-flowering Carnations, for which a Silver Banksian Medal was awarded. Scarlet Glow was the finest variety in the collection, which included Mary Allwood, Wivelsfield White, and White Wonder.

Mr. C. ENGELMANN, Saffron Walden, Essex, staged well-grown Carnations, which included Carola, Scarlet Carola, and Variegated Carola (rose-pink with crimson stripes and blotches), all novelties raised by the exhibitor. (Silver Flora Medal.)

Carnations were also exhibited by Mr. H. BURNETT, Guernsey (Silver Banksian Medal); Messrs. YOUNG AND CO., Hatherley, and the Misses PRICE AND FYFE, Grove Park Nursery, Lee.

Messrs. BARR AND SONS, King Street, Covent Garden, showed flowering bulbs, Primroses, Freesias and other early blooming kinds. The most striking subject was a batch of forced Tulips of the variety William Copeland (syn. Sweet Lavender). The bulbs were planted in September last, and the earliest blooms opened on January 15.

Messrs. JOHN PIPER AND SONS, Bayswater, arranged a small rock-garden, which was excellently designed. The highest point was crowned by a small plant of *Cephalotaxus pedunculata*, and down the slope was a broad band of *Saxifraga hursleriana*, whilst a "valley" was red with *Cyclamen ibericum rubrum*.

Mr. G. REUTHE, Keston, Kent, showed Crocuses, *Iris histrioides major*, *Eranthis cili-cica*, *Cyclamen Coum purpureum*, *Helleborus foetidus*, *H. corsicus* and other spring flowers.

Messrs. J. CHEAL AND SONS, Crawley, arranged a small rockery which was bright with patches of coloured Primroses, *Primula denticulata*, *Anemone blanda*, *Ericas* and *Erythronium Hartwegii*.

The WARGRAVE PLANT FARM, LTD., Twyford, Berkshire, exhibited on a rockery *Crocus biflorus*, *Iris alata*, *I. Danfordiae*, *Myosotis Ruth Fischer*, *Primula megaseaeifolia*, *Cyclamen ibericum* and other early flowers.

Mr. JAMES BOX, Haywards Heath, had uncommonly good plants of *Iris reticulata*, *I. histrioides major* and *I. Danfordiae* in a collection of Alpines which was bordered by plants of *Primula malacoides*.

Messrs. G. AND A. CLARK, LTD., Dover, showed *Polyanthuses Cloth of Gold* and *Avalanche*, together with plants in bloom of their excellent strain of coloured Primroses.

Orchid Committee.

Present: J. Gurney Fowler, Esq., in the chair; and Messrs. Jas. O'Brien (hon. secretary), De B. Crawshay, R. A. Rolfe, F. Sander, F. J. Hanbury, R. G. Thwaites, W. Waters Butler, T. Armstrong, A. McBean, W. Cobb, J. Charlesworth, J. Cypher, J. E. Shill, W. P. Bound, H. J. Chapman, H. G. Alexander, C. H. Curtis, A. Dye, W. H. White, S. W. Flory, W. Bolton, Gurney Wilson, Sir Harry J. Veitch, and Sir Jeremiah Colman, Bart.

There was a fine show of Orchids, some important groups being staged, and nineteen new Orchids entered to go before the Committee, one of which secured a First-class Certificate, and three others obtained Awards of Merit.

Mrs. NORMAN COOKSON, Oakwood, Wylam (gr. Mr. H. J. Chapman), was awarded a Silver Flora Medal for a pretty and interesting group, specially rich in showy *Odontiodas*. Among the more noteworthy were the original rich red *Odontioda Cooksoniae*; *O. Bradshawiae* Cookson's var., which, with an unrecorded *Odontoglossum*, gave the new *O. Marion* now shown, a large flower, handsomely blotched with red and tinged with rose; and with *O. ardentissimum*, the new *O. Margaret*. *Odontioda Vivienne* (Cooksoniae x amabile), a flower of good shape blotched with red and margined with rose; various other *Odontiodas*, *Odontoglossum Telemachus* var. *Esme*; a grand specimen of *Cypripedium Venus* with many flowers, and other pretty hybrids, all raised at Oakwood, were also shown.

Messrs. J. AND A. McBEAN, Cooksbridge, staged an extensive group of hybrids of *Cymbidium insigne*, for which a Silver Flora Medal was awarded. The principal feature was made of 80 plants of *C. Gottianum*, with tall spikes of blush-white flowers; *C. Alexanderi* was equally beautiful, and *C. Schlegelii*, *C. Pauwelsii*, *C. Wiganianum*, *C. Doris*, and *C. Holfordianum* were also shown.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a group composed for the greater part of hybrid *Odontoglossums*, a grand plant of *O. amabile splendens*, with a very heavy spike of large, white flowers spotted with light purple, obtaining

flowers nearest in form to those of *O. coronarium*, and with broad petals making a perfectly circular outline. The colour is deep chocolate-purple, or dark claret, the labellum having a pink tip and yellow crest. It should make a fine new break for crossing. Others noted were *Cymbidium Woodhamsianum* Orchidhurst variety; *C. Gottianum*, and a selection of hybrid *Cypripediums*.

Messrs. SANDER AND SONS, St. Albans, were awarded a Silver Flora Medal for a group in the centre of which were some well-flowered *Phalaenopsis Aphrodite*. Around them were showy *Cattleyas* and *Laelio-Cattleyas*, including very finely coloured *L.-C. Mauretania*, the light yellow *L.-C. Ernestii*, and various *Brasso-*



[Photograph by R. A. Malby.]

FIG. 39.—CYPRIPEDIUM DESDEMONA.

(R.H.S. Award of Merit on January 27, 1914, see p. 78.)

a well-merited Cultural Commendation. *O. Lambeauanum*, *O. Doris*, *O. ardentissimum*, and variety *Xanthotes*; *O. Phoebe*, a selection of finely-coloured *Odontiodas*, and other hybrids were noted. Two specially good were *Laelio-Cattleya Marcus* (*L.-C. Andromeda* x *C. Trianae*), yellow with purple markings, and the fine *Cypripedium Desdemona*. Among species were *Oncidium cheirophorum*, and *Masdevallia tovarensis*.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver Flora Medal for a fine group, principally hybrids, and which contained some very handsomely blotched seedling *O. crispum* of very fine shape, and various other hybrids, including *O. Elissa* and other *O. Edwardii* crosses. The most remarkable plant in the group was *O. Sandhurstianum* (*coronarium* x *Edwardii*) (see fig. 38), a unique cross with

Cattleyas; *Oncidium splendidum*, *Cypripedium Golden Eagle*, a very distinct hybrid; some finely blotched *Odontoglossums*, *Oncidium serratum*, *O. chrysopterum* and other *Oncidium*s.

Messrs. FLORY AND BLACK, Orchid Nursery, Slough, received a Silver Banksian Medal for a compact group of pretty hybrids, some of which were new, and notably *Laelio-Laelio-Cattleya Ariel* (*L. purpurata* x *B.-C. Mrs. J. Leemann*), a well-formed flower with cream-white sepals and petals tinged and flaked with rose-pink, the lightly fringed lip being bright rose-pink, with chrome yellow disc; and *Brasso-Cattleya Cecilia* (*C. aurea* x *B. glauca*), with cream-coloured sepals and petals and rose-coloured lip shaped like *C. aurea*, but smaller. *Odontoglossum Doris*, *O. Lambeauanum*, and a good dark seedling *O. crispum*; *Cypripedium Pliny*, *C. Elatior*, *C.*

Minos Youngii, C. Idina, and some unnamed crosses.

Messrs. J. CYPHER AND SONS, Cheltenham, were awarded a Silver Banksian Medal for a very good group of Cypripediums, remarkable for the vigorous condition and fine size of the flowers. Among the best noted were C. Bridgei, C. Thompsonianum, some handsome C. Euryades, C. Charlesianum Cypher's variety, a good, bold flower; C. Beekmannii, C. Mrs. F. Goodson, and C. Memoria Jerninghamiae, still a very fine and distinct flower. In the centre were Calanthes, and in front Lycaste lasioglossa, Oncidium cheiroporum, and Soprobronitis grandiflora.

Messrs. STUART LOW AND Co., Bush Hill Park, and Jarvisbrook, Sussex, were awarded a Silver Banksian Medal for a group of well-grown plants, in the centre being a very large and finely coloured Cattleya Percivaliana, with many flowers, and quite one of the best varieties of this pretty species. Some good Laelio-Cattleyas the brightly coloured Sophro-Laelia Psyche, good Cypripediums, including the handsome C. Beryl Westonbirt variety; Masdevallia Macrura, M. Estradae, M. tovarensis, and a fine plant of Dendrobium Wardianum album.

Messrs. HASSALL AND Co., Southgate, showed two plants of the pretty Brasso-Cattleya Menda; Odontoglossum crispum with large and finely formed flowers, and two good hybrid Cypripediums.

Messrs. W. A. MANDA, St. Albans, showed a good and varied selection of forms of Cattleya Trianae.

Messrs. SWAN AND PRICE, Keyfield Nurseries, St. Albans, staged a small group of very good Cypripediums.

FRANCIS WELLESLEY, Esq., Westfield, Woking, showed Cypripedium Westfieldiense in fine form.

AWARDS.

FIRST-CLASS CERTIFICATE.

Cattleya Tityus, var. *A. McBean* (Enid × Octave Doin), from Messrs. J. AND A. McBEAN, Cooksbridge. A happy combination of C. Mossiae, Warscewiczii, Mendelii, and Dowiana aurea, and a model Cattleya of fine size and colour. The sepals and broad petals are deep purplish-rose, the ample lip ruby-crimson.

AWARDS OF MERIT.

Odontioda Doris (*Odontioda Cooksoniae* × *Odontoglossum amabile*), from Mrs. NORMAN COOKSON, Oakwood, Wylam (gr. Mr. H. J.

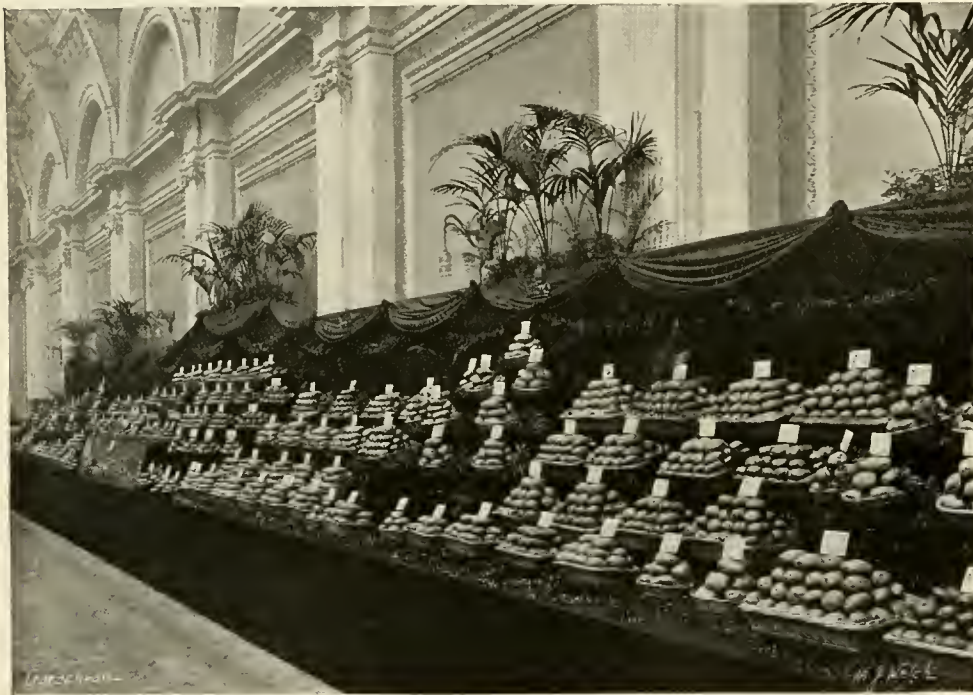
Fruit and Vegetable Committee.

Present: Jos. Cheal (in the chair), Messrs. J. Willard, Edwin Beckett, H. Markham, A. R. Allan, A. Grubb, A. Bullock, G. Reynolds, W. Poupart, C. G. A. Nix, John Basham, and James Gibson.

Messrs. SUTTON AND SONS' exhibit of Potatoes (see fig. 40), for which a Gold Medal was awarded, included 150 distinct varieties and about 50 seedlings, most of the latter being of great promise. The seedlings were arranged in the centre of the collection, and above a glass case which was filled with species of Solanum—S. etuherosum, S. Commersonii, S. Maglia, and others whose history will be found in *Gard. Chron.*, March 3, 1906, p. 129. Above the case were dishes of the Large Red Fir Apple, the Small White Fir Apple, and the Congo purple-fleshed Potatoes, whilst of more interest to growers were specimens, preserved in spirit, of various Potato diseases, illustrating wart disease or black scab, *Synchytrium endobioticum*, *Hypochnus* (*Rhizoctonia*) *solani*, and the common blight, *Phytophthora infestans*. In such an extensive collection room was found for almost all the standard and favourite varieties, many of which have originated from this famous house. The variety Windsor Castle was noticed, and it appeared to be as good as when Messrs. SUTTON AND SONS first put it into commerce; it is the forerunner of a "Castle" race, which includes such novelties as Edinburgh Castle, Dover Castle, Balmoral Castle, Stirling Castle and Carisbrook Castle. The following varieties represent some of Messrs. SUTTON AND SONS' finest Potatoes in their respective classes:—1st Early, Ringleader, Gladiator, May Queen, Harbinger; 2nd Early, Edinburgh Castle, Acquisition, Windsor Castle, Ideal; Main Crop, Superlative, Abundance, Reliance, and White City. The coloured tubers included the well-known Mr. Bresse, Reading Russet, Cardinal, and Garden Favourite. It will be seen on reference to fig. 40 that the tubers were staged in a very attractive manner, being arranged in tiers, with a ground of black drapery.

Messrs. JAMES CARTER AND Co., Raynes Park, showed a collection of vegetables representing produce from the firm's strains of seeds. There were excellent Lyon Leeks, large Cranston's Excelsior and selected Ailsa Craig Onions; Early Favourite, Snowball and other Potatoes; Cartercone Savoys, Borecoles, Chou de Russie and other winter greens; Crimson Ball, Exhibition and Long Red Beets; Silver-Skinned Jerusalem Artichokes, Incomparable Crimson Celery; Summer Favourite Carrots of the stump-rooted type, Holborn Marrow Parsnips, Batavian Endive, Brussels Sprouts, Chinese Artichokes, Spinach and many other subjects. (Silver-gilt Banksian Medal.)

The "dishes" comprising the collection were so arranged that the exhibit presented a very attractive and dainty appearance.



[Photograph by R. A. Molby.]

FIG. 40.—COLLECTION OF POTATOS SHOWN BY MESSRS. SUTTON AND SONS AT THE R.H.S. MEETING ON TUESDAY LAST.

Lieut.-Colonel SIR GEO. L. HOLFORD, K.C.V.O. (gr. Mr. H. G. Alexander), sent Cypripedium Satyr (Hera Euryades × Beryl), a very handsome Cypripedium with large, nearly black blotches on its white dorsal sepal; the broad petals and lip resembling C. Beekmannii, Indian yellow with dark purple markings. Also Sophro-Laelio-Cattleya St. Arilda (S.-L. Phroso superba × L.-C. Goldcrest), a pretty flower of a salmon-tinted yellow colour and rose margin to the lip.

G. C. ROEBELING, Esq., Trenton, New Jersey, U.S.A. (gr. Mr. Jas. Goodier), again showed the remarkable Laelia anceps Roebingiana which received an Award of Merit last year, the deeply coloured petals showing more plainly the peloriate arrangement of the segments.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), showed Cymbidium Lady Colman Pitt's variety; Odontoglossum crispum Pegasus, a finely blotched seedling form; Cypripedium Talma (Charlesianum × Lathamianum), with purple-flushed dorsal sepal; and C. Proserpine (glaucophyllum × Charlesianum), with rose-spotted lip.

PANTIA RALLI, Esq., Ashted Park, Surrey, sent Cymbidium Gottianum; very fine.

Chapman). Flower of good shape, with white ground; fringed petals blotched with red, and tinged with lilac on the margin.

Odontioda Sibyl (*Odontioda Bradshawiae* Oakwood var. × *Odontoglossum dark seedling*), from Mrs. NORMAN COOKSON. A remarkable colour variation, the flower being almost wholly of a bronzy-claret tint.

Cypripedium Desdemona (Mrs. Cary Batten × *Alcibiades*) (see fig. 39, p. 77), from Messrs. CHARLESWORTH AND Co., Haywards Heath. A very distinct Cypripedium of large size. The ground colour is rich Indian yellow with small, green base to the dorsal sepal, which bears blackish-purple lines, the petals and lip being tinged and marked with the same dark hue. The surface of the flower is glossy, and very attractive.

CULTURAL COMMENDATION.

To Mr. J. E. SHILL, gr. to Baron Bruno Schröder, The Dell, Englefield Green, for three magnificent plants of Cymbidium Pauwelsii The Dell variety, two with three and one with one spike of very fine blooms.

To Messrs. CHARLESWORTH AND Co., for a magnificent plant of *Odontoglossum amabile* splendens (Harryano-crispum × crispum).

GLoucestershire ROSE AND SWEET PEA.

JANUARY 26.—The annual meeting of this Society was held at the Guildhall on the 26th inst., Mr. Michael Lloyd-Baker presiding.

The balance-sheet showed that the receipts amounted to £296 17s. 10d., and the expenditure to £327 18s. 9d., leaving a deficit of £31 0s. 11d. The Chairman, while regretting the deficit, said the kudos that accrued to them through having the National Rose Society's Show at Gloucester last year was well worth that loss, and they hoped to get it back. He moved the adoption of the balance-sheet.

Mr. Conway Jones seconded, and urged the need for more general support in the way of subscriptions. The balance-sheet having been adopted the election of officers was proceeded with.

Colonel Timms, of Watson House, was elected chairman in place of Mr. Lloyd-Baker, resigned, and Lady Holford was elected President of the Society; while Lady Cunynghame, Miss de Mont Jean, and Mrs. Buller (Norton Court) were added to the list of patrons.

The secretary and other officers were re-elected.

It was agreed to hold this year's show on Friday, July 3.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

(ANNUAL MEETING.)

The Results of the Election were recorded in our last issue.

JANUARY 24.—The following are the proceedings at the seventy-fourth annual meeting of the friends of this Institution, a note upon which was published in the last issue. There were twenty-four present, and Sir HARRY J. VEITCH presided.

The secretary, Mr. GEORGE J. INGRAM, having read the minutes of the last meeting, was called upon to read the annual report and balance-sheet for 1913, which we publish in full as follows:—

REPORT OF THE COMMITTEE.

It is with much satisfaction the Committee presents its 74th Annual Report, also a statement of receipts and payments (as audited) for the year 1913. They have again the pleasure of congratulating the friends and subscribers to the Institution on its continued prosperity and increased benefits to deserving and necessitous horticulturalists in their distress and need.

In 1913 no less than £4,593 13s. was disbursed in granting annuities of £20 and £16 a year respectively. This sum is larger by £181 than any amount hitherto expended in any one year in the history of the Institution.

At the commencement of the year there were on the funds 258 persons—145 men and 113 widows. During 1913 12 only have died, four of whom left widows who, their cases having been found eligible and necessitous, were placed on the funds for the widow's allowance of £16 a year without election, under Rule III., 13. There were, therefore, at the end of the year 250 persons receiving annuities for life, and although 8 net vacancies only have occurred the Committee recommend the election of 15 candidates from an approved list of 60 applicants, which will make a total of 265 annuitants on the funds—the highest number at any time in the history of the Charity. In thus increasing their financial obligations by adding 7 additional beneficiaries the Committee feel assured the subscribers and friends of the Charity will justify their action by a continuance of that liberality and support necessary to maintain the work.

The special funds, Victorian Era Fund and the Good Samaritan Fund, still prove to be of incalculable benefit in the relief of a large number of distressed cases.

It may be mentioned that the interest derived from the Victorian Era Fund is applied in granting aid to the unsuccessful candidates at elections who were formerly subscribers, no less a sum than £219 having been distributed amongst them during the year; whilst the income from the Good Samaritan Fund affords temporary and immediate assistance in urgent cases to deserving applicants, a sum of £246 having been disbursed from this source in 1913. The claims upon this fund are very numerous, and the Committee would be grateful for any special contributions to augment its income. Grateful letters from the recipients of aid thus rendered show how much the help was needed and how greatly appreciated.

The Annual Festival Dinner, held at the Hotel Metropole in June last, under the presidency of Leopold de Rothschild, Esq., C.V.O.—President for the second time in 25 years—was most successful. The Committee desire to place on record their deep gratitude to this warm friend of the Institution for his presence and eloquent advocacy of the claims of the Charity and for his personal generous contributions to the funds. They also take this opportunity of tendering their best thanks to those gentlemen who kindly acted as stewards or collectors, to the donors of flowers, to the horticultural Press for their liberal and gratuitous help, to those who kindly arranged the floral decorations on the occasion, and to other friends who directly or indirectly contributed to make the Festival a success.

The Committee gratefully acknowledge the help afforded by the Liverpool Auxillary by their annual concert, the Geo. Monro Concert Committee, as well as by the organisers of successful concerts at Altrincham, Liverpool, Leyton and other places. Sincere thanks are also expressed to those Clergymen who kindly allocated a proportion of their Harvest Thanksgiving offertories for the benefit of the funds.

The Committee have again to refer to the liberality of their colleagues, Messrs. Arthur W. Sutton, J.P., V.M.H., and Geo. Monro, V.M.H., for their kindness in providing a year's allowance to two unsuccessful candidates who, it is needless to say, are deeply grateful for these timely gifts.

Again the Committee sincerely acknowledge the kindness of those noblemen, ladies and gentlemen, who have opened their beautiful gardens for the benefit of the funds, amongst whom were Rt. Hon. Earl Beauchamp, Madresfield; Rt. Hon. Lord Northbourne, Betteshanger; Rt. Hon. Mary Countess of Ilchester, Holland House; the Lady Wantage, Lockinge; the Lady Battersea, Overstrand; Sir Frank Crisp, Bart., J.P., LL.B., Henley; E. J. Wythers, Esq., Epping; and C. W. Dyson Perrins, Esq., Malvern.

It is hoped that other ladies and gentlemen will follow these excellent examples.

The auxiliaries still prove valuable adjuncts to the Institution, not only in obtaining financial support, but also in creating a larger interest in its work. To the Presidents, Honorary Treasurers, Honorary Secretaries (whose names are appended), as well as to the local Committees, very grateful thanks are offered.

BRISTOL AND BATH.

Presidents. Col. H. Cary Batten | Hon. Treasurers. | Hon. Secretaries. Mr. Geo. Harris.

WORCESTER.

Rt. Hon. Earl Beauchamp, K.C.M.G. | John White, Esq. | Mr. Percy G. White.

DEVON AND EXETER.

Presidents. Trehauke H. Kekewich, Esq. | Hon. Treasurers. Mr. W. Mackay. | Hon. Secretaries. Mr. W. Mackay.

WOLVERHAMPTON.

C. T. Mander, Esq., J.P. | Mr. Geo. Bradley. | Mr. Geo. Bradley.

BERKSHIRE, READING AND DISTRICT.

Mrs. Rowland Spurling. | Arthur W. Sutton, Esq., J.P., V.M.H. | Mr. L. Castle.

LIVERPOOL AUXILIARY.

The Rt. Hon. the Earl of Derby, K.G. | Mr. A. J. Crippen. | Mr. R. G. Waterman.

The Committee are glad to be able to report that the amount received from the successful Royal International Horticultural Exhibition, 1912, was £1,532 1s. 7d., being two-thirds of the balance of the profits after all liabilities had been discharged. Part of the amount has been invested for the benefit of an Annuitant who is now in receipt of £20 a year for life. The Committee again offer their grateful acknowledgements to the directors of the Exhibition for their kindness.

The Committee have again with sorrowful regret to record the deaths of many warm friends and supporters during the past year, amongst whom they would specially refer to Sir Trevor Lawrence, Bart., V.M.H., Chairman at the Festival Dinners in 1877 and 1888, and a Vice-president of the Institution; the Rt. Hon. G. W. Palmer; Mr. Martin John Sutton, J.P.; Mr. Fred Cooper, a member of Committee for many years; Mr. R. Milligan Hogg, also a former member of Committee; Mr. Robert Sydenham, Mr. John Maulean, Mr. R. Staples, Mr. A. Porteous and Mr. Anthony Hall. The loss of these generous-hearted friends is very severely felt.

In conclusion the Committee would emphasise their gratitude for the practical aid and sympathetic help accorded to them on behalf of those who through misfortune are unable to help themselves, and earnestly appeal for additional support for this National Horticultural Charity so that the beneficent work, which has been carried on with such benefit to the poor and needy for 74 years, may be maintained and extended.

(Signed) HARRY J. VEITCH, Treasurer and Chairman of Committee. GEORGE J. INGRAM, Secretary.

The Chairman moved that the report and balance-sheet be adopted. He referred to the small attendance at the meeting, which he did not regard as a sign of indifference, but rather as showing that the subscribers had entire confidence in the way the affairs were managed. The report was in every respect satisfactory, and it was a pleasure to learn that the receipts showed an increase of £181 over those of the previous year. Because of this additional support, the Committee were enabled, said Sir HARRY, to recommend the election of fifteen candidates, notwithstanding that only eight vacancies had occurred during the year through the deaths of pensioners. The Chairman referred to the kindness of Mr. Leopold de Rothschild in presiding at the annual dinner, and for the financial support he had given on that and other occasions. The Auxiliaries had rendered valuable help, and only that afternoon cheques for more than £200 had been handed him by representatives of the Worcester and Reading branches. The sum of £1,532 1s. 7d. had been received from the Directors of the International Exhibition, to whom the Committee accorded its heartiest thanks. Thus the Institution had benefited largely on two occasions from International Exhibitions, for the sum

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—BALANCE SHEET, 1913.

DR.	£ s. d.	£ s. d.	CR.	£ s. d.	£ s. d.
To Balance		1,152 7 9	By Annuities and Gratuities, including special gifts from Messrs. A. W. Sutton and Geo. Monro, and "Schröder" Annuity		4,593 13 4
„ Amount on Deposit (including Sherwood Gift)		2,980 5 9	„ Expenses of Annual Meeting and Election		10 19 6
„ Wolfe Legacy and Interest		1,101 16 5	„ Rent, firing, lighting, etc., and salaries of Secretary and Clerk		591 15 10
„ Annual Subscriptions	1,375 8 0		„ Printing Reports, polling papers, appeals, etc., and stationery	138 5 6	
„ Donations (including Festival Dinner Contributions, etc.)	2,702 15 2		„ Less advertisements	45 5 0	
„ Amount granted from profits of Royal International Horticultural Exhibition, 1912	1,532 1 7		„ Postages, reports, polling papers, etc.	93 0 6	
„ Royal Horticultural Society for "Schröder" Annuity	20 0 0		„ Advertisement "Fry's Charities"	51 13 3	
„ Dividends and Interest	951 3 2		„ Carriage and incidental expenses	3 3 0	
„ Returned Income Tax	49 16 4		„ Bank charges	14 0 11	
		6,641 4 3		5 9	
			„ Post Office telephone		763 19 3
			„ Expenses of Festival Dinner	239 13 3	6 10 0
			„ Less dinner charges	205 14 0	
					35 19 3
			„ Investments "Sherwood" Gift		498 18 6
			„ Investments Royal Int. Hort. Exhibition (part)		483 16 6
			„ Placed on deposit		3,130 0 0
			„ Placed on deposit Wolfe Legacy and Interest		1,101 16 5
			„ Balance with Treasurer	1,249 7 11	
			„ Balance with Secretary	10 13 6	
					1,260 1 5
					£11,875 14 2
					£11,875 14 2

*Required to meet quarterly payments on Jan. 1, 1914.

We beg to report that we have audited the accounts, having obtained all the information and explanation required. We have also verified the securities in the hands of the Bankers, and in our opinion the Balance Sheet is properly and correctly drawn. We also find the Books in perfect order.

(Signed) THOMAS MANNING, JESSE WILLARD.

VICTORIAN ERA FUND.—BALANCE SHEET FOR 1913.

DR.	£ s. d.	£ s. d.	CR.	£ s. d.	£ s. d.
To Balance, Jan. 1, 1913		156 16 3	By Gratuities		219 0 0
„ Dividends		219 14 8	„ Balance, Dec. 31, 1913		272 4 9
„ Returned Income Tax		14 13 10			
„ Legacy (H. E. Tillman, Esq.)		100 0 0			
		334 8 6			
		£491 4 9			£491 4 9

GOOD SAMARITAN FUND.—BALANCE SHEET FOR 1913.

DR.	£ s. d.	£ s. d.	CR.	£ s. d.	£ s. d.
To Balance, Jan. 1, 1913		344 3 4	By Gratuities		246 0 0
„ Donations		38 0 0	„ Balance, Dec. 31, 1913		278 6 10
„ Dividends		133 18 8			
„ Returned Income Tax		8 3 10			
		180 2 6			
		£524 5 10			£524 5 10

January 19, 1914.

Audited and found correct. (Signed) THOMAS MANNING, JESSE WILLARD.

of £1,000 was contributed from the show of 1866. During the past year the Institution had lost through death many prominent patrons. The late Sir Trevor Lawrence was one of their best friends, for not only had he presided on two occasions at the annual dinners, but he was always ready to help the Institution in every way. The economical manner in which the fund was managed was a matter for congratulation, and for this they were largely indebted to their capable secretary, Mr. George Ingram. Good work was still being done by the Victorian Era Fund and the Good Samaritan Fund. After thanking the members of the Press for the assistance they had always afforded the Institution, Sir HARRY concluded his speech with an appeal for increased financial support.

The resolution for the adoption of the report and balance-sheet was seconded by Mr. WHITE, and carried unanimously.

Mr. ARTHUR W. SUTTON asked the Chairman what the Committee proposed to do with the large sum received from the Directors of the International Exhibition, and whether they could extend the benefits in consequence. In reply the Chairman stated that a sum of money had been invested to provide for an additional annuitant, and fifteen additional pensioners were included this year, although there were only eight vacancies.

The meeting then proceeded to the election of officers, and Mr. A. W. SUTTON proposed the re-election of Sir Harry Veitch as Treasurer. Every year, he said, the members became more and more conscious of the debt they owe to Sir Harry Veitch, for it was well known that he allowed the work of the Institution to take precedence of all other. Mr. BILNEY seconded, and the motion was accepted with great enthusiasm. In returning thanks, Sir HARRY announced that the Speaker of the House of Commons, the Rt. Hon. J. W. Lowther, had consented to preside at the next annual dinner, to be held on Friday, June 26.

Mr. GEO. MONRO proposed the re-election of Mr. Geo. Ingram as Secretary, and the motion was carried amidst the greatest applause.

The retiring members of the Committee were all re-appointed, and the name of Mr. Percival Etheridge added to the list to fill a vacancy caused by the death of Mr. F. Cooper. The Auditors and Arbitrators were re-elected and thanked for their services.

At this stage the scrutineers of the ballot were nominated, and the meeting was adjourned until 4.30 p.m., when the poll was declared, resulting in the election of the pensioners mentioned on p. 63 of our last issue.

THE FRIENDLY SUPPER.

The Friendly Supper was held on the evening of the same day at the same hotel. Sir HARRY VEITCH presided, and he proposed the toast of "The Gardeners' Royal Benevolent Institution." Mr. HAROLD BEALE proposed "The Committee." This toast was responded to by Mr. RUDOLPH BARR. Mr. ETHERIDGE gave "Our Country Friends," to which Messrs. CASTLE (Reading), P. M. VEITCH (Exeter), and PERCY WHITE (Worcester) responded.

The sum of £15 was offered by Messrs. W. Clement and F. Dangerfield for the benefit of the seven unsuccessful candidates who had been longest on the list, conditional on £20 more being raised to provide a consolation gift of £5 each to these candidates. The money was at once forthcoming in the form of donations from Sir Harry Veitch, Messrs. P. Etheridge, Harold Beale, Ed. Sherwood and Edmund Rochford.

Worcester and District Auxiliary.

The eighteenth annual meeting of the subscribers of the Worcester and District Auxiliary of the Gardeners' Royal Benevolent Institution was held on Wednesday, the 14th inst., at the Crown Hotel, Worcester, C. E. Pipe, Esq., in the chair.

The annual report and balance-sheet were submitted and adopted. The report stated that owing to inclement weather, the day set apart for opening Madresfield Court Gardens was not a financial success, only a small balance being the result. There was a falling off in the annual subscriptions, but this was somewhat compensated by thirteen new subscribers. The sum of £105 has been forwarded to the parent institution during the past year. The bye-

laws submitted by the committee were duly adopted, and the officers elected. The proceeds of the "Gardens" Fund being again offered to any subscribers wishing to become life members by payment of £5 5s., Messrs. J. and W. Jones, having signified their intention of accepting the same, were accordingly enrolled as life members of the institution. Mr. A. A. Preece has again kindly offered to present a piece of china to the member of the Auxiliary who shall collect the largest amount on a collecting card by the end of the year. Since the Auxiliary was started in 1896 it has contributed £1,639 to the Institution, sufficient to provide pensions for sixteen necessitous gardeners or widows of gardeners.

ROYAL OXFORDSHIRE HORTICULTURAL.

JANUARY 12.—The Mayor (Alderman the Rev. W. E. Sherwood) presided at the annual general meeting of the Royal Oxfordshire Horticultural Society, which was held on the 12th inst.

The revenue account for the year disclosed expenditure amounting to £294 11s. 7d., and receipts totalling £271 17s. 8d., this showing a loss on the year of £22 13s. 10d. The balance-sheet showed liabilities due to the bankers and secretary of £39 2s. 5d., and assets totalling £20 10s., this disclosing an adverse balance of £19 12s. 5d. The report and balance-sheet were agreed to. The President of Magdalen (Dr. Warren) was re-elected president. Messrs. Barclay and Co. were re-appointed treasurers, Mr. John Thomson and Mr. J. Morrell, hon. secretaries, Mr. W. S. Carver, auditor, and Mr. F. Lowe, acting-secretary.

SOUTHAMPTON HORTICULTURAL.

JANUARY 12.—The Mayor of Southampton (Alderman W. Bagshaw), who has been a subscriber to the society for 20 years, presided at the 51st annual meeting of the Royal Southampton Horticultural Society, held at the Council Chamber on this date.

The report showed that although the society commenced the year with a debt of £56, the net deficit is now only £10. This very satisfactory result was largely due to the kindness of Ellen Lady Swaythling in lending her beautiful grounds at South Stoneham House for the Rose show. Her ladyship had again placed her grounds at the disposal of the society for next year. The summer show did not entail any loss, but the autumn show resulted in a loss of nearly £26, largely due to unfavourable weather.

Lord Swaythling was re-elected president. The vice-presidents were also re-elected. Mr. Herbert E. Molyneux, Norton Desborough, was elected vice-chairman in the place of Mr. A. Doggrell, who had resigned. Mr. A. G. Thomson was re-elected hon. treasurer, and Mr. C. S. Fuidge was again chosen as secretary.

SCOTTISH HORTICULTURAL.

JANUARY 20.—The annual business meeting of this association was held in Dowell's Rooms, George Street, Edinburgh, on the 20th inst. Mr. King, the president, was in the chair, and there was an attendance of 140 members.

The report by the Council stated that in the beginning of last year a representation was made to the Governors of the Edinburgh and East of Scotland College of Agriculture that they considered that the time had arrived when horticulture should have direct representation on the Governing Board of that institution. This suggestion was agreed to by the Governors, and ultimately Mr. W. H. Massie was put forward as the joint nominee of the Association and the Royal Caledonian Horticultural Society, and was co-opted a member of the Board. Towards the close of the year the Council learned that there was a rumour that the authorities of the Royal Scottish Museum proposed to abolish the section of Economic Botany in that institution, and the matter was at once taken up with a view to future action should the rumour prove well founded.

At the end of 1912 the Horticultural Institution fund stood at £288 2s. 5d. During the year donations to the amount of £341 0s. 8d. had been received, and the net proceeds of the

bazaar which was held in conjunction with the Chrysanthemum Show amounted to £853 15s. 11d., the fund at December 31 last, including interest on investments, being £1,493 18s. 7d. There was a profit of £83 9s. 11d. on the Chrysanthemum Show, and the Association Fund amounted to £977 10s. 5d., an increase of £117 18s.

During the year one life and 109 ordinary members were enrolled, and the membership now stood at 1,254.

Captain Stirling, of Keir, was re-elected honorary president, Mr. King was re-appointed president, and Messrs. W. Smale and James Hay were elected to fill vacancies in the vice-presidencies. Messrs. J. Alexander, J. W. M'Hattie, W. H. Massie, W. Michie, R. T. Naismith, W. Smith and Miss Burton were appointed members of the Council; the secretary, treasurer, and auditors were all re-elected.

PROPOSED AMALGAMATION WITH THE ROYAL CALEDONIAN ASSOCIATION.

Mr. G. M. Taylor introduced the question of amalgamation with the Royal Caledonian Horticultural Society by referring to what had been done a few years ago, and asked if the matter was to rest for ever where the former committee had left it. A fresh effort should be made to bring about the amalgamation, for time, energy and money were being wasted in running two societies. The secretary, Mr. Richardson, stated that the former committee was re-appointed for one year only, and if anything fresh was to be done a new motion would have to be proposed.

Mr. Comfort thereupon proposed that the Council be authorised to enter into negotiations with the Royal Caledonian Society. It had been stated by Mr. D. W. Thomson, the chairman at the annual meeting of the Royal Caledonian Horticultural Society, that his society was prepared to favourably consider the question of amalgamation, and Mr. Comfort considered that the Scottish Horticultural Society should also be in favour of amalgamation.

Mr. Cuthbertson, in seconding, said he agreed with Mr. Taylor that it was a disgrace to Scottish horticulture that things should be as they were. The same men held high office in both societies. If there was a sincere desire for unity he was certain it could be brought about, and one strong society would be the result.

Mr. McHattie said he agreed with Mr. Cuthbertson's remarks. He was strongly in favour of a union between the two societies, and considered that every effort should be made to accomplish it.

Mr. Richardson explained that on the last occasion on which an effort was made to unite, the difficulty of the Charter of the Royal Caledonian Society was considered insurmountable. Mr. Taylor said Charter or no Charter the thing should go through. Mr. Naysmith, a new member of the Council of the Scottish Horticultural Association, said he was not prepared to commit himself to proposals for union, as he thought good work could be done by the societies separately. Mr. James Whytock strongly advocated union. Mr. King, the president, assured the meeting, after Mr. Comfort's motion had been carried unanimously, that he was strongly in favour of amalgamation, and he would see that every effort was made to bring about the desired result.

COVENTRY CHRYSANTHEMUM.

JANUARY 22.—At the annual business meeting of the above society on the 22nd inst. it was reported that the balance from 1912 was £59 16s. 1d., and the total amount on the income side of the financial statement was £218 11s. 6d. The expenditure, including £70 12s. 9d., distributed in prize money, was £150 6s. 8d., leaving a balance at the bank of £68 4s. 10d. The president, Alderman A. H. Drinkwater, J.P., congratulated the members upon the increasing popularity and success of the exhibition. The election of officers resulted as follows:—President, Alderman Drinkwater; treasurer, Alderman W. H. Batchelor; chairman, Mr. A. Scott; vice-chairman, Mr. F. Morgan; secretary, Mr. G. Griffin; auditors, Messrs. A. Hammond and F. Wilkins. The vice-presidents and patrons were re-elected, the Mayor of Coventry, Councillor S. Bettman, J.P., and Harold Twist, Esq., being added to the list.

MARKETS.

COVENT GARDEN, January 28.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

Table of Cut Flowers prices including Arums, Azalea, Camellias, Carnations, Freesias, Gardenias, Lilium auratum, Lily-of-the-Valley, and various Orchids.

Cut Foliage, &c.: Average Wholesale Prices.

Table of Cut Foliage prices including Adiantum Fern, Agrostis, Asparagus plumosus, Carnation foliage, and French Flowers like Anemones and Lillac.

French Flowers.

Table of French Flowers prices including Anemones, Lillac, Marguerites, Mimosa, Narcissus, and Ranunculus.

Guernsey and Scilly Flowers.

Table of Guernsey and Scilly Flowers prices including Anemone fulgens, Narcissus, and Soleil d'Or.

REMARKS.—The supplies of Daffedils and Tulips are gradually increasing, and the blooms are of much better quality. These bulbous flowers are the brightest subjects in the market just now, and, with Lily-of-the-Valley, the more numerous. Other kinds are very scarce, and prices remain exceptionally high, but trade is very quiet. The supply of Carnations is sufficient for the demand, but the blooms generally are small. The new crop of Roses—Richmond, Lady Hillingdon, Catherine, Mer-

ment and Sunburst—is ready, and blooms were offered for sale this week. Other sorts are expected to follow shortly. Supplies of bloom from Scilly and Guernsey are limited to Sol. d'Or and Grand Primo Narcissi and Freesias, which are all scarcer than usual at this season. A few bunches of Narcissus Poeticus were marketed this week. In the French Flower Market, Violets, Acacia (Mimesa), Anemones, White Stocks, and Marguerites are the more plentiful subjects, but the supplies are shorter than usual. Paper White Narcissus appears to be practically finished, and the quality is very poor. Prices for blooms continue very high, and there is a good demand for the class of flowers required for foundation purposes by florists; but as in the English market, the supplies are short throughout, and the salesmen have no difficulty in clearing their stocks long before the market closes.

Plants in Pots, &c.: Average Wholesale Prices.

Table of Plants in Pots prices including Aralia Sieboldii, Araucaria excelsa, Asparagus plumosus, Begonia Gloire de Lorraine, Cacti, Cocos Weddelliana, Croton, Cyclamen, Daffodils, Dracaena, Erica hyemalis, Ficus, Gleditsia, Lantana, Lilium longiflorum, Lily-of-the-Valley, Marguerites, Pandanus Veitchii, Phoenix rupicola, and Spiraea japonica.

Fruit: Average Wholesale Prices.

Table of Fruit prices including Apples, Apricots, Bananas, Cranberries, Custard Apples, Dates, Figs, Grapes, Lemons, Limes, Lychees, Nuts, Oranges, Peaches, Pears, Pineapples, Plums, and Strawberries.

REMARKS.—The supplies of English Culinary Apples are limited to the varieties Bramley's Seedling and Dumelow's Seedling (Wellington), and are about equal to the demand. All the boxed fruits from Wenatchee and Oregon are suitable for dessert purposes, and are very good, both in appearance and quality. Apples in barrels continue a good supply, the best variety being Albemarle. Pears from California and Cape Colony consist of the following varieties:—Easter Bonné, Winter Nelis, Clapp's Favourite, and Williams' Brun Chrétien. Fruits from the Cape to hand this week include Peaches, Plums, Apricots, Pears, and Nectarines. Black Grapes continue plentiful. Supplies of Tomatoes from the Canary Islands have shown an increase during the past week. Forced Strawberries from Worthing are available in limited quantities. Forced Vegetables that are obtainable include Mushrooms, Peas, Beans, Cucumbers, Asparagus, and Potatoes. Salads, such as Lettuce, Endive and Chicory are fairly plentiful. There is no shortage in the supplies of ordinary vegetables. E. H. R., Covent Garden, January 28, 1914.

Vegetables: Average Wholesale Prices.

Table of Vegetable prices including Artichokes, Asparagus, Beans, Beetroot, Cabbages, Carrots, Cauliflowers, Celery, Chicory, Cucumbers, Endive, Garlic, Horseradish, Lettuce, Leeks, Peas, Potatoes, Radishes, Spinach, Sprouts, Stachys, Tomatoes, Turnips, and Watercress.

Potatoes.

Table of Potato prices including Bedford, Blacklands, British Queen, King Edward, and Evergood.

REMARKS.—Trade is somewhat slow, and prices have a tendency to fall. Stocks in London are very large, and are accumulating. Edward J. Newborn, Covent Garden and St. Pancras, January 28, 1914.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending January 24, is furnished from the Meteorological Office:—

A large anticyclone maintained its position over or in the immediate neighbourhood of the United Kingdom with little modification in intensity until late in the week, and the southerly wind current on the Atlantic affected the extreme western seaboard of the kingdom only. Over the country generally the wind blew from some easterly point, and at several places in the north and east it was accompanied by slight falls of snow or sleet. By Friday the central part of the high pressure system was transferred to Germany, and the southerly current encroached gradually on the west of these islands, raising the temperature several degrees in Ireland and the most western parts of Great Britain. By Saturday, when the anticyclone had retreated still further to the south-eastward, a decided gradient for south-westerly winds embraced all our western and northern districts, while at the end of the period the change to milder weather extended to the south-eastern corner of England also. Rain now fell generally (the amount at Fort William being as large as 1.2 in.) and gales occurred at a few places in the north and north-east of Great Britain, and lightning was observed at Lerwick.

THE WEATHER IN WEST HERTS.

Week ending January 28.

A Change to Milder Weather After a Persistently Cold Fortnight.—The recent uniformly cold period which had lasted a fortnight came to an end on the 26th, since which the weather has been decidedly warmer. Just before the close of the cold period in question there were two very cold nights, when the exposed thermometer indicated 17° and 20° of frost—making these the two coldest nights as yet of the present winter. The ground temperatures are rising, but are still 1° colder than is reasonable, both at 1 foot and 2 feet deep. Rain fell on three days, but to the total depth of only about one-tenth of an inch. Since the frost came out of the ground on the 25th there has been some slight percolation each day through both of the soil gauges. The sun shone on an average for only 1 hour 9 minutes a day, which is 40 minutes a day short of the usual duration of bright sunshine at the same period in January. Calms and light airs as a rule prevailed during the week. The mean amount of moisture in the air at 3 p.m. exceeded a reasonable quantity for that hour by 5 per cent. E. M., Berkhamsted, January 28, 1914.

LAW NOTE.

THEFT AT KEW GARDENS.

RECENTLY a number of shrubs have been missed in Kew Gardens, and a special watch was set by the police, with the result that two men were captured early on Wednesday, the 21st inst. Three others, however, managed to make good their escape.

The men in custody, Allen Berrow, a labourer, of Shaftesbury Road, Acton, and Henry Wild, a flower seller, of Osborne Road, Acton, were brought before the Richmond Police Court later in the day, and charged with stealing a quantity of growing shrubs of the value of £5, the property of the Board of Agriculture and Fisheries. They were remanded for inquiries. The Curator, Mr. Watson, said that for some time past shrubs had been missed, and he identified the bag of cuttings produced as similar to the shrubs which were missing from the Gardens. He should say that the four sacks which the police had in their possession would probably be worth 10s. a sack, but to replace the shrubs which had been mutilated it would cost about £5. It was a rather difficult matter to estimate the amount of damage done.

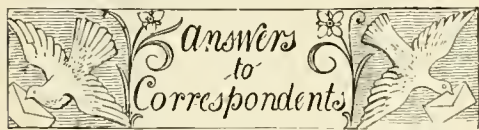
Inspector White said the men had only been in custody for two to three hours, and the police had not had time to make inquiries.

Mr. Watson said a similar raid took place a few nights earlier, but the men got away.

Inspector White asked for a remand, which was granted.

TRADE NOTE.

Mr. E. MATTHEWS, for the past 3 years gardener to Gerard Craig Sellar, Esq., Ardornish, Morvern, Argyll, has been appointed manager to Messrs. G. Gibson and Co., Leeming Bar, Bedale, Yorkshire.



ACTION OF FROST ON CATERPILLARS: A. Wilson.

The caterpillar you have sent to us for determination is that of the common Cabbage moth, *Mamestra brassicae*. It is not unusual for this insect to pass the winter in the caterpillar stage. As a rule, however, it buries itself in the earth and pupates in the early spring. Frosts seem to have no harmful effect on this caterpillar.

AMOUNT OF LABOUR FOR A SMALL GARDEN: X. Y. Z.

You will require from five to seven men in your garden. But it is not an easy matter to answer your query, seeing that you do not state how much of the specified area of land is occupied by the kitchen garden, neither do you give the length and breadth of the glasshouses, nor the purpose for which they are used. Is the soil light, heavy, or medium in texture?

ANNUALS FOR A SHADY BORDER: Scotia.

Much depends on the density of the shade. As to the selection of kinds, if quite shady only very few plants can be expected to flower with any degree of satisfaction. The best results will be obtained by cultivating the soil well, and by early sowing, or, better still, by raising the plants elsewhere and transferring them when they are of good size. If the shade is only moderate, *Antirrhinum* (treated as annuals) would be moderately successful, and the following are also suitable. *Asperula azurea setosa*, *Bartonia aurea*, *Collinsia bicolor*, *C. candidissima*, *Candytuft* and *Hieracium*.

APPLE-STEM BORER: J. J. The insect that has made tunnells in your Apple tree is the Goat Moth (*Cossus ligniperda*). Pass a piece of stiff wire into the holes for the purpose of killing the caterpillars, or eject paraffin emulsion into the burrows. Badly-infested trees should be cut down and burned before the caterpillars escape.

CARNATION LEAVES: L. Y. The leaves have been injured by greenfly. Dip the plants in quassia extract.

CUCUMBER AND DRACAENA ROOTS: P. H. *Rotherfield*. Eelworm is present in the roots of both plants. There is no cure for specimens that are attacked, and they should be destroyed by burning. Where eelworm is present all potting soil should be sterilised by heating, or it may be mixed with gaslime.

DALBERGIA SISSOO: Wm. M. *Gossip*. *Dalbergia Sissoo* is described in *Timber Trees of India* by J. S. Gamble, and by Sir D. Brandis in *Indian Trees*. It would be of no value for planting in the British Isles, as it requires a tropical or sub-tropical temperature, and even if grown as a decorative plant indoors it would not prove very satisfactory. The timber is very valuable, and is one of the numerous kinds which are known in the timber trade as Rosewood. The heart-wood is brownish, and it possesses great strength and elasticity. It is also heavy, its weight being about 50lbs. to the cubic foot. The wood is used for all kinds of joinery and cabinet work, carving, building material, gun carriages, etc. Several other species are of similar value, more especially *D. latifolia*, from Southern India.

HORTICULTURAL COLLEGES: C. F., Switzerland.

The following are establishments where you can obtain tuition in horticulture: R.H.S. School at Wisley, Surrey; University College, Reading, Berkshire; Royal Botanic Society's School of Gardening, Regent's Park, London; South-Eastern Agricultural College, Wye; University of Leeds; Swanley Horticultural College, Kent; Devon School of Gardening, Ivybridge.

MAGNOLIAS NOT FLOWERING: A. J. L.

We assume that your inquiry as to why four Magnolias, planted more than 20 years ago against the south front of a dwelling-house, never flower, refers to *Magnolia grandiflora*. Formerly many of the plants of this species were raised from seeds, and seedlings are always very slow in coming into flower. The type is not so floriferous nor so precocious as the variety *exoniensis*, but the species and all the varieties should be raised from layers, which will flower freely at an early age. To induce your examples to flower you should remove all the side shoots on last season's growth and take care that the roots are never dry in summer.

MILDEW ON VINES: Paddy.

When pruning is completed dress the vines with soft soap, half-a-pound to a gallon of water, and as much sulphur as will make a thick paste. The vines must not be syringed during the following spring or the sulphur will be washed off. Flowers of sulphur will destroy mildew on vines while there is sufficient sun heat to raise the temperature occasionally to 80° in the shade. There are several ways of applying the sulphur. It is not sufficient to merely dust it on the bunches, for the mildew attacks the leaves and stems as well as the bunches, and although very easy to destroy when it first appears, it is more difficult to combat when it becomes firmly rooted in the skin of either the berry, the stem or the leaves, and marks of it cannot then be effaced. Sulphur may be mixed with water, using a little soapsuds first to make it into a paste. Apply the sulphured water through the nozzle of a syringe, placing the finger against the nozzle to form a spray. Half-a-pound to one gallon of water is not too much, and the mixture requires to be kept well stirred from the bottom. Or sulphur may be applied in a dry state with the Malbec bellows; but both of these plans leave some sulphur in the bunches which can scarcely be washed out. The best plan is to use Campbell's Sulphur Vaporiser: the larger size will do for a house up to 6,000 feet, using 1 ounce of sulphur to each thousand cubic feet, and attending otherwise very strictly to the directions sent out with the machine. This quantity is not likely to cause any injury if used after stoning has commenced. A coating of dust will be left on the berries, but this can be easily removed early in the following morning with a pair of strong, ordinary bellows, or it can be washed off by a thorough drenching of

soft water. If the dust remains for moisture to condense on it by rapid change of temperature it cannot then all be removed. If the fruit is cut not later than the first week in September, a fresh treatment with sulphur should then be given, and the house closed while the sun is powerful during three or four days.

MOSS ON LAWNS: A. W. M. Moss is usually found in wet, impoverished turf, and although the sea-sand would serve to lighten the soil and make it drier, we do not recommend its use. Apply a dressing of superphosphate at the end of February, which will not only feed the grass, but the acidity will help to destroy the moss. Applications of lime are also beneficial. Rake off the moss with an iron rake, working the tool across the turf after the latter has received a good raking the other way. Prepare some fine soil of a rich nature—old potting soil is suitable, and apply it evenly as a top-dressing in March.

NAMES OF FRUITS: W. J. *Bligh*. Northern Spy.—*Nita*. Siegende Reinette.—*J. Sharp*. (a) Reinette Precox; (b) Opetien pomiers; (c) Dumelow's Seedling (Wellington); (d) Brownlees' Russet; (e) not recognised; (f) Striped Beefin. K. 1, Not recognised—a very poor fruit; 2, Warner's King; 3, a very poorly grown fruit of, possibly, Bramley's Seedling; 4, Dumelow's Seedling (Wellington); 5, Alfriston; 6, Northern Greening.

NAMES OF PLANTS: H. Miles. *Arbutus Unedo*, Strawberry Tree.—*R. O.* 1, *Masdevallia Estradae*; 2, *Masdevallia polysticta*; 3, *Stelis ophioglossoides*; 4, *Bulbophyllum recurvum*.—*S. G.*, *Aigburth*. 1, One of the many garden forms of *Nephrolepis exaltata*, probably *todaoides* (see fig. 147, *Gardeners' Chronicle*, Vol. LIV., December 13, 1913). The Orchid is *Laelia Jongheana*.—*Yelch*. *Ruscus Hypoglossum*.

PRUNING NEWLY-PLANTED FRUIT TREES: G. C. V.

There is a difference of opinion as to whether newly-planted trees should be pruned in the first or the second season; but carefully managed trials have convinced many that it is desirable to prune in the April following the planting of two-year-old trees, which are preferable to older ones. As your trees were over-aged when planted, there seems to be all the more reason for cutting them back this season; otherwise they will be liable to fruit excessively at the expense of growth, and may become permanently stunted. The extent of cutting-back should be in inverse proportion to the strength of last year's shoots. The weaker they are, the more severely should they be shortened. One-third will be enough to leave in the case of moderately strong growths, a little more in that of vigorous shoots, and less in that of weak ones.

SELECT LIST OF SWEET PEAS: A. E. F. and W.

The following is a list of 18 varieties of Sweet Peas of first-rate quality and suitable for exhibition:—Maud Holmes, Elsie Herbert, Margaret Attie, R. F. Felton, Thomas Stevenson, Hercules, Mrs. Harcastle Sykes, King Manoel, Scarlet Emperor, Edith Taylor, Agricola, Elfrida Pearson, Clara Curtis, Queen of Norway, Walter P. Wright, Edrom Beauty, Barbara, King White. If two white varieties are required, do not include *Agricola* and add *Florence Wright Spencer*. If a bicolor is favoured, select Mrs. Cuthbertson in place of Mrs. H. Sykes.

WALL PLANTS FOR A CORRIDOR: Scotia.

As you do not wish to grow Roses, the best plants to train against the wall in a corridor having an intermediate temperature, for furnishing cut flowers, would be *Brunfelsia calycine grandiflora*, *Euphorbia* (*Poinsettia*) *pulcherrima*, *E. jacquimaeflora* and *Heliotropium*. You would also find *Asparagus plumosus* very useful for furnishing greenery. The *Heliotrope*, when it has covered the allotted space, should be pruned hard back about four times a year.

Communications Received.—A. J. J. G.—R. L. F.—F. J. Tarporley—Vitis—G. H.—J. B.—A. H. F.—D. M.—W. G.—Scott—J. W. P.—O. T.—H. N.—G. P.—Dublin—S. A.—C. R.—L. & M.—Devonian—J. B.—E. T. C.—W. A. C.—Foreman—J. E. C.—R. J. D.—S. M.—Streatham—J. C.—H. & D.—S. C.—R. A. M.—H. H.—F. W.—J. R.—B.—T. O.—W. R.—A. G.—W. H. W.—R. E. A.—E. A.—R. P. B.—J. W. P.

THE
Gardeners' Chronicle

No. 1,415.—SATURDAY, FEBRUARY 7, 1914.

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THE MARKET FRUIT GARDEN.

SINCE the middle of November the season has been a very favourable one for the orchards. The rainfall has been small, but there has been just enough frost to bring the soil into good condition. The rainfall of January at my station was only 0.86 inches. A better season for fruit-planting could not have been desired, and the same may be said in relation to digging in orchards. At present indications are in favour of a backward season for vegetation, which is an advantage; but there is never any certainty upon this point so early in the year. Sometimes when there are signs of premature development of fruit-buds at the beginning of February a frosty period sets in and stops progress for weeks, while at other times continuously mild weather converts a late season into an early one.

THE MORE YOU PRUNE THE MORE YOU MAY.

This might well be accepted as a fruit-grower's adage in relation to well-furnished trees. For the first three years after planting, Apple trees can hardly be pruned too severely, and it often happens that, owing to weak growth or damage done by aphid, severe treatment is needed for a year or two longer. But when enough leaders have grown to furnish the tree well, the less pruning of vigorous and sound leaders is done the better it is for results. Scabby or cankered growths, of course, should be cut back to sound

wood, whatever the age and furnishing of a tree may be, and this may be said also of very weak or misdirected shoots. But when one cuts some growths there is a temptation to cut all, and this, I think, should be resisted. A grower upon a large scale desires to avoid the necessity of extensive pruning after a good framework has been obtained. He wishes to be able then to avoid anything more than the thinning of crowding growths, the cutting out of one of any two which are crossing, whether crowded or not, and sometimes the reduction of branching tops to singles. This being the case, he needs to bear in mind that if he prunes leaders this year he will have to prune afresh next year. Below every cut made now at least two shoots will be almost certain to grow, and in the case of a tree already fully furnished with branches, all but one will have to be cut out or spurred next season, or, better still, next summer. This is what is meant by "the more you prune, the more you may." There is also another point for consideration. A tree showing scab on some of last season's growths, as already stated, must be cut back to sound wood; but it does not follow that sound shoots on the same tree should be also pruned to give it a uniform appearance. Scab attacks young wood almost exclusively, and a sound shoot present now is not likely to be attacked so far as it extends at present. Extension growth may be, but then only the extension, or part of it, will need cutting off next year, and the shoot now grown will be preserved.

Similarly in the case of a variety like Cox's Orange, liable in some places to outbreaks of canker on young wood, an observer will find that most of the outbreaks are just above where a lateral has been spurred or a leader cut back. Consequently the more cutting is done the more the canker spreads. The canker fungus finds an entrance at the cut surface unless the latter is tarred, and breaks out in the bark above the cut, sometimes close to it, and sometimes higher up the new growth.

A PRUNING PREDICAMENT.

A difficulty as to the treatment of Apple trees of a slender habit of growth has been brought home to me while pruning Cox's Orange trees eight years old from the planting. In the best part of the orchard they have made splendid growth in spite of scab and canker on many of them, diseases which have been carefully attended to from the first. Great extension was made last season, particularly near the hollow centres of the trees, many of which are 15 feet from the ground at the tips of the highest branches. These tall inside branches are very difficult to get at, either for pruning or for fruit-picking. They are not stout enough for a common ladder to be used, and, besides, they are covered with fruit-buds, which such a ladder would break off. Then, as the trees are spread widely, it is impossible to reach some of the inside branches when standing as near the top of an 8-foot step-ladder as it is safe to stand, except

by pulling them down with a crotched stiek. The necessity, therefore, has arisen for preventing any further upward growth, and the only way to attain this end is to cut back to a fruit-bud. This "goes against the grain" with the finest growths on the trees, but it is the only way out of the predicament.

DIFFICULT WORK.

In the middle fortnight of January, when frost prevailed during the whole of nearly every day, and an Arctic wind was blowing, pruning was too cold work to be endurable for long at a time. Besides, there is some doubt as to the safety of pruning in a freezing atmosphere. When the thaw set in, accompanied by a little rain, stodging around the trees produced a mass of mud, which is very objectionable. Moreover, it was somewhat dangerous to mount high steps covered with greasy mud from the boots. In each shift of the steps, which have a spiked leg opposite to the part to be mounted, they had to be wrenched with much force out of the soft soil in which they had become embedded. Under such circumstances pruning was not very pleasant work.

WINTER SPRAYING.

February is the month in which most of this work is done, though March would be preferable if one could be sure of getting through it before the buds begin to burst. But as the work is often interrupted by rain or other unfavourable weather, it is not safe to delay the start beyond the middle of February, at least in the case of Plums and Pears, and not so long in a very forward season. For the mere destruction of moss or lichen any time in the winter will do. But we hope to do something more by winter-spraying, namely, to check the development of insect and fungous pests. Many fruit-growers believe that limewash, or lime and salt, applied as late in the season as possible before the buds burst, coats over the eggs of the aphid and the Apple sucker, and prevents many of them from hatching. Entomologists, or at least some of them, doubt this, and the point is at present an uncertain one. If there be anything in it lime alone should be more effective than lime and salt, as the addition of the latter, it seems to me, must prevent the lime from drying hard upon the trees, and render it more liable to be washed off by rain. That somehow hot limewash prevents aphid infestation seemed to be indicated by the fact that one block of Plum trees seen at Pershore last season, which had been sprayed with this stuff, was quite free from the pest, while another block at a short distance was very badly blighted by it. This is no proof, it is to be admitted, but two growers said they had noticed the same coincidence. If aphid infestation always arises from eggs on the trees infested lime-sulphur is certainly not a preventive, as I have used this wash regularly for years, and no one could have worse attacks of aphid than I have had. But does an attack always arise from eggs deposited on the trees infested? I have

searched in vain for eggs on both Plums and Apples, and yet a week later the trees were badly infested. In all the pruning done this winter I have noticed only one shoot partly covered with aphid eggs. Apple-sucker eggs I have often found, and as the attacks of this pest are much less serious with me than they are in many places, it is not unlikely that the use of lime-sulphur has acted as a preventive.

MUCH-NEEDED INFORMATION.

With respect to winter spraying being a partial preventive of fungous attacks, there is great need of information as to the earliest stage in the development of each common fruit fungus in which spraying is likely to be effective and the period of the season at which it occurs. No book on mycology in my possession affords this information. Mycologists tell us to spray with sulphate of copper while the trees are dormant to prevent attacks of scab and brown rot; but one of the highest authorities states that an application of the wash before the disease gets to an active stage is useless. The question then arises as to whether either scab or brown rot is in an infectious stage before the buds burst. If not then either a fungicide is effective to some extent when the fungus is in a resting stage, or

insert them. Although the land was well prepared and the rows were well trodden immediately after the planting, the result was, if a dry period occurred, that the slits gaped open, leading to the killing of some young bushes and the stunting of others. To prevent this the plan of simply pushing the cuttings alongside of a cord into the well-prepared soil was adopted, and this proved a complete success. Since it was adopted there has been hardly a miss in a row and excellent growth has been general.

NEW OR NOTEWORTHY PLANTS.

A NEW SPECIES OF SELLIERA.

SELLIERA is a small genus of the Goodeniaceae, of which two species have long been known. One of these is endemic in Australia, and the other inhabits Australia, New Zealand and extra-tropical South America. A third species, as we learn from the *Bulletin du Jardin Botanique de Buitenzorg*, has been discovered in the rice fields of Central Java. This is named *Selliera Keningsbergeri*, and it adds one more to the southern

1867, judging from the brief account given by Dr. R. R. Gates in *American Naturalist*, 1911, p. 589. An allied species, also briefly described by Dr. Gates, is *Oenothera guttata* (*Onagra guttata* Greene in herb.), which is probably the later published *O. irrigua* Wootton and Standley. It has very narrowly-lanceolate leaves.

PRIMULA ELLISIAE POLLARD AND COCKERELL.

This is a very fine species, apparently confined to the Sandia Mountains, not yet in cultivation. It is related to *P. Rusbyi*, but has much larger flowers and a conspicuously farinose calyx. *T. D. A. Cockerell, University of Colorado, Boulder, Colorado.*

ANNUALS.

II.—ANNUALS OF DWARF HABIT.

IN proceeding to write briefly regarding a number of the annuals which I liked best among the three hundred and thirty sorts which I grew I have decided to group them according to their heights. A few annuals are so dwarf that they can with aptitude be called creeping. The very dwarfiest of all is

IONOPSIDIUM ACAULE.

Whilst endeavouring to write a description of this charming little flower last summer I turned up *The English Flower Garden*, and I see I have noted that the flowers with me are not violet, at least not deep violet. It might be permissible to call them bluish violet. Otherwise I think Mr. Robinson's description perfect. It is as follows:—"A charming little Portuguese annual about 2 inches high, whose dense tufts of violet flowers spring up freely where plants of it existed the previous season. Its peculiar beauty makes it useful for various purposes. On the rock garden associated with even the choicest of Alpine plants, it holds its own as regards beauty, and never overruns its neighbours, and it is particularly suitable for sowing near pathways or rugged steps, growing freely in such places; indeed, it would even flourish on a hard gravel walk. It flowers a couple of months after sowing, and often produces a second crop of blossoms in the autumn." This is exactly what it did with me. It was sown on May 5, and began to bloom on June 20, continuing till the end of July, coming into flower again in September. The foliage is small and neat, and forms very beautiful bright green masses.

DOWNINGIA ELEGANS OR CLINTONIA PULCHELLA.

As its name indicates, *Downingia elegans* (see fig. 41) is a very pretty annual which charms everyone, and those who have not grown it should certainly make a note to try it. With me it grew to a height of 5 inches; the flowers are not unlike a large *Lobelia* in form, the under lip or petal, which gives the character to the flower, is three-quarters of an inch across, has three distinct zones of colour, the outer one being clear blue, the middle one pure white, and the one nearest the centre of the flower bright yellow, on which there are three distinct black spots. The plant has narrow linear leaves, and branches freely near the base. It remained continuously in flower for two months in the very dry season of 1913. Its proper name is, I believe, *Downingia*. It belongs to the order Campanulaceae. The plant is a native of California. Why the name *Clintonia* should have been associated with the family I do not know. Many of my friends say that the flower is like that of a miniature Orchid.

VERONICA GLAUCA

is an annual Speedwell which I grew with care but it disappointed me. It attained a height of 4 to 5 inches, but it lacked brightness, its blue



FIG. 41.—DOWNINGIA ELEGANS, FLOWERS WHITE, WITH A BLUE EDGE AND YELLOW CENTRE.

winter spraying against it is useless. If any reader of these notes can throw light upon this point he will do good service to fruit growers.

NORFOLK BEAUTY APPLE.

This is an Apple which will probably be grown extensively hereafter, when its merits have become well known. It is a large culinary variety, the tree is a very sturdy grower, and, so far as my experience with it goes, it is free from canker and scab. At present my trees have not come into bearing to any considerable extent, and the few fruits yielded were not thoroughly tested in relation to keeping quality. I am informed that they keep till January or later. The variety was raised by Mr. William Allen, of Gunton Park Gardens, near Norwich, and sent out in 1906 or thereabouts. It has been twice before the Fruit Committee of the R.H.S. The first time it was awarded an Award of Merit, the second time a First-Class Certificate.

PLANTING CURRANT CUTTINGS.

A "wrinkle" in this connection has been derived from experience. When I began to raise Black Currants extensively from cuttings the practice was that of cutting a slit in which to

genera represented in South America, Australasia and Malaya. It is a native of Central Java.

NEW GARDEN PLANTS FROM NEW MEXICO.

(Concluded from p. 67.)

OENOTHERA HEWETTII COCKERELL.

THIS Evening Primrose, found at the Rito de los Frijoles in 1912, is one of the Lamarckiana group, with large yellow flowers. It blooms the first year from seed, but lives over, and the second year becomes a very large plant with a long flowering period. I am not sure that it is better than some of the species already in cultivation, but it is worth a trial. The buds are coloured with red as in *O. rubrinervis*. Some seed sent to Professor de Vries in 1912 has yielded him six plants, which he finds to agree exactly with my description of the type plant grown at Boulder. Two of these plants have been used by Professor de Vries for crosses with two of his mutants. From the type plant grown at Boulder I have enough seed to supply the botanic gardens of the world. It seems probable that this species was collected by Dr. W. M. Bell in the Raton Mountains so early as

being far short of that of the Germander Speedwell of our roadsides.

ALYSSUM MARITIMUM.

Here I shall only refer to the very dwarf form, which is so popular for carpeting and edging. There are many strains of it offered under many different names, such as Little Gem, White Carpet, Snow Carpet, etc. To retain the procumbent habit constant care requires to be exercised in selecting for seed, and I am sure there is room also to improve the size of the flower, as I have from time to time seen very promising heads. Most of the seed sold is grown in Germany, where the best firms give this plant much attention, raising seed by the hundredweight. The foliage of the best types is a darker, brighter green than that of ordinary maritimum. The seeds germinate in ten days, and the plants come into flower in seven weeks. They should be thinned to at least 3 inches apart.

MESEMBRYANTHEMUM CRYSTALLINUM.

The Ice Plant wants a warmer situation than Midlothian to show off its crystals. It grew abundantly, but was never what could be termed an effective border plant. On the other hand,

LEPTOSIPHON.

The Leptosiphons are surely among the most charming of all annuals. They form dense clumps of foliage, and are surmounted by numerous very bright flowers, which revel in the sunshine. The flowers of *L. aureus* (see fig. 42) are bright yellow, about half an inch in diameter. On close inspection they are seen to be lined with lemon markings, and at the base of each of the five divisions of the flower there are two tiny dark-brown spots. This lovely yellow variety was the dwarfiest of all the Leptosiphons, attaining to the height of only 5 inches.

L. roseus grew a shade taller, and the growth was rather more tufted. The foliage developed in a rosette form, from which the flowers sprang. The flowers were about half an inch in diameter, and might quite accurately be described as rose-coloured, though they are shaded or striped with blush, and have a yellow centre. In the sunshine each clump was simply a mass of beautiful flowers. The seeds came up freely in eight days after sowing, and the plants were ultimately thinned to about 4 inches apart. They remained in flower for over two months.

There is another Leptosiphon which I will

Some successful growers of winter Roses report their plants in August in a rich compost, that has been mixed for a year, and consisting of about five parts of yellow, fibrous loam and one part horse and cow manure, together with a quantity of burnt garden refuse.

The roots are shaken free of the old soil and re-potted in the fresh compost, which will supply all that is needed for the first crop of blossom. Afterwards, as soon as the flowers are over, the plants are trimmed, and when they start into growth afresh a top-dressing composed of half loam and half concentrated fertiliser is afforded.

I usually apply a handful of this mixture to each plant in an 8-inch pot, and more or less to other plants in larger or smaller receptacles.

Such feeding as this is far better than applying liquid manure, because at each watering some of the stimulant of the top-dressing is carried down to the roots, whilst the surface roots, which are always very active, derive great benefit from the stimulating properties.

Roses planted out under glass need a top-dressing applied now. In this case a mixture of two parts pulverised sheep manure, $\frac{3}{4}$ parts wood ashes, $\frac{1}{4}$ part fine bone, and four parts good, fibrous loam, should be employed.

A diligent watch must be kept for greenfly, which will be found clustering around the developing buds. I find Auto Shreds one of the simplest remedies for destroying aphides.

It will be well to place the next batch of plants in a cold house or pit, where they can be protected from frost, and they may be pruned if required to bloom in April.

A house of Roses grown without artificial heat will be very useful for furnishing blooms in late April and May. Select Hybrid Perpetuals and Hybrid Teas of the freer and hardier type, such as Prince de Bulgarie, Pharisaer, Caroline Testout and Lady Ashbourne. The blooms are usually finer than those from plants that have been forced more quickly. Such plants should be pruned now, and the shoots tied. Severe pruning gives the best results, as this ensures the development of strong, new wood, which is the basis of all good results in pot culture, provided always that the roots receive suitable nourishment.

Roses potted from the open ground last October and kept plunged outside may be utilised for greenhouse work this spring if necessary, although I prefer to allow them to grow outside for one season. Plants of Crimson Rambler potted in October and the shoots cut back at the same time to about 12 inches may be shortened now to 6 inches, and placed in gentle heat, preferably upon a bed of fermenting materials.

The plants are splendid for decorative purposes; although dwarf and bushy they will yield three or four handsome panicles of blossom, and none of the Polyantha Roses equals this old variety for brilliancy. It will pay to strike a few cuttings of this Rose every year. When one-year old they should be transplanted and cut back hard at the same time. In the following October they should be dug up and potted into 7-inch pots. Dorothy Perkins, American Pillar, Excelsa, Troubadour and Lady Godiva all make splendid dwarf pot plants treated in this way.

Polyantha Roses have become a leading feature of the spring display of flowers, and they are most useful for all kinds of decorative work. Some of the newer varieties are grand. Erna Teschendorff has blooms of a lovely rich colour; it is a much better Rose indoors than in the open; Jessie, Orleans, Susie, Jeanne d'Arc, Baby Taubenschön and Ellen Poulsen are all good novelties suitable for pot culture. Potted even so late as now these Roses would be very useful to furnish beds for a summer display where it is not possible to plant permanently this spring.

One of the best of the newer Roses for forcing is Killarney Brilliant, a variety that has caused a great impression in America, where its raisers, Messrs. A. Dickson and Sons, sent it for trial some two seasons ago. The colour is much deeper than in the old Killarney, and it has



FIG. 42.—LEPTOSIPHON AUREUS, A DWARF HARDY ANNUAL: FLOWERS YELLOW.

I can say of

MESEMBRYANTHEMUM TRICOLOR

that it did better than I expected. It was very charming on warm sunny days. The flowers then opened wide, and revealed all their beauty—brightest rose at the tips of the florets, shading off to white towards the centre, which is brown. The flowers measure $1\frac{1}{2}$ inches in diameter. The sepals and flower-stems are covered with miniature crystals. The habit of the plant is creeping, rising only 4 or 5 inches above the ground. It is said to suffer from transplanting, but of this I have no experience. It germinated twenty-three days after sowing, and bloomed in August.

SANVITALIA PROCUMBENS.

No clumps in the front of my border were more continuously effective than those of this plant. There are two forms—single and double. Both kinds grow freely and attain to a height of about 6 inches, and the plants are literally covered with their small blossoms. The single flowers are about 1 inch in diameter, ray petals clear, bright yellow, centre of the flower black. If one who does not know the plant can imagine a Sunflower so small, he has pictured a single Sanvitalia. The double form is a globular yellow flower, perhaps not quite so large as the single one. It is of the easiest annuals to grow.

refer to here, although it is taller than the preceding two. It is *Leptosiphon androsacens*. The flowers are larger, being from $\frac{5}{8}$ to $\frac{3}{4}$ inch in diameter. They are rosy lilac in colour, and open only in bright sunshine. The Leptosiphons are classed by some authorities with the Gillias, but to me I am afraid they will remain Leptosiphons. In my notes I gave them all full marks, and I know no annual more suitable or more effective for the front of borders, rockeries, steps, or path edges in positions where they are likely to get a good share of sunshine. W. Cuthbertson, Duddingston.

THE ROSARY.

SEASONABLE WORK.

ROSES under glass require much attention during the latter part of January and the early days of February.

In many establishments the varieties Richmond and Liberty are grown in considerable numbers to furnish blooms at Christmas and in the early weeks of the year. Such plants will soon be starting again into growth, and they will need a top-dressing.

many more petals. Ophelia is also gaining many admirers in America, and is confidently expected to be one of the foremost forcing varieties. The blooms possess a delicious fragrance, the buds are long and pointed, and the colour salmon-pink, with gold shading. It is to be expected that blooms will be seen largely in the English flower markets this spring.

Other good novelties are Hadley, of the General McArthur and Richmond type; Mrs.

ORANGES AND LEMONS AT STANTON HALL, DERBYSHIRE.

STANTON HALL, situated in the Peak of Derbyshire, is the country seat of Mrs. McCreagh Thornhill. Oranges and Lemons are grown under glass in the gardens with great success; the standard tree of Seville Orange (*Citrus Bigaradia*), represented in fig. 43 is planted in

from these trees has been awarded several Silver Medals from the Royal Horticultural Society and the Sheffield Chrysanthemum Society. I was informed by Mr. Harvey, the gardener, that the trees produce sufficient fruits to provide a plentiful supply of marmalade for the inmates of Stanton Hall all the year round. The average number of fruits is 150 Oranges and 100 Lemons each season. Mr. Harvey cultivates the fruits of Oranges and Lemon in a state of perfection rarely attained in this country, and they reflect great credit to his skill and care. The photograph of the Orange tree was taken after many of the fruits had been removed. F. Jennings, Chatsworth Gardens, Chesterfield.



[Photograph by J. B. Gratton.]

FIG. 43.—ORANGE FRUITING IN A VINERY AT STANTON HALL, DERBYSHIRE.

Edward Powell, Mme. Jules Bouche and Melody. The variety Prince Engelbert Charles d'Arenberg has many admirers in the United States. It is a fine, rich, crimson colour, but with me the flowers are apt to split out-of-doors.

Sunburst will be extensively grown for some time to come, even though its flowers are variable; when the petals are of a pale colour there is nothing approaching them in beauty, and when they develop the lovely rich golden colour it is absolutely the best of its special shade.

the centre of a lean-to vinery and is a fine specimen. At the time of my visit it was laden with fruits of beautiful colour and extraordinary size, the majority measuring from 15 to 16 inches in circumference. The Oranges do not ripen in one season, but hang on the tree for two years, during which time another crop of green fruit is growing, making a beautiful contrast. A Lemon tree, growing in another vinery and trained upon the back wall, was finely fruited, the individual fruits requiring the support of bags on account of their weight. Fruit

FORESTRY.

THE EDUCATION OF GERMAN FORESTERS.

IN view of the increasing interest which is being taken in the afforestation problem in England, and the consequent question of competent forestry officers, it may be of interest to consider the education of the German and more particularly the Prussian forest superintendent.

In the first case he must have a thorough higher education, which means that he must stay at school until the age of at least eighteen years and must then pass an examination considerably more difficult than the London Matriculation. He must be physically fit in all respects; that is to say, he must serve his term of military service, which in this case is one year; the man who is not fit to become a soldier is never eligible as a forester. In order that his knowledge shall be practical as well as theoretical, he must serve a kind of apprenticeship in a forest district, where he is set to do various kinds of work, such as planting, felling, measuring timber, etc., and must keep a diary of all operations or objects of interest seen during the day. This diary is of great importance, as it must be laid before the Board of Foresters, where it in a way gives an idea of the powers of observation of the candidate. The apprenticeship lasts seven months, and may be served either before or after the military service.

Now comes the most important step in the whole business—viz., the education proper at the school of forestry. For three terms—that is to say, a year and a half—the budding forester must study the natural sciences, at the end of which time he sits for a stiff examination in those subjects. If he pass this, he studies for another year and a half, this time forestry proper, with a fair amount of law, national economy, etc., and then sits for another test. Should he fail in either of these examinations he is allowed another try; but should he fail a second time, only special permission from the highest authorities can save him from being thrown out of the service.

He now receives the title "referendar," or probationer, but is by no means yet done with his education. For a whole year he must study law at some university, for six months he must manage a forest district as an under official, and for half a year more he must travel from one place to another seeing various forests and keeping a diary of everything he has seen. At the end of this time the probationer is or ought to be ready for the final examination, which is of a more practical and severe nature than the previous test. As in the former case he is only allowed to fail once. "Assessor" is now his title, and he draws his first wages, amounting to about thirty shillings per week, which, considering the time and study needed and his age (about twenty-five years), is not particularly liberal. The stipend gradually increases for about eight years to about £150-£200 a year. Up to this time he is merely an assistant in a forest area, but he is given a department of his own to manage after this eight years' ser-

vice, and his salary rises by degrees to about £500 a year.

This is very little, especially when one considers the style which such men have to live up to, and a poor man can hardly be a chief forester in Prussia. He generally needs as much money again as he earns, and thus the man without a private income is hopeless. Also from the time that the student leaves school until he passes his last examination—about six and a half years—however studious he may be, he cannot earn a penny.

There is no doubt that the German forester is the best in the world, and that the Government is doing its best to preserve this reputation by the exactitude and severity of the tests imposed on the candidates and the careful selection of individuals from a more or less personal point of view.

There are five principal schools of forestry in Germany, viz.:—Eberswalde, near Berlin; Munden, near Hanover; Aschaffenburg, near Munich; Tharandt, near Dresden; and Eisenach, near Erfurt. The two first belong to Prussia, the next one to Bavaria; the fourth to Saxony; and the fifth to Thuringia. J. G. W.

ORCHID NOTES AND CLEANINGS.

ORCHIDS AT WESTFIELD, WOKING.

THE collection of Francis Wellesley, Esq. (gr. Mr. Hopkins), although a small one, has contained from time to time more really fine things than most of the larger collections. The excellent culture of the plants affords a pleasant example of what may be done where both owner and grower are keenly interested in their subject. *Cypripediums*, *Cattleyas*, both hybrid and fine varieties of species, and *Laelio-Cattleyas* take up the greater part of the space in the neat block of houses, the most retired and warmest of which is devoted to the raising of hybrids, a most interesting lot of remarkably promising crosses being there in different stages of growth.

On the occasion of a recent visit the *Cypripediums* gave the greatest show of bloom, their house being filled throughout with showy and varied flowers. Some of the best noted were *C. Sanctaenus* Westfield variety, a model flower of attractive colour; *C. Charlesianum* Westfield variety, with a very fine white dorsal sepal with emerald green base; *C. The Premier*, with fine chocolate purple markings; *C. Waterloo*, one of the finest dark forms; *C. Memoria Mostynii* (*Actaeus Langleyense* × *aureum* Surprise), *C. J. W. Mills*, *C. Actaeus Bianca* Westfield variety, and a pretty yellow *C. insigne*, raised at Westfield. The last-named has very handsome yellow flowers with the greater part of the dorsal sepal pure white. Some very fine forms of *C. Leeanum* and *C. insigne* bore a profusion of flowers, striking examples being *C. insigne* Harefield Hall, the favourite clear yellow and white *C. insigne* Sanderae, and the distinct *C. insigne* Bohnhoffianum, which, while not so showy as some of the others, is interesting owing to the peculiarity of its sepia-brown tinted dorsal sepal. Prominent in the house, either as fine specimens or remarkable varieties, were *Cypripedium* Royal George (*Harrisianum* superbum × *Minos* Youngii), a noble flower of fine colour. The stock of this fine hybrid was originally acquired by Mr. Wellesley from the raisers, Messrs. Armstrong and Brown; *C. Delhi* of fine form, substance and colour; *C. Thalia* Mrs. Francis Wellesley, which in its early days was the coveted *Cypripedium*, realising the record price; *C. Little Gem* Westfield variety, a model flower, though not large; *C. Gaston Bultel* and *C. Germaine Opoix*, two handsome flowers of Continental origin; *C. Duchess of Argyll* (*Lecanum giganteum* × *Druryi*), and *C. Charlesworthii* *Memoria Douglasii*, two very handsome *Cypripediums* acquired from the late Mr. J. Douglas; *C. The King*, a

distinct Indian yellow flower with small chocolate purple spots; *C. Elatior Rex*, and a number of seedlings flowering for the first time.

On one side was a selection of varieties of *Cypripedium* *Thalia* and *C. Priam*, some of which have not come so fine this season as formerly.

In the *Cattleya* and *Laelio-Cattleya* houses the plants were in splendid condition, and some points in their culture may be noted with advantage. The majority of the plants were of moderate size with few back bulbs. It has been found when a rare but badly-grown specimen has been purchased that it makes little progress, even under the better conditions, unless divided, and instances of this practice were shown to us giving remarkable proof of renewed vigour. Careful watering is a great point. A too wet or sodden plant is never found at Westfield, where both in the water-supply at the root and the character of the atmosphere what is called "the dry side" is favoured. Thus the plants root most abundantly, which they never do when overwatered, *Cattleya Mossiae* and its hybrids being specially liable to damage from too much water. A very beautiful set of fine varieties of *C. Mossiae*, *C. Warscewiczii*, *C. Mendelii*, *C. labiata*, and *C. Schrödera*, with a very fine lot of albino forms in each section, show well the effects of good culture, the pseudo-bulbs being short and stout, some of them curiously so, a small plant of *C. Schrödera* Mrs. Francis Wellesley having the pseudo-bulbs almost as broad as long, and resembling those of a large *Laelia anceps*. *C. Mendelii* His Majesty the King, which secured a First-Class Certificate at the Temple Show, 1908, and Royal favour, proves a good grower, and was thriving well; and *C. labiata* alba The Empress and other albinos here seem to thrive

quite as well as the typical forms. Other remarkable plants noticed were *Laelio-Cattleya Morningtoniae* (*Pallas* × *Fascinator*), which secured a First-Class Certificate at the Temple Show, 1911; *Brasso-Cattleya Wellesleyae* (*C. Mossiae* *Wagneri* × *B. glauca*), a charming white fragrant flower, L.-C. Mr. Donald MacMaster, and L.-C. Lady Oliphant, both handsome and distinct; *Sophro-Cattleya Westfieldense* with pseudo-bulbs eight inches long, and a very bright dark-red *Sophro-Laelio-Cattleya* between *S. grandiflora* and L.-C. *Warnhamense*; *Laelio-Cattleya* Mrs. W. Hopkins (L.-C. *Haroldiana* × *L. Iona*), a very handsome flower; and several new crosses flowering for the first time, one being a finely-coloured flower, which may develop into sufficient beauty to render it desirable to retain for crossing again; but the large number of fine hybrids already raised, and the erratic behaviour of some of the promising new crosses which do not come up to expectation, render careful selection imperative.

HYBRID ORCHIDS.

THE following new or rare hybrids have recently flowered. The list is supplementary to those published in Vol. LIV., pp. 375, 385. The plants are recorded with the names of the exhibitors or of those who have sent us flowers. The names and parentage are those given by the owners of the plants. If any of our readers know of prior records, either of name or parentage, we shall be glad to make corrections where error is proved.

Orchid growers are asked to send us flowers of new crosses with particulars.

Hybrid.	Parentage.	Exhibitor.
Brasso-Cattleya Pyrrha	C. labiata × B. glauca	Flory and Black.
Brasso-Cattleya Cecilia	C. Dowiana aurea × B. glauca	Flory and Black.
Brasso-Laelio-Cattleya Ariel	L. purpurata × B.-C. Mrs. J. Leeman	Flory and Black.
Cattleya Fafner	Trianae × Enid	Flory and Black.
Cattleya Madonna	Trianae delicata × chocoensis alba	W. H. St. Quintin, Esq.
Cattleya Tityus var. A. McBean	Enid × Octave Doin	J. and A. McBean.
Cymbidium Coningsbyanum	grandiflorum × insigne	G. Hamilton-Smith, Esq.
Cymbidium Nada	eburneum × Lowio-grandiflorum	Sir Geo. Holford.
Cypripedium Alcinda var. Strelsa	insigne Harefield Hall × Alcibiades	W. R. Lee, Esq.
Cypripedium Artemis aureum	nitens × Fairrieanum	Lt.-Col. Sir G. L. Holford.
Cypripedium Bourtonense	insigne Harefield Hall × Blanche Moore	G. E. Moore, Esq.
Cypripedium Cassius	niveum × T. B. Haywood	Flory and Black.
Cypripedium Comorin	Bassano (Reynaldi) × Hera Euryades	Flory and Black.
Cypripedium Delhi	insigne Harefield Hall × Earl of Tankerville	F. Wellesley, Esq.
Cypripedium Desdemona	Mrs. Cary Batten × Alcibiades	Charlesworth and Co.
Cypripedium Floryi	Niobe × Dicksonianum var. Countess of Carnarvon	Flory and Black.
Cypripedium Frenchay	bellatulum × Lawrebel	W. Hewitt, Esq.
Cypripedium Goliath	insigne Harefield Hall × Amy Moore	W. R. Lee, Esq.
Cypripedium Hanburyanum	Lecanum giganteum × Maudiae	F. J. Hanbury, Esq.
Cypripedium Julian	Vandyke × aureum Oedippe	Sir Geo. Holford.
Cypripedium Mrs. J. Lea-Smith	Edmund Lord × aureum virginale	F. J. Hanbury, Esq.
Cypripedium Piny	Lecanum Clinkberryanum × Victor Hugo	Flory and Black.
Cypripedium Proserpine	glaucochryllum × Charlesianum	H. T. Pitt, Esq.
Cypripedium Sandhurst	concolor Regneri × Fairrieanum	Armstrong and Brown.
Cypripedium Satyr	Hera Euryades × Beryl	Sir Geo. L. Holford.
Cypripedium Swallowtail	Mons. de Curte × Fairrieanum	Lt.-Col. Sir G. L. Holford.
Cypripedium Talma	Charlesianum × Lathianum	H. T. Pitt, Esq.
Cypripedium Verona	Beckmanni × Lecanum giganteum	Flory and Black.
Laelio-Cattleya Armstrongae	L.-C. Geo. Woodhams × C. Iris (correction from Nov. 22, 1913, p. 358).	Armstrong and Brown.
Laelio-Cattleya autodoin	L. autumnalis × C. Octave Doin	J. and A. McBean.
Laelio-Cattleya Capua	L.-C. Hippolyta Phoebe × C. Warscewiczii	Flory and Black.
Laelio-Cattleya Cecilia	C. Trianae × L.-C. luminosa	Hassall and Co.
Laelio-Cattleya Cimon	C. Dowiana aurea × L. Juvenils	F. Wellesley, Esq.
Laelio-Cattleya Golden Beauty	Ernestii × Hy. Greenwood	Lt.-Col. Sir G. L. Holford.
Laelio-Cattleya Minnie	L.-C. exoniensis × C. Dowiana aurea	Sander and Sons.
Laelio-Cattleya Nerva	L.-C. Nysa × C. Warscewiczii	Mrs. Bischoffshelm.
Laelio-Cattleya Orient	C. labiata × L.-C. Adolphus	W. H. St. Quintin, Esq.
Laelio-Cattleya Trajan	L.-C. Ingramii × C. labiata	Flory and Black.
Laelio-Cattleya Wilfrediana	L.-C. cinnabrosa × C. Aclandiae	W. H. St. Quintin, Esq.
Odontioda Doris	Oda. Cooksoniae × Odm. amabile	Mrs. Cookson.
Odontionia Langowoyi	M. Schwöderiana × O. Cro-Skimori	Charlesworth and Co.
Odontioda Latona Goodson's variety	Odm. crispo-Harryanum × Oda. Bradshawiae	H. S. Goodson, Esq.
Odontioda Margaret	Oda. Bradshawiae × Odm. ardentissimum	Mrs. Cookson.
Odontioda Marion	Oda. Bradshawiae × Odm. hybrid	Mrs. Cookson.
Odontioda Royal Gem Westonbirt variety	Oda. Vuykstekeae × Odm. ardentissimum	Lt.-Col. Sir G. L. Holford.
Odontioda Royal Gem Broadlands variety	Oda. Bradshawiae × Odm. ardentissimum	E. R. Ashton, Esq.
Odontioda Sibly	Oda. Bradshawiae × Odm. hybrid	Mrs. Cookson.
Odontioda Vivienne	Oda. Bradshawiae × Odm. crispum Britannia	Mrs. Cookson.
Odontoglossum Cnary	Oakwoodense × ardentissimum	Pantia Hall, Esq.
Odontoglossum Carpathus	cirrhosum × amabile	J. and A. McBean.
Odontoglossum Cleopatra	Carmantia × Harryanum	De B. Crawshaw, Esq.
Odontoglossum Crisalemma	hellemsense × crispo-Harryanum	De B. Crawshaw, Esq.
Odontoglossum Elissa	Edwardii × illustrissimum	Armstrong and Brown.
Odontoglossum Gundreda	Edwardii × Hunnewellianum	Mr. Harry Dixon.
Odontoglossum Junora	Edwardii × pulchellum	Mr. Harry Dixon.
Odontoglossum Jupiter	nebulosum × ardentissimum	Mons. H. Graire.
Odontoglossum Neptune	nebulosum × crispum	Mons. H. Graire.
Odontoglossum Sandhurstense	eoronarum × Edwardii	Armstrong and Brown.
Odontoglossum Saturne	nebulosum × crispo-Harryanum	Mons. H. Graire.
Odontoglossum Telemachus var. Esme	excellens Prince of Orange × harvengtense (Douchristense).	Mrs. Cookson.
Sophro-Laelio-Cattleya Gem	S. grandiflora × L.-C. Warnhamensis	F. Wellesley, Esq.
Sophro-Laelio-Cattleya St. Arilda	S.-L. Phroso × L.-C. Golderest	Sir Geo. L. Holford.

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKSON, Oakwood, Wylam-on-Tyne.

CATTLEYA.—Certain Cattleyas and allied Orchids which have recently flowered are developing new roots from the bases of the new pseudo-bulbs. Any such plants may receive attention, either re-potting or top-dressing them as is considered necessary. The work should be done before the new roots grow very long, when they would be liable to injury in the process of re-potting. Many seedlings of these Orchids commence root action at this season of the year, and any necessary potting should be done as soon as this takes place, thus enabling the plants to become re-established in the new compost with the least possible check. The choice of compost should be determined by the conditions and the situation in which the plants are cultivated. Many advocate the use of a mixture of *Osmunda* and *Polypodium* fibres, while others contend that carefully selected peat intermixed with a few broken leaves and Sphagnum-moss, with sufficient broken crocks, sand and charcoal added to render the compost porous, is the best rooting medium, using pots filled to at least one-third their depth with clean, broken crocks. Water should be afforded the roots sparingly, as in the case of all newly-potted plants. They may be sprayed overhead whenever the outside conditions permit, and this, in conjunction with damping and syringing between the plants, will provide sufficient moisture to keep the pseudo-bulbs plump until the roots can draw supplies of water from below. Many Cattleyas, *Laelias* and *Laelio-Cattleyas* have their flower-buds advancing in the sheath, and in different stages of development, and such plants should be afforded every encouragement to assist them to develop their blooms. Specimens on the point of flowering should be placed close to the roof-glass, for they will derive much benefit from the sunlight. In the early part of the year, as well as during the late autumn, unless the blossoms open in favourable conditions, they lack texture and good substance, whilst the finest colours are not developed. A more liberal treatment in respect to root moisture may also be afforded as soon as the flower-buds become well advanced. As the days lengthen it will be necessary to damp the floors and spray the plants overhead more frequently in houses where the plants are not in flower, but this work must always be regulated in accordance with the weather. Where spraying overhead is practised it is advisable to do the work sufficiently early in the day to allow the moisture to evaporate from the foliage before the evening.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

WATER AND BOG GARDEN.—Such semi-tender plants as *Gunneras* and *Spiraea Aruncus* which have been afforded protection, should be examined at intervals to see that rats, mice and other vermin are not damaging the plants by eating the crowns. If it is found that they are, traps must be set. Most of these subjects are best propagated when they start into growth, and a few should be raised each season, for it is advisable to have a stock in reserve. Water Lilies may also be increased just now.

SUMMER BEDDING PLANTS.—The propagation of *Verbenas*, *Lobelias*, *Pelargoniums*, *Fuchsias* and similar plants should receive attention. If tall plants of *Heliotropes* and similar plants are required for dot-bedding healthy, vigorous-growing specimens should be trained to single stems and grown on in a house having an atmospheric temperature of about 50°. Admit plenty of fresh air to prevent the plants from becoming drawn and spindly.

CLIMBING PLANTS.—*Wistarias*, *Loniceras*, *Jasminums*, *Vitis*, and similar subjects, should receive attention. All foreright shoots and any

of weakly growth should be removed entirely. Some extension of the plants should be permitted annually by retaining all or a portion of the leading growths. It may also be necessary to train a few new shoots arising from the lower part of the stem to take the place of worn-out branches.

CLEMATIS.—If old "butts" or large roots of forest trees are available place them in irregular clumps and plant a few specimens of Clematis—*Nellie Moser*, *Jackmannii*, or *Mons. Andre*—to ramble over them. When the plants need further support arrange roughly-trimmed tops of Larch or other trees amongst the stumps. The Clematis will soon cover the supports; they flower well in out-of-the-way parts of the pleasure grounds, for they need but little attention. We have occasionally utilised poor specimens of forest or other trees for the same purpose. The top of the tree is cut off and the branches trimmed to project irregularly. A barrowful of good soil should be provided for the plants, of which two of the same variety may be set at the foot of each tree.

SHRUBS.—Shrubberies seldom receive sufficient attention in such matters as digging, manuring and pruning. Notwithstanding the great wealth of subjects suitable for shrubberies they are usually composed of such common evergreens as *Laurels*, *Box*, *Yew*, *Aucubas*, and *Privets*, producing a monotonous and depressing effect. Such kinds are very useful to form boundaries or screens, and they are adapted for planting beneath forest trees, but only a few of these should be used where the object is to obtain a decorative effect. I purpose enumerating from time to time a few of the best shrubs in their season, and those who wish will be able to make a list for planting next season. The habit and form of each species should receive due consideration, as this will determine largely the position and space in which to plant it, for when the plant has reached maturity it should stand clear of its neighbours. This is a most essential detail, and the planter must always look ahead in this and other matters. Groups are preferable to any other system of planting, although in exceptional cases a handsome single specimen may be permitted, and there should be no repetition. A clump of nine or more, according to the size of the individuals when full-grown, and the latter at distances apart varying from 6 to 12 feet is to be recommended. In grass-land the stations for planting the shrub should be about 5 feet in diameter, using fresh soil containing good turfy loam, leaf-mould and old mortar rubble; but members of the *Heath* family, including *Rhododendrons*, *Kalmias*, *Azaleas* and *Andromedas*, which resent lime, should have peat substituted for the mortar rubble. The roots should be covered with a mulching of half-decomposed vegetable matter and the cultivated area kept clear of weeds. Pruning should be done twice a year, first after the flowers are over, when the old flowering wood and the thin, weakly spray growth should be removed, and again during the winter months, when the leaders should be shortened and the other parts pruned to preserve a proper balance in the plants.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORHCOTE, Eastwell Park, Kent.

RASPBERRIES.—Take advantage of favourable weather to complete any necessary work in the Raspberry quarters. Provided that the old fruiting canes were removed directly after the berries were gathered last summer, it will only be necessary now to cut out the superfluous rods, and tie those that are left to the wires or other supports. If the stakes are of wood these should be examined with a view to replacing any that show decay. The uprights on which the wires are strained should be 18 inches higher than the canes, after the latter are pruned, as this will permit the use of netting to protect the crop from birds. If the plants are secured to stakes in the ordinary way take care not to bunch too many canes together—four or five canes to a stake will be ample. Those trained to wires should be at least 9 inches apart. Plants that have failed should be replaced by strong, young canes, lifted with a good ball of earth. Use a

small quantity of fresh, fine soil to sprinkle amongst the roots, which grow near to the surface, consequently deep digging in established plantations is not to be recommended. Clear the ground of weeds and rubbish, and if heavy in texture fork the surface lightly in view of the treading the soil has received. When the work is completed, apply a mulch of animal manure.

PLANTING RASPBERRIES.—Ground for Raspberries should be trenched and manured heavily some time previous to planting, to allow the soil to settle. The land should be clear of such perennial weeds as *Convolvulus* (*Bine-weed*), or they will be a source of great trouble, it being almost impossible to eradicate them from established plantations. If the planting was not done in the autumn, but the canes heeled in the soil temporarily, the work should be undertaken at the first opportunity, remembering that planting too deeply is a common error. The canes should be cut down almost to the ground level, as soon as growth commences in the spring, for this will prevent them fruiting the first season, and in consequence they will grow stronger. The best varieties are *Superlative*, *Hornet*, and *Baumforth's Seedling*, whilst of the yellow sorts *The Guinea*, or *Yellow Superlative*, and *Queen of England* may be recommended.

AUTUMN-FRUITING RASPBERRIES.—In seasons such as 1913 autumn-fruiting Raspberries are a great success. *November Abundance* and *Queen Alexandra* are two good varieties, but the newer *Hailshamberry* proved much the best in these gardens. The plant is of a healthy, vigorous growth, and produces heavy crops of exceptionally large, well-coloured berries. The *Hailshamberry* should be tried in all gardens where autumn-fruiting Raspberries are appreciated. All the old canes should be cut down to the ground level.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROYSCHELD), Buckinghamshire.

PINEAPPLES.—The earliest plants will soon be showing signs of fruiting, and they should be encouraged in this by affording a brisk bottom-heat, and a temperature of 60° to 65° by night, with a rise of 10° by day, according to the weather. In times of sunshine the temperature may rise 15° higher, admitting air freely. Grow successional plants in a temperature of about 58° to 65°, with a proportionate rise by sun-heat. The roots of suckers planted in beds should be kept on the dry side, and the atmosphere kept at a temperature of about 55°.

PEACHES AND NECTARINES.—Give constant attention to the inside borders; do not allow them to become either very dry or excessively wet. When moisture is required soak the soil thoroughly with tepid manure water, or place some Peruvian guano at the rate of three to four ounces to each square yard on the border and water afterwards. This is an excellent stimulant, especially for old-established trees, or for such as have not recently received a top dressing. When the embryo fruits begin to protrude through the fading corollas the temperature, both by day and night, may be increased slightly, and more atmospheric moisture afforded.

ORCHARD HOUSE.—The pruning of all trees, and especially those in pots, should be finished without delay. As a rule, too much wood is left in orchard house trees, and the trees are allowed to produce too many flowers. Cultivators are often over-anxious to secure a plentiful show of bloom, forgetting that this involves a severe strain on the plants' energies at a critical stage, and that the more bloom is produced the less likely are the flowers to set. A Peach or Nectarine tree growing in a twelve or fourteen inch pot, for instance, with one hundred flowers, is just as good, if not better, and will produce as good a crop of fruit as one with ten times the number. In pruning, therefore, this should be borne in mind—that every flower bud, if properly developed, will produce a fruit, and that therefore a few blooms only are necessary on each shoot. The shoots of Peaches, in pots, and even those of bush

and pyramid specimens, should not be left more than 6 inches in length, and in many instances even less, unless they are required for the formation of the tree. In the case of trees that were pinched closely during the past season, the ends of the shoots only will need to be removed. Prune always to a wood bud, which may be known by its being much more slender and pointed than the flower buds. Where no wood buds are to be found the shoots should be left their entire length, if they cannot be dispensed with. Keep the ventilators open night and day for the purpose of retarding the trees as much as possible. Cleanse the trees as directed in a former calendar if insect pests are feared, and see that the roots never lack moisture. If the pots are well drained the roots can hardly receive too much moisture at this stage, but if the supply is deficient they will suffer.

STRAWBERRIES.—Plants that have been grown in slightly heated pits or frames for some weeks past should be examined frequently, and, where needed, afforded liberal root waterings. Superficial sprinklings are worse than useless, and I strongly urge that tepid water should always be used. Dispense with fire-heat as much as possible, placing mats or other coverings on the roof at night to maintain the necessary warmth, and prevent fluctuations in the temperature, an important detail in the successful forcing of Strawberries.

FIGS.—Trees breaking into growth should be grown in a moist atmosphere and a temperature of from 55° to 65°. Keep the roots plentifully supplied with water as soon as they are fairly active. In order to keep the growths short and fruitful—especially in the case of pot trees—pinch out the points of the young shoots when they are about three inches long. Now is a suitable time to propagate Figs from eyes—which strike freely—treated in much the same manner as I recommended for vines. Portions of well-ripened shoots cut into suitable pieces, one or two inches in length, and placed in small pots in strong bottom heat, will root freely in from twelve to fourteen days. Cuttings of the roots with “eyes” at the extremity will also make plants, but the process takes much longer as a rule.

THE KITCHEN GARDEN.

By R. P. BROTHERTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

ONIONS.—For a very long series of years I have raised Onions under glass, sowing the seeds at this time and transplanting the seedlings in the second or third week of April. Previous to adopting this system it was impossible to protect the crop from the devastations of the Onion maggot, which since has given little, if any, trouble. Besides, the early start is responsible for a much larger bulb, there being no difficulty in obtaining an even lot of bulbs 12 inches in circumference, produced in drills at 15 inches apart, and the plants 5 inches asunder. I refer to keeping Onions such as James' Keeping, a variety probably unequalled for its reliability. Those who might be deterred from adopting this system on account of an imagined increase of labour may be assured that the labour is not more, but probably less than that required when the crop is raised from seeds sown in the open ground. Ours are sown in cutting boxes, which are placed one above another until the seed germinates, and the seeds are germinated in a temperature of 60° or so. Once the seedlings are well through the soil they are transferred to cold frames, where they remain until ready for transplanting.

CARROTS.—Sow seeds of a stump-rooted variety rather thinly on a warm border. Sparse sowing at this season obviates the need to thin the seedlings before the small roots are usable. The Carrot fly, which is very destructive in old gardens, seems less prevalent when the plants are not crowded.

CELERY.—The crop for early autumn use must be prepared by sowing a dwarf, white variety in a seed-pan. Scatter the seed very thinly over the surface of the previously moistened compost, just covering it with the finest

parts of the latter, and stand the seed-pan in a heated structure, but not near to the hot-water pipes. It is a curious circumstance that though found wild luxuriating in marshy places, Celery succeeds best in cultivation under not too moist conditions; therefore from the beginning this fact should be kept in mind and the seedlings treated accordingly.

TOMATOS.—The plants will have a tendency to make long, spindly growth, but by careful watering this will be discouraged, and a growth more favourable to the production of flower and fruit will be secured. I never syringe Tomatos and have scarcely ever been troubled with any of the diseases that are common in many gardens. Another sowing of a larger-fruited variety than Sunrise may be made. Many varieties are very similar, and the grower will do well to continue to cultivate those that he has found give the best results.

SPRING CABBAGES.—Winter Cabbages would be the more proper designation for this crop, for we commenced to cut heads in the third week of last month, the growth in late autumn having been abnormally rapid. The variety is the old but very reliable Vanack, and to succeed these we have Edinburgh Market. In most years I give early Cabbages a slight dressing of sulphate of ammonia in the beginning of March. This year they will be dressed at once, double the amount of superphosphate of lime being added. This as a precaution against “bolting.” Where a large supply of Cabbages is required during summer it would be advisable to sow seeds in a frame, or even in a box, and germinate them in heat—that is, in instances where the usual crop is ready to cut, and where there is almost a certainty of a gap occurring in the succession.

CUCUMBERS.—The plants are now growing very rapidly, and those in pots should be planted out without further delay. My system is to set each plant in a mound of soil of about one peck to start with, the material consisting of very rough pieces of semi-decayed turf, with some less rough compost to pack around the plants. Roots soon appear through the soil, and the after-treatment consists in adding fresh lumps of turf, rotted manure and a reliable fertiliser from time to time as the roots take possession of the material previously added. An abundance of moisture at the roots is essential, it being assumed that bottom heat is provided. If Cucumbers are required very early do not stop the plants until the embryo fruits are observed, and then stop the laterals just beyond each berry. Where no better means are available an early crop may be secured from plants in pots or in boxes, grown in a stove temperature. I have frequently grown early fruits under this system, starting with a small amount of compost and adding to it as required. Less water at the roots all through is needed. The plants may also be grown on hot-beds, but these involve considerably more labour than either of the methods described above.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

GARDENIA.—One and two year old plants furnish the best blooms, therefore a batch of cuttings should be inserted now to take the place of older specimens. Select strong side-shoots, make the cuttings 3 inches long, and dibble them singly in 2-inch pots containing equal parts loam, peat and leaf-soil, with a liberal sprinkling of sharp sand and charcoal. Plunge the pots to their rims in cocoanut-fibre over warmth that will provide a bottom heat of 75° to 80°. Spray the shoots overhead and grow them in close conditions until rooted. Plants in 6-inch pots with flower-buds well advanced must be watered very carefully or the blooms may grow deformed. Very weak soot-water may be afforded as a stimulant twice weekly. Spray the foliage lightly on bright mornings and examine the shoots for the presence of mealy bug, which must be destroyed. Remove the shoots at the base of the flowers as they appear, and grow the plants in an atmospheric temperature of 65° to 70°. If required for conservatory decoration

inure the plants gradually to cooler temperatures and keep them drier at the roots.

SEED-SOWING.—The raising of seedlings will demand much attention, for numerous plants are raised from seeds sown now. Shallow pans are the best receptacles for the purpose, and they should be cleansed and furnished with plenty of materials for drainage. It is advisable to sterilise the compost, which must be made smooth and firm in the pans. Soak the soil with warm water by immersing the pans. Such small seeds as those of Begonia, Gloxinia, Streptocarpus and Lobelia should be sown on the surface. Plunge the pans in fibre, cover them with glass and paper, and germinate the seeds in a temperature of 70°. When the seedlings appear remove the seed-pans to a light shelf near to the roof-glass and protect the young plants from direct sunshine. If the compost becomes dry hold the pans in a vessel of water and allow the latter to rise in the soil through the drainage hole. Larger seeds, such as those of Celosia, Schizanthus and Smilax, should be covered with fine soil to a depth of about one-sixteenth of an inch.

STOVE PLANTS.—Codiaeums (Crotons), Dracaenas, Aralias, Ficus elastica, Acalyphas, Dieffenbachias, Ixoras, and many other stove plants are starting into growth, and will need re-potting or top-dressing. The majority of stove foliage plants thrive in a compost composed of equal parts fibrous loam and peat, one quarter of the whole of half-decayed leaf-mould, with sufficient charcoal and sharp sand to keep the compost open. The more forward specimens should be attended to first. Make an examination to see if the soil is suitable to maintain the plant in a healthy condition throughout the growing season, in which case a top-dressing will suffice. See that the drainage is perfect. In applying the top-dressing remove some of the surface soil to allow space for watering, and make the new soil firm. Those re-potted must not be placed in much larger pots, remembering that good specimens can be grown in comparatively small receptacles. Use clean pots, and place some of the coarser material over the crocks. Trim the ball by removing the old pot sherds and a little of the soil. Work the new compost evenly around the ball, making it firm with a potting stick as the work proceeds. Water the roots when the work is finished, and spray the plants overhead about midday, but do not water a second time unless moisture is absolutely needed. Maintain a slightly higher temperature at night, say 65° to 68°, according to the weather; in the daytime it may rise to 75° or 80° with sun-heat. Admit air only in very favourable circumstances for the present. Stove foliage plants when used for decorations in the residence are liable to lose their lower leaves, and will not make good specimens afterwards if potted on. But they may be used for propagation; their tops should be cut off and inserted singly in thumb-pots, plunging the pots in cocoanut fibre in a propagating frame having a temperature of 75°. The ringing of Crotons, Dracaenas and Ficus elastica may be done now. Place the plants in a propagating pit or at the warmer end of a plant stove; remove a band of the bark beneath the foliage, and bind a little moss around this part. Secure the plant to a stake and syringe it daily to keep the moss moist. Roots will make their appearance in three weeks or a month, when the plants should be severed, potted up, and grown in close conditions for a few days.

PANDANUS.—Suckers taken from the base of old plants, trimmed of their outer leaves, and potted singly in small pots will root in a brisk heat. Afford water with extra care at all times. Small pot plants make dainty specimens for table decorations.

STOCK PLANTS FOR FURNISHING CUTTINGS.—Plants of fibrous-rooted Begonias, Plumbago rosea, P. coccinea superba, Coleus (foliage varieties), Thyracanthus rutilans, Clerodendron fallax and similar subjects should be placed in moist heat to produce cuttings. A few plants of Plumbago rosea may be turned out of their pots, the roots cut in small pieces, and the latter placed in pans of soil. They will quickly form useful plants.

EDITORIAL NOTICE.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

APPOINTMENTS FOR FEBRUARY.

MONDAY, FEBRUARY 9—
United Hort. Ben. and Prov. Soc. Com. meet.

TUESDAY, FEBRUARY 10—
Roy. Hort. Soc.'s Show and Ann. Meet.
Horticultural Club Annual Dinner, 6.30 p.m.

THURSDAY, FEBRUARY 12—
Manchester & N. of Eng. Orchid Soc. meet.
Preston Hort. Soc. meet. (Lecture by Mr. E. Scaplehorn on "Rock Plants and Rock Gardens.")
British Gardeners' Assoc. (London Branch) meet. (Lecture by Mr. W. J. Ing on "Hampton Court Palace and Gardens," illustrated by coloured lantern slides.)

FRIDAY, FEBRUARY 13—
B.G.A. (Kew branch) meet. Lecture by Mr. W. Hales on "British Wild Flowers for the Garden."

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 38.7.

ACTUAL TEMPERATURES:—
LONDON, *Wednesday, February 4* (6 p.m.): Max. 52°; Min. 41°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, February 5* (10 a.m.): Bar. 29.8°. Temp. 49°. *Weather*—Sunshiny.
PROVINCES, *Wednesday, February 4*. Max. 51°, Valencia; Min. 41°, Yarmouth.

SALES FOR THE ENSUING WEEK.

MONDAY, TUESDAY, WEDNESDAY, THURSDAY, AND FRIDAY—
Continuation of the Sale of the stock at Coombe Wood Nurseries, Kingston Hill, by order of Messrs. J. Veitch and Sons, Ltd., by Protheroe and Morris, at 12.

MONDAY AND WEDNESDAY—
Rose Trees, Shrubs, Lilies, Perennials, etc., at Stevens's Rooms, 38, King Street, Covent Garden, at 12.30 p.m.

MONDAY AND FRIDAY—
Hardy Bulbs, Herbaceous Plants, etc., at 12, by Protheroe and Morris.

WEDNESDAY—
Perennials, Herbaceous Plants, Hardy Bulbs, etc., at 12; Palms and Plants at 5. At 67 and 68, Cheap-side, E.C., by Protheroe and Morris.

THURSDAY—
Roses, by Protheroe and Morris, at 1.

FRIDAY—
Orchids, by Protheroe and Morris, at 12.45.

The discoveries made by man in the domain of ideas have something in common with the

Problems of Genetics.

plants introduced from far-off countries and cultivated in our gardens. Both make their appearance suddenly, excite controversy, and having won acceptance, settle down on the shelves of our minds or of our plant-houses as inalienable parts of our mental or horticultural stock-in-trade.

Accepted, unchallenged, the idea and the plant alike pursue for a time the even tenor of their way. Then suddenly the plant begins to vary—as *Primula obconica* began to vary a year or two ago, and as *Primula malacoides* is just beginning to vary now. So is it with the idea: after it has achieved a wider acceptance and the word which expresses it has passed into everyone's mouth, suddenly it begins to vary, to take on new forms of meaning, and thereby to lose its old specific characters. For example, who, by looking upon the multitudinous varieties of Chinese Primrose could picture out a reconstruction of the original form from which they sprang? In such a way as

this the biologist's idea of Evolution is varying, and in a generation or two the new variations on this old theme will have changed men's ideas, so that none but the careful historian may be able to discover the notions and superstitions with which that idea was clothed in the nineteenth century. The great and signal merit of Professor Bateson's book on the "Problems of Genetics" is that it prepares the way for improved varieties of the idea of the evolutionary process by teaching biologists to recognise that they falter where they thought they firmly trod. By stating the problems in clearer terms Professor Bateson shows that evolutionary hypotheses which have become convictions are still awaiting proof. Nor can we think of higher praise than this, that it has fallen to the writer of "Problems of Genetics" to do for biology what the greatest dramatist of our era has done for sociology—to propound again the fundamental questions which we, good easy men, had thought were answered long ago.

To those who want clean-cut conclusions, ready for immediate use, Professor Bateson's book will not appeal. For such men his chapters have but one message—that of the poet who cried, "Ah! what a dusty answer gets the soul, when hot for certainties in this our life." But to those who are workers and want encouragement and not illusion this book will be a benefaction; for it holds out high hope that the old problems—of variation, of specific form and the like—are susceptible of solution by new methods.

The old method, which Darwin put to such masterly use, aspired to understand the mechanism of evolution by assembling in vast array the biological facts, co-ordinating them and generalising upon them.

That method failed, not by reason of lack of persistency on the part of man, but because of the obduracy of the facts. These stubborn things will not pack into our present systems, and whilst some seem to fit nicely into such a generalisation as that conveyed by the term natural selection, others will not; while some seem to proclaim the truth of the doctrine that the struggle for existence plays a part in determining the form of things, others again appear to contradict it. Till finally it has become clear that the old method has failed because it attempted to discover law and order by the contemplation of a miscellaneous collection of diverse facts of nature. The new method teaches that much sifting of these facts of nature must be practised before we can arrange them in homogeneous groups; and it shows, moreover, how this sifting may be done. Whether or not the writ of Mendelism runs throughout the realm of nature no man can say; but this may be said, that Mendelism gives to the biologist what he lacked before, namely, an experimental method for the analytical study of living things. For this method, which he has done so much to elucidate, Professor Bateson makes no extravagant claims; nor is there need, for it is unique. It stands to contemporary biology in a

relation similar to that in which the atomic hypothesis stood to the chemistry of last century.

From the point of departure provided by Mendelian analysis the bio-chemist of to-day is setting out to explore the chemical nature which determines specific form. No one can say what or how much he will find, but all will allow that a scientific inquisition holds out more hope of discovery than does an indiscriminate raid on Nature.

The impression produced by this book is that of a storm-swept landscape on which sunlight has begun to fall again. The ground is littered with the debris of the storm, but the light in the sky gives promise of trees to bud again; of a fresh and fairer landscape arising from the ruin of the old.

To those who care nothing for such fanciful impressions the book will appeal because of the array of new or neglected facts which it presents, and the searching criticism which it brings to bear on many of the statements which have been put forward in support of such hypotheses as that of the inheritance of acquired characters. In illustration of this last point reference may be made to the classic case of Schübeler's Wheats. The story goes that Schübeler imported Wheat and Maize from Central Europe to Norway, and found that in successive years the period of growth and ripening was increasingly reduced. After two generations seed was sent back to Breslau, and when grown was found to ripen more quickly than the original stock had done. Upon enquiry Professor Bateson finds that in the year (1859) during which the returned seed was grown at Breslau July and August were exceptionally hot months. . . . As Professor Bateson suggests, the elements of the weather may possibly have done something to hurry the ripening. Nor will practical growers dissent from this comment.

Supplementary Illustration.—A feature of particular interest in the Wisley gardens in June last year was a row of Tree Lupins (*Lupinus arboreus*) flowering on the margin of the lawn near to some of the glasshouses. They were just at their best when a deputation from the Floral Committee visited the gardens for the purpose of making awards to Violas in one of the best trials of Violas we have ever known. We were so impressed with the Lupins that a few days afterwards we made a second journey to Wisley for the purpose of obtaining a colour photograph of the Lupin and of several other noteworthy plants at that time in flower, including the excellent specimen of *Kalmia latifolia*, which visitors to Wisley may have noticed. The coloured plate of the Lupin will commend the plant as a standard to readers who have not hitherto made use of it in the way Mr. WRIGHT has found so satisfactory. Amongst the experts who visited the garden on the occasion to which reference has been made, there was none who had seen such fine specimens as that figured in our illustration, and all were curious to know exactly how the plants had been cultivated. A member of Mr. WRIGHT's staff has been good enough to give us the following interesting details of the method adopted:—The seeds are sown in pots or pans during July or August in cold frames or houses. As soon as the seedlings are large enough they are planted in 4-inch pots, and after they have

* *Problems of Genetics*. Silliman Memorial Lectures delivered at Yale University in 1907. By Professor Bateson, F.R.S. Pp. 258; with illustrations. Oxford University Press. 17s. net.



TREE LUPINS (*LUPINUS ARBOREUS*) IN THE R.H.S. GARDENS, WISLEY

established themselves in these pots and have been gradually hardened they are placed on a base of ashes in a sheltered position out-of-doors. In this position they are syringed frequently and induced to grow without suffering any check. The side shoots are pinched out so that a good, clear stem of 3 feet high may be formed. At this height seven or eight shoots are left to form the head. The plants are moved into 6-inch pots as soon as they are ready. The main stem is kept straight by means of bamboo stakes, and when it has attained about 3 feet in height the leading shoot is pinched out. This operation causes the shoots which have been left at the top of the stem to develop freely, eventually producing fine heads. During the winter months the plants are accommodated in a very cool house, where they are allowed to remain until danger from severe frosts is over. They are afterwards gradually hardened off for planting out-of-doors in the positions in which they will flower, generally at 10 feet apart. They grow exceedingly quickly, making heads which measure 3 feet through in little more than a year, but if proper security is not afforded them by means of stakes they will be sure to suffer injury from the winds. Seeds should be sown every season, as the plants are seldom satisfactory for more than two years. There is one word of caution that must be given in relation to Tree Lupins—namely, that they are ill-suited to places where they are likely to be subjected to the influence of winds. Some sort of protection against winds is essential; but, having stated this much, it may be further stated that when such positions have been selected for them, and the plants are grown so skilfully as the specimens at Wisley, then the Tree Lupin is certainly an object of admiration. It may well be made a feature in every garden where space is not greatly limited. In fig. 44 we reproduce an illustration of a fine white variety known as "Snow Queen."

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the committees will be held on the 10th inst. in the Vincent Square Hall, Westminster. At three o'clock the annual general meeting of the Fellows will be held in the Lecture Room.

VISIT OF SECRETARY OF THE BOARD OF AGRICULTURE TO THE HORTICULTURAL CLUB.—Amongst the visitors invited to be present at the annual dinner of the Horticultural Club on Tuesday next are Field-Marshal Lord GRENFELL, G.C.M.G., President of the Royal Horticultural Society, and Sir SYDNEY OLIVIER, K.C.M.G., Permanent Secretary of the Board of Agriculture and Fisheries. Sir SYDNEY OLIVIER has already signified his acceptance of the invitation. Members intending to be present are asked to send immediate intimation to Mr. R. HOOPER PEARSON, Hon. Sec.

THE LATE SIR TREVOR LAWRENCE.—We understand that the late Sir TREVOR LAWRENCE, by his will, left all his plants to his wife, but expressed a wish that she would present to the Royal Gardens at Kew such portions of his collection as she might be advised or might consider to be mainly of botanical interest, the matter being left entirely to her decision. We understand that Lady LAWRENCE has written to Sir DAVID PRAIN, the Director of Kew Gardens, to say that she has much pleasure in informing him of her intention to carry out Sir TREVOR'S wishes, and will make the necessary arrangements in due course.

ROYAL GARDENERS' ORPHAN FUND.—In respect to the annual meeting of the Royal Gardeners' Orphan Fund, which will take place at Simpson's Restaurant, Strand, on Friday, after this issue is distributed, it may be noted with satisfaction that the Chairman will find himself in the gratifying position of being able to recommend the election of all the nineteen

candidates. Thus no poll will be necessary. We are quite sure that the subscribers to the fund will approve the Committee's recommendation. Charitable institutions exist solely for the relief of distress, and the public is always more ready to support a charity that spends its funds liberally on the purposes it is its business to fulfil than to approve a less courageous and generous policy.

MR. MARTIN JOHN SUTTON'S ESTATE.—The estate of the late MARTIN JOHN SUTTON, J.P., has been sworn for probate at £137,086 gross, the net personalty amounting to £133,831. Legacies are bequeathed to Mr. SUTTON'S widow, to each of his two sons, to his daughter, to other relations, and to certain persons in his employment. In making his bequests Mr. SUTTON observed "that, having always tried to give to religious and philanthropic objects during my life as the Lord has prospered me, rather than to lay money by for bestowal after I can no longer use it, I leave no legacies to societies." Only those most intimate with the deceased

cession:—(1) "The Desirability of holding Meetings in Provincial Fruit-growing Centres in conjunction with our Affiliated Societies"; and (2) "In what, if any, manner can the Federation extend its Scope of Utility to its Members?" A lecture will be delivered by Mr. GERALD O. SHERRARD, of the John Innes Horticultural Institution, on "Pollination Experiments with Fruit Trees," and papers will be read by Mr. W. G. LOBJOIT, on "Conditions of Tenure and Methods of Valuation"; by Professor UDALE (Worcestershire County Council), on "A Few Thoughts on Current Topics, including the American Mildew and Disposal of Garden Produce"; and by Mr. GEOFFREY F. HOOPER, on "A Few of the Little Troubles of a Fruit Grower."

ANGLO-AMERICAN EXPOSITION, 1914.—We are informed that among the British firms who have signified their intention of contributing to the horticultural display at the White City during the Anglo-American Exposition are the following:—Mr. R. H. BATH, May-flowering bulbs, quarter acre; Messrs.

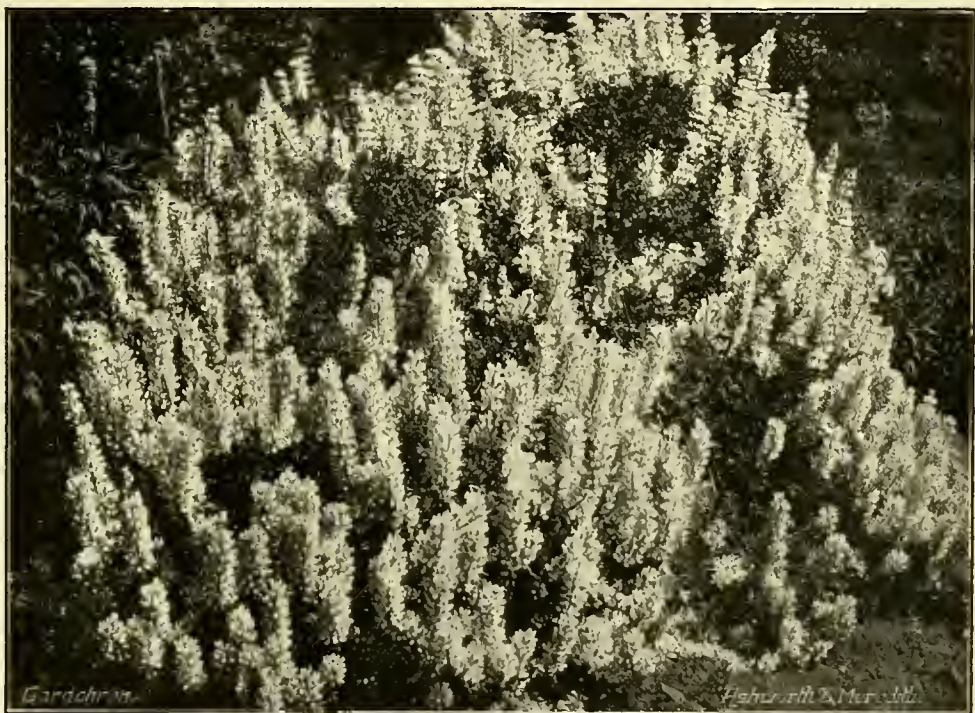


FIG. 44.—LUPINUS ARBOREUS "SNOW QUEEN"

gentleman know the wide extent and fine generosity of the almsgiving which he practised all through his life.

WIMBLEDON'S NEW PARK APPROVED.—On p. 57 we referred to the opposition of some of the ratepayers to the proposal of the Town Council of Wimbledon to purchase the Wimbledon Park Estate for the purpose of an open space, and the decision to take a poll on this and other matters. The result of the poll was declared on Monday last, and the scheme approved. The number of votes cast in favour of the Bill was 2,643, against 2,086, the majority in favour being 557.

THEFT FROM KEW GARDENS.—The case of shrub-stealing from Kew Gardens, particulars of which were given in our last issue, again came before the Richmond magistrates on the 2nd inst. One of the defendants was fined 40s. and the other £6, the alternative being 14 days' and two months' imprisonment respectively.

THE NATIONAL FRUIT GROWERS' FEDERATION.—The twelfth annual meeting of the National Fruit Growers' Federation will take place at the Royal Horticultural Hall, Vincent Square, Westminster, on Wednesday, the 25th inst. The following subjects are down for dis-

CHEAL AND SONS, trees and shrubs; HOBBIES, LTD., Roses, one acre; GEORGE JACKMAN, Rhododendrons and other flowering plants; JOHN JEFFERIES AND SONS, American trees and flowering shrubs, quarter acre; KELWAY AND SON, herbaceous plots, covering three-quarters of an acre, with a display of aquatic plants covering half an acre; W. A. MANDA, American specialities, three-quarters of an acre; R. C. NOTCOTT, formal Rose garden; PAUL AND SON, flowering shrubs and Rose trees planted for effect; PIPER AND SONS, topiary exhibit, summer bedding and formal English garden; RIVERS AND SONS, trained fruit trees; L. R. RUSSELL, green and variegated tree Ivies; SPOONER AND SONS, trained fruit trees; STARK AND SON, Kniphofias and Sweet Peas, Violas and Antirrhinums; CHAS. TURNER, Conifers, Bamboos, Yuccas, Weeping Birch, Elm and Maples; R. J. WALLACE, Colchester, formal English garden; THOMAS S. WARE, Begonias; J. WOOD, 15,000 square feet of rock and water garden. Mr. LEOPOLD DE ROTHSCHILD will decorate the large central lagoon.

ERFURT PLANT AND SEED INDUSTRY.—Dr. EDMOND GOEZE, an early Kewite, contributes to the *Jahrbuch für Standen-Kunde*, 1913, an interesting review of the contents of the

catalogue of plants and seeds issued by one of the leading firms of Erfurt. His notes—historical, cultural, statistical and descriptive—are valuable and suggestive. Erfurt is the centre of the cultivation and breeding of the China Aster, among other things, and some six pages of the catalogue are devoted to the races and varieties of this old favourite garden plant, of which about 300 are enumerated.

FLORA OF NEW GUINEA.—The fifth livraison of the botany of Dr. H. A. LORENTZ's scientific expedition to New Guinea has appeared—pp. 899-988, plates 161-178. It comprises the families Amaryllidaceae, Haemodoraceae, Nyriaceae, Commelinaceae, Zingiberaceae, Pontederiaceae, Typhaceae, Hydrocharitaceae and Balanophoraceae, elaborated by various botanists. Most of the families named are represented by only one or two species; but a large number of Zingiberaceae is described and figured. *Riedelia*, Oliver, now counts fifty species; *Alpinia* is represented by thirty-seven species, and *Geanthus* by eleven. Evidently there is a great concentration of this family in New Guinea, and one wonders why so few are seen in cultivation. The Reed-maces of the world are classified under eight species.

WOOD PIGEONS AND CROPS.—One effect of the recent cold weather is the great increase in the numbers of wood pigeons from abroad, and in Devonshire especially the birds are doing much damage to crops, especially on farms. With a view to keeping the pigeons under, the Devon Farmers' Union has arranged to hold a combined shoot on the first and second Mondays in February. In one district alone it is expected that 1,600 men will take part in the shooting.

ALYSSUM BENTHAMII.—A lilac-flowered variety of this species is described by Mr. S. KARRER in MOLLER'S *Deutsche Gärtner Zeitung* (No. 1, 1914), under the varietal name of *compactum lilacinum*. It is claimed for this novelty that it is at its best in September and October.

GERMINATION OF SEEDS.—To the vagaries of germination, which formed the subject of a recent article, may be added the following, which were observed in the Munich Institute of Agriculture and reported in *Die Gartenwelt* (January 3, 1914). Fresh seeds of *Nigella sativa* sown in a seed bed exposed to the sun fail to germinate; cover the seed bed so that the seeds are in darkness, and the seeds germinate in ten days. Many species of Lily fail to germinate in darkness; but if kept for a long time (three years) in darkness and then sown in the light the seeds germinate very quickly. The statement is made that seeds of *Digitalis purpurea* require eight months for germination, but this certainly does not apply to garden strains of the plant. Some seeds germinate better after freezing; this it is said is true of species of *Primula*.

THE POLLINATION OF ENCEPHALARTOS ALTENSTEINII.—At the annual meeting of the Royal Society of South Africa, Dr. MARLOTH described the remarkable mode of pollination which occurs in the Kaffir Bread Tree (*Encephalartos Altensteinii*). As is the case with the *Yucca*, pollination is effected by an insect which gains access to the ovules for the purpose of depositing its eggs therein. In the case of *Encephalartos* the pollinating insect is a beetle (*Antliarhinus Zamiae*). That the beetle is actuated by no altruistic instinct is evident from the observation of Dr. RATTREY, that all the seeds may be destroyed by the grubs which are hatched from the eggs deposited among the ovules. Dr. RATTREY also shows that the insects are attracted to the male cones of *Encephalartos* by an odour which is perceptible in *E. Altensteinii* and powerful in *E. villosus*, Lehrs. Having paid their visit to the male, the insects visit subsequently the female cones, whither they carry pollen. Unlike *Encephalartos*, another genus of Cycads, *Stangeria* (*S. Katzeri*) is wind-pollinated.

VARIATION.—In the January part of *The Journal of Heredity* (American Genetic Association) there is a carefully written article on "Variation in Tobacco." Mr. H. K. HAYES, the writer, starts by stating the belief held by some that a change of environment often brings about the birth of new types. In 1910 an experiment was begun to develop a type similar to one of the best Cuban varieties. In that year 150 plants were grown from seed sent from Cuba. The variability was very large, and only five or six of the plants gave promise of commercial value. This is not surprising, as we are told that no attempt at seed selection had been made in Cuba. One experimenter (HASSELBRING) found that by growing pure lines, both in Cuba and Michigan, no breaking up of type occurred, and that whatever modifications he found due to change of environment appeared alike in all of the plants of a given strain. HAYES selfed the two most desirable plants in his lot of 150. These plants bore 19 and 20 leaves respectively. In the second season the produce from these two selfed plants showed great variability. Again the two best plants were selfed, two bearing 18 and 19 leaves respectively. The produce of these in the third season proved very uniform, both in number and shape of leaves, and was so far as field characters go equal to the commercial Cuban tobaccos grown on the same field. By this we presume is meant that in three years a strain was raised from Cuban seed equal to the selected strain of the same variety which was being grown in the States. To further determine whether the variations observed in generations of the foregoing experiment had any connection with change of environment, three seed-pods were picked from different plants growing in Cuba and sent to the experimental station at Bloomfield. The produce of these proved that there was no breaking up of type due to changed environment. A number of excellent illustrations is given, and it is evident that raisers of new tobaccos are finding that many of the characters of the plant follow true Mendelian lines.

NEW BOOKS.—The *Modern Gladiolus Grower*, published monthly by MADISON COOPER, Calcium, New York, U.S.A., as its title indicates, is devoted solely to the Gladiolus. It contains 32 pages of text and advertisements, and in size is 9 inches by 6 inches. The price per annum is 50 cents, or \$1 for three years. The number is well printed, and contains numerous articles of interest to Gladiolus growers, including reports of the American Gladiolus Society. Among the contents we note the Gay Gladiolus, Gladioli in a dry season, some of the newer Gladioli, testing new varieties, the Gladiolus in designs and decorative work, and among other items a page for correspondence. Such a publication should be well received by Gladiolus cultivators on both sides of the Atlantic.

ABNORMAL WEATHER IN DECEMBER.—The details respecting the weather in December that appeared over the signature of *J. Edward Clark* (see p. 42) lost part of their interest from the fact that the printer omitted to give the locality in which the notes were made. We may supply this omission by stating that Mr. CLARK'S observations related to Purley, in Surrey.

ANIMALS AND PLANTS UNDER DOMESTICATION.—In his second lecture of this course on animals and plants under domestication, Professor BATESON showed plants of the wild and cultivated forms of Parsnip, Carrot, Lettuce and other vegetables. He said that in many cases the difference between the two forms is one of size. How far this difference is due to feeding is not known, but VILMORIN, CARRIERE and BUCKMAN found that the size of the wild forms was in some cases very quickly increased under cultivation. BUCKMAN obtained the variety of Parsnip the "Student" from the wild form in

eight generations. But it must not be forgotten that probably no special precautions were taken against crossing with the cultivated types. Professor BATESON then discussed the origin of the cereals, of which the Barley has the simplest history. It is probably derived from *Hordeum spontaneum*, a two-rowed wild form found in Asia Minor. This Barley, in common with nearly all the wild forms of cereals, has a brittle rachis, so that on threshing the ear breaks in pieces. Those plants which have varied by the production of a tough rachis have been selected for cultivation. Among the wild cereals which have a brittle rachis are Rice, Wheat, and Millet. The origin of the cultivated Wheats is more complicated. The various species of Wheat differ from each other with regard to certain pairs of differences. On crossing cultivated varieties differing from each other in one or more of these pairs of characters a fertile product is obtained, and the characters introduced segregate according to MENDEL'S law. Yet when the different species are crossed together a sterile hybrid is often produced. Botanists consider that the fertility of a cross between a wild and cultivated form is a criterion of the origin of the cultivated form, but until the factors involved in fertility and sterility have been further investigated such an assumption should not be made. Photographs of wild species of Potato, lent by Messrs. SUTTON AND SONS, were also shown.

IMPORTED FERTILISERS.—The statistics of imported fertilisers indicate that basic slag is becoming more generally used as a fertiliser. Thus the amount (in tons) imported in 1910 was 16,588, in 1911 22,666, and in 1912 49,313. Guano shows a decrease from 34,124 tons in 1911 to 14,115 in 1912. Nitrate of soda is fairly stationary, and mineral phosphates show a small increase in amount imported.

A NEW USE FOR MANGROVES.—An interesting and important statement appeared recently in the French Press to the effect that the timber of species of *Rhizophora* (e.g., *R. racemosa* = *R. Mangle*) is of great value on account of its flexibility and durability. The wood, which is rich in tannin, has remarkable powers of resisting decay, and is therefore of value for railway purposes, for piles, and for mine props. Inasmuch as species of *Rhizophora* have a wide distribution in the Mangrove swamps of the tropics, the statement is worthy of the careful attention of those concerned with the development of tropical countries.

"EUCALYPTUS."—The nineteenth part of Mr. MAIDEN'S *Critical Revision of Eucalyptus* treats of *E. goniocalyx*, *E. nitens* (a new species), *E. elaeophora*, *E. cordata* and *E. angustissima*, bringing the number of species described and figured up to 105, and the number of plates to 104. It may be useful to repeat here that Mr. MAIDEN has figured forty-five species of *Eucalyptus*, on a larger scale, in his *Forest Flora of New South Wales*, a list of which is given in the part under notice. Most of the species figured in the part before us exhibit considerable variation in the size and configuration of the leaves, from the seedling stage to the adult stage. The account of *E. cordata*, as one of the hardest species, has special interest for West Country gardeners. It is figured in the *Gardeners' Chronicle* for March 12, 1910, and also in the *Botanical Magazine*, plate 7835. *E. cordata* is now known to be confined to Tasmania in a wild condition, and to the southern part of the island, growing in decomposed volcanic rock—greenstone diabase—not in recent volcanic rock basalt. It was originally described by LABILLARDIERE as an "arbor procer"; but it rarely exceeds 20 feet, and 50 feet is the extreme height recorded of wild trees. In cultivation *E. cordata* has been confused with *E. pulviger*, A. Cunn. (*E. pulverulenta* Sims). Mr. MAIDEN gives BENTHAM'S contrasting characters:—Leaves crenate, calyx obtuse at the base . . . *E. cordata*. Leaves quite

entire, calyx tapering to the base . . . *E. pulverulenta*. Among the variously shaped leaves of *E. cordata* figured by MAIDEN is a perfectly circular "perfoliate" one, 4 inches in diameter, borne by a slender branch less than a sixth of an inch in diameter. *E. nitens* Maiden was formerly classified as a variety of *E. goniocalyx*, than which it is a much larger tree, growing 200 to 300 feet high, with a trunk from "2 to 17 feet" in diameter. The dimensions are given in figures, and it seems probable that seventeen may be a misprint for seven. *E. angustissima* is an imperfectly known shrubby western species with leaves 3 to 4 inches long, and mostly less than a quarter of an inch wide, and very small globose fruits. *W. B. H.*

"THE BOTANICAL MAGAZINE."—The issue for January contains illustrations and descriptions of the following plants:—

ERYTHRINA PULCHERRIMA, tab. 8,532.—This species is closely allied to the well-known Coral Plant of gardens—*E. Crista-galli*, but is readily distinguished by the different shape of the leaflets. The history of the plant is obscure; its

of about 50 feet, with a spreading head of branches and a trunk 5 feet in girth. The leaves are marked by numerous parallel veins, one of the distinctive characters that separate *Distegocarpus* from *Eu-carpinus*. *C. japonica* is said to have been introduced by MARIES in 1879, but the specimens now in cultivation came in 1895. The tree is perfectly hardy, very graceful, grows well in stiff loam, and is stated to be an admirable subject for planting in small gardens.

PRIMULA PURDOMII, tab. 8,535.—This species was awarded the R.H.S. First-Class Certificate on March 18, 1913, when exhibited by Messrs. JAMES VEITCH AND SONS, and was described in *Gardeners' Chronicle*, March 22, of that year, p. 192. The flowers are borne in umbels from 3 to 12 inches long, and are lilac-mauve in colour. The *Botanical Magazine* plate represents them as being of a faint mauve. The leaves are covered with a white farina which adds to the beauty of this plant.

LONICERA DEFLEXICALYX, tab. 8,536.—The species is nearest allied to *L. ovalis*, but it has narrower leaves. A specimen at Kew forms a bush 7 feet in height and 15 feet across, with

ACTINIDIA CHINENSIS, tab. 8,538.—This Chinese climber first flowered in Europe in 1909 in Mr. WOODALL's garden at Brancolar, Nice. Specimens sent us by that gentleman formed the subject of the Supplementary Illustration in the issue for July 31, 1909, in which issue Mr. WOODALL gave a description of the plant.

SMILACINA PANICULATA, tab. 8,539.—This plant is a native of Guatemala and South Mexico; it was introduced by Messrs. SANDER AND SONS, in whose nursery specimens flowered in March, 1913. The blossoms, together with all parts of the inflorescence, are of snowy whiteness, and the spike is in pleasing contrast with the green foliage. The species might prove useful as a greenhouse subject, but it is not suited for growing in the open, where its more hardy congeners, such as *S. racemosa* and *S. stellata*, succeed.

RONDELETIA CORDATA, tab. 8,540.—The introduction of this plant into this country seems to have been accidental, for the first seedling appeared in soil adhering to some imported Orchid. For a long time it was grown as *Rodgiera cordata*, because it was originally supposed that the flowers were tetramerous. *Rondeletia cordata* is a good subject for the greenhouse border, forming a bush some 6 feet high and flowering freely every spring.

VIOLA GRACILIS, tab. 8,541 (see fig. 45).—This beautiful Violet has been extensively planted in gardens during recent years, especially on rockeries, where it forms delightful patches of dense growth covered in spring and early summer with purple blossoms. The species grows wild on Mount Olympus, and its habitat extends into Macedonia, and also, probably, into Montenegro.

ORANGE AND LEMON INDUSTRY IN SPAIN.—In Spain no industry has developed so rapidly as the growing of Oranges and Lemons, and none has ever proved such a source of wealth to the country. This development has been favoured, during a period of forty years, by economic conditions and the attraction of the English market. The annual value of the crops is estimated at one hundred million pesetas.

PHYTOPATHOLOGICAL CONGRESS.—An international Phytopathological Congress will be held at the International Institute of Agriculture, Rome, on February 24. The Congress will consider means for instituting an international system for the control of plant-disease. The views expressed by Professor CUIONI on the subject of expanding the present "Phylloxera" Convention into an International Phytopathological Convention, will be considered by the delegates.

GENETICS AT CAMBRIDGE.—The station for experimental investigation of problems in Genetics, to which reference was made last week, is now in working order. The ground attached to the station is about 2 acres in extent, and has been thoroughly well worked and manured. Professor PUNNETT, who has taken up his residence at Whittingehame Lodge, intends to continue his investigations on Sweet Peas, as well as those on poultry, and, as we believe, hopes also to direct his attention to the genetics of the Carnation. An excellent range of glasshouses has been erected on the station, which lies on the outskirts of the town.

FOURTH INTERNATIONAL BOTANICAL CONGRESS, LONDON, 1915.—The Nomenclature section of the Third International Botanical Congress, held at Brussels in 1910, carried towards completion the work of the Vienna Congress (1905) on the international rules governing questions of nomenclature. The combined result of the decisions reached at Vienna and Brussels has been published in the second edition of the *Rules of Botanical Nomenclature*. There remain, however, certain points which have to be settled by the Nomenclature Section of the London Congress in 1915. The pro-



[Photograph by C. P. Roffill.]

FIG. 45.—*VIOLA GRACILIS*: COLOUR OF FLOWERS VIOLET.

habitat is unknown, and it appears to have been introduced into Italian gardens, whence it has spread to various parts of the Continent. *E. pulcherrima* grows as tall as 30 feet, and the green branches are sometimes streaked with reddish-brown; the shoots are prickly, but the prickles are not so numerous as in the other species mentioned. The flowers appear in threes in the axils of the leaves, and are rosy-cerise coloured, as shown in the plate; they appear to be broader than those of *E. Crista-galli*. For a number of years a plant has been growing in the Palm house at Kew, but it does not flower freely.

GALTONIA PRINCEPS, tab. 8,533.—*Galtonia candicans* is a well-known garden plant—more commonly grown under the name of Hyacinthus; the species under notice has larger racemes and more numerous flowers, so that it would appear to be even better adapted for garden purposes than is *G. candicans*, especially because specimens flower at Kew every year under the same conditions as are afforded its congener. The flowers of *Galtonia princeps* are greenish-yellow.

CARPINUS JAPONICA, tab. 8,534.—This is a very handsome Hornbeam, growing to a height

gracefully arching branches. The rich, yellow-coloured flowers are produced in profusion on the upper sides of the twigs; as a garden subject the species is undoubtedly one of the most ornamental of the bush Honeysuckles in cultivation. Propagation is readily affected by cuttings inserted late in the summer. The plant flowers late, which is an advantage, for the blooms thus escape injury from spring frosts.

The issue for February deals with the following plants:—

AMPELOPSIS MEGALOPHYLLA, tab. 8,537.—The most remarkable feature of this Chinese species is the great size of the leaves, which are about 3 feet long. To Mr. M. L. DE VILMORIN belongs the honour of first raising specimens in Europe, from seeds received by him from China in 1894, and plants flowered in his garden at Les Barres three years later. The species was then confused with *A. cantoniensis*, which is not hardy in this country; *A. megalophylla* itself appears to be somewhat tender, for it needs a well-sheltered position in a sunny spot. The species grows well in Mr. J. HARCOURT's gardens at Nuneham, Oxfordshire, whence the material for the figure was obtained.

gramme of work for 1915 was defined by the Congress of 1910 as follows:—1. To fix the starting point for the nomenclature of (a) Schizomycetes (bacteria); (b) Schizophyceae (excepting Nostocaceae); (c) Flagellatae; (d) Bacillariaceae (Diatomaceae). 2. To compile lists of *nomina generica utique conservanda* for (a) Schizomycetes; (b) Algae (including Schizophyceae, Flagellatae, etc), new lists for groups not included in the list of 1910 and also a supplementary list; (c) Fungi; (d) Lichens; (e) Bryophyta. 3. Compilation of a double list of *nomina generica utique conservanda* for the use of palaeobotanists. 4. Discussion of motions relating to new points which were not settled by the rules adopted at Vienna in 1905 and at Brussels in 1910. The carrying out of this work has been entrusted to two committees under the direction of a rapporteur général, Dr. J. BRIQUET (Geneva), assisted by a vice-rapporteur, Prof. H. HARMS (Berlin). In the compilation of the lists of *nomina conservanda* the rapporteur général will have the assistance of a certain number of editors in each committee.

"GEO. MONRO, LTD.," CONCERT COMMITTEE.

—The eighteenth annual concert, arranged by the "Geo. Monro, Ltd.," Concert Committee, will take place at the Queen's Hall, Langham Place, on Thursday, the 26th inst. The chair will be occupied by Mr. GEO. MONRO.

SALE OF NURSERY STOCK AT COOMBE WOOD.

—The second sale by public auction of the trees and shrubs growing in Messrs. JAMES VEITCH AND SONS' Nursery, Coombe Wood, Kingston Hill, was commenced on Monday last, and will continue until the 13th inst. Coombe Wood Nursery, situated on Kingston Hill, is on a deep, rich loam. The nursery is well protected by trees from cold winds, and the plants are grown under very favourable conditions; moreover, the manager, Mr. HARROW, has a high and deserved reputation as a cultivator. In view of these circumstances it is not surprising to learn that all the lots found a ready sale, for although the attendance was not a large one the auctioneers, Messrs. PROTHEROE AND MORRIS, informed us that they had received commissions to purchase from all parts of Great Britain. The trees and shrubs included in the sale represent a wide range of subjects, and comprise Rhododendrons, golden Yews, ornamental flowering and avenue trees, Conifers in variety, Roses, Clematises, species of Vitis and other climbers, Magnolias, Bamboos and specimen plants suitable for planting in borders and "Japanese" gardens. Rhododendrons occupy a considerable portion of the catalogue, there being six thousand named varieties, besides seedlings raised from seeds sent by collectors from China. As the latter have not yet flowered many of them may prove to be new species. The Rhododendrons all met with a good demand, and we were informed that those offered on the second day were nearly all purchased by the same buyer. There have been no sensational prices. It is interesting to learn that the keenest buying was for the specimens of topiary, a fashion of gardening that is coming again into favour. The new Chinese plants also sold well. During our stay we watched the bidding for lots of the new *Ilex Perrnyi*, and these realised good prices. Standard Chestnut *Briotii* (*Aesculus Briotii*), some 10 to 12 feet high, were also in demand, and specimen standard Privets, Aucubas, *Grise-linia littoralis*, Norway Maples, *Taxus elegantissima*, Spanish Chestnuts, *Cytisus* in pots, standard Planes and *Thuja Lobbi* were soon disposed of. The catalogue includes 5,000 lots, divided into some 500 for each day of the sale.

PUBLICATIONS RECEIVED.—*Annual Report of the Board of Regents of the Smithsonian Institution, 1912.* (Washington: Smithsonian Institution.)—*An Account of the Morisian Herbarium.* By [S. H. Vines and G. Claridge Bruce. (Oxford: Clarendon Press.) Price 15s.

SCOTLAND.

THE PREMIER HORTICULTURAL SOCIETIES.

THE results of the past year have been very satisfactory to the management of the Royal Caledonian Horticultural Society and the Scottish Horticultural Association. The former society shows an increase in the funds of about £48, and this follows on a smaller increase the previous year. The attendance at the shows has improved. The Scottish Horticultural Association has a still larger increase in the funds, largely due to the success of the Chrysanthemum Show, which resulted in a profit of about £83. This was carried to the revenue account of the association, with the result that the latter showed a gain of £76, which went to capital account. The funds of the Association now amount to £951 to credit of capital account. In addition there is a sum of £1,493 standing to the credit of the Horticultural Institution Fund.

ECONOMIC BOTANY IN EDINBURGH.

THE position regarding the section of economic botany in the Royal Scottish Museum, Edinburgh, has been under the consideration of the Scottish Horticultural Association, in view of a rumour that it was to be abolished. The secretary of the Association has been in correspondence with the director of the museum, and has received an assurance that no such change was intended, but that what had been discussed was "whether it was advisable to treat the economic botany collection as a reference or teaching collection, to which students and other interested persons might have access." At present a part of the collection is open to the general public, and the Association, while favourable to anything which would make the collection more useful, would oppose anything which would restrict the access to persons desiring to consult them on application. The subject came up at the annual meeting of the Royal Caledonian Horticultural Society, when it was agreed to appoint a committee of three to watch developments in connection with it.

EDINBURGH PUBLIC PARK EMPLOYEES.

THE employees of the Edinburgh public parks have petitioned for an increase of wages and the matter is receiving consideration from the authorities. A proposal has also been made that four dwellings should be provided at the Braid Hills, as the employees there have great difficulty in obtaining houses convenient to their work. The plans under consideration provide a living-room and four bedrooms.

BALMORAL GARDENERS' SOCIAL EVENING.

THE members of the staff of the Royal Gardens, Balmoral, held their annual social evening in the Parish Hall, Crathie, recently. Nearly eighty ladies and gentlemen were present.

PROPOSED ADDITIONAL ALLOTMENTS IN EDINBURGH.

THE Parks Committee of Edinburgh has under consideration a proposal for providing allotments at Alfred Place in the city. The area selected is about two acres.

THE PROPOSED WINTER GARDEN FOR EDINBURGH.

THE Edinburgh Field Naturalists' and Microscopical Society has decided to send a memorial to the Edinburgh Town Council, protesting against the proposal to erect a winter garden or any other building in the Princes Street Gardens.

NEW PARK AT DUMBARTON.

THE Rt. Hon. Lady Overton opened a new children's park at Dumbarton on the 24th ult. The park, which is the gift of Dr. J. Douglas C. White, of Overton, and Mr. Peter Denny, is nine acres in extent, and is situated in a populous part of the town. *Correspondent.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

CYANIDING TO DESTROY MEALY BUG.

IT is as easy to clear a vinery of Mealy Bug by cyaniding as it is to destroy Greenfly in a Peachhouse by vaporising with nicotine, and it is just as safe in the hands of a careful person as any other poisonous preparation. Why your correspondent, J. H. Y., states that a vinery in fruit cannot be cyanided I am at a loss to understand. I adopted this mode of destroying Mealy Bug when it was first introduced to the public, and have continued to use it ever since, and, after long experience, I have no hesitation in recommending anyone who is troubled with Mealy Bug in the vineries to commence cyaniding as soon as the Grapes begin to turn colour, and repeat the operation at weekly intervals for four or five weeks. This can be done without the slightest harm to either fruit or foliage, and will completely rid the vinery of bug. It is much easier to destroy the young bugs than those fully developed, and the dose required to kill the young insects will do no harm whatever to either the young fruit or foliage. A much stronger dose can be used when the leaves fall, but this is hardly required, as all eggs will have hatched out and the young bugs killed before that stage. This is a very much better plan than cyaniding in winter. I do not think that the gas will destroy the eggs. I can assure those who follow this course that they will not be troubled with a single bug in a bunch of Grapes when ripe. I may add that I have cyanided a Tomato house in the middle of winter for the destruction of White Fly without injuring a single leaf, and I know of no other preparation that has such deadly effects upon this pest. Of course, the doses are very much smaller for the destruction of White Fly than for bug or thrip, etc. It is important that the materials used are of guaranteed standard quality, for if precaution is taken and the correct cubic contents of the house ascertained to get the proper quantities, success is absolutely assured. All failures in cyaniding, I am convinced, could be traced either to inferior materials or to carelessness in performing the operation. *Jas. Fulton, Grims Dyke.*

—Mr. Blakey (p. 75) seems to infer that the reason why this fumigant is not more extensively employed for the destruction of Mealy Bug is that it has never yet been put on a scientific basis. But I am of the opinion that one of the reasons why cyaniding has not been more extensively employed is that there has been too much science introduced into the method of applying the gas, instead of making it what it is, one of the simplest methods. As I described in the issue for December 13, 1913, p. 427, no special appliance is necessary. Earthenware bowls with glazed inside surfaces, holding about two quarts each, should be procured and the required quantity of water placed in them. The proper quantity of sulphuric acid is next added (it is very important to remember that the water must never be added to the sulphuric acid). The quantity of cyanide for each bowl having been weighed and placed in pieces of paper, the operator takes these in his hand, drops the contents of a paper in each bowl, walks quickly outside and closes the door after him. In about three-quarters of an hour afterwards the house must be thrown open, and no one allowed to enter for at least one hour or more. This is simple enough for anyone to perform, and I have proved it to be as safe as it is simple. To bring the plants to a condition to render them safe from injury by the gas, discontinue damping and syringing three days before cyaniding, to make certain that all moisture is dried off the stages, etc. A little air may be admitted if the weather is favourable to ensure the atmosphere of the house and the foliage of the plants being thoroughly dry. The plants should not be afforded more root-waterings than are absolutely necessary to prevent flagging; the object being to reduce the amount of moisture in the foliage and render the leaves safe from injury. I am not sufficiently versed in natural history to know if there are two kinds of mealy bug, neither do I think it desirable to make more

intimate acquaintance than I have been obliged to do with this useless, troublesome, and expensive pest. Your correspondent states there are cases on record where the cyanide has floated on the acid without dissolving. This seems to me incredible unless very thick paper were used, as the cyanide is very heavy and sinks in the acid immediately. Tissue paper may be used, and this is soon destroyed by the acid. *J. H. G.*

WISLEY IN WINTER.—When a garden gives access as much pleasure in winter as in any other season of the year one may rest assured that it has been planted with rare judgment and is placed in a spot generally favourable to vegetation. Wisley, the garden of the Royal Horticultural Society, in Surrey, was very beautiful recently after a week of hard frost, no trace of which existed in any way, and the free planting of things that contribute warm, grateful colouring in winter made up pictures of beauty that would rejoice the true artist. Looking from the rock garden, Bamboos in infinite variety, *nigra*, *aurea*, *palmata*, *invicta glaucescens*, and many others, were waving in the west wind, and here and there breaking in on the view were Himalayan Rhododendrons and such Heaths as *Erica lusitanica* (codonodes), with plummy, soft green foliage, covered over from February until May with white flowers. Here and there were groups of *E. mediterranea hybrida*, the beautiful cross between the Mediterranean Heath and *E. carnea*. The collection of Heaths, a race of shrubs that it is a pleasure to find fast becoming popular, will repay close study, and on the bank where most of them are placed each kind is well represented, showing their value in the soft light of a winter day, from the characteristic shades of green and brown. *Daphne Blagayana* will soon scent the gardens with its ivory-white flower clusters, and when it succeeds in the way shown at Wisley none of its group gives greater pleasure: shelter from the afternoon sun, and close association of stones with the roots resulting in the most bountiful growth. *Shortia galacifolia* is a great success in the peaty soil and shade from shrubs, and the warm colouring of the leaves is a pleasant break. It is also to be seen in the Alpine house which contains a collection of Saxifrages and other plants, best seen with such shelter; *S. Burseriana* and others that bloom before winter is really over asking for protection if the fresh beauty of its flowers is to be enjoyed. In the collection of scented-leaved Pelargoniums one kind stands out for brilliancy of colouring—the old favourite, *Pretty Polly*. The flowers may be described as bright vermilion, and with the fragrant foliage make a plant of rare value in the winter months. It may be hoped that these long-discarded greenhouse plants will soon come into their own. On all sides the impress of good gardening is to be seen at Wisley, and a day spent there with Mr. Wright will long remain a pleasant memory. *E. T. Cook.*

HAMAMELIS (see p. 67).—Your correspondent, Mr. Wyndham Fitzherbert, is in error when he states that *H. mollis* "was not introduced into this country until 1898." We are indebted to Maries for the introduction of this beautiful species, when collecting on behalf of Messrs. J. Veitch and Sons, 1877-1879. If the flowers of Mr. Fitzherbert's *H. Zuccariniana* resemble *H. japonica* he has not the true plant, for they are distinct. The former are coloured primrose-yellow, the latter golden-yellow, almost as much difference as there is between the colour of an orange and a lemon. *A. O., Kew.*

CELERY DISEASE.—In several issues of the *Gardeners' Chronicle* last year correspondents wrote on the subject of the disease in Celery caused by *Septoria Petroselinii*. Some suggested over-manning and the use of certain kinds of animal manure as the possible cause of the complaint, and my experience during the past three years inclines me to agree with them. In the seasons 1911-12 I lost practically the whole crop of Celery through this disease, and in each case I followed the old practice of placing 9 inches to 1 foot of rotted cow-dung in the bottom of the trenches. Last year I only used a very light dressing of dung before planting, and before earthing up I applied a good dressing of kainit—

about loz. to the square yard. A second application of the potash manure was applied before the second earthing, and in each case the soil was thoroughly well watered. The result has far exceeded my expectations. I have not seen a trace of disease on any of the "heads," most of which weighed more than 3lb. after trimming. The variety I grow for a main crop is *Standard Bearer*. I may add that, although I sprayed three times last year with the Bordeaux mixture, I did the same during the previous seasons. *H. F. Zobel, Castle Hill Gardens, Rotherfield.*

WINTER-BLOOMING ROSES (see pp. 61, 75).—Here in Dunstable, which is 460 feet above sea level, and in a garden with a south-east aspect, I gathered blooms of the following varieties of Roses on Christmas morning:—*Souvenir de Pierre Notting*, *White Maman Cochet*, *Richmond*, *Marquise de Salisbury*, *Laurette Messimy*, *S. M. Rodocanachi*, *Fran Karl Druschki*, *Mrs. R. G. Sharman Crawford*, *Hugh Dickson*, *Souvenir de S. A. Prince*, *Perle d'Or*, *Souvenir de A. Stella Gray*, *Mme. A. Carrière*, *Caroline Testout* and *Irish Elegance*. This shows that Roses can grow as well in the more northern parts as in the south. *Arthur Munt, The Priory, Dunstable, Beds.*

PRIMULA OBOCONICA AND SKIN IRRITATION.—My experiences of *Primula oboconica* have been nearly the same as those described by your correspondents. Some few years ago I could handle the plants raised from seed with impunity. The last batch that I had to deal with resulted in the well-known symptoms of poisoning. I do not know whence these plants came, but it was evident that they were of a different strain from those I had previously handled, which has made me wonder if some strains of *Primula oboconica* are not poisonous, or are at least less virulent than others. I also know of another instance where the particular strain which I first grew did no harm, whilst another did. This evidence is not sufficient to be conclusive, as the condition of the blood must be taken into consideration. It would be interesting to know if others have had a similar experience to mine. *Modern Journeyman.*

ANTS AND SEEDS (see page 75).—I have been troubled with the amber-coloured ants described by Mr. Cook, and the only method I know of preventing them from getting into the seed pans is to smear some soft soap all around the holes at the bottom, and then stand the receptacles on bricks or inverted pans. *H. Hills.*

PRESERVATION OF WILD FLOWERS (see page 76).—Many plant lovers will be gratified to see this subject raised by your correspondent. No doubt the kind of vandalism he describes is on the increase, and is largely the result of the inclusion of nature study in the school curriculum. Great devastation may also be observed at village flower shows, where prizes are usually awarded to children for bunches of wild flowers. In this case, as in the last, the schedule maker must have the blame, surely not the child. Perhaps after all the most disturbing feature in the history of the extinction of native plants is the fact that the destruction is both studied and calculated, anyone may buy a flora and arm himself with a vasculum, and it is possible that destruction may proceed according to their luck or enlightenment. There are many natural history and "Botanical Exchange Societies" of the local and "private" nature, and one would like to hear more of their enactments. At Kew the men are professional gardeners, and they are accompanied on their excursions by practised and respected botanists. *T. Sargeant.*

DAHLIA MARIANNE.—With reference to the recent correspondence about this Dahlia and the query by *A. C.* in your issue of January 10 (see p. 29) may I ask *A. C.* if he can give me any information about Barlow's Bedder, and from whom it may be procured? I should also like to know when this variety was raised. Gluchauf—not Gluchaut, as spelt by *A. C.*—is absolutely distinct from *Marianne*, but the point that many growers who are interested in Dahlias wish to arrive at is this—what is the origin of Barlow's Bedder? Can any grower tell us? There can be no question about the value of *Marianne*, and it seems extraordinary

that its merits were not recognised at the Duffryn trials. Was it considered synonymous with Barlow's Bedder? If so the question of name will require some consideration when we ascertain all the facts. *Curious.*

FAILURE OF CHRYSANTHEMUMS (see pp. 29, 61).—After carefully reading Mr. Kearns's note (Vol. LV., p. 61) I take it that he means half a load of cow-dung was used as manure water on 18,000 plants; if so, he certainly did not over-feed them. In his first letter he states that the plants were fed regularly with manure-water. I quite understood that fire-heat was not used until November, but he says he applied a temperature of 65° to 70°. I venture to suggest that Mr. Kearns will have no more trouble with his Chrysanthemums if he uses sterilised soil and does not raise the temperature too high when the plants are forming their buds. I agree with him that the deformed flowers were probably caused by a check, no doubt due to eelworms. *C. Robinson, St. Hilary Gardens, Cowbridge.*

A BULB COMPETITION.—May we appeal to your readers on behalf of a bulb competition which has been started this year in connection with many of the North Lambeth schools and several mothers' meetings, clubs and guilds? In all 1,740 bulbs have been sold to the competitors at cost price, and now we are faced with the difficulty of raising money for the prizes. It is very difficult to do this locally as the neighbourhood is a very poor one, and for this reason we wondered whether possibly any of your readers would be willing to help us. We may add that the children and other competitors are taking the very greatest interest in their bulbs. *O. Butler, M. V. Ewbank, hon. secs., Lady Margaret Hall Settlement, 151, Kennington Road, Lambeth, S.E.*

MR. J. C. MCPHERSON.—As Lord and Lady Londesborough have decided not to reside at Londesborough Park in this county (Yorkshire), the large kitchen gardens and extensive, well-arranged ranges of glasshouses have been let as a business concern. This entails the resignation of Mr. McPherson, the well-known gardener. He has served the family over forty years, first in Hampshire, then in Yorkshire. His numerous friends and confrères will be glad to know that his lordship has, with his usual kindness, granted Mr. McPherson a pension for the remainder of his life. His frank, brusque presence and his exhibits will be much missed at York and other exhibitions in the North. With his good wife, he has decided to reside in the outer London area, near to some of their family settled there. The whole of the glasshouses at Londesborough were erected under Mr. McPherson's superintendence some years ago. For producing large supplies of choice garden produce they would be hard to equal, and impossible to excel. *Yorkshire Gardener.*

JOURNEYMAN GARDENERS AND LOW WAGES.—In reply to Mr. A. Norris I should like to say that if there are any head gardeners who are worse off than journeymen they had better change their occupation and seek employment as road-men! Then, it is not quite correct to state that journeymen receive their training free of charge; many pay a premium, and those who do not pay a premium frequently work for 6s. a week. Surely, Mr. Norris would not suggest that 6s. represents fair payment for a week's work? I wish head gardeners would consider it part of their duty to use their influence with the employer to improve the wages paid to the garden staff. It was with them, and not with the employers, that most of the blame rests. *J. J., Cirencester.*

—I have read with interest the many letters on young gardeners' wages. What do they think a head gardener should receive? I applied to a nobleman one day last week for the situation of head gardener, and received a reply saying, "Apply to my agents." Then he goes on to say the wages given was 18s., cottage, and no more, and very deeply underlined *no more*. What do our young men think of this? *Nil Desperandum.*

—I quite agree that a higher wage than the present average would be very acceptable, but probably thinking about it is as far as we shall

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JANUARY 7.—*Present:* Mr. E. A. Bowles, M.A. (in the chair), Messrs. A. Worsley, J. Fraser, J. W. Odell, W. Hales, W. C. Worsdell, and F. J. Chittenden (hon. sec.).

get at present. Young gardeners do not think of the head gardener at all. I think a journeyman receiving 18s. week, bothy, milk, and vegetables, is better off than a good many head gardeners. There are plenty of heads who have worked in some of the best gardens in the country, and have to leave through no fault of their own, who are forced to take the first situation offered them. They may be married, with a family of children, yet the majority does not receive more than 25s. week and house. The journeyman need pay only 7s. or 8s. week for his board, and a steady lad can save 10s. week. The head gardener has to provide all household goods himself, and has several mouths to feed. Who is the better off? Ask the head gardener himself, for he can speak from experience. The article by H., on page 75, puts the question in a nutshell, the fact being that gardeners are not strong enough in numbers to demand more wages. Now that other trades offer good prospects for young men, journeymen will soon again be in demand. *Journeyman.*

—It is needless to waste words on journeymen who are contented with what is at the best a very meagre existence. Everyone knows that under present conditions it is almost impossible for the average journeyman to take as much interest in his work as he would if he had the remuneration he deserves. C. H. states in the issue for January 24 that he has been in his present place for six years, at the wage of 23s. 6d., 8s. of which he pays for rent. I am surprised that a man with such qualifications as he seems to possess, and holding such a responsible position, is content to remain in a place for so long at such a very low wage. While men in charge are content to work for such low wages it is to be wondered at that the young men under them receive such a paltry reward for their labours? *R. J. D.*

—I notice that nearly all the letters published on this subject are more or less flavoured with the complaint that "conditions" are all wrong, and in need of various suggested improvements. This they undoubtedly are, and always will be from some point of view or other. My advice to the young gardener is to adapt himself to circumstances, and get all he can out of conditions as they are, and not spend his time in thinking about what they ought to be. The gardening profession is probably as good to-day as it ever was. Although we find unfavourable exceptions, there is still room and pay for the right sort of man. No doubt there are thousands of young men capable of filling good positions, but they would do well to remember that there is a vast difference between *filling* a situation and *obtaining* one. So many young men seem to think the one thing necessary for success is a thorough knowledge of horticulture, and they fill their heads with a superficial knowledge of the various subjects. But even a thorough theoretical knowledge alone is not sufficient. It is the application of knowledge that tells. My advice to young gardeners is learn how to do a job well, and by tact and politeness, as well as by thorough competence, study the art of getting the job to do. *C. H. Middleton.*

—The question of journeymen, low wages, and bothies is so complicated that no definite conclusion can be drawn. There are not two gardens in the country that are worked on the same principle. If journeymen apply for situations at 15s. or under per week, then it is entirely their own fault that they work at such low wages. They are more to be blamed than pitied, because if they did not apply for such places the head gardener would be obliged to offer more wages. On the other hand, if the head employs journeymen (not improvers) at 15s. or under, per week, he deserves all the trouble that arises from the misdeeds of unskilled men. But in many cases a gardener advertises for a journeyman "with good wages," and engages him on the recommendation of another head, who gives a glowing account of his capability just to get rid of him. Consequently, he ruins a certain amount of what would have been good produce, and the employer tells the gardener that they will not pay the wages if they cannot have better results. Who is to blame? *W. Robinson, Locks Park Gardens, Derby*

Publication of Proceedings of Scientific Committee.—Mr. WORSDELL raised the matter of the publication of the minutes of the Scientific Committee in a collected form, so that they could be more readily consulted. Many matters of great interest and value are brought before the Committee from time to time, and from the fact that the minutes were published along with so much other matter in the *Journal*, Mr. WORSDELL feared that they were frequently lost sight of. Mr. CHITTENDEN said that a complete index of the contents of the last series of the Society's *Journal* was being made, and that would at least in part remove the difficulty that certainly existed when it became necessary to consult so large a bulk as the long series of the Society's *Journal* made.

Hybrid Pelargoniums.—Mr. J. FRASER continued his remarks upon the origin of the scented-leaved Pelargoniums, dealing with plants of several sections, including P. tetragonum, P. echinatum and others. He illustrated his remarks by reference to specimens from the Wisley collection, and they will be included in full in the report on these plants upon which he is engaged.

Fertility of soil under ricks, etc.—Mr. DOWNER drew attention to the greater degree of fertility shown by soil which has been covered by a rick, and also by the spots on which shocks of Wheat have stood in wet seasons. The Committee considered that the fact that rain washed out a considerable amount of the earth salts which plants contained, especially after they were dead, accounted in part for this extra fertility, and in some cases the washing of the soil to which uncovered parts are exposed may account in part for the lowered fertility of these, while the surfaces covered with ricks, etc., while protected from drying, are also protected from the serious washing which occurs when heavy rains fall. A great amount of refuse finds its way into the soil when ricks are removed and the earth turned up, and this also may have the effect of increasing its fertility.

Report of the Council for 1913.

THE one hundred and tenth annual general meeting of the Fellows of the Royal Horticultural Society will be held on Tuesday next in the Society's hall at 3 p.m. We make the following extracts from the Report of the Council for the year 1913:—

SIR TREVOR LAWRENCE.

The year 1913 began with the shadow, as it were, of gloom cast over it by the resignation of our president, and it has ended in the great sorrow of his death, which took place on December 22, within a few days of his eighty-second birthday.

Seldom, if indeed ever, has a society been served by its president so long and so ably as the Royal Horticultural Society has been served by Sir Trevor Lawrence. Elected to the president's seat in the very difficult days of the society's history in 1885, Sir Trevor has held the reins ever since, up to the spring of 1913, and has guided the society with steadily increasing progress, out of the quagmire of difficulties in which he found it, into its present state of prosperity. Whilst thus deeply appreciating his services, most of the members of the Council have been in too close a touch with the president as contemporaries to be able to realise how great and comprehensive those services have been, and it is only the rising generation of horticulturists who in the future investigate the history of the society who will behold in clear light the vast influence and benefit to horticulture of the long and uninterrupted presidency of Sir Trevor Lawrence.

NEW PRESIDENT.

To fill the void left by Sir Trevor's resignation was the difficult task which the Council had to perform in the spring of 1913, and fortunate indeed do they consider themselves in having prevailed on Field-Marshal Lord Grenfell to accept the office.

NEW COMMITTEES.

The work of the society has increased to such an extent that, in addition to the Parliamentary Committee formed towards the end of 1912, the Council have felt it necessary to appoint two new committees—namely, (1) the Diploma Committee, and (2) the Research Committee.

The Diploma Committee is entrusted with the organisation of the examinations for the National Diploma

in Horticulture, which has been established by the society with the approval and co-operation of the Board of Agriculture. The first examination will take place in June, 1914.

The Research Committee was appointed to examine the large number of suggestions for the extension of the society's work which are constantly being made, and to advise the Council on any reasonable ways in which the society might assist and advance the more scientific aspects of horticulture. A very important report has been drawn up by this committee, and, if it is found practicable to carry out its recommendations, there is every prospect of great developments taking place in the society's work in the immediate future. This report, which was only laid before the Council on December 9, will require much careful thought, for the scheme is of such magnitude and complexity, and touches so many different interests, that its mere consideration must of necessity take a considerable time before even an outline of it can be announced, so that for the present no more can be said beyond recording the fact. A new committee has been formed to advise on the details of the report.

ORCHID REGISTER.

It has been decided to establish a register of Orchids; not only, but specially, for the sake of recording the parentage of hybrids and of securing their correct and permanent nomenclature. Mr. E. A. Rolfe has been appointed Official Recorder. The register will be carried back as far as possible by careful examination of old documents, and the Council hope that Orchid growers having private records of genera, species, and hybrids, will assist the compilation by lending them to the society to be copied for this purpose. The immediately pressing work of the Recorder, however, will be the entering up on the register of every new Orchid shown, with particulars of its parentage, raiser, owner, etc., as far as is known.

PARLIAMENTARY COMMITTEE.

The Parliamentary Committee appointed in 1912 have had the following subjects under their consideration—namely, (a) the proposed Government Seed Testing Station, (b) the Subsidies given by Government to Co-operative Organisations, which are alleged to undersell Retail Traders, (c) Railway Rates and Conditions, and (d) the Sale of Wet Coke by weight. On the two former points the Council have addressed memoranda to the Board of Agriculture; and on the question of Coke, Sir Albert Rolfe has kindly undertaken to bring the matter before the Board of Trade on the Council's behalf.

WISLEY GARDENS.

The planting of the rock garden is still proceeding, but it is necessarily a matter of time before so large an area can be well clothed with plants, especially considering the slow growing nature and rarity of some.

The Alpine house is proving a valuable addition to the rock garden, and many Fellows visit it during the earlier months of the year.

The erection of an Orchard house is at this moment proceeding. The house is being constructed with very great care, in order that exact and delicate experimental and research work concerning fruit trees may be properly undertaken within it.

A Water Lily tank, fitted with hot water pipes, is also under construction for the accommodation of Blue Water Lilies kindly presented by Mr. Leopold de Rothschild.

TRIAL OF TULIPS.

The Council issued an invitation to growers of Tulips to send bulbs to Wisley, that their correct nomenclature might be recorded and a list of synonyms made. Over 4,000 parcels of bulbs have been received and planted, and a committee of Dutch and English growers has been appointed for the work.

SPRAYING AND SUNDRIES TRIALS.

A useful trial of spraying apparatus was conducted at Wisley, in April, when awards were made.

The new system of trial of horticultural sundries, introduced this year as a means of determining the awards which such subjects as garden rollers, mowing machines, tools, insecticides, etc., should receive, has been satisfactory, and will be continued.

MR. SMITH'S RESIGNATION.

Mr. Arthur C. Smith, the assistant superintendent, resigned after six years of useful service. Mr. Blakey, who had been chief foreman, was appointed his successor, and Mr. Braddy has been raised to Mr. Blakey's position with special charge of the fruit department.

DAHLIA TRIAL AT CARDIFF.

Mr. Reginald Cory most kindly placed his garden at Duffryn, near Cardiff, at the Society's disposal for a trial of Dahlias decorative to a garden. The Council invited the co-operation of the National Dahlia Society in this trial, which co-operation was most cordially given, and the delegates from the two Societies inspected between seven and eight thousand plants, representing nearly a thousand distinct varieties, out of which 291 were selected as being desirable for garden ornamentation.

CHELSEA SHOW.

The past year has seen the first of the new series of spring shows at the Royal Hospital Gardens, Chelsea; the result in every way justified the action of the Council in transferring the Show from the Temple Gardens to Chelsea, and it is confidently hoped that Fellows will co-operate with the Council in encouraging the attendance of visitors, so that the Show may be a success in the future.

HOLLAND HOUSE SHOW.

For the second time only, in a period of ten years, the Holland House Show was favoured with beautiful weather, and was pronounced to be the most pleasant Summer Show the Society had held.

SHOWS OPEN ONE HOUR LATER.

A communication having been received from Fellows in the City, asking that the shows at Vincent Square might remain open one hour longer, the Council, after consulting the most frequent exhibitors, decided to adopt the suggestion. Fellows will accordingly find the later hours set forth on their annual tickets.

CUPS.

A standard pattern (in four sizes) for the R.H.S. Cups was adopted in 1913, and was found to be very popular with exhibitors. A cup of a different pattern has been chosen for 1914, an illustration of which will be found in the "Book of Arrangements." Mr. E. H. Davidson has again very kindly presented a cup for the best Cattleya at the Chelsea Show, and Mr. Cory a cup for the most meritorious Seedling Dahlia in the trials, which he is kind enough to allow the Society to continue for a second year at Duffryn, Cardiff.

NEW CHALLENGE CUPS.

The Council have to thank Lady Algermon Gordon-Lennox for a large silver challenge cup presented for award at the Holland House Show for hardy flowers. They have also to thank Mr. Reginald Cory, not only for the great kindness shown in placing his garden at their service for the Dahlia trial, but also for his hospitality to their delegates and for his gift of a seventy-five guinea challenge cup for a group of Dahlias for garden decoration at the Society's Show in September.

The Council have further accepted from Messrs. Clay a £75 silver-gilt challenge cup for "A Rose, not in commerce, possessing the true old Rose scent." This cup will be offered for the first time at the 1914 Holland House Show, and Messrs. Clay will furnish the Society with a smaller permanent cup to present to the winner when the challenge cup is returned.

The Council have established a silver challenge cup, value thirty guineas, to be awarded at the R.H.S. Daffodil Show. As a well-deserved compliment to by far the greatest raiser of hybrid seedlings of modern times, it is to be called the "Engleheart Cup." In 1914 it is offered at the R.H.S. Daffodil Show, on April 15 and 16, for the "Twelve Best Seedlings, distinct, which have not yet been put into commerce." The Council have accepted the trusteeship of the Barr Memorial Cup, founded in memory of the late Mr. Peter Barr, and its award will be made on the recommendation of the Narcissus Committee.

PRITZEL'S INDEX ICONUM BOTANICARUM.

The Council have also accepted the trusteeship of the sum of £250, voted by the directors of the International Horticultural Exhibition, 1912, for the revision of Pritzel's Index Iconum Botanicarum. The Council have also received a kind gift of £100 from the Veitch Memorial trustees and have themselves agreed to supplement this, and all other gifts which may be received for the purpose, by £250 annually until the fund is sufficient to pay for the revision proposed.

SAXIFRAGE CONFERENCE, 1915.

It has been decided to hold a conference on Saxifrages in 1915. Mr. Milne-Redhead has generously presented the Society with his MS. list containing nearly 1,000 entries of species, varieties, and synonyms. Further co-operation in this direction will be most gratefully accepted.

DAFFODIL YEAR BOOK, 1913.

A Daffodil year book was issued by the Society in August and found a ready sale, the copies available being rapidly bought up. The Council are greatly indebted to the Rev. J. Jacob for his assistance.

LAWRENCE MEDAL FOR 1913.

The Lawrence Medal for 1913 has been awarded to Mr. G. F. Moore, of Bourton-on-the-Water, for his exhibit of Orchids, on January 7, 1913.

DEPUTATIONS.

During the year deputations from the Society have visited the shows held at Truro, Bristol, Cardiff, Birmingham, Kendal and Maidstone, reports of which will be found in the *Journal*.

An invitation has been received from the Carlisle and Cumberland Horticultural Association, and has been accepted, for a deputation in August next.

GRAPES TO GLASGOW.

An exhibit of Wisley-grown Grapes was sent to the Glasgow and West of Scotland Horticultural Society's Show in September, where the fruit excited the greatest admiration and was awarded a special Gold Medal.

DOUGLAS' JOURNAL.

The task of editing the journal kept by Douglas when he was travelling in America nearly 100 years ago as the Society's collector has taken far longer than could have been anticipated, the writing being in places very difficult to decipher, but it is hoped to publish it early in the ensuing summer.

PLANT COLLECTOR.

The Council have arranged to share part of the expenses and of the "finds" of a collector, who is starting for the high lands between China and Tibet.

NEW HONORARY FELLOWS.

The Council felt much pleasure in appointing as Honorary Fellows of the Society Mr. H. W. Admitt and Mr. W. W. Naughton, in recognition of the remarkable ability and success with which for a long number of years they have acted as co-secretaries of the Shrewsbury Show.

OBITUARY.

It is with regret that the Council have to record the death of the following Fellows: The Duchess of Northumberland, the Earl of Pembroke, the

Countess Cowper, the Dowager Countess of Kenmare, Viscount Tredegar, Lady Darling, Lady Dorothy Neville, Colonel Archer Houlton, Alfred Austin, Esq., Martin J. Sutton, Esq., Alfred Tate, Esq., W. T. Hindmarsh, Esq., A. H. Kingsmill, Esq., J. S. Moss, Esq., Martin J. Sutton, Esq., Alfred Tate, Esq., W. T. Cily, and Messrs. Amos Perry, Robert Sydenham, Edward Webb, and A. H. Kent.

ANNUAL PROGRESS.

The following table shows the Society's progress in regard to numerical strength during the past year:—

LOSS BY DEATH IN 1913.			
		£	s. d.
Hon. Fellows	4	0	0 0
Lifa "	9	0	0 0
4 Guineas	2	8	8 0
2 "	79	165	18 0
1 "	90	94	10 0
Associates	2	1	1 0
	186	£269	17 0

LOSS BY RESIGNATION, &c.

		£	s. d.
4 Guineas	2	8	8 0
2 "	214	449	8 0
1 "	451	473	11 0
Associates	24	12	12 0
Affiliated Societies	13	13	13 0
	704	£957	12 0
Total loss	890	£1,227	9 0

FELLOWS ELECTED IN 1913.

		£	s. d.
Hon. Fellows	5	0	0 0
4 Guineas	3	12	12 0
2 "	750	1,575	0 0
1 "	789	828	9 0
Associates	74	38	17 0
Affiliated Societies	35	36	15 0
Communitations	17		
= £411 12s. 0d.			

Deduct loss	1,673	£2,491	13 0
		1,227	9 0
Net increase in income		£1,264	4 0
New Fellows, &c.		1,673	
Deaths and Resignations		890	
Numerical increase		783	
Total on December 31, 1912		13,355	
Total on December 31, 1913		14,168	

COMMITTEES, &c.

The Society owes a constantly recurring debt to the members of the standing and special committees, chairmen, judges, writers of papers for the *Journal*, compilers of extracts, reviewers, lecturers, and the several examiners, who, during the past twelve months, have done so much to contribute to the Society's usefulness, and to help to maintain its high standing among the practical and scientific institutions of the world. The Council also acknowledge their obligations to the Press for their invaluable assistance in reporting upon, and calling attention to, the work of the Society.

By Order of the Council,

W. WILKS, Secretary.

Royal Horticultural Society,
Vincent Square, Westminster, S.W.
January 1, 1914.

NATIONAL CHRYSANTHEMUM.

ANNUAL MEETING.

FEBRUARY 2.—The annual meeting of the members of the National Chrysanthemum Society took place on Monday last at Carr's Restaurant, Strand. The president, Sir Albert Rollit, D.C.L., LL.D., presided.

After the secretary had read the notice convening the meeting, and the minutes of the last annual general meeting, the Executive Committee's report for 1913 and the balance-sheet were read. The following are extracts from the report:—

ANNUAL REPORT.

The Great Autumn Exhibition held in November at the Crystal Palace was undoubtedly a worthy successor to the many shows which have preceded it in past years, and worthily upheld the general reputation of this society. There was a considerable increase in the exhibits of single Chrysanthemums, but, at the same time, it is satisfactory to note that there was no diminution in the number of large exhibition blooms staged. The competition was keen in the majority of the classes, although the actual number of entries was a few less than in 1912. During the October show 10,060 people visited the Crystal Palace, and during the November show the number of visitors was 20,206.

The show at Essex Hall on December 10 was held under exceptional circumstances. The exceedingly mild weather which prevailed during the whole of October and November led to the fear that it might be difficult to get a good show so late as December 10. Fortunately these fears were not realised, and after taking into consideration the nature of the season, it was generally admitted that the exhibits which were

staged, although not actually numerous, were of very fine quality. The market Chrysanthemums staged on this occasion were of outstanding merit.

A suggestion was made during the year that a special certificate should be prepared, and a copy of same awarded to the winners of the trophy in the affiliated societies' class each year in order that such society might retain a permanent record of its success. The suggestion met with the unanimous support of the committee, and the certificates are now being prepared. It has been further decided that affiliated societies who were successful in winning the trophy in past years may receive copies of the certificate upon making application to the secretary.

The annual conference was held at Essex Hall, on December 10, when the following papers were read, viz.: "The Evolution and Development of Outdoor Chrysanthemums," by Mr. Norman Davis, and "Chrysanthemums for Outdoor Garden Decoration," by Mr. T. Bevan, the latter paper being illustrated by limelight views. The attendance was again very satisfactory, over 110 members being present. A full report of the proceedings will appear in the 1913 *Transactions*.

The new volume of *Transactions* for the year 1913 is now in hand and will be published during the spring. A special supplement of photographs in natural colours will be included in this issue.

New Varieties.—Nine meetings of the Floral Committee were held during the year, when 177 new varieties were considered as compared with 249 during the previous year. The decrease in numbers was no doubt due to the fact that in 1913 a registration fee of 1s. was charged on each variety staged. The committee are of opinion, however, that the introduction of the new regulation had no detrimental effect on the general work of the committee, but rather achieved its object in keeping away varieties which only served to waste time. The following awards were made, viz.: 30 First-Class Certificates, 19 Commendations, 2 Market Certificates and 4 Market Commendations.

The usual table is set forth below showing to which sections First-Class Certificates have been awarded during the past five years:—

	1909.	1910.	1911.	1912.	1913.
Japanese	8	19	8	27	15
Incurved Japanese	—	—	—	2	2
Incurved	3	2	2	3	—
Single	7	12	21	16	13
Decorative	8	21	7	—	—
Total	26	54	38	48	30

The new classification which was introduced in 1912 is proving its value in many ways, and it is hoped that members, who have not already done so, will make themselves acquainted with the new rules bearing on this matter.

The new regulations with regard to the granting of special Market Certificates were enforced throughout the 1913 season. Ten varieties were submitted under these special regulations, and of these two were awarded Market Certificates and four were Commended as market varieties. During 1913 varieties which were staged for these special awards were judged on points as set forth in the last schedule.

During 1913 special prizes were offered for seedling plants of Anemone, Pompona and Anemone-Pompons. The committee regret to report that the Floral Committee was unable to make any award in connection with this offer of special prizes.

It has been decided to offer during 1914 a special prize of £2 2s. for the best Anemone-centred single, subject to the following conditions, viz.:—

1. That the variety must not have been placed before the Floral Committee on a previous occasion.
2. That a plant must be shown of each variety staged.
3. That the variety must obtain a First-Class Certificate in order to be eligible for the prize.

At the meeting held on December 10 the committee unanimously decided to adopt the following definition of a spray, viz.: "A spray is the last flowering growth consisting of one stem with a central flower or bud and with its surrounding flowers or buds." The Executive Committee subsequently adopted this definition as part of the society's general show regulations, and they recommend that it should be adopted by all affiliated societies.

Mr. T. Bevan, the chairman of the Executive Committee, attended the Quinquennial Exhibition at Ghent as an official delegate from this society. Mr. C. Harman Payne acted as a member of the jury, and other members were also present at this exhibition.

At the end of October an International Chrysanthemum Show was held at Ghent, when the French Chrysanthemum Society joined forces with the Belgian authorities. Exhibits were taken over from England by Mr. E. G. Mocatta (gr. Mr. Thomas Stevenson) and Messrs. W. Wells and Co., Ltd. Your committee have special satisfaction in reporting that Mr. Mocatta was awarded 1st prize in a class for 100 Japanese varieties, and also in a class for singles; and that Messrs. W. Wells and Co., Ltd., received a Gold Medal for their trade exhibit. In connection with this show, Mr. T. Bevan and Mr. C. Harman Payne acted as members of the International Jury on the special nomination of the Exhibitions Department of the Board of Trade. A report of this exhibition by Mr. C. Harman Payne will appear in the forthcoming volume of the society's *Transactions*.

The committee have pleasure in once again being able to report that the financial position of the society is good. The whole of the liabilities were paid before the close of the year, and the surplus of assets over liabilities at December 31 last amounted to £126. The audited accounts for the past year are appended to this report.

The exhibitions for 1914 have been fixed as follows: October 7 and 8, at the Crystal Palace; November 4, 5 and 6, at the Crystal Palace; and December 9, at Essex Hall.

The Conference for 1914 will be held at Essex Hall on December 9, in conjunction with the late exhibition and meeting of the Floral Committee fixed for the same date. The subject of "Single Chrysanthemums"

will be dealt with, and it is hoped that papers will be delivered under the following sub-headings, viz:—

(1) The Culture of Singles; (2) The Best Singles of to-day; and (3) Suggestions to future raisers of Singles.

In accordance with Rule 7, the following nominations have been made for elections as honorary fellows and corresponding members:—

As Honorary Fellows: Messrs. D. Ingamells, member of the Executive and Floral Committees; G. Prickett, member of the Executive and Floral Committees; and Firmin de Smet, Ghent.

As Corresponding Member: Ch. Pynaert, Ghent.

Sir ALBERT ROLLIT moved the adoption of the report and balance-sheet. He considered that the report recorded great improvements in all respects and indicated an advance in the society which was doing good work. As to finances, there was a balance of £126 surplus over liabilities. The number of Fellows had increased, and the subscriptions had materially added to the revenue. The exhibitions, he considered, had been well worthy of the society's renown. He could remember those at the Royal Aquarium, and was one of those who did not at first view with favour the Crystal Palace as a place in which to hold the shows, but he had long since been of the opinion that it was an excellent site. No society had been more loyal to the Palace than the N.C.S., and the members of it might feel that they had some share in bringing about the preservation of the great and historic building for the use of the public. After a few words relating to the affiliated societies and the good work they did in spreading abroad a love for flowers, Sir ALBERT dealt with the conferences held by the society. These fostered research and excited interest among the members, and had a decided educational value, and this was all the more important as the knowledge thus gained was widely distributed through the proceedings of these meetings being recorded in the society's publications. The society's relations abroad were of the most cordial character, and it had its part in international work. At Ghent last year many members of the society had taken part, either as jurors or exhibitors, and he would specially mention Messrs. Bevan, Wells, Stevenson, and Harman Payne in this connection. As President, he was proud of the honour of holding that position, and would always do his best to maintain the high position the society held.

The motion was seconded by Mr. T. BEVAN and carried unanimously.

A vote of thanks was proposed to the auditors.

The election of officers then followed, with the following result:—President, Sir Albert Rollit; treasurer, Mr. John Green; chairman, Mr. Thos. Bevan; vice-chairman, Mr. E. F. Hawes; foreign secretary, Mr. Harman Payne; general secretary, Mr. R. A. Witty. The auditors appointed for 1914 are Messrs. E. W. Oakley and H. C. Bridges.

The chairman spoke of the efficient services rendered by the secretary, Mr. Witty, who had helped him greatly during the year by his business-like methods.

One-third of the Executive Committee retiring by rotation an election followed to fill the vacancies. The result was as follows:—Messrs. R. Ballantine, Mills, W. Cassidy, P. A. Cragg, W. O. Hiehle, C. H. Curtis, D. B. Crane, A. J. Foster, R. J. Frogbrook, W. Newton, Thomas Smith, G. Prickett, and J. Tyler.

LINNEAN.

JANUARY 15.—A meeting of the Linnean Society took place on the 15th ult., Prof. E. B. POULTON, F.R.S., President, in the chair.

Mrs. HENSHAW gave an account of the journey into the interior of Vancouver Island, made by Mr. Henshaw and herself, illustrated with a series of photographs of the scenery and the more striking plants.

Mr. G. CLARIDGE DRUCE, M.A., F.L.S., read a paper on a Marsh Orchis, for which he proposed the name *Orchis praetermissa* (a Latin description being given), and contrasted it with the true flesh-coloured *O. incarnata* of Linnaeus, as described by C. B. Clarke in *Journ. Linn. Soc.* xix. (1881), 206, showing how it differed in the shape of the flowers and in other characters from that plant. *O. praetermissa* is the crimson-flowered plant which has a wide distribution through South and Central England. A beautiful painting of it has been executed by Miss

Trower from a seedling raised by Mr. B. Savile Ogle, who had collected the parent plant before 1903 on the borders of Berks and Hants. The seedlings obtained from it resembled each other and the parent in all the stages of their growth. The parent was figured as *incarnata* in the *Report of the Ashmolean Natural History Society of Oxfordshire* for 1904.

Mr. Druce himself collected the plants in Nottinghamshire in 1878, in Oxfordshire in 1882, in Berks and in Norfolk.

Mr. P. M. HALL and Mr. R. B. ULLMAN, who have studied the Orchids around Winchester with great assiduity, came independently to the opinion that it was a distinct species (a note on it appears in the *Report of the Winchester College Nat. Hist. Society*) and found it abundantly in Hampshire. A photograph by Mr. Bedford showed that it occurred near Lewes in Sussex.

Reference was made to another and as yet undescribed form from the Coast Sands of Britain, as well as to a northern plant, but these await further investigation.

Mr. DRUCE stated that he has as yet been unable to find any description or figure of his plant in British or European works.

Mr. DRUCE then read a note on Article 45 of the Vienna Rules, contending that the change of *Limonium* to *Statice* was either unnecessary, or, if persisted in, might open the door to other changes in nomenclature. His point was that the Linnean genus *Statice* was made up of the two Tournefortian genera, *Statice* and *Limonium*; that in his *Genera Plantarum* Linnaeus alludes to and gives descriptions of both these under *Statice*, placing first the Sea Thrifts under *Statice*. Miller and Hill correctly chose *Limonium* to represent the Sea Lavenders, leaving *Statice*, Linn., to denote the Sea Thrifts. A list of genera, in which the retained name represents a minority of the plants in the genus, had been drawn up by him; but, as the author stated, many of these were correct on the same evidence as that accorded by the example given.

He further suggested that, in order to clear up some apparent ambiguity in Art. 45, the words "has no retrospective action" might be added to it.

Mr. DRUCE's third paper gave a list of the names of genera defined by Miller, Abridgement of the *Gardener's Dictionary* of 1754, which (as wholly Tournefortian) were not included in the *Index Kewensis*: thus Miller may have to be cited for many of those genera, instead of later authors such as Adanson, Moench, Gilibert, etc.

To this was appended a note concerning John Hill's *British Herbal* of 1756, with its accidental binomials, which in some cases preceded those cited from Garsault's *Materia Medica* of 1768, which have been inserted in the fourth supplement to the *Index Kewensis*.

The next general meeting will be held on Thursday, February 5, 1914, at 8 p.m. Exhibitions and papers: (1) Mr. W. R. B. Oliver, "The Vegetation of White Island, New Zealand." (Communicated by Dr. L. Cockayne, F.R.S.). (2) Mr. W. C. Worsdell: Lantern-slides of Cape Plants, mostly in their native habitats. (3) Mr. Walter E. Collinge: On the range of Variation of the Oral Appendages in some Terrestrial Isopoda.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JANUARY 15.—At the meeting held on the 15th ult., the following members of the committee were present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Bamber, J. Cypher, J. Evans, A. Hanmer, J. Howes, J. Lupton, D. McLeod, W. J. Morgan, C. Parker, W. Shackleton, Wm. Thompson, H. Thorp, Z. A. Ward, G. Weatherby, and H. Arthur (secretary).

R. ASHWORTH, Esq., Newchurch (gr. Mr. Gilden), was awarded a Large Silver Medal for a group composed principally of *Odontoglossum* and hybrids. The exhibit included *Odontoglossum illustrissimum* var. *Nonpareil*, *O. Janua*, *O. Arcturus*, *O. Aviator*, *O. Ethiopia*, *O. Blue Peter*, and *O. Lucy*; *Odontiodas Ashlands* var. *devoniana*, and *O. Charlesworthii*; *Cypripedium bellatulum album* and *Gomezia Barkeri*.

A. WARBURTON, Esq., Haslingden (gr. Mr. Dalgleish), was awarded a Large Silver Medal for a group of Orchids (a Cultural Certificate and a Bronze Medal were awarded to Mr. DALGLEISH for the excellent plant of *Cypripedium virginale*).

H. ARTHUR, Esq., Blackburn, staged various *Cypripediums* and a plant of *Oncidium serratum*, with a spike carrying 41 flowers.

Col. J. RUTHERFORD M.P., Blackburn (gr. Mr. Lupton), staged *Cymbidium Holfordianum* and *Cypripedium Actaeus major*.

MESSRS. CYPHER AND SONS, Cheltenham, were awarded a Silver-gilt Medal for a mixed collection, including *Cypripediums*, *Calanthes*, *Masdevallias*, and *Laelia anceps Sanderiana*.

MESSRS. SANDER AND SONS, St. Albans, were awarded a Silver Medal for a group containing a batch of *Laelia Gouldiana*, also choice *Odontoglossum* and *Cattleyas*.

MESSRS. A. J. KEELING AND SONS, Bradford, staged *Cypripedium keighleyense*, *C. aureum*, *Hyanum*, *Laelia anceps Sanderiana* and other Orchids.

Mr. W. SHACKLETON, Great Horton, Bradford, staged two fine varieties of *Odontoglossum crispum* and seedling *Cypripediums* of the insigne type.

Mr. D. McLEOD, Chorlton-cum-Hardy, showed *Cypripedium Boltonii* and a few cut flowers.

FIRST-CLASS CERTIFICATES.

Odontioda Thompsoniae, a fine, circular flower, 2½ inches across, coloured scarlet shaded with crimson, and having a distinct white edge around the segments; the lip is broad and margined with white; *O. × Hercules*, 4½ inches across, dark chestnut coloured with white veins and markings, the outer edge shaded with rose; *O. Papilion*, white flushed with rose, blotched and spotted with bright purple; *Cypripedium waltonense magnificum* (Rupert × Thompsonii), broad round dorsal 3½ inches across and having a clear white margin; inner portions suffused and spotted with dark rose, base green, with dark red band down the centre. The petals are light brown with dark markings and the pouch is of similar colour. All these shown by Wm. THOMPSON, Esq.

Odontoglossum illustrissimum var. *Nonpareil*, a circular flower of brilliant colouring, shown by R. ASHWORTH, Esq.

AWARDS OF MERIT.

Odontoglossum × amaranthum and *O. illustrissimum Creole*, both shown by Wm. THOMPSON, Esq.

O. illustrissimum Janua and *Odontioda Ashlands* var. (Od. *Andersonianum* × *C. Noetzliana*), both shown by R. ASHWORTH, Esq.

Cypripedium Iona (*bellatulum* × *Farrieanum*), both exhibited by the Duke of MARLBOROUGH.

C. Zealandia, shown by Rev. J. CROMBLEHOLME.

C. leyburnense Fern Bank var., shown by CHAS. PARKER, Esq.

Brasso-Cattleya Menda (*Cattleya labiata* *Virginale* × *B.-C. Queen Alexandra*), shown by R. LE DOUX, Esq.

Lycaste × Beryl, shown by Messrs. CYPHER AND SONS.

Laelio-Cattleya (*C. Trianae* × *L.-C. luminosa*), the property of Messrs. HASSALL AND Co.

LIVERPOOL HORTICULTURAL.

JANUARY 31.—The thirty-fifth annual meeting of this society was held on the 31st ult. in Hackins Hey, Liverpool, Mr. W. Mercer presiding. The balance-sheet for 1913 showed an increase both in the amount received from subscriptions and admissions to the exhibitions. The balance in hand is now £109. Mr. Leo Thomson was re-elected treasurer and Mr. G. Blackmore as sub-treasurer. Mr. Harold Sadler resigned the secretaryship after fifteen years' service and was accorded a vote of thanks. It was decided to hold a special general meeting of the society on the 18th inst. for the purpose of electing a new secretary. In the meantime a small committee was appointed to deal with applications for the office.

MARKETS.

COVENT GARDEN, February 4.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday...

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers like Arums, Azalea, Camellias, Carnations, and their prices per dozen.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage like Adiantum Fern, Agrostis (Fairy Grass), and Asparagus plumosus.

French Flowers.

Table listing French flowers like Anemones, Narcissus, Ranunculus, and their prices.

Guernsey and Scilly Flowers.

Table listing Guernsey and Scilly flowers like Anemone fulgens and Narcissus.

ties Victoria and Sir Watkin. The salesmen's stands are filling with bulbous flowers, including single and double Tulips. Larger consignments of Narcissi are arriving from the Channel Islands...

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various plants in pots like Aralia Sieboldii, Araucaria excelsa, Asparagus plumosus, and their prices.

REMARKS.—Trade is better for flowering plants—Cinerarias, Genistas, Hyacinths, Daffodils, Azaleas, Marguerites, and White Spiraea are the leading features just now...

Fruit: Average Wholesale Prices.

Table listing various fruits like Apples, Lemons, Limes, and their prices.

REMARKS.—As the supplies of home-grown Apples shorten the demand for imported fruits show a steady increase. About 40,000 cases of fruit have arrived during the past week from Cape Colony;

they include Pears, Plums, Apricots, Peaches and Nectarines. Forced Strawberries are arriving daily from the Worthing district. Black Grapes are not plentiful; the crop of Black Alicante is almost finished...

Vegetables: Average Wholesale Prices.

Table listing various vegetables like Artichokes, Asparagus, Beans, Carrots, and their prices.

Potatoes.

Table listing various potato varieties like Bedford, Blacklands, British Queen, and their prices.

REMARKS.—The conditions of trade and prices show no alterations over those of last week.—Edward J. Newborn, Covent Garden and St. Pancras, February 4, 1914.

Obituary.

E. S. Ross.—We regret to record the death of Mr. Edward Stephen Ross, gardener and bailiff to Mrs. Cordes, of Silwood Park, Ascot, which occurred on the 29th ult. from cerebral haemorrhage...

ENQUIRY.

BUCK SAVIN.—Can any reader inform me what is "Buck Savin"? Waggoners in my neighbourhood use little sprigs of it dried and powdered to mix with their horses' food...

SCHEDULES RECEIVED.

The Midland Carnation and Picotee Society.—The twenty-fourth annual exhibition of this society will be held on Thursday, July 30, and Friday, July 31. Secretary, Mr. T. Humphreys, Botanical Gardens, Edgbaston, Birmingham.

ANSWERS TO CORRESPONDENTS.

"There are few gardeners, and still fewer amateurs, who do not on occasion require immediate information upon various points of practice. But either from an unwillingness to inquire, or from not knowing of whom to make the inquiry, they too often fail to obtain the information they are in want of. And let no one be alarmed lest his questions should appear trifling, or those of a person ignorant of that which he ought to know. He is the wisest man who is conscious of his ignorance; for how little do the wisest really know!—except that they know little. If one man is unacquainted with a fact, however common, it is probable that hundreds of others in the same position as himself are equally in want of similar information. To ask a question, then, is to consult the good of others as well as of one's self."—*Gardener's Chronicle*, No. 1, Vol. 1, January 2, 1844.

ALLIGATOR PEAR: *W. C. Pendarves*. The Alligator Pear is *Persea gratissima*, known also as Avacado Pear. Specimens were illustrated in *Gardener's Chronicle*, December 26, 1908, Fig. 177. The tree is a native of the West Indies, and would not succeed in this country out-of-doors.

AMMONIACAL SOLUTION OF CARBONATE OF COPPER: *R. L.* This fungicide is prepared from copper carbonate, 5 oz.; ammonia (26° Baumé), 3 pints; and water, 50 gallons. The ammonia must be handled with care, and should be diluted to about five times its volume. Make the copper carbonate into a thin paste with water in a small vessel. Add the paste to the diluted ammonia and stir constantly. The mixture is then brought up to 50 gallons. The ammonia will evaporate rapidly, therefore ammoniacal copper carbonate should be used as promptly as possible.

BARE PATCHES IN TURF: *J. T.* Apply a dressing, as you suggest, and mix suitable lawn seeds with the fine soil.

BULBS ROTTING: *G. H.* Your bulbs are infested with bulb mite. Sterilise the soil in which the plants have been grown and burn the infected bulbs.

CAMELLIA BUDS DROPPING: *Devonion*. The most frequent causes of bud-dropping in Camellias are insufficient heat and a check to the roots, the latter either through an excess or an insufficiency of moisture. As the plant has flowered well in the same house before it cannot be due to unsuitable temperatures, and the unsatisfactory condition must be attributed to careless watering.

CARNATION PLANT: *D. M.* There is no fungus present on the leaves, but the general appearance suggests eelworm at the roots.

CATERPILLAR: *A. J. J. G.* The caterpillars are those of the common Cabbage Moth, *Plutella brassicae*. The larvae bury themselves in the earth during the daytime and feed at night when the weather is favourable.

"CLEAN CULTURE": *G. W. H.* What you describe as clean culture appears to consist in merely excluding the use of all animal and organic manures. If you ask whether such clean culture is to be recommended in all circumstances our reply is in the negative. At the same time clean culture might very often be practised by gardeners without causing any loss of cropping. Not that the exclusion of organic manures is necessary, but because the soil already contains sufficient for the needs of the plants. We have often recommended for old gardens that have been manured liberally, not to say excessively, with organic manures, the discontinuance of same for a season, applying instead dressings of lime. Further, provided the gardener can always get fresh loam from a pasture and just the amount of loam he requires for his crops, the advice which you said has been given you might be followed with advantage, but quite the contrary experience falls to most cultivators; they have to make the best of the soils available, and in doing so they frequently find that their task is materially lessened by making use of such fertilisers as your adviser condemns. As we have said, what is meant by clean culture is not to be recommended in a general way, but may frequently be found to be perfectly satisfactory for particular cases.

CHRYSANTHEMUMS: *J. W. P.* The following six varieties of single Chrysanthemums are suitable for exhibition purposes. They should be disbudded in the first week of November:—Bronze Edith Pagram, Snowflake, Sandown Radiance, Mrs. A. Middleton, Portia and Mrs. Loo Thomson. If these varieties are propagated at once, grown quite hardy in the young stage, potted into their flowering-pots (9 inch or 10 inch) during the third or last week in May, and allowed to break naturally they should show their buds about the first week in September. If they are then disbudded, leaving one bloom to each shoot, they should be at their best condition of flowering by the time stated. Mrs. Loo Thomson and Mensa, should you care to grow the latter variety in place of Snowflake, will require housing fairly early, as they are rather late varieties for shows early in November. Feed the roots liberally with manure after the buds are taken. The following six varieties are suitable for producing sprays of blossom:—Joan Edwards, Sylvia Slade, Manor House, Terra Cotta, Ceddie Mason, Mr. Tresham Gilbey and Hilda Lawrence. You might include a plant or two of Mensa, Celia and Portia, for if these bloom in time they will help you considerably. You should be able to obtain four good vases of blooms from the following seven varieties:—Mrs. W. Roots, Market Red, Heston Yellow, Mrs. R. Luxford, Mrs. G. W. Streeter, H. W. Thorpe and Phoebe.

DISEASED TREE TRUNK: *W. B. S.* Remove all dead and decaying tissue, scraping the loose rotting wood from the interior and sweeping out all the debris with a brush. When quite dry the interior of the trunk, should be painted with one or, preferably, two coats of creosote and filled up with a composition of one part of Portland cement to three of clean gravel and sand, the surface coating containing the largest quantity of cement. A coat of coal tar on top of the dry creosote goes far in making the concrete adhere firmly to the wood. When a fairly healthy tree is being operated upon, and when the bark is likely to grow over the exposed surface the concrete should only be placed on a level with the underside of the living bark. Sometimes brickbats broken small are used instead of gravel, but for various reasons cement is preferable. The concrete surface may be prevented from cracking by applying annually a coat of paint, which, for appearance sake, may be of a similar colour to that of the bark of the tree.

EXPENSES FOR REMOVAL: *Reader*. You cannot obtain compensation for expenses incurred in removing to your present situation unless your employer came to an arrangement with you by which he agreed to pay the cost. You are quite right in thinking that the expenses of removal are very frequently borne by the new employer, but this is quite the result of custom, and not due to any legal obligation. In regard to your second question, it is usual for a head gardener to give or receive one month's notice before terminating his employment, and in the absence of special circumstances this notice can generally be insisted upon in the courts. You ask: "What holiday is a head gardener entitled to during twelve months' service?" We suppose that he is not legally entitled to any absence from duty unless such absence is caused through illness. The question of holidays is another matter which rests with the parties concerned. Unless under special circumstances we should imagine that an employer would be desirous of his gardener having a week, fortnight, or even longer leave of business each year, but his power of giving such leave would depend upon all sorts of circumstances connected with the garden itself and the staff maintained to do the work and share the responsibility. If a gardener wishes to make sure of an annual holiday all he has to do is to come to an arrangement upon the question when taking up a new situation. In the event of him failing to do this he must throw himself upon the consideration of the employer.

GRUB INFECTING BULB: *J. W. B.* The grubs are those of *Merodon equestris*, the Narcissus

bulb fly (see *Gardener's Chronicle*, October 12, 1912, p. 124). This pest is widely distributed over England, and it infests Hyacinths, Tulips, Narcissi, etc. The parent fly appears from the end of April to July. We would advise you to destroy the infested bulbs. Fumigation with hydrocyanic acid gas has met with some success, but the bulbs must be thoroughly dry before exposing them to the action of this gas.

HELIOTROPE DISEASED: *R. L. F.* A parasitic fungus is attacking the "collar," and it is doubtful whether the affected plants can be saved. Water the roots with a solution of nitrate of potash at intervals of three days.

MANGOS FROM BOMBAY: *W. B.* We are informed by Messrs. Geo. Munro that they receive occasional consignments of Mangos from business people who have brought them over from Bombay. They have also had several instances where traders have endeavoured to send large quantities, but the fruits have never arrived in good condition except when they have come in small lots, brought personally. They have never heard of any large quantity being on the market, and do not think it possible that 100 cases were received here in the whole year. There is a demand for really fine Mangos from Bombay if they arrive in good condition, but the difficulty of getting suitable temperatures on board has always caused deterioration during the voyage.

NAMES OF FRUITS: Two very small Apples in blue box—Golden Harvey (syn. Brandy Apple).—*A. H.* Decayed; send again earlier next season.—*H. G.* Court of Wick.—*W. G.* Hambleton Deux Ans.—*H. F. Z.* Apple Golden Russet; Pear Olivier de Serres.

NAMES OF PLANTS: *W. T.* *Moschosma riparium*.—*V. I.* 1, *Cochloda sanguinea*; 2, *Oncidium Pubes*; 3, *Sophranotis violacea*; 4, *Brassica caudata*; 5, *Zygopetalum maxillare*.—*Correspondent*. *Dendrobium primulinum*.—*H. G.*, *Cork*. *Boronia elatior*, of the Natural Order Rutaceae. Native of South-Western Australia.—*H. R.* 1, *Pteris argyrea*; 2, *Calanthe Veitchii*; 3, *Calanthe vestita*.—

POTATO DISEASED: The trouble is due to winter-rot, which often causes the flesh to assume a red or blue colour.

PRIMULA OBCONICA LEAVES: *Scot*. No disease is present in any of the plants. The trouble is due to some error of cultivation.

VEGETABLES: *A. H. C.* It is customary for head gardeners to be allowed sufficient vegetables to satisfy the requirements of their own households, but we cannot say that they have any right to demand them. It is rather an act of grace on the part of the employer. Moreover, no reasonable gardener would think of taking supplies from vegetables that are scarce at a particular season, but he would help himself to those which were present in quantities exceeding what is necessary for his employer's establishment. We suspect there are few cases where such privileges are denied to the head gardener, especially where, as in your instance, there is no private garden attached to the gardener's residence. In any case it is a matter for arrangement between the employer and his gardener, and not one in which the gardener can make a legal demand.

VIOLET LEAVES: *F. J.* The leaves are injured by a fungus—*Cercospora violae*. Spray the plants every third day with a solution of liver of sulphur at a strength of 1 oz. in 4 gallons of water.

VIOLETS NOT FLOWERING: *Vitis*. The specimens sent were perfectly healthy, but the growth was so thin and poor, due to overcrowding, that blooms could not be expected in quantity.

Communications Received.—*C. T. D.*—*W. C.*—*E. B. A.*—*Dublin*—*S. C.*—*R. W. C.*—*H. J. C.*—*W. M. A. C.*—*H. E.*—*H. S.*—*F. M.*—*H. W.*—*B. R. T.*—*Constant Reader*—*C. T. M.*—*Plantsman*—*F. J. C.*—*J. R.*—*Wageningen*—*A. R. M.*—*E. B.*—*E. T. C.*—*T. W. C.*—*T. C.*—*H. H. W.*—*Mitcham*—*C. T.*—*R. P.*—*H. H. C.*—*Progress*—*C. E. T.*—*M. E. M.*—*Bucks*—*F. Y.*—*F. G.*—*A. S.*—*J. D. G.*—*B. C.*—*H. G.*—*E. A. N.*—*L. L.*—*M. P.*—*G. A. P.*—*G. R.*—*S. S.*—*Mitcham*

THE

Gardeners' Chronicle

No. 1,416.—SATURDAY, FEBRUARY 14, 1914.

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MUNSTEAD WOOD.

THE home of Miss Jekyll, set high up on a ridge of Surrey hills, not far from the town of Godalming, and nestling amid a woodland of Pine and Birch, is a place loved by all who have the privilege of a close acquaintance with an English home in an exquisite setting, and made by one whose influence on "decorative" gardening has been and is far-reaching. Miss Jekyll's name is a household word to all who cultivate the gentle art which at Munstead finds full expression.

During several years the writer enjoyed the privilege of spending many hours in this woodland home, and a visit was paid recently on a misty winter day when the grey-green of Lavender and Rosemary mingled with the browns and silver of Birch and bracken. It is a garden in which lovely colour schemes and ways of planting hardy shrubs and flowers have been conceived for the purpose of surrounding the home with something more alluring and satisfying than the customary adornments, the familiar exotics, beautiful in themselves, but wearisome for their constant repetition.

Munstead has had a strong influence in fashioning the modern garden. Fashion, fickle jade though she is, certainly dictated years ago a change to

higher things in all forms of domestic art, and leaders there were to encourage this beneficent departure from mere formalism that was, in many phases, almost repulsive in its cold, forbidding attributes. And, as Miss Jekyll would tell you, the cottage garden has had a subtle, almost hidden influence in moulding the tastes of the latter part of the last century, and has yielded hardy flowers that are used in the most beautiful garden pictures at Munstead. Two occur to mind. One is that excellent garden Chrysanthemum Cottage Pink, which may be regarded—at any rate, the writer can discover no difference between the two—as identical with Emperor of China. It fills many a cottage garden in the neighbourhood with a fresh pink colour passing to a crimson shade in the centre, from early autumn until the frosts, when the leaves turn to warm, ruddy hues. When the autumn garden has lost its beauty the cottage plots that fringe the hill roadside leading to Munstead are as gay as in high summer from the bountiful planting of the Cottage Pink Chrysanthemum, which defies wind, rain and frost with surprising pertinacity; it is just this quality that gives the flower a value beyond most others for the outdoor garden.

It is not possible in a sketch of such a home as this to convey more than an impression of its beauty and interest to the garden enthusiast. When summer days are with us certain flowers stand out for their value in the border, or in some form of grouping, but an impression that will remain a pleasant memory until the end of time was the Primrose wood in the evening of a warm spring day. The flowers typify a strain brought to perfection through constant selection and crossing, and rejoice in a setting of woodland casting grateful shadows over a sea of warm orange and yellow. Many years have flown since this great lady gardener began to work at what, to use her own words, "I may now call my own strain of Primroses, improving it a little every year by careful selection of the best for seed. The parents of the strain were a named kind called the Golden Plover, and a white one, without name, that I found in a cottage garden." From these beginnings have come the glorious bunch-flowered or Polyanthus type of Primrose in roughly yellow and white colourings that have given to our gardens, large and small, much of their present spring beauty, and the variations sometimes bring forth a plant that surpasses its fellows in purity and strength of colouring and growth. All this, it is to be remembered, is the labour of an amateur, and the garden lover of to-day owes much to keen amateurs engaged in serious gardening.

Well the writer remembers the variety of Nigella damascena which Miss Jekyll raised at Munstead, and now to be seen everywhere—a mass of blue so deep that it seemed as if a bit of the heaven above had fallen to the brown earth. But on every side there is something to win the fancy and to be noted for repro-

duction. I have sometimes used this association of two things in thinking out my own plans for garden planting, Megasea and crimson tuberous Begonia. The solid foliage of the Megasea offers just that protection, so to say, that the Begonia seems to ask for, hiding ugly stems and throwing into hold and agreeable relief the full-toned flowers. Then the delightful association of Rosemary, Lavender and China Roses, which has contributed much to the gaiety of comparatively modern gardens. It is a blending of soft grey, green, and pink as clear as the pink of a sea shell, and when autumn has gone some rosebuds and open flowers will remain to carry their beauty through mild winter months.

The right placing of colours has perplexed many, and will continue to do so. Nothing is more difficult in outdoor gardening than planting well a mixed border, which, however carefully designed, is apt to go wrong somewhere. At Munstead the desire is to achieve broad and simple effects, and it is recognised there that the use of a multiplicity of things tends to the destruction of harmony in colour and all real effectiveness. Miss Jekyll points this out in her charming volume, "Wood and Garden," and the following words are well worth quoting for the suggestions they offer: "I always find more satisfaction and facility in treating the warm colours (reds and yellows) in graduated harmonies, culminating into gorgeousness, and the cool ones in contrasts, especially in the case of blue, which I like to use either in distinct but not garish contrasts, as of pale blue with pale yellow, or in separate cloud-like harmonies, as of lilac and pale purple with grey foliage. I am never so much inclined to treat the blues, purples and lilacs in associated gradations as the reds and yellows. Purples and lilacs I can put together, but not these with blues, and the pure blues always seem to demand peculiar and very careful treatment."

Miss Jekyll is emphatic in her condemnation of haphazard mixtures. Simplicity, yet a full effect, and complete harmony of colourings have been made the subject of much study for many years, and they are recorded in Munstead garden itself and in many writings. The notes on the colour grouping of Rhododendrons, shrubs too frequently ill-placed, have been of inestimable value to the writer; and though, as Miss Jekyll points out, there may be better varieties representing the colourings aimed at in the several groups, those are the ones known and will serve as well as any others to show what is meant. This scheme is recorded in the work already mentioned, and if adopted will prevent crude blunders. It is pointed out that the colourings seem to group themselves into six classes of easy harmonies, thus: (1) Crimson inclining to scarlet or blood colour grouped with dark claret colour and true pink. In this I have planted nigrescens, the dark claret colour; John Waterer and James Marshall Brook, both fine red-crimsons; Alexander Adie and atrosanguineum, good crimsons, inclining to blood colour; Alarm, rosy-scarlet; and Bianchi, pure pink. (2) Light

scarlet-rose colours inclining to salmon, a most desirable range of colour, but of which the only ones I know well are Mrs. R. S. Holford, and a much older kind, Lady Eleanor Cathcart. These I put by themselves, only allowing rather near them the good pink Bianchi. (3) Rose colours inclining to amaranth. (4) Amaranths or magenta-crimson. (5) Cool, clear purples of the typical ponticum class, both dark and light, grouped with lilac-whites, such as album elegans and album grandiflorum. The beautiful, partly-double Everstianum comes into this group, but nothing redder among purples. Fastuosum flore pleno is also admitted, and Luciferum and Reine Hortense, both good lilac-

NEW OR NOTEWORTHY PLANTS.

CALCEOLARIA × BALLII.

THIS hybrid is a pretty little greenhouse shrub, and almost intermediate in character between its two parents, *C. deflexa* and *C. Forgetii*, both natives of Peru.

Calceolaria deflexa, better known in gardens as *C. fuchsiaefolia*, is a useful winter-flowering plant for a cool greenhouse, but there is some difficulty in keeping the leaves in good condition through the winter, and this is rather detrimental to the appearance of the plant. The

makes the plant decorative. *C. Forgetii* is a small shrub with pubescent leaves, and stems. The leaves are oval, $\frac{1}{2}$ inch to 2 inches long, obtuse and serrated. The inflorescences are pyramidal, 6 inches or so long. The flowers are cream-coloured with a reddish blotch inside the lower lip, and are peculiar because of the pouch pointing upwards. The corolla is 4 to 5 inches long.

C. Forgetii was presented to the Royal Botanic Gardens, Glasnevin, by Kew in October, 1912, and during the winter its pollen was placed upon flowers of *C. deflexa*; the seed produced from the fertilised flowers was sown in March, 1913, and the first flowers of the hybrid opened in December of the same year.

The flowers of *C. × Ballii* are sulphur to clear lemon yellow, about $\frac{1}{2}$ inch in length; some are spotted red inside the lip, while others are without spots; they resemble *C. Forgetii* in shape and in the pouch pointing upwards, while the upper lobe is crenated as in *C. deflexa*. The leaves are 2 to 2½ inches long, and 1 to 1½ inch broad; the upper side is hairy, and the under surface smooth and greyish—not so white as in *C. deflexa*. The young stems are slightly pubescent.

The new hybrid seems to inherit the free-flowering properties of *C. Forgetii*, the pollen parent; the flowers last well in a cool house, and so it promises to be an attractive greenhouse subject. *C. F. Ball*, Royal Botanic Gardens, Glasnevin.

PELARGONIUM TRANSVAALENSE.

PELARGONIUM transvaalense (see fig. 47) is an extremely pretty, new and interesting plant. It grows about 2 feet high, the flowers are 1½ inch in vertical diameter, and of pale pink colour. It is new in the double sense of recent introduction to the country and also in having had the above name conferred upon it only last year. In habit it is much more like a European Geranium than a Cape Pelargonium, and the rootstock even helps the similarity; but since it has a spur adnate to the pedicel, like all other Pelargoniums, there is no question as to the genus to which it must be referred. The stems lie down completely for the resting period, and in this again the plant resembles Geranium. The rootstock, it is said, is used for dysentery by the natives of the Transvaal, and probably it has some value on account of its astringency. The name *transvaalense* is published in *Das Pflanzenreich*, of Professor Engler, vol. 53, in which the order Geraniaceae is monographed by R. Knuth. He describes this plant, but has apparently not seen leaves so large as those that are here illustrated, and some particulars from this specimen may be of use. The rootstock consists of a knotty or gnarled mass of short brown stems; the herbaceous stems with the peduncles, which are from 6 to 9 inches long, attain about 2 feet in height, they are reddish, gibbous above the nodes, and, like all the rest of the plant, except the flowers, are covered with fine, short more or less glandular hairs, thinly or thickly distributed. The leaves are few; the largest here illustrated has a stalk 10 inches long. The blades are from three to five angled, and the diameter of the largest is 7 inches. As they dry they become of very thin texture. The stipules are broadly ovate, and the bracts of the involucre are from three to six in number, broadly ovate, and acuminate very much like the stipules. The pedicels are always present, and vary from $\frac{1}{8}$ to $\frac{3}{8}$ inch long; the sepals are $\frac{3}{8}$ inch long, ovate acute, the upper rather the broader; the nectary or spur is 1¼ inch long; the petals are retuse, the upper $\frac{3}{8}$ inch wide and broader at the upper end, the lower petals are $\frac{1}{4}$ inch broad; the face of the flower measures 1½ inch vertically. There are seven stamens, all fertile, and the styles are five; the flowers have a distinctly male and female condition, and are protandrous like others of the genus. Seeds may have been set



FIG. 46.—CALCEOLARIA BALLII (*C. DEFLEXA* × *C. FORGETII*): COLOUR OF FLOWERS SULPHUR-YELLOW.

whites. But the purples that are most effective are merely ponticum seedlings, chosen when in bloom in the nursery for their depth and richness of cool purple colour.

One must leave Munstead for a while, a garden in a woodland, a garden of scents, of heath paths, nut and Michaelmas Daisy walks, Roses clambering wherever they will and beauty everywhere, a garden for the true artist, and teaching lessons that have not been unheeded by a generation of amateurs willing to learn. It is a real regret to Miss Jekyll that for reasons of health she is not able to welcome the many who, charmed by her writings, wish to visit her famous and delightful gardens. *E. T. Cook.*

leaves and stem of *C. deflexa* are glabrous and viscid; the leaves measure 2 to 2½ inches long, are ovate-lanceolate, serrated, dark green above, and whitish beneath. The flowers are drooping, and the corolla a clear yellow, $\frac{1}{2}$ to $\frac{3}{4}$ inch across the lobes, the upper lobe being nearly as large as the lower.

C. Forgetii, Bot. Mag. 8436, was introduced by Messrs. Sander in 1909 from the Andes, where it grows at an elevation of over 8,000 feet, and an illustration in *Gardeners' Chronicle*, January 27, 1912, of this plant under the name of *C. virgata*, shows how wonderfully free flowering it has been when planted out at Kew for the summer months. In very mild localities it might survive the winter in the open ground. The flowers are very small, but their profusion

by the plants own pollen, and it cannot yet be said whether it is self-sterile or not. *Pelargonium transvaalense* was received at the Botanic Garden, Cambridge, from Mr. Thorncroft, early in the year 1910, and it flowered the following November. It may be known to some as *P. Thorncroftii*, the name used for some time in the Botanic Garden of Cambridge, but Knuth's name is the first to be published. As no name at first could be given at Kew, it was intended to send an account to the *Gardeners' Chronicle* with the name *P. Thorncroftii*, but a sufficiently good photograph has only just been secured. I am now indebted to Kew for referring me to Knuth's description. This plant belongs to the section *Eumorpha* in company with *P. alchemilloides*, *P. sanciculaefolium*, *P. grandiflorum* and others. Mr. Thorncroft informs me that it grows at an altitude of 3,000 feet, and is always found in shade in the bush growing on banks in the kloofs, where the soil is loose and dry, perhaps a little damp, but never wet. *R. Irwin Lynch, Botanic Gardens, Cambridge.*

ORCHID NOTES AND CLEANINGS.

RHYNOSTYLIS GIGANTEA RIDLEY.
A FINE inflorescence of over thirty flowers each more than an inch across is sent by Mr. Tom Maltby, St. Margaret's, Woodford Wells. The flowers are fragrant, wax-like in substance, bluish-white spotted with rose-red. The broad, flatly-arranged lip is white tinged with rose, with dark rose-coloured lines from the base. It is *Vanda densiflora* Lindl. Gen. et Sp. Orch. 221, and commonly known in gardens as *Saccolabium giganteum*. It is a strong grower, requiring intermediate house in winter and the warmest house for the spring and early summer while making new growths. If kept too warm and moist in winter it gets affected with "spot," and soon declines in vigour.

LAELIO-CATTLEYA NELLA.
Two plants of this remarkably beautiful Veitchian hybrid (which was illustrated in the *Gardeners' Chronicle*, December 13, 1913, p. 416) have recently flowered with Messrs. Floy and Black, Orchid Nursery, Slough, out of the stock acquired from Messrs. Jas. Veitch and Sons, and an interesting point is raised. The recorded parentage is *L.-C. Domeniana* (*L. purpurata* × *C. Dowiana*) × *C. labiata*, but it appears that *C. Warneri* was the parent on one side and not the ordinary *C. labiata*, and that the extra beauty of *L.-C. Nella* over some of the typical *C. labiata* crosses is the consequence. This may well be the case seeing that Messrs. Veitch in their *Manual of Orchidaceous Plants* place all the section under *C. labiata*, and doubtless recorded their hybrids in the same way. It is to be hoped that other of their hybrids recorded as with *C. labiata* may have been with *C. Warneri*, which is one of the best parents for the hybridiser. It has a very distinct broad leaf, and two or three of the small lot of *L.-C. Nella* are scarcely distinguishable from small *C. Warneri*. The flowers are deep purplish-rose, with broad claret-red lip, with gold lines from the base.

E. H. DAVIDSON AND CO.

THE business established at Orchid Den, Twyford, by Mr. E. H. Davidson about a year and a half ago, for the raising and growing of Orchids, is now formed into a company, with Mr. James B. Lakin as the managing partner. A full report of this successful Orchid establishment was published in the *Gardeners' Chronicle* for November 8, 1913, pp. 3, 7, 8. Attention was drawn to the remarkably promising batches of *Sophronis grandiflora* crosses, *Odontioda* and *Odontoglossum* hybrids, *Cattleyas* and *Laelio-Cattleyas*. Mr. Davidson laid the foundation for successful hybridising by purchasing some of the best species and varieties obtainable.

AMERICAN NOTES.

HYDROCYANIC ACID GAS AS AN INSECTICIDE.

THE discussion in the *Gardeners' Chronicle* on the subject of gas tar and mealy bug is of great interest. The use of hydrocyanic acid gas is the greatest boon in our day, being the cheapest, cleanest and deadliest of all known agents for the destruction of insect pests. There is no real danger in its application to the operator, it does not go off like gunpowder, and, if the doors are locked after its liberation, there can be no danger to irresponsible individuals. Risk is, however, always present, and there seems to be no other word that fits. Atmosphere and temperature in the structure are dominant factors in that if the house is moist it is unsafe, and if the temperature exceeds 60° harm will result. There are varying qualities of cyanide, too, but the best is none too good; the grade sold as 98 per cent. pure is the most suitable.



FIG. 47.—PELARGONIUM TRANSVAALENSE. (See page 102.)

The use of this gas in vineries carries a risk also that was not stated by *J. H. Y.* for it is sure to injure Muscat varieties when the foliage is in an immature condition; but no harm results to Black Hamburgs in the same structure. It is not perfectly safe until the leaves are fully developed, which is the time the bugs are becoming active. Another error of omission is that the quantity to be used per 1,000 cubic feet was not stated. This is essential.

For the benefit of readers the following data are copied from a report recently published here, covering many kinds of greenhouse plants. The name of the author has been lost in making the clipping, and the present writer now makes due apology; but it would seem that instead of the usual dose of 1 oz. of cyanide to 1,000 cubic feet, this is a much safer base to work from, in that it shows that far less will do the work. It was found that White Fly (*Aleyrodes*) could not be killed by the gas on indoor Tomato plants without injury to same at the stated dose. Later, in

fumigating an adjoining house, the escaping gas that reached them through a partition killed the fly.

From exhaustive experiments made by the entomologist from whose results the following is cited—the dose applying in all instances to 1,000 cubic feet of air space are:—Tomatos in daytime, 1/8 oz.; at night, 3/8 oz.; Antirrhinums (Snapdragons) (very susceptible plants), 1/8 oz. in day and 3/8 oz. at night; young shoots of Roses, not more than 5/16 oz. night or day; Chrysanthemums, 3/8 oz. at night only; Carnations, not well to use more than 3/8 oz.; Lily-of-the-Valley, forced, blooms 3/8 oz., leaves 7/16 oz.; Asparagus plumosus, 3/8 oz.; Lantanas will stand 5/8 but not 7/16; Cyclamens will not be injured by 1/2 oz.; Ferns are not injured by 7/16, but stronger doses are not safe; Pelargoniums, 1/2 oz.; Lettuce was not injured by 7/16; Coleus, Hibiscus, Crotons, Begonias, Pansies, Hyacinths, Salvia, Palms and Radishes will stand a 1 oz. dose without injury; aphides will be killed with 7/16 oz.; thrips with 1/2 oz., and repeated doses of 7/16 oz.; mealy bugs not in masses by 1/2 oz., which dose repeated will kill all the pests; scale on Palms and Crotons were killed and some red spider by 1/2 oz.; this repeated will probably kill all the scales. It is advised to fumigate in as low a temperature and in as dry an atmosphere as possible, and preferably at night.

In the above report no word is said about ventilation afterwards, and it is assumed that the gas may be left in over night to dissipate before morning, but it is the most recent word for our guidance in the use of this agent, evidently made with care, and proves especially that we have heretofore used too much when adopting the usual formula of 1 oz. per 1,000 feet.

For dormant fruit trees under glass the writer has often used 2 oz. with good results for destroying both scale insects and mealy bug, but the whole thing resolves itself into using judgment. In England there would be no difficulty in getting the temperature at night below 60°; here we often have to wait for weeks, it then being too late to do the best work. An employee used two tons of cyanide in one winter in Florida in Orange groves to kill scale and white fly, but could only work at night when the temperature was low enough, and then erected tents temporarily round the trees to dose them. When the tents became wet with heavy night dews others were in reserve, and all were dried in the daytime. *E. O. Orpet, Lake Forest, Illinois, U.S.A.*

WINTER-FLOWERING IRISES IN THE ROCK GARDEN.

ONE of the charms of the rock garden is the evergreen character of most of the Alpine plants. Hence, furnished with attractive tufts and cushions of many-tinted foliage, the garden looks well all through the winter.

The miniature trees and bushes of Veronicas, Cistuses, Hypericums, Iberis, *Acaena splendens* and *Othonna* all retain their leaves. The mossy Saxifrages display mats of vivid green; the crustaceous ones provide glaucous tufts of silver-edged rosettes; the *Sempervivum* crowns show many warm tints; while the *Aubrietias* in themselves give several shades of rich verdure, intensified by the golden and silver variegations.

What more delightful setting can there be than this for the winter-flowering bulbous Irises?

Fortunately, these little Irises are easily procured and are quite hardy. When we have a succession of favourable seasons they will increase year after year; but prolonged cold, wet weather during summer plays havoc with these Eastern plants, which love to bask in the sun—that is, figuratively, for they are then underground—as much as do the Persian cats.

The earliest to flower is *Iris Vartanii*, a native of Palestine and named after Dr. Vartan, who found it at Nazareth. I have had it in blossom

on November 20; mid-December is its usual time, January 16 being the latest date I have recorded. It is a delicate, refined-looking flower about 3 inches across, pale lavender above and pale green beneath, with long, narrow standards and deeply bifid styles; the elongated falls have a white ground and darker lilac stripes with a fleshy yellow crest. The pollen is white, in blue anthers. It is deliciously scented, like vanilla. The glaucous-green quadrangular leaves grow up early and are about 10 inches long at flowering time, over-topping the scape, which is 5 inches long. This is the floral tube, for the seed-vessel is subterranean.

The small bulbs are narrowly oval with netted coats, and many tiny offsets are produced. Several bulbs should be planted in a group, facing south-east if possible, with a rock behind to shelter them from the north. The soil should be a warm loam lightened with leaf-mould and sparingly enriched with old manure.

There is a pretty pure white variety of this Iris with a pale-lemon crest on the fall. One of these produced a monstrous flower which had five styles, four falls, four standards and five anthers; three of the latter were perfect, the other two were petaloid. Monstrous forms of flowers are not uncommon in Irises, and usually consist in an extra number of parts; but sometimes they are reduced and come in twos instead of threes.

Very closely allied to the last and the most beautiful of this section is Iris *Histrio* (see *Gard. Chron.*, fig. 34, January 23, 1909), well named the play-actor from its brilliant garb. The flower is nearly 3 inches across and is carried about 4 inches above ground. The styles and standards are a pure light-blue; the oval falls have a creamy-white ground mottled over with large deep-blue spots and a line of gold down the centre. There is some slight variability in colour in individuals of this species. The soil should be similar to that for *I. Vartanii*, and a sunny, southerly position near the top of the rock garden, where it cannot be dripped upon, is essential. *I. Histrio* is an early flowerer, beginning at the end of December and continuing until the early days of March, the greatest number of flowers being produced from mid-January to mid-February. It has a slight fragrance of attar of Rose.

The leaves begin to appear in November, and, like those of all the winter Irises, they greatly need protection from the only too marked attentions of slugs and small snails. Powdered slug destroyers may be placed around the clumps, but they need constant renewal in rainy weather. The most efficient slug guard is made of strips of perforated zinc, 3 inches deep and 24 inches long, bent into a ring and fastened with wire, and then placed over the clump and pressed an inch or so into the soil. Even then the eager slug will try and force its way through the meshes if it is a very slender one. This plant is a native of Asia Minor and the Lebanon.

Iris histrioides differs from those species already described in its mode of growth. Flowers and leaves shoot up simultaneously through the frosty ground, and when the flowers open on their short scapes the leaves are but 1 to 3 inches high. It does not usually begin flowering until January 21 and then continues till the first week in March; but last winter (1913), which was a mild season, the first flower opened on New Year's Day.

I. histrioides has large flowers nearly 4 inches across of a gorgeous blue. They vary somewhat in the shape of the fall and the markings, but usually the standards and styles are an intensely bright blue, and the falls are further embellished with dark-blue spots and a gold crest down the centre on a cream ground. The species is found at Amasia in Asia Minor, and is scentless.

Iris Bakeriana (see *Gard. Chron.*, fig. 33, January 23, 1909), named after Mr. J. G. Baker, formerly of Kew, is a distinct and very pretty little flower, a native of Mesopotamia and Asia Minor, but is now increasingly difficult to

obtain. The leaves are 8 to 12 inches long at flowering time and are round in section, with eight deeply-marked furrows. The scape is 6 inches high and the flower less than 3 inches across. It makes up for its small size by its very pretty colouring. The styles and standards are deep violet-blue, while the falls are white with a yellow line and spots and streaks of deep purple ending in the rather pointed tip, which is velvety-black. It has golden pollen and a delicate fragrance of violets. The flowering season is rather prolonged—from January 19 almost to the end of March. This plant is impatient of moisture and should be placed in full sun on a well-drained plateau of the rock garden and given a light, dry soil.

After flowering the foliage of these bulbous Irises continues to grow for about two months and should be carefully preserved and tied up to a stick. The leaves of *I. Histrio* will reach 2 feet in length and those of *I. reticulata* (see *Gard. Chron.*, fig. 149, November 2, 1912) 3 feet.

The next Iris to flower is very different in colour from the other early ones. *Iris Danfordiae* (see *Gard. Chron.*, fig. 54, March 17, 1900) is golden-yellow, and, grouped with the blue ones, forms a delightful contrast. As it flowers from the end of January to the middle of March it comes in well with them. The flowers grow about 4 inches high and are 2½ inches across. The oblong golden falls have an orange crest and small brown spots on the claw. The standards are reduced to a tiny yellow bristle a quarter of an inch long, which makes this species a link with the Juno group. The species itself has been split up into two named forms, on account of the colouring of the styles; the one has green stripes on a yellow ground (*Bornmülleri*), while the other is without stripes (*Danfordiae*). This is a native of the eastern part of Asia Minor, having been brought first from the Cilician Taurus by Mrs. Danford, after whom it is named. The flower is scentless. It should be treated like the others.

After the foliage has withered all the species should have a piece of glass placed over them, supported on wires or stones, to keep the bulbs dry and help the ripening process when they are not lifted. This precaution also prevents their being planted over or smothered by encroaching vegetation. The two last Irises must be treated together, as they are two forms of one species. The blue-violet flower is named *Iris reticulata*, and the red-purple one *I. Krelagei*. *I. reticulata*, named from the netted coat of the bulb, is the hardiest and best known of this section and will flower in the ordinary border, but is at its best on the rockwork. It needs a good, well-drained loam with some lime added; and as it is addicted to a fungous disease, the bulbs should be lifted occasionally, the decayed ones removed and the offsets planted out. It is a native of the Caucasus and smells sweetly of Violets. The dark-green leaves are 8 inches long at flowering, the scape about 6 inches. The flowers are 3 inches across; the styles and standards deep violet-blue; the narrow falls dark velvety-purple with an orange crest edged with white, purple spotted. *Iris Krelagei*, named after the well-known Dutch nurseryman, differs in having broader styles and falls; the colour is a rich reddish-purple, contrasting well with the golden crest. It has only a faint Violet perfume. *I. Krelagei* begins flowering quite a week earlier, the respective dates being: *I. Krelagei*, January 25 to April 7; *I. reticulata*, February 6 to April 25.

While winter Irises are coming up they may be protected in wet or rigorous weather by glass overhead or a bell-glass, but the glass should be removed after flowering to avoid injury to the foliage.

These little Irises are very satisfactory from the length of time each blossom will last—from seven to ten days. Also, when gathered in bud, they can be packed quite easily and sent by post, and may often bring a message of cheer to a sick-room. *Eleonora Armitage*.

NOTICES OF BOOKS.

AN ILLUSTRATED FLORA OF SOUTH AFRICA.*

FEW countries have contributed so largely to European conservatories and gardens as the Cape of Good Hope. The despatch of plants from this Colony began at a very early date, before the settlement by Van Riebeeck, for we find several curious plants figured by Stapel in his edition of Theophrastus' *History of Plants*, published at Amsterdam in 1644. Some of the earliest specimens from the Cape, which are preserved in herbaria in this country, were collected about 1737 by Oldenland, who formed the *Hortus Siccus Capensis*, which was sent to Petiver, and acquired by Sir Hans Sloane. Then in 1772 came Thunberg, the father of Cape Botany, and at the same time Masson, who travelled with Thunberg, and whose plants and wonderful collection of drawings are at the Natural History Museum at South Kensington; and also about the same date Oldenberg. In 1810 Burchell, in 1815-23 Bowie, in 1825-34 Ecklon and Zeyher, and Drège, and in later years Macowan, Bolus, Schlechter, and many others.

From 1775 to 1835 Cape plants may be said to have been quite the rage. The conservatories, temperate houses, and gardens of England and the Continent teemed with Pelargoniums, Heaths, Proteas, and other handsome flowering shrubs and lovely bulbous Iridaceae, Amaryllidaceae, and Liliaceae; and as evidence of this, if other evidence were required, we may call to mind several very fine illustrated works dealing largely with Cape plants, such as the four volumes of Andrew's *Heaths* (1802-1805), and the five volumes of Sweet's *Geraniums* (1820-1830).

It is very difficult to compare the relative numbers of species of flowering plants at the Cape with any other portion of the earth's surface, but enough is known to enable us to say that South Africa ranks among the richest of regions. Dr. Bolus in his *Essay on the Flora of South Africa* in 1886, compares South Africa with Australia, which is five times larger in area, with the following result:—Australia: Orders 152, genera 1,300; South Africa: Orders 142, genera 1,255, and he considers the reason South Africa is so rich is because we have here the meeting and partial union of two, and perhaps three, distinct Floras, and that South Africa has a highly diversified surface of land and soil, and a climate with much sunlight, a condition which is favourable to the multiplication of forms.

The *Flora Capensis* was commenced by Harvey in 1859, and contains, or rather will contain when quite complete, careful descriptions of all the plants known from that region. The present work, which is to be in four large quarto volumes, will be illustrated by 180 coloured and 100 monochrome drawings, as well as 300 figures in the text. It is an introduction, and a very good one, to the charms presented by the Cape Flora. In the absence of some such work it has been most difficult for the student and traveller to understand and appreciate the variety of form that surrounds him on every side. It is the work of Dr. Rudolf Marloth, well known for his labours in connection with the Cape Flora; but its inception is due to Lady Phillips. The first volume, which has just been published, deals with the Cryptogams, Gymnosperms and part of the Dicotyledons (Piperales to Rhoeadales). The life-history of the various forms of Cryptogamic life is shortly described; and among the Gymnosperms of especial interest is the account of the curious and anomalous genus *Welwitschia*. The genus *Mesembryanthemum* is treated of in this volume, and some interesting notes are given of the mode of life of *M. rhopalophyllum*, which occurs in the sandy deserts of Southern Namib, near Pomona Island. This plant grows embedded in the sand, nothing but the slightly convex apex of each cylindrical leaf

* *The Flora of South Africa*. By Rudolf Marloth. 4 vols. 4to. 180 coloured illustrations, 100 monochrome drawings, 300 figures in text. £2 2s. per vol. net. Vol. I. Wesley and Sons.

being visible; while the buried leaf itself is fresh green, with a rather delicate skin, the exposed part is protected by a thick epidermis and cuticle and possesses few stomata. It is through this portion, which has the function of a window, that the leaf receives its light. There are 5 to 10 or even more leaves to each plant, which peep out of the sand like the eyes of the sand lizard or the sand viper. As will be gathered from this example the book abounds with information of much interest on the ecology of many of the plants. Under each family is a clavis of the genera, and descriptions of the more interesting species are appended. The area dealt with is roughly bounded on the north by the Tropic of Capricorn, starting on the west coast near Walfish Bay, and traversing German South-West Africa and Bechuanaland until the line reaches the Limpopo.

The coloured plates, though varying somewhat in merit, add much to the attractiveness of the work. The photographs of plants in their natural habitats are excellent. The type is large and clear. To the author is due the credit of producing what must be regarded as a pioneer work, for nothing similar to it, at least so far as relates to extra-European floras, has hitherto been attempted. We heartily wish for it the success it deserves, success which should encourage others in the same path, with the result of opening up one of the most fascinating branches in the domain of Natural History. Not only students of the Cape Flora, but travellers, and indeed anyone curious about the marvellous operations of Nature, will certainly be much indebted to Dr. Marloth and Lady Phillips for this most interesting and attractive work.

E. G. B.

DIERAMA (SPARAXIS) PULCHERRIMUM ALBA.

THE old name, Sparaxis, is still in general use for this plant, but owing to the marked disparity between the Sparaxis proper and Dierama in form, habit and garden value, it is necessary to recognise the tall, arching, well-flowered plants as Dierama and the dwarf, starry-flowered plants as Sparaxis. There is only one species of Dierama recognised by botanists, this being *D. pulcherrimum*, a tall-growing plant with very tough, yet slender and arching, grass-like leaves and taller racemes of delicate pendulous flowers, which sway and flutter with the least breath of wind. The bulb, which resembles that of a *Gladiolus*, but is smaller, is covered with a thick, matted tunic, and the roots are thick and evidently capable of resisting severe drought. It is said to have been introduced in 1866 by Messrs. Backhouse, of York, who described it as being very graceful in habit and as growing from 2 feet to 3 feet high; this, however, is far short of the length that the flower-stems usually attain, those shown in the illustration at fig. 48 being all over 6 feet. The type is rose-magenta in colour, a not very pleasing tint, and there is also a very beautiful and rare pure white form which is here shown and a pale pink variety. The type has been discarded here, and only the white and pale pink forms are grown. The Dierama has the greatest objection to removal, which, when it must be done, should be carried out as soon as the flowers begin to fade. Immediately after this stage stout, fleshy roots are produced from the bulbs, and if these are broken the plants are badly injured. Its general appearance would lead to the supposition that it is a water-loving plant, but it succeeds well in dry positions, provided that it is grown in porous, sandy soil, and is well watered when it commences to grow. Being a native of South Africa the Dierama cannot be considered hardy, and in the colder districts should have the protection of a wall and be mulched with leaf-mould or ashes in the winter. Deep planting is advo-

cated, and this is doubtless desirable in cold localities, but in the south-west if planted 3 inches deep and given no protection it invariably thrives. The best position for this plant is in colonies among dwarf shrubs, where its slender, arching flower-shoots rise up gracefully and are seen to the best advantage. The shrubs also afford the plants shelter. It is a subject which will well repay a little care for the first year or

seeds were collected from these plants in the past summer, all of which have been given away. The tall stems carry from eight to ten flower-pedicels, and these pedicels usually bear ten blooms. The Dierama is sometimes styled the Wand Flower, and the late Mr. Burbidge christened it the Fairy's Fishing-rod, on account of the exquisite grace and lightness of the slender flower-wands. *Wyndham Fitzherbert.*

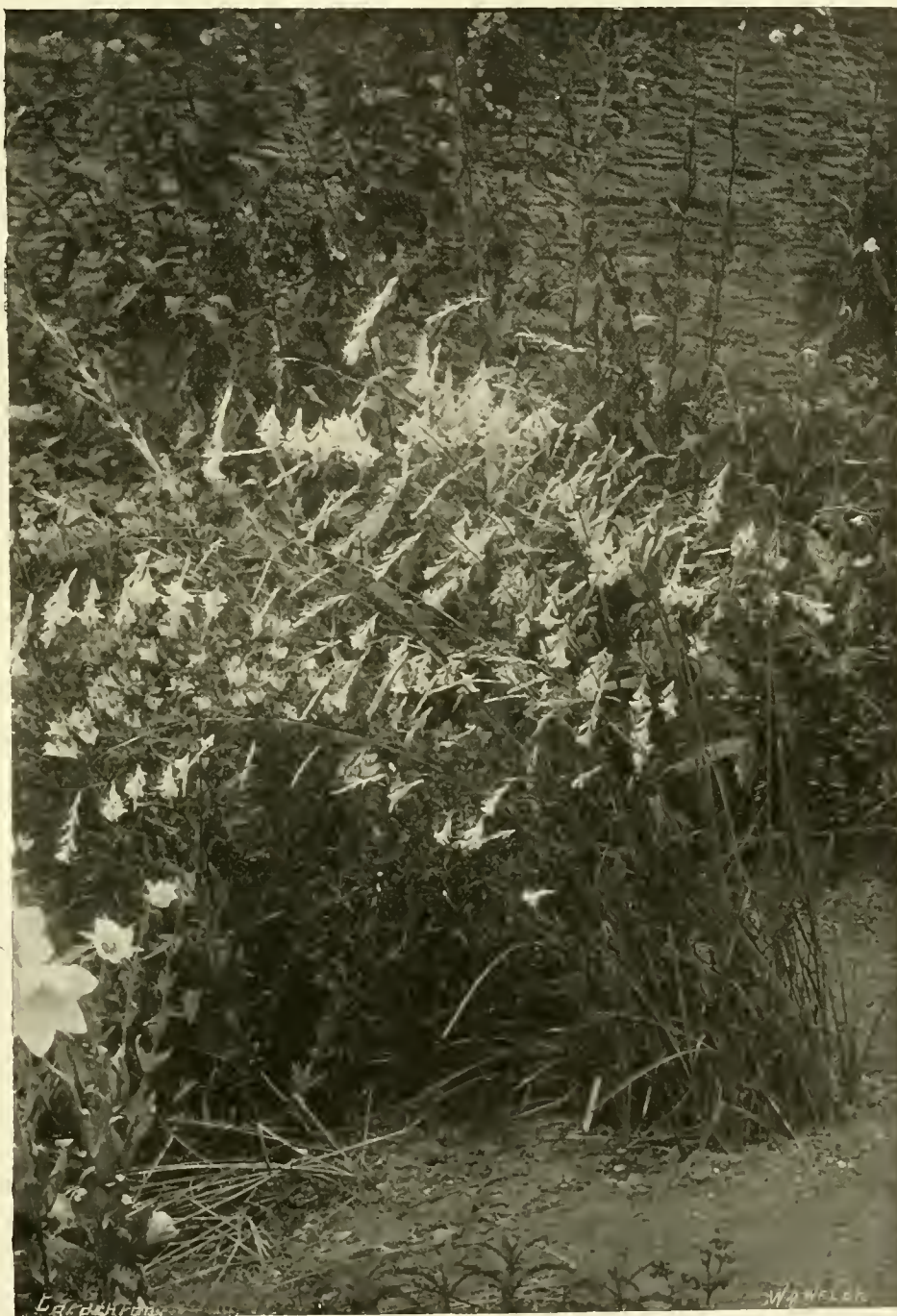


FIG. 48.—DIERAMA PULCHERRIMUM ALBA IN A DEVONSHIRE GARDEN. (Photograph by Wyndham Fitzherbert.)

two. A deep, rich, sandy border in full sunshine will prove suitable to it, and it is a plant that all Iris lovers should grow, its beauty and grace being worthy of any little extra trouble and cultural attention. It is easily raised from fresh seeds sown as soon as they ripen in pans or boxes, and placed in a cold frame or on a shelf in the greenhouse. In the warmer districts seed sown in the open generally germinates well, and mature bulbs increase fast when once well established. To provide the finest show a group should consist of at least twenty bulbs. There are thirty bulbs in the colony shown in the illustration, and when these plants were in full bloom they provided a picture that roused the enthusiasm of visitors from far and near. Thousands of

WASPS.—I was much interested in the reply to Mr. Shakelton on "Wasps' Nests in November" in the issue for January 24, p. 64. I found three wasps' nests in a bank along a road near here (four miles south of Dublin), in December. One very strong colony was working up to Christmas. The wasps seemed rather under the usual size. On December 27 we had frost—4° to 8°—which lasted for a week, after which there was no sign of life about any of the nests. I had never seen or heard of wasps' nests at this time of year. So far as I know some of these nests had been made during the summer. We had an extraordinarily mild winter: a Laburnum had been in full bloom at the time I write of, and is now green with leaves. *Mary C. Hopkins, Robuck Hill, Dundrum, Co. Dublin.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

APPLE NORFOLK BEAUTY AND LIME-SPRAYING OF PLUM TREES.—I was pleased to see *Southern Grower* write so encouragingly of this Apple on p. 83. I know the original tree in the gardens at Gunton Park, Norfolk, from which Mr. Allan sent out the first stock. For several years I saw the tree heavily laden with large, even, handsome fruits, some of which I cooked in January, and found them of excellent quality, but since growing them I have not been able to keep the fruit longer than October. I consider that it is a valuable October Apple. The tree grows freely, and promises to be a good cropper when well established. With reference to the remarks on lime-spraying of Plum trees, my experience and observation of other people's practice is that lime-spraying of Plum or other trees does not prevent infestations of aphids. A grower of some 300 acres of fruit trees close here sprays his Plum trees with hot lime just at the time when the trees are bursting into bloom, and even while the blossoms are fully expanded, but while this spraying at that stage does not interfere with the fertilisation of the blossom, as many aver, it does not prevent a full crop of aphids attacking the trees just at a time when the Plums are making their first swelling. For Apples, Plums, Red and White Currants nothing but lime is employed. *E. M., Swanmore Park Estate, Bishop's Waltham.*

HAMAMELIS.—I write with reference to the paragraph on page 67 of your issue of January 31, 1914, regarding the shrub, "*Hamamelis arborea*." In it your correspondent states that this shrub attains a height of 20 feet in Japan, but nothing approaching this size is to be seen in this country. I write to state with, perhaps, interest to your readers and also to your correspondent that there are two *H. arborea* in the gardens at Tedsmore Hall, Oswestry, one of which is 18 feet high from the ground, with two branches 19 feet long. The other *H. arborea* is 16 feet high from the ground, and has a branch 17 feet 6 inches long. These have been planted about 15 years. The trees of *H. arborea* have this year flowered to an extraordinary extent, and at the present time are a mass of flowers, and a wonderful sight. The soil is sandy and on sandstone rock, 300 feet above sea level, and exposed to rough weather from the Welsh hills from the North-west. *Colonel Mainwaring Jackson, Tedsmore Hall, Oswestry.*

CYANIDING PLANT HOUSES.—*J. H. G.* (p. 94) states that it is very important to remember that the water must never be added to the sulphuric acid when cyaniding. I should be pleased to know why he is so particular on this point. During my experience I have cyanided over a hundred Fruit and Plant houses, but have always added the water to the sulphuric acid with excellent results. *J. B.* [If water be added to strong sulphuric acid considerable heat is engendered, and the liquid is apt to "boil" and splash into the face or on the hands or clothes of the operator.—*Eds.*]

CYANIDING TO DESTROY MEALY BUG.—I have read Mr. Fulton's remarks on this subject (p. 94), and have good reason to agree with his statement that failures with this fumigant may be due to inferior materials. I have been to some trouble in cyaniding two vineries, using a strength of 3 oz. potassium cyanide, 5 oz. best sulphuric acid, and 8 oz. water per 1,000 cubic feet, and almost the first thing I saw on entering one vinery after the door had been opened was a spider crawling unconcernedly down a piece of string. We found living bug in both houses after the operation. The cyanide was dissolved, but an examination of the bottles from which it had been taken showed that the potassium cyanide, which I had ordered as the strongest and best, was marked 40 per cent., which is evidently quite useless for the purpose, and should not be accepted. I have now on order sodium cyanide at 130 per cent., which I expect will give vastly different results. I can remember something similar happening when I used the cyanide many years ago. I had sodium cyanide, and when this was used up ordered some more from a local chemist, who gave me the potassium—probably a weak per-

centage—the results of which were the same as I have described above, and led me to discontinue the practice. Mr. Fulton's letter would have been of much greater value had he given the exact proportions with which he has obtained the excellent results on Grapes, Tomatoes, etc., also which cyanide and the percentage. *A. Shackleton, Forde Abbey Gardens, Chard.*

LENÔTRE.—I see that the question "Was Lenôtre ever in England?" in your issue of January 31, p. 75, has not been answered; I therefore think it may interest your readers to know that I went very carefully into the subject, which I discussed with the late M. Edouard André, and carried on a correspondence with him about it. We came to the conclusion that he did not visit England. In the third edition of my "History of Gardening in England" (John Murray: 1910) I devote several pages (178 to 193) to the question, and I give the evidence at length, including some unpublished contemporary letters, etc. Though it is clear that Lenôtre was asked to England by Charles II., and Louis XIV. gave him permission to go, I have been unable to find any contemporary record of his journey, but obtained a good deal of negative evidence which points to his not having accomplished the journey.—*Alicia M. Cecil.*

SAXIFRAGA BURSERIANA GLORIA.—Some plants possess the rare attributes of interest and beauty long before their flower-bud expands, and the subject of this note is one of them. Just now, indeed, and for days past, this Saxifrage has been conspicuous by reason of the brilliant scarlet colour of its inch-high peduncles and calyces, which, appearing above the grey of the spiny tufts, make a beautiful contrast. The charm of the plant will be enhanced as the large blossoms unfold, for it is a prince among its kind, although, perhaps, not entirely alone in size or beauty, seeing it has such peers as *Magna Tridentina* and *Major*. In the dry condition of the Alpine house the flowers last long in a good condition. Dry cold, too, would appear to be a factor in promoting the rich colour of flower-stalk, to which reference has been made, and which for a week or two is singularly bright and effective. *E. J.*

GRAFTING ROSES (see p. 52).—In his remarks on this subject *Experience* advises a temperature of 83°. I have found 70° more satisfactory, and this should be maintained both day and night. As to keeping the case closed without ventilation for the first six days, how is the superfluous moisture to escape? Apparently, it would not be able to do so, consequently the grafts would damp. I find it is necessary to wipe the glass once or twice each day to remove moisture, while on dull days it is sometimes necessary to do this three times. As is well known, damping is the Rose propagator's greatest trouble, and must be guarded against, which certainly cannot be done if the case is to be kept closed at the start, and no moisture removed. The time for taking the grafts from the case depends upon how soon there is a free flow of sap from Briar to graft, which is indicated by the pink colour assumed by the latter. This may take so few as ten days or so many as six weeks. No one can tell what time a graft will take to make growth. When the graft has assumed colour it will stand any amount of sunshine, otherwise it will fade in half an hour. *Amateur.*

JOURNEYMAN GARDENERS AND LOW WAGES.—The correspondence on gardeners' wages in your columns has been interesting and instructive. I note with pleasure that gardeners' wages have an upward tendency, and let us hope though but slow they will continue to increase, as there is still much room for improvement. As a journeyman my wage never exceeded 15s. weekly, and no extra pay for Sunday duty, and if one were fortunate enough to secure a foreman's place the increase was 3s. per week, this rate being the general pay some thirty years ago. Like Mr. Hudson, I always refused premiums. As regards the young men not taking so much interest in their work as formerly, does not this show that the majority of them are still dissatisfied with their lot? Some may retort that young men in the building and similar trades have not the same chance of promotion as a young gardener, but it must be patent to all

that not one-third of the latter can ever hope to secure a head place of any importance. In one establishment of which I had charge there were four young men in the bothy, and the highest wage paid was 14s. True there was extra money for Sunday duty, but was this a living wage for a man of 22? I believe the wage sheet has been revised during the past year or two, and not before it was necessary. Respecting bothies, it must be admitted that improvements have been made of late years, but there are still many that are not worthy of habitation. Usually these young gardeners' quarters are situated on the north side of a high wall, ill-ventilated, scantily furnished, and probably adjacent to a stoke-hole, where the smoke, fumes, and dust have a resting place. This combined with one of the youths to cook the food and clean up three or four days out of the week, and the only lavatory some couple of hundred yards away, is surely enough to damp the spirit of any youth aspiring to enter the gardening profession. There is some talk of a minimum wage being fixed for farm hands; should that come to pass, let us hope someone will plead for the underpaid gardener. *James Mayne, Slough.*

WART DISEASE OF POTATOS.

ORDER OF THE BOARD OF AGRICULTURE AND FISHERIES.

(DATED 2ND FEBRUARY, 1914.)

THE Board of Agriculture and Fisheries, by virtue and in exercise of the powers vested in them under the Destructive Insects and Pests Acts, 1877 and 1907, do order, and it is hereby ordered, as follows:—

Application of the Order.

1. This Order shall apply to England and Wales.

Definitions.

2. In this Order—
 "The Board" means the Board of Agriculture and Fisheries.
 "The Local Authority" means as regards any District the Local Authority for the District under the Diseases of Animals Act, 1894.
 "Disease" means the disease affecting Potatoes which is known as *Synchytrium endobioticum*, or Wart Disease of Potatoes, Black Scab, Cauliflower disease, or Potato canker; and "diseased" means visibly affected with disease.
 "Tubers" means tubers of the Potato plant.

Notification of Disease.

3. The occupier of any premises on which disease exists, or appears to exist, shall forthwith notify the fact by post or otherwise to the Board, or to an inspector or other officer of the Board or of the Local Authority authorised to receive such notification, and where practicable a specimen showing the disease shall accompany the notice.

Precaution to be adopted in case of an Outbreak or Supposed Outbreak of Disease.

4. No tubers shall be removed from any premises on which disease exists or appears to exist until after the investigation required by the next Article.

Investigation by Local Authority.

5.—(1) The Local Authority on receiving in any manner notice of the existence or apparent existence of disease shall forthwith take such steps as may be necessary to determine on what premises the disease exists in the crops or soil, and shall cause notice of such determination to be served on the occupier of each of such premises, which, within the limits specified in the notice, shall thereupon become "infected premises" and continue to be infected premises until the notice is withdrawn in accordance with Article 9, but the limits of the infected premises may be extended by a notice served by the Local Authority or the occupier of the infected premises.

(2) The notice shall as far as practicable include in the infected premises only those lands in which there are or have been diseased tubers.

Action to be taken after Preliminary Investigation.

6.—(1) The Local Authority may at any time and from time to time by a notice served on an occupier of infected premises require him to adopt such measures for prevention of the spread of the disease as are authorised by this Article and specified in the notice.

(2) A notice under this Article may require the occupier of the premises to adopt any one or more of the following measures:—

- (a) To destroy any part of the crop, except the tubers, by fire or such other suitable method as may be specified in the notice;
 (b) to boil thoroughly all diseased tubers;
 (c) to take such steps as the Local Authority may consider necessary to prevent the disease being conveyed to other premises.
 (3) Nothing in this Order shall prevent the destruction by the owner thereof, by fire or other effective method, of any diseased tubers.
 (4) A notice under this Article may prescribe the time within which the adoption of any measure thereby prescribed shall be completed.

Power to Prohibit the Planting of Potatoes on Infected and other Premises.

7. The Local Authority may by a notice served on the occupier of any infected premises, or any adjoining premises to which the disease is likely to spread, prohibit the planting of Potatoes in the infected or other premises except under such conditions as may be prescribed in the notice.

Provisions to Prevent Spread of Disease by Planting Diseased Potatoes.

8.—(1.) Diseased tubers shall not be used for planting or sold or offered for sale for any purpose.

(2.) No person shall use, except by licence of an Inspector of the Board or the Local Authority, or sell or offer for sale for planting tubers which to his knowledge have been grown on infected premises, whether the premises have been declared to be infected before or after the tubers were lifted.

(3.) An Inspector of the Local Authority, acting under their directions, may by a notice served on any person having in his possession or under his charge tubers which are diseased, or in a pit, bag, or other receptacle with diseased tubers, or which the Inspector has reason to believe to have been in a pit, bag or other receptacle with diseased tubers, or otherwise exposed to infection with disease, prohibit the removal of the tubers from the premises on which they are when the notice is served, except under such conditions as the Inspector, acting under such directions, may consider necessary to prevent the spread of disease and prescribe by the notice.

Withdrawal of Notices of Infected Premises.

9. A notice constituting any premises infected premises may be withdrawn by a notice signed by an Inspector or other officer of the Board. Unless there are special circumstances, a notice of withdrawal shall not be issued as regards any premises until the expiration of three years from the date of the notice declaring the premises infected.

Copies of Notices and Returns of Proceedings to be sent to the Board.

10.—(1.) A copy of every notice served under this Order shall be sent to the Board by the Inspector or officer by whom the notice is signed.

(2.) The Local Authority shall, in a form to be provided by the Board, notify the Board of any outbreak of disease.

Information to be given as to Diseased Potatoes.

11. Every person who has or has had in his possession or under his charge any diseased tubers, and every person who as auctioneer, salesman, or otherwise has sold or offered for sale any such tubers shall, if so required in writing by the Board, or the Local Authority, or an Inspector of the Board or of the Local Authority, give the Board, or the Local Authority, or the Inspector, as the case may be, all such information as he possesses as to the persons in whose possession or under whose charge they are or have been; Provided that any information given under this Article shall not be available as evidence against the person giving the same in any prosecution under this Order, except in respect of an alleged failure to comply with this Article.

Powers of Entry.

12. Any Inspector or other officer appointed in that behalf by the Local Authority, upon production if so required of his appointment or authority, may for the purpose of enforcing this Order enter any premises and examine any plant or tubers thereon.

Notification of Order.

13. This Order shall be published by the Local Authority in accordance with any direction given by the Board.

Powers of the Board and their Inspectors.

14. The powers conferred by this Order on a Local Authority or an Inspector of a Local Authority may be exercised by the Board or an Inspector of the Board respectively, and any notice served by a Local Authority or an Inspector of a Local Authority may be altered or revoked by a notice under this Order served by the Board or an Inspector of the Board.

Offences.

15. Every person shall be liable on conviction to a penalty not exceeding ten pounds, who—

- (1.) fails to give notification of disease as required by Article 3; or
- (2.) fails to adopt such measures for prevention of the spread of the disease as are specified in a notice served on him under Article 6; or
- (3.) removes any tubers in contravention of this Order or any notice served thereunder; or
- (4.) plants Potatoes in infected premises in contravention of a notice served under this Order; or
- (5.) uses tubers or sells or offers for sale tubers in contravention of this Order; or
- (6.) refuses or fails to give any information required under Article 11, or gives false information; or
- (7.) wilfully obstructs or impedes any Inspector or other officer in the course of his duties under this Order.

Execution of the Order.

16.—(1.) Each Local Authority shall carry into effect this Order within their District, and shall appoint such Inspectors or other officers for that purpose as may be necessary.

(2.) Any duty or power imposed or conferred on a Local Authority by this Order may be performed or exercised by an Inspector of the Local Authority acting under and in accordance with any directions in that behalf given by the Local Authority.

(3.) For the purposes of this Order a notice shall be deemed to be served on a person if it is delivered to him personally or left for him at his last known place of abode or business or sent through the post in a letter

addressed to him there, and a notice or other document purporting to be signed by the clerk or an Inspector of a Local Authority or an Inspector of the Board shall be prima facie evidence that it was signed by him and duly authorised by the Local Authority or the Board.

Revocation of Order.

17.—(1.) The Wart Disease of Potatoes Order of 1912 is hereby revoked; provided that such revocation shall not—

- (i.) affect the previous operation of that Order or anything duly done or suffered under that Order; or
 - (ii.) affect any right, privilege, obligation, or liability acquired, accrued, or incurred under that Order; or
 - (iii.) affect any penalty incurred in respect of any offence committed against that Order; or
 - (iv.) affect any investigation, legal proceeding, or remedy in respect of any such right, privilege, obligation, liability, or penalty as aforesaid; and any such investigation, legal proceeding, or remedy may be instituted, continued, or enforced, and any such penalty may be imposed, as if this Order had not been made.
- (2.) Every notice served under the Order hereby revoked shall have effect as if it were a notice under this Order.

Commencement.

18. This Order shall come into operation on the third day of February, nineteen hundred and fourteen.

THE WART DISEASE OF POTATOS (INFECTED AREAS) ORDER OF 1914.

The Board of Agriculture and Fisheries, by virtue of and in exercise of the powers vested in them under the Destructive Insects and Pests Acts, 1877 and 1907, do order, and is hereby ordered, as follows:

Application of Order.

1. This Order shall apply to any Area declared by Order of the Board to be infected with Wart Disease and any such Area shall be an Infected Area for the purposes of this Order.

Restriction on Planting in Infected Area.

2. No Potatoes shall be planted or sown or permitted to be planted in an Infected Area except with the authority of a licence granted by an Inspector of the Board or otherwise than in accordance with the conditions imposed by the licence. The licence may prescribe the variety of Potatoes authorised to be planted, and the source from which the Potatoes shall be obtained.

Restriction of Removal of Potatoes grown in Infected Area.

3. Potatoes grown in an Infected Area, whether before or after the declaration of the Area to be infected, shall not be removed or sown or permitted to be removed from the Infected Area except with the authority of a licence granted by an Inspector of the Board; provided that this restriction shall not apply to the removal of Potatoes not visibly diseased for the purpose of being consumed upon premises in the occupation of the person by whom they were grown.

Notification of Disease.

4. The occupier of any premises in an Infected Area on which Wart Disease exists, or appears to exist, shall forthwith notify the fact by post or otherwise to the Board, or to the person authorised by the Board to receive such reports, who will forthwith forward the report to the Board. Where this Article applies Article 3 (Notification of Disease) of the Wart Disease of Potatoes Order of 1914 shall not apply.

Precautions against Spread of Disease.

5. The following measures for prevention of the spread of Wart Disease shall be adopted by each occupier of premises in an Infected Area.

(a) The haulm, leaves and roots of each diseased plant shall be destroyed either by fire, or by some other method authorised by an Inspector of the Board, within 14 days from the date of lifting, either within the Infected Area or with the written authority of an Inspector of the Board at a place outside the Infected Area.

(b) Potatoes which are visibly diseased, if not forthwith destroyed by fire within the Infected Area, shall be thoroughly boiled as soon as possible, either within the Infected Area, or with the licence of an Inspector of the Board at a place outside the Infected Area.

(c) Litter or manure from any live stock which has been fed with Potatoes grown on land within the Infected Area shall not be used or permitted to be used as manure on any land outside the Infected Area.

Power to require Crop to be lifted.

6. An Inspector of the Board may by notice served upon the occupier of any premises within an Infected Area require him to lift any Potatoes which the Inspector may suspect to be affected with Wart Disease by a date specified in such notice.

Partial exemption from General Order.

7. No part of an Infected Area shall be declared to be "infected premises" under the Wart Disease of Potatoes Order of 1914, and any premises included in an Infected Area shall cease to be "infected premises."

Definitions.

8. In this Order—
"The Board" means the Board of Agriculture and Fisheries;

"Wart Disease" means the disease affecting Potatoes which is known as *Synchytrium endobioticum*, or Wart Disease of Potatoes, Black Scab, Cauliflower disease, or Potato canker; and "diseased" means affected with Wart Disease.

Offences.

9. Every person shall be liable on conviction to a penalty not exceeding ten pounds, who—

- (1.) plants or removes or causes or permits to be planted or removed any Potatoes in contravention of this Order; or,
- (2.) fails to give notification of Wart Disease as required by Article 4; or
- (3.) fails to adopt any measure required by Article 5 to be adopted by him; or
- (4.) fails to lift any Potatoes as required to be lifted by him under Article 6.

Short Title.

10. This Order may be cited as the WART DISEASE OF POTATOS (INFECTED AREAS) ORDER OF 1914.

POTATOS SUITABLE FOR PLANTING ON INFECTED PREMISES.

The Board of Agriculture and Fisheries desire to remind all occupiers of premises declared infected for the purpose of the Wart Disease of Potatoes Order that it is illegal to plant any Potatoes on such premises unless a licence has previously been obtained from an Inspector of the Board or of the Local Authority. The penalty for any contravention of the Order is a fine not exceeding Ten Pounds.

Such licences can, however, as a rule be obtained on application to the Board by any occupier who undertakes to obtain from a reliable dealer one or more of the varieties of Potato referred to below, all of which have been tested, some of them for several years, and have been found to resist Wart Disease under ordinary circumstances.

Should any occupier have any difficulty in finding a Potato dealer who can supply the variety he wants, the Board will, on application, send a list of dealers who have undertaken to stock these Potatoes, with a statement as to the varieties which each is able to offer.

Milecross Early.—White, round, not liable to ordinary Potato disease (*Phytophthora*), matures rapidly, haulm strong, and quality good.

Conquest.—White, round, heavy cropping, second-early Potato of good quality; must be earthed up high, as tubers are produced near surface.

Jeanie Deans.—A fine oval Potato with strong haulm and white flower. Crops heavily on light, rich soils. Stocks of this variety are not large.

Dobbie's Favourite.—A second-early, round in shape, white flower; an excellent Potato when well grown.

Abundance.—A well-known heavy cropping, late variety, oval in shape, of good quality, rather liable to ordinary disease; white flower.

Sutton's Supreme.—A second-early of pebble shape, white flower, suited to garden cultivation.

Great Scot.—A very good second-early; white and round, eyes rather deep; haulm robust; a very heavy cropper under good cultivation. Quality excellent; flower, white.

Schoolmaster.—A second-early, white-skinned and round; crops well, but is liable to ordinary disease. Not a good keeper.

Crofter.—A late oval Potato of good quality; liable to ordinary disease. Flower, white.

Culdees Castle.—A pebble-shaped variety, not quite so strong in the haulm as Crofter, and liable to produce more seed size tubers on light soil. Does well under garden cultivation. Flower, white.

White City.—A late, kidney-shaped variety. A fine Potato for garden cultivation, but not a heavy cropper. Under high cultivation tubers are frequently hollow. Of first-rate quality. Flower, lilac.

Provost.—A late, white, round Potato possessing strong haulms and white flowers; well suited to garden cultivation. "Seed" should be changed every second year.

The Admiral.—A late variety, white-skinned and round. Haulm medium, a heavy cropper and good disease-resister. Quality excellent. Flower, white.

Irish Queen.—Tubers round, eyes rather deep, haulm strong. Excellent cropper. Keeps late into season.

St. Malo Kidney.—Tubers coarse, kidney-shaped. Haulm robust. Not a good keeping variety.

King George V.—An elongated oval tuber, skin netted, eyes shallow, haulm strong. An excellent cropper. Quality moderate.

Davie's Laird.—Roundish tuber, flesh white. A robust variety that crops heavily on well-prepared medium loams. Quality excellent.

Flourball.—Well-known late variety, round and pink-skinned. Eyes rather deep, haulm straggling with bronzing on stems when exposed. Quality very good; flower, white.

Golden Wonder.—A late white-fleshed kidney with yellowish-brown tinge on skin. The "seed" should be a good size, and if unsprouted should be planted before the end of March, as the variety requires a long growing season. Liberal manuring is essential, and in gardens bastard trenching is recommended. It is possessed of excellent quality, and is one of the best late keeping Potatoes. Flower, mauve-tipped white.

Peacemaker.—Is similar to Golden Wonder.

Langworthy.—A late kidney-shaped Potato possessing white skin and flesh. Tubers that are fully developed may generally be recognised by the characteristic tapering "heel." Quality excellent. Same treatment required as for Golden Wonder. Flower, mauve-tipped white.

What's Wanted.—Shape not so constant as in Langworthy. In other respects very similar.

N.B.—The four last-mentioned varieties are, relatively speaking, light croppers, but they are probably unsurpassed as resisters of ordinary Potato disease.

This list is not exhaustive, and there are several other varieties which are resistant. They are not quoted, as the supply of Potatoes of "seed" size is believed to be small.

4, Whitehall Place,
London, S.W.

The Week's Work.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

DAHLIAS.—The old stools of all types of Dahlias should be brought out of their winter quarters—the older plants divided and placed in moist sandy soil, in warmth, to furnish cuttings. The newer Paecony-flowered type is a great acquisition, for the plants are very effective when bedded out. They throw their gorgeous flowers well above the foliage on long stems, and they are excellent as cut blooms, especially for church decoration or for placing in large vases. The Geisha is a particularly good variety. Collettere, Cactus, and Pompon Dahlias are all useful and effective plants for bedding, whilst Single varieties bloom profusely out-of-doors (provided the seed-pods are picked off regularly) until destroyed by frost.

SALVIA PATENS.—This, the finest of all blue-flowered bedding plants, may be divided, and the portions introduced in gentle warmth for propagation. The plant grows best in boxes filled with a mixture of leaf-mould, sand, and a little loam. This pretty Sage is very striking when associated with the double white Marguerite Mrs. F. Sander.

BEGONIAS.—Tuberous-rooted Begonias should be placed in shallow boxes containing moist sand and leaf-mould, in which they should be placed, but not quite covered. Ainery just started is the best place in which to grow them, but if required for bedding purposes the less fire-heat employed the more sturdy and better they grow. As soon as the shoots have grown half-an-inch long, the tubers may be cut into portions containing one or more eyes, in the same manner as seed Potatoes are divided, and replaced in similar soil and grown in a very slightly-heated structure—with just sufficient warmth to keep the atmosphere buoyant. Begonia Northiana (the Continental variety of that name) has erect scarlet flowers and an excellent constitution, and is the finest of all for bedding. This is a totally different plant from the weakly sort with drooping flowers, which is often grown under that name. Stock plants of fibrous-rooted Begonias should be pulled to pieces and placed in gentle warmth. All Begonias grow well in soil containing decayed leaf-mould, and the compost should be on the loose side. Seeds of *B. semperflorens* varieties, if sown at once, will furnish good plants suitable for summer bedding, and may be relied upon to come fairly true from seed.

SOFT-WOODED PLANTS.—The propagating houses and frames are crowded with a complement of all soft-wooded plants required for decorating the formal parterres. The closest attention must be given to prevent the young plants from becoming drawn. Where a groundwork of any special colour is attempted, with tall specimens of another kind as dot plants, the latter—such as *Heliotropes* and *Fuchsias*—should be trained with long stems. Grow them in a warm house—a temperature of 50° to 55° is suitable—where they should develop into healthy, sturdy specimens. Subjects utilised as edgings—such as *Dactylis* and *Alyssum*—should be increased either by division or by cuttings.

THE THYME WALK.—The Thyme walk is a favourite part of these gardens, and the present is a suitable time to strike a few healthy cuttings of Lemon Thyme to raise plants for filling up blank spaces. The walk may be formed as a curve to connect two points. When the plants are walked on the boots carry the pleasant perfume for hours.

HELLEBORE.—The green Hellebore *H. viridis* has been, and is at the present time, very effective in these gardens. It is an accommodating plant, for it will grow on any dry bank or slope, or under shady trees, in the poorest soils. We have also the Lenten Hellebore, *H. orientalis*, as well as the Christmas Rose, *H. nigra*, and all are worthy of extended cultivation. All of the species resent disturbance at the roots.

WATER-SIDES.—Willows and Dogwoods massed on lake-sides for winter effect, by reason of their beautifully coloured bark, should be cut close to the ground and the prunings utilised for cuttings. The latter may be dibbled in the soil to take the place of unhealthy or exhausted plants. *Salix babylonica Britzensis* has red bark, and *S. ramulus aureus* is the best of the yellow-stemmed Willows, whilst *Cornus sibirica* is the best red-stemmed Dogwood. Willows and Dogwoods should be planted somewhat closely in large, irregular masses.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON, Oakwood, Wylam-on-Tyne.

IMPORTED ORCHIDS.—Such deciduous species of *Dendrobium* as *D. Wardianum*, *D. nobile*, *D. Falconeri* and *D. Devonianum* are usually imported in large quantities at this season of the year, and the plants are in demand for private gardens, as they are useful not only for furnishing cut blooms but also for decorative purposes generally. The most useful species of all is *D. Wardianum*, and many gardeners purchase large quantities of this plant annually to furnish flowers in the spring. *D. Wardianum* does not generally remain in a good condition after it has been in cultivation for some time, and for this reason it is desirable to purchase a few fresh plants annually. Newly-imported plants should be overhauled carefully for the presence of insect pests, which may be concealed about the pseudo-bulbs, bracts, and base of the plants. All dead and decaying matter should be cut away and the plants prepared for potting. Well-drained, shallow pots or pans—they may be suspended—are suitable receptacles, for plants in bloom are seen to the best advantage when hung from the roof-rafters. The receptacles should be sufficiently large enough to accommodate the plants, but no larger. Very little compost is necessary, and it may consist of equal parts fibrous peat, *Osmunda*-fibre and finely-chopped *Sphagnum*-moss, mixed with a sufficient quantity of broken charcoal and sand to render the materials porous. The compost should be pressed firmly about the base of the plant in order to hold it in position, and the pseudo-bulbs should be secured to neat stakes. Very little root moisture will be necessary until the shoots grow some considerable distance from the base. Spraying the pseudo-bulbs, compost, etc., is the best method of applying moisture in the early treatment of the plants, for it is only necessary to retain the pseudo-bulbs in a plump condition. Those that arrive early in the season are the most satisfactory, as they obtain full advantage from our all too short summer. The directions for potting *D. Wardianum* apply also to the other species mentioned.

RENANTHERA IMSCHOOTIANA.—This plant is also imported at the present season, and no other Eastern Orchid is more serviceable in private gardens. The brilliant racemes of scarlet flowers last fresh for a long time, and they are very decorative. The plant blooms in the spring and summer and grows best in baskets or shallow pans in the warm intermediate house. The compost recommended for *Dendrobiums* is suitable for this *Renanthera*. When the plants are in active growth keep the atmosphere well charged with moisture.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE, Eastwell Park, Kent.

STANDARD FRUIT TREES.—Although standards are too large for planting in the majority of walled-in gardens, there is usually ground in close proximity to the kitchen garden that could be utilised for large fruit trees. Plant the hardier kinds in the colder and more exposed situations, reserving the best and warmest positions for choice varieties. Damsons may be grown in cold, windy situations, where most other fruits would fail. Thus they may be grown on the north or east side of an orchard, but if the position is a very bleak one it would be well to plant some thick-growing, hardy tree such as the Austrian or Corsican Pine, as a

wind-break. The Damsons themselves should be planted closely to act as a wind-break to the other fruit trees. The Farleigh, Bradley's King and Prune Damson are good varieties. The newer Merryweather is a good late variety; the tree is a very strong grower and bears large fruits of good flavour. Bullaces succeed under the same conditions as suit Damsons, and where they are appreciated Langley Black Bullace and the White Bullace should be planted.

STANDARD APPLES.—Although autumn planting is much to be preferred, time will be saved if the work of planting is undertaken during the next few weeks in favourable weather. If the trees arrive from the nursery when the weather is frosty, place them in a cool place where they may be unpacked with safety and the roots covered with soil until the conditions are suitable. If the ground has been previously cropped with vegetables and is in a good condition it will require very little further preparation. Do not plant fruit trees in low-lying, damp situations, as in such places spring frosts are more frequent. Well-drained ground sloping gently to the south or south-west is best suited for fruit trees, and if the soil is a rich loam success is almost assured. Inferior soils may be improved by adding wood-ash, loam, or even good garden soil. In the case of a small orchard or enclosed strip of ground it is an advantage to inter-crop with vegetables or small fruits. If the land is laid down to grass poultry or stock should be allowed on it. In any case the site for the trees should be well prepared, making stations for the trees about 6 feet in diameter. Never incorporate rank animal manure with the soil when planting young fruit trees; this is only required when the trees are bearing good crops of fruit.

STANDARD PLUMS.—Standard Plums are very useful to supplement the crop of this fruit from the wall and bush trees. Varieties of Plums suitable for planting as standards are Rivers' Early Prolific, the Czar, Belgian Purple, Gisborne, Greengage, Early Orleans, Kirke's, Monarch, Victoria, Primate, Pershore and Bonne Bouche Gage. When planting stone fruits of any kind add mortar-rubble or chalk to the soil. Tie the trees securely to strong stakes immediately they are planted and mulch the roots with some light material.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

THE VINERY.—The earliest vines should be thinned of superfluous bunches, selecting for the crop those that are the more compact, and with strong, short stems. Such bunches will be the more likely to swell their berries well, and less liable to shanking. Do not force the vines hard during dull weather. The ventilation of the vinery should receive careful attention, admitting air on favourable occasions, as nothing is more detrimental to vines in any stage than a stagnant atmosphere. See that the outside borders are protected from cold rains and snow, and keep the inside borders in a moderately moist condition. Vines in bloom should be grown in a temperature of about 65° at night, with a rather dry atmosphere, closing the house early in the afternoon when the temperature is about 80°. Newly started vines should be syringed several times daily. Any rods that are slow in breaking into growth should be bent back, and kept constantly moist. Attend to such details as disbudding and pinching to ensure the proper regulation and development of the foliage.

MELONS.—When planting Melons use the best loam obtainable, and do not allow too much room for the roots, as to do so is one of the greatest mistakes in Melon culture. Place a little powdered charcoal around the collar of each plant as a preventive of canker. The bottom heat need not exceed 70°, with an atmospheric temperature of 75° to 80°, according to the condition of the weather. If the plants are growing in pits cover the roof at night with some protective material, as this will obviate the use of much fire heat. When the atmosphere is moderately moist admit air on all favourable

occasions during the early part of the day, but close the ventilators early in the afternoon in order to take full advantage of the sun heat. Sow seeds at intervals to provide plants for successional cropping.

FIGS.—Maintain a moist, genial atmosphere in houses where the trees are already in leaf. As soon as the new growths have extended three or four inches pinch out the points, for this will favour a rapid development of the fruits. Where trees are grown in considerable numbers some of the more forward plants may with advantage be placed in another well-heated glass-house to hurry them into growth.

PEACHES AND NECTARINES.—Where more fruits have set than are required for a crop they should be thinned freely before they grow to the size of peas. Continue to disbud the shoots, taking care to retain growths that arise from the base or heel of the previous season's growth, for these mainly furnish the fruiting wood of another season, as well as being necessary for the formation of the tree. The foreright shoots, or breastwood, should be removed entirely, but if growths are required to furnish bare spaces some that are suitable may be trained in. Let the inside borders be well supplied with moisture, and keep late houses as cool as possible.

PINES.—Fruits of the Queen variety are ripening, and these will be followed by Smooth Cayenne and Charlotte Rothschild. Pay particular attention to the condition of the roots, for without good healthy roots fine fruits cannot be expected. Maintain the temperatures already advised, with a steady bottom heat. Water the soil freely whenever necessary with tepid water in which a small quantity of guano has been placed. Do not practice much syringing overhead. Successional plants should be grown slowly for the present. Where bottom heat is not provided by hot-water pipes, and a new bed has to be prepared for suckers, the present is a suitable time to get the fermenting materials ready. Some growers prefer beds of old tan mixed with a little new tan, as in this case the suckers may be plunged immediately they are potted. When potting or top-dressing the plants see that the soil is first warmed thoroughly.

CHERRIES.—The houses in which Cherries are forced should be ventilated freely during the early part of the day, for no fruit-tree resents a close, moist atmosphere more than the Cherry. Spray the trees both mornings and afternoons until the flowers expand, when syringing should be discontinued until after the fruit has set. Afford a little ventilation constantly at the top of the house as the trees come into bloom whenever there is no danger of the temperature falling below 45°; a rise of 10° or 15° may be permitted during the day by sun heat.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

TUBEROUS-ROOTED BEGONIA.—The tubers, that have been rested quite dry, should be prepared for starting again. Like the Gloxinia and Achimenes, the Begonia is best started in boxes containing leaf-mould or cocconut fibre. Shake the old soil from the tubers and arrange them just below the surface. Afford water sparingly until growth is well advanced, but use the syringe frequently. The atmospheric temperature should be 60° to 65°. Large tubers may be cut in two. Dust the cut surface with powdered charcoal mixed with slacked lime, for it should be dry before planting. Seed may be sown on the surface in well-drained shallow pans. Place a sheet of glass over the pan, and cover it with paper, for the seeds will germinate best in the dark. When the seedlings appear, accustom them gradually to the light until finally they are placed on a shelf close to the roof-glass; but they must be shaded from direct sunshine.

HERBACEOUS CALCEOLARIAS.—The earliest batch of these showy greenhouse plants growing in 5in. pots are ready for shifting into 7in. pots, in which they will flower. The compost should be open in texture. A suitable mixture

is formed of two parts sandy loam, one part leaf-mould, with dry manure and sand added. Water the soil sparingly at the start, and re-pot the plants before they become pot-bound. Aphid infests the undersides of the leaves, and should be destroyed by fumigating. Grow the plants in an airy house, close to the roof-glass, in a temperature of 55°.

CAMELLIA.—The flower-buds of these showy greenhouse plants are swelling fast, and the plants need occasional doses of weak liquid manure and syringings on frequent occasions until the flowers open. If the leaves are sponged with tepid water the plants will present a brighter appearance and it will help to promote good health in the foliage. When the flowers are over the atmosphere should be kept warm and moist. A temperature of 45° will suffice whilst the plants are in bloom.

FUCHSIA.—The main batch of these plants may be started now in a temperature of 50° to 55°. Repot them when growth commences in a compost consisting of two parts rich loam and one part well-decayed manure and leaf-mould, with a liberal sprinkling of coarse sand. Shake most of the old soil from the roots, and use small pots at the start, but as growth develops repot into larger receptacles as required. Cuttings may be struck now, and they will make good plants before the autumn. These also must be re-potted before they become pot-bound, and points of the shoots should be pinched out to obtain shapely specimens.

CHRYSANTHEMUMS.—Cuttings of Decorative and Single Chrysanthemums that are sufficiently rooted should be potted in a compost consisting of three parts rich loam and one part each of horse manure, leaf-mould, and sand. Use the syringe frequently; if the compost is fairly moist, root waterings will not be needed until fresh growth develops. Plants already established in their pots should be afforded plenty of air during mild weather. Stand them in a light position near to the roof-glass, and syringe the foliage with quassia extract to destroy green and black fly.

HYDRANGEA HORTENSIS.—A few well-established plants in pots may be placed on a shelf near to the roof-glass in a house having a temperature of 50° to 55°. When well advanced in growth, water the roots twice weekly with liquid manure. Thos. Hogg is a good white variety, and responds to the influence of a moist heat.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynningham, East Lothian.

FORWARDING PEAS.—In those years when the early crop cannot be sown out-of-doors, I make a substitutionary sowing in boxes at about this time. Earlier plants become drawn before they can be planted out. There are several ways of proceeding, but none more to be preferred than to sow the seed very thickly, almost touching each other, in ordinary cutting-boxes. The soil to be saturated with water, and the boxes placed in a warm structure for a few days until the seedlings are through the soil. Afterwards they are better grown on until two or three inches in height in a cool house. When the time approaches for transplanting into the border, allow the soil in the boxes to become quite dry, in which condition the roots can be disentangled easily without breakage. They are then set a few inches apart in rows, and so deep as to be almost covered. The crop from these is usually ready to gather at about the end of May. In the earlier localities the variety Pilot should be sown, but as yet it is too early to sow in Northern districts.

CHERVIL.—Where the leaves of this aromatic little herb are in request, a few seeds should be scattered thinly on any odd spot of ground, covering them with a little light soil and smoothing the surface with a spade. Sometimes enough to meet requirements is produced by self-sown seeds.

PARSNIPS are usually sown at about this date, but there will be ample time if they are not sown until a few weeks hence. This root-

vegetable should always be grown in deeply-trenched ground, which, if in good heart, is better not to be manured. I sow a few seeds at every 6 inches, a system which saves thinning. The rows must be at least 15 inches apart, but if too much space is allowed the roots are apt to grow very large and coarse.

BRUSSELS SPROUTS.—Another sowing, which sometimes proves the most profitable, should now be made in a cold frame, placed on a spot in the garden selected for the purpose, and in the ordinary soil. Sow the seeds broadcast, but not thickly, else the seedlings would need to be thinned. At the end of March the frames are removed and the plants exposed to harden and strengthen for planting later.

CAULIFLOWERS.—Reserve a part of the frame for a sowing of Autumn Giant or others of that type, and of a variety of the Erfurt Market type. Prepare for the Cauliflowers by incorporating some well-decayed manure into the soil a few inches below the surface. It is worth the trouble to mat the frames at night, but in the daytime expose the plants fully to the sunshine.

EARLY POTATOS.—Most of us have a spot chosen for its shelter, its exposure, and the quality of the soil in which to plant early Potatos. We, too, have our special variety—very old stagers, some of them. Myatt's Prolific, though not the very earliest sort, is still in favour, because of its high quality. Whatever the sort selected, it is important that the ground receive the most thorough preparation. It would naturally be manured when either deeply dug or trenched in autumn; and now it should be very thoroughly broken up and pulverised by means of a broad-tined fork, and a dressing of superphosphate of lime mixed at the same time—but cultivation is the main thing. Plant the tubers whole, and not too small specimens. Do not grudge a few inches of extra space. Some growers cover the sets with discarded potting compost, which is no doubt of much value to induce rapid rooting in heavy soils, but in well-prepared medium and light soils it is not needed. See that the surface of the ground is loosened after heavy rains by hoeing, which serves to warm the ground, and a careful workman will not damage the growths.

THE "FRENCH" GARDEN.

By PAUL AQUATLAS.

NURSERY BEDS.—Select a well-sheltered and sunny part of the garden for rearing seedlings in the spring. A space 30 feet wide by 25 feet long is sufficient for a garden of two acres. Make a small bed 6 inches thick for the first sowing of Cauliflower All Year Round or Half Hardy Parisian. The soil used in the frame must be in an excellent condition. Sow the seeds thinly and keep the lights close until the cotyledons appear, when a little ventilation may be afforded on every favourable occasion. The first batch of Celery should be sown within ten or twelve days on a hot-bed 6 to 8 inches thick; there have been great improvements in the strain of self-blanching varieties of Celery. Both Chemin and White American grow strong and tall, and are not so liable to disease as are some other sorts. Sow the seeds thinly, mixing them with dry sand as they are very small. Germination is slow. The seedlings must not receive any check or the plants may run to seed. Celeriac Early Parisian may be sown very early. This is a large-rooted variety and hardier than ordinary Celery, also not so liable to run to seed.

CROPS IN THE OPEN.—A sowing of Radish Sparkler or French Breakfast can be made either in drills made at 9 inches apart or broadcast. The Radishes are grown chiefly as an intercrop on ground where Lettuces or Cauliflowers will be planted in a few weeks' time, but it is advisable to sow them in a special bed by themselves in a warm corner, where the crop can be protected if necessary. Sow Spinach Monstrous of Viroflay to follow the autumn batch. When grown as a catch-crop Spinach should be sown very thinly. In heavy land sow in drills formed at 1 foot apart. The Cabbages planted in October are growing well and the ground should be well hoed and dressed with nitrate of soda.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would oblige by delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, FEBRUARY 17—

Broughty Ferry Hort. Assoc. meet.

WEDNESDAY, FEBRUARY 18—

Croydon and Dist. Hort. Soc. Annual Dinner.

THURSDAY, FEBRUARY 19—

Brighton, Hove and Sussex Hort. Soc. meet, Odd-fellows' Large Assembly Room. (Lecture by Mr. W. Giles on "Popular Vegetables for Home and Exhibition.")
Linnean Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 39.5°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, February 11 (6 p.m.): Max. 47°; Min. 45°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, February 12 (10 a.m.): Bar. 29.5°. Temp. 49°. Weather—Sunshine.

PROVINCES.—Wednesday, February 11. Max. 50°, Cornwall; Min. 43°, Aberdeen.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—

Herbaceous Plants and Hardy Bulbs, Roses and Fruit Trees, at 12, At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

TUESDAY—

Fruit Trees, Ornamental Trees, and other stock, at Osterley Park Nurseries, Windmill Lane, near Hanwell, by Protheroe and Morris, at 12.

WEDNESDAY—

Hardy Bulbs and Herbaceous Plants, at 12, Trade Sale Miscellaneous Bulbs, at 12, 1.149 c/s Japanese Lilies, at 2.30, Palms and Plants, at 5. By Protheroe and Morris.

THURSDAY—

Special Sale of Roses, At 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 1.

FRIDAY—

Imported Burmese Dendrobiums, also Established Orchids, At 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.45.

MONDAY AND WEDNESDAY—

Rose Trees, Shrubs, Perennials, Lilies, etc. At Stevens's Rooms, 58, King Street, Covent Garden, London.

The annual meeting of the Royal Horticultural Society, a full report of which is published on p. 115, was of more than ordinary interest. In the first place it had to record the severe loss sustained by the Society in the death of the late President, Sir Trevor Lawrence. In deploring his loss the Society recalled the memorable and continuous services which Sir Trevor had rendered to the cause of Horticulture; services which are appreciated with admiring gratitude by all the members of the Society.

In the second place the meeting gave its sanction to a scheme elaborated by the Council for extending the work at Wisley. This extension is the natural outcome of the work which has been done during the past ten years and, as pointed out by Sir Daniel Morris in moving the motion to create a Trust Fund for the purpose, the further work to be undertaken at Wisley will involve the provision of larger facilities for each of the three kinds of activity now carried on at the gardens, namely, research, education and the carrying out of trials of flowers and vegetables. The decision of the Fellows and of the Council is a wise one; for just as a successful business must be progressive if it is to maintain its position, so must a Society which represents a progressive craft take a lead in ensuring the progress of that craft.

The suggestions received by the Council in response to its inquiry how it might best serve to advance horticultural knowledge were so numerous as to convince the Council that a bold scheme of development would meet with the support of the Fellows of the Society. This event has proved the correctness of this judgment. In perfecting the organisation for the carrying out of special investigations, for the perfecting of horticultural education and for the extension of trials the Society has taken a step which we are convinced will prove of great and lasting benefit to horticulture.

Public Parks and Playgrounds.

The wanton destruction of an avenue of Poplars in Finsbury Park raises grave issues requiring close investigation. Unfortunately, and for reasons which will be apparent immediately, the investigation of such acts as that at Finsbury Park is by no means easy. It is a simple matter for anyone who understands these things to satisfy himself that the destruction of the avenue was an act of sheer foolishness. He has only to inspect the ground to discover that the increased space available for games is so small as to fail to justify the removal of the trees.

But when we look beyond this irreparable occurrence, and, in the hope of forestalling them, endeavour to ascertain what other similar acts of destruction are contemplated by authority, we are met by a screen of secrecy, as though we were spies endeavouring to discover by guile the dispositions of an enemy. When we apply to the men who are in charge of the parks we learn that to divulge any information as to which avenue or group of trees is to fall next beneath the axe may involve the head in dismissal. Like a gaoler under the Terror, he dare not give a hint to friends of the victims which head is to fall next.

Neither, so far as we can discover, has the head of the Park any influence with the judge. The park superintendent who has a knowledge of trees, if he wish to stand well with authority, had best keep it to himself. The fiat goes forth—clear all this horticultural rubbish—trees in

avenues or groups, flower beds, shrubberies—sweep them away and erect goal posts in their place.

We protest against the absurdity of this condition of affairs. There is no state of war between the public and the Council. The Council is the servant and not the master of the public, and the public has the right to know and to criticise what the Council intends to do with the parks which it holds in trust for the people.

In present circumstances of enforced secrecy, those of us who care for parks, who know the varied part they play in public enjoyment, are confronted always with accomplished facts. This group of Planes has been cut down—it is no good crying over felled trees. That avenue of Poplars has been demolished—they are gone and grumbling will not make them grow again.

The Parks Committee is composed of well-meaning gentlemen who, as is always the case with this sort of committee, are led by the nose by the permanent officials. Hence any caprice or mistaken policy on the part of those who really determine things, if carried out swiftly and secretly, will evade criticism and, supported by the all-powerful argument of the accomplished fact, will receive the uninformed sanction of the Council. We lay stress on these facts because it is evident that without the assistance and advice of the experienced men who superintend the parks the Council is bound to continue to blunder.

That its blundering is well meant is evident. The members of the Council, like everyone else, desire that children shall have full use and enjoyment of the parks. All desire that the fullest facilities shall be provided for games. But whilst holding these common views we feel it necessary to point out that there is a very clear limit to the use of the public parks for the purpose of set games. They are frequented by thousands of tired people who are seeking rest. Men and women who have physical exercise enough in their work, and who wish to recreate themselves by the contemplation of or mere propinquity with tranquil scenes, to whom the sight of budding trees brings new life, and for whom the bright hues of flowers lighten the drab of their homes: games must not drive these people from the parks.

Wherefore the London County Council would do well to cease from its haphazard method of control and to face the fact that it has a difficult problem to resolve. That problem is to determine how far the noisy cuckoo of games shall be allowed to oust the legitimate nest-holder: to hold the balance between the park as a retreat for tired people and a sanctuary for those townsmen and women who love nature and the park as a playground. In many places these two functions are not incompatible one with another; but in the smaller parks of crowded districts they require the utmost care of adjustment. If they will take this work in hand, will call in the help of experienced advisers in horticultural affairs, and will utilise the large fund of experience pos-



Photographs by H. N. King.

LEONARDSLEE, HORSHAM, THE RESIDENCE OF SIR EDMUND G. LODER, BART.

sessed by the park superintendents, the Council will deserve the gratitude of the community. The difficulty is one which is bound to grow and the Council will be wise to face it before its administration is disfigured by more very silly acts like that of destroying the group of Planes and avenue of Poplars at Finsbury Park.

As evidence that we have not misrepresented the present state of affairs, we put on record the fact that at one of the parks which was visited in the course of our inquiry the superintendent, on learning the nature of our inquiry, ran away, lest by divulging facts of public interest he should lose his place; and this in London in 1914! To repress irresponsible chatter is to confer a benefaction: but to impose a gag on responsible officials is to proclaim oneself bankrupt in the art of government.

Supplementary Illustration.—Our Supplementary Illustration is of Leonardslee, Sussex, the residence of Sir EDMUND G. LODER, Bart. One view shows the south-east front, which slopes rather steeply from the residence. The view from the terrace includes the lake, which lies in a hollow amidst banks of Rhododendrons and other flowering and foliage plants. In the lower picture is seen the rustic bridge, which leads to the portion of the pleasure grounds beyond the lake. It is on the further side of the water that the extraordinary colonies of *Sarracenia* are cultivated. A full description of the wonderful collections of trees and shrubs contained in these gardens is to be found in the issues for October 13 and 20, 1906.

AMERICAN GOOSEBERRY MILDEW.—The Board of Agriculture and Fisheries desires to remind fruit-growers, nurserymen, market gardeners, etc., in the county of Kent that the Orders prohibiting, under a penalty not exceeding ten pounds, the movement of Gooseberry and Currant Bushes either from or within the county except by licence are still in force. The Local Authority for the county of Kent has ceased to employ an inspector for the purposes of these and other Orders under the Destructive Insects and Pests Acts, and all applications for licences should therefore be sent direct to the Board.

CENSUS OF PRODUCTION.—The Board of Agriculture and Fisheries is engaged in collecting information in connection with the census of production which is now again being taken, for the compilation of another report on the Agricultural output of the country, similar to that issued for the year 1908. A large number of forms of inquiry on various points have been sent to occupiers of land, who will, it is hoped, as on the previous occasion, assist the Board by furnishing the information required. The particulars asked for are solely for use in the Statistical Division of the Board for this purpose.

THE POTATO QUARANTINE IN AMERICA.—From statements published in the American Press it would appear that the recent establishment of the "Potato Quarantine" is having a considerable effect on prices. Thus, Mr. A. W. McCANN, writing in the *Globe* (New York), states that Potatoes which were sold wholesale at 60-65 cents per bushel in Boston, New York, Philadelphia, and Baltimore are now selling at 85-90 cents, and predicts that the wholesale price will rise to 1 dollar 50 cents before the middle of the present month. Mr. McCANN observes that New York farmers are already asking 1 dollar per bushel at the loading stations. The same writer expresses apprehension lest other countries adopt retaliatory measures, and insist that American Apples shall not be imported unless it can be shown that they are grown in districts free from such pests as codlin moth, "bitter rot," and San José scale.

HORTICULTURE AT CRAIBSTONE EXPERIMENTAL FARM.—Mr. GREENHOWE, the recently-appointed Lecturer in Horticulture in the Aberdeen and North of Scotland College of Agriculture, has submitted a proposal to the Governors to utilise the garden at Craibstone—the experimental farm acquired by the college, and situated a few miles from Aberdeen—for experimental and demonstration purposes in horticulture. It is proposed to form a model fruit plantation for supplying information as to the most suitable varieties of hardy fruits for the district, also for conducting manurial experiments and for practical demonstrations to horticulturists.

PARMENTIER AND THE POTATO.—In the last three issues of *Le Jardin* M. G. GIBAULT has contributed a series of interesting articles entitled "La Légende de Parmentier." They deal with the introduction and history of the Potato as an article of food in France.

CHICORY GROWING IN ABERDEENSHIRE.—Remarkably successful experiments in the growing of Chicory have been carried out in Aberdeenshire under the auspices of the Aberdeen and North of Scotland College of Agriculture. The districts selected were Kilblean and Culsamond, and some valuable information and results have been obtained. The variety tested was Magdebourg, which has a good reputation. The experiments demonstrated that the best soil for Chicory is a deep loam, and subsoiling previous to the crop being sown was proved to be a great advantage. To get the best-shaped roots no farmyard manure should be used, but a good dressing of artificial manures should be applied. The crop was planted early in May, and it was not ready for lifting until well into November. Had the season been late the crop might not have been a success, especially in late districts. Samples of the roots were submitted to a Coffee manufacturer on a large scale in Aberdeen, and he reported that the ground-roasted roots produced capital Chicory. The yield was, approximately, 19 cwt. per acre. The price of Chicory to the manufacturer is about £28 10s. per ton, of which the sum of £12 10s. is paid for duty, thus leaving the grower about £16 per ton. Evidently a return of 19 cwt. per acre of ground-roasted Chicory would give a profitable result. There is considerable labour and expense entailed in connection with the crop owing to the heavy dressings of manure necessary and the continuous cultivation to keep the land free from weeds in the early stages. To get the best results the leaves, when they turn yellow—that is, before lifting—require to be removed gradually. Great care must be exercised in lifting the crop, in order to prevent bleeding of the roots. Those leaves which remain green at the time of lifting make capital food for stock, thus forming another asset in the value of the crop. The college authorities purpose next season to carry out similar experiments in earlier districts within the college area, as evidently lateness in ripening is a weak point in the growing of Chicory. The growing of Chicory has been a neglected part of agriculture since the duty on the home-grown article was made practically the same as that on foreign grown. Recently attempts have been made in England, particularly in Cambridgeshire, to grow Chicory again, and it is satisfactory to learn these have met with considerable success. Meantime the further extension of the experiments in the North of Scotland will be watched with much interest.

SULPHUR AS A FERTILISER.—The most recent contribution to the discussion on the use of sulphur as a soil-fertiliser is provided by Herr W. JANICAUD, Director of the horticultural experiment station of Mülhausen, who publishes the results of his experiments in *Die Gartenwelt* (January 17). Mr. JANICAUD used the Tomato as his test plant, and carried out his culture in pots. The Tomatos (*Luculus*) were grown in various conditions; some in soil to which no manure was added; others in soil to which was added flowers of sulphur (2 grams per 1 kilo-

gram of soil = $\frac{1}{2}$ oz. to 2 lbs.), and others which received either a complete manure only or a complete manure together with sulphur. The conclusion reached is that sulphur, even in the presence of a complete manure, acts as a stimulator to the growth of the plant. Dr. HILTNER, who estimated the numbers of bacteria present in the manured and unmanured soils, finds that the effect of sulphur is to bring about a remarkable increase in the bacterial population. Thus the number of bacteria was found to be:—

Soil.	Bacteria per gram of soil.
Unmanured	12.51 millions.
Sulphured	23.59 "
Completely manured and sulphured	16.16 "
Completely manured and un sulphured	10.97 "

SMUT DISEASES OF CULTIVATED PLANTS.—Bulletin No. 73 of the Department of Agriculture, Ottawa, Canada, consists of a valuable summary, by Dr. Güssow, the Dominion botanist, of what is known of the cause and control of the smut diseases of cultivated plants. The Bulletin points out that the spores of the smut fungi are distributed by wind and by such farm instruments as threshing machines, and recommends the disinfection of the latter by means of formalin. The results of recent experiments demonstrate that though, generally, the spores are killed by passing through the body of an animal, this is not always the case; nor can it be stated with certainty that when diseased grain is fed to stock the animals run no risk of disease. As is now generally accepted, different smuts have different methods of infecting the host plants. In stinking smut of Wheat, covered smut of Barley, naked and loose smut of Oats, for example, spores distributed from diseased ears reach and lodge upon the grains, are sown with the seed, germinate in the ground, and produce secondary spores which infect the seedling. In other smuts, for example the loose smuts of Wheat and Barley, the spores, which are ripe at flowering time, are carried to the stigma of the Wheat or Barley flower, germinate like pollen grains thereon, and, sending down a germ tube into the ovary, provide for the infection of the grain which is being produced in the ovary. Evidently a knowledge of these facts must determine practice—for example, whereas dressing seed with copper-sulphate or formalin or treating it with hot water is productive of good results in the former class, it is without effect when applied to those smuts in which floral infection occurs. Early sowing of autumn wheat has been shown by Dr. MUSSERATI to result in a considerable reduction in the amount of disease. Thus Wheat sown in France on October 11 gave rise to only 1 per cent. of diseased plants, whereas in similar Wheat sown on November 22, infection took place in 90 per cent. of the plants. From these and other experiments it may be laid down that the later in autumn and the earlier in spring Wheat is sown the more the crop is likely to be affected. The gravity of smut diseases may be judged by the estimate that Oat smut alone causes a loss of 8 per cent. of the total crop, that is, a financial loss of upwards of £3,000,000 per annum. The Bulletin, which gives an excellent summary of recent work, both at Ottawa and elsewhere, concludes with an illustrated description of the chief smut diseases which attack cereals and other farm plants.

THE HORTICULTURAL BRANCH OF THE BOARD OF AGRICULTURE FIRST ANNUAL REPORT.—The report of the Horticultural Branch of the Board of Agriculture has just been issued. It is prefaced by a brief statement by Mr. T. H. MIDDLETON, who draws attention to the fact that, in addition to the horticultural subjects dealt with by Mr. ROGERS in the Report, other matters affecting horticulture are treated of in separate publications. The main body of the Report consists of an account of the scheduled

diseases of plants—*e.g.*, American Gooseberry mildew, wart disease of Potatoes, large Larch sawfly, Tomato and Cucumber canker, and others. The price of the Report is 2s. 2d.

SOCIÉTÉ FRANÇAISE D'HORTICULTURE DE LONDRES.—The annual dinner of the members of the London Society of French Gardeners will be held at the Café Royal, Regent Street, on Saturday, May 2. Mr. HAROLD BEALE, of the firm of Messrs. JAMES CARTER AND Co., will preside. The secretary is Mr. G. SCHNEIDER, 3, Meredyth Road, Barnes.

NORTH OF ENGLAND HORTICULTURAL SOCIETY.—The annual general meeting of the Fellows of the North of England Horticultural Society will be held on Wednesday, February 18, at 3 p.m., in the Queen's Hotel, Leeds.

LEGACY TO A GARDENER.—By the will of the late Miss EMILY MATILDA EASTON, of Nest House, Felling, Durham, who died on Christmas Day, aged ninety-five years, her gardener, Mr. JONATHAN MILNER, receives a legacy of £3,000.

ANIMALS AND PLANTS UNDER DOMESTICATION (see pp. 74, 92).—At the third lecture of the course Professor BATESON said that while the study of our domesticated animals and plants leads to the conclusion that many, such as the dog, the horse, and the Wheat, are of multiple origin, such a conclusion is unsatisfactory, for it only throws the problem of the actual origin of new forms a stage further back. The great antiquity of many animals and plants prevents any exact knowledge of their origin, and it is not until we come to the introductions into domesticity of the 18th century that we have good evidence of the development of forms under cultivation. A series of coloured figures by WEINMANN, published in Holland in 1740, show the state of horticulture at that date in a very complete manner. Certain plants, such as the Anemone, the Auricula, and the Balsam were fully developed, and probably no great change has since occurred in these plants. Many forms of the short-spurred *Aquilegia* existed, and it was not until the introduction of the long-spurred, Californian species that any further change occurred in this genus. The Strawberries were very poor, and their improvement is due to the introduction of the American species. A new form that has appeared quite lately is the red annual Sunflower. This plant was seen by Professor COCKERELL growing by the roadside in Colorado. Knowing that the annual Sunflower is self-sterile, Professor COCKERELL crossed this plant with the yellow form, and in the first generation obtained plants intermediate between the yellow and red type. He crossed these F_1 plants with each other, and in the second generation obtained the true red variety again, and this variety has now been put on the market. In conclusion Professor BATESON showed a number of Japanese prints (see figs. 49 and 50) illustrating the great range of variation seen in the annual *Ipomaea*. This plant is much grown in Japan, and there is great competition in the production of new forms. It is supposed that selection of the shrivelled seeds gives a larger proportion of the monstrous forms so much sought after.

PUBLICATIONS RECEIVED.—*Etudes sur la Flore du Katanga.* By Emile de Wildeman. Vol. 11. Fasc. I. (Bruxelles: Falk fils.)—*The White Gate and Other Poems.* By Lorna Leigh. (Hampstead, London: James Hewotson and Son.) Price 1s. 6d.—*Mitteilungen der Deutschen Dendrologischen Gesellschaft; und Jahrbuch für Staudenkunde.* Published by Dr. Graf v. Schwerin, Wendisch-Wilmersdorf bei Thyrow.—*Fruit and Its Cultivation.* By T. W. Sanders. (London: W. H. and S. Collingridge.) Price 6s. net.—*The Sweet Pea Annual, 1914.* Published by the National Sweet Pea Society. Secretary, Mr. Henry D. Tigwell, Greenford, Middlesex.

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 10.—The meeting on Tuesday last was of more than usual importance in view of the annual general meeting of the Fellows, which was held at 3 p.m. in the Lecture Room, the



FIGS. 49 AND 50.—MONSTROUS FORMS OF *IPOMAEA*, SHOWN BY PROFESSOR BATESON AT HIS LECTURE ON ANIMALS AND PLANTS UNDER DOMESTICATION, FROM THE JAPANESE MONOGRAPH BY BUNJIRO FUJISAWA.



proceedings at which are reported below. The Hall was filled with exhibits, three of which were awarded Gold Medals, and there was an excellent attendance. A group of Orchids from the Westonbirt collection comprised the most notable floral exhibit, and it was awarded a Gold Medal.

The Orchid Committee recommended two First-class Certificates and seven Awards of Merit to novelties

The Floral Committee recommended two Awards of Merit to new plants and nineteen Medals to collections, including the Gold Medal for a comprehensive exhibit of species and varieties of *Nephrolepis* from Messrs. H. B. MAY AND SONS.

The Fruit and Vegetable Committee also awarded a Gold Medal for Oranges, Lemons and other Citrus fruits shown by Messrs. T. RIVERS AND SON.

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. Chas. E. Shea, G. Reuthe, W. J. Bean, Chas. T. Druery, J. W. Moorman, J. F. McLeod, Wm. Howe, Thos. Stevenson, John Green, Geo. Gordon, W. Bain, J. Dickson, Chas. Dixon, H. J. Jones, Arthur Turner, Chas. E. Pearson, W. Cuthbertson, W. P. Thomson, Geo. Paul, E. A. Bowles, A. A. Dorrien Smith, R. C. Reginald Nevill, John Jennings, C. R. Fielder, E. H. Jenkins, F. W. Harvey, Jas. Hudson and J. W. Barr.

Messrs. H. B. MAY AND SONS, Edmonton, were awarded a Gold Medal for an exhibit of Ferns, comprising 11 species and 73 varieties of *Nephrolepis*. The award was made for the educational value of the exhibit. The fronds were displayed on a white background, each was labelled plainly and arranged so that it was an easy matter to trace the evolution from the species, which included *N. exaltata*, *N. philipense*, *N. rufescens*, *N. tuberosa*, *N. acuta*, *N. pluma*, *N. Duffii*, *N. pectinata*, *N. davalloides*, *N. cordifolia*, and *N. ensifolia*. The most distinct is *N. Duffii*, the long rachis having small, round, overlapping pinnules not much larger than Peas. No varieties have originated from *N. Duffii*. *N. tuberosa* is very handsome and dark green in colour, but *N. acuta* is the darkest of all. *N. exaltata* has given the greatest diversity in foliage, and there were 40 varieties from this popular species. *N. rufescens* comes next with 13 varieties. In the whole of this collection pride of place was taken by *N. exaltata superba*, which has fronds 3 feet long, resembling ostrich plumes. Of those with "mossy" fronds, *N. e. Willmottae* has the densest and finest divided pinnae.

Messrs. JAS. CARTER AND Co., Raynes Park, filled a table with greenhouse Primulas. The finest was a stellata variety named Fairy Queen; the large flowers are white, with a tinge of violet around the yellow eye. This was grouped in a mass in association with *P. malacooides*. They also displayed choice varieties of the sinensis form of Chinese Primrose, amongst them the beautiful one named Holborn Coral. *Primula obconica* Crimson Gem and *P. obconica gigantea* pink and gigantea lilac were arranged in mounds, set round about with *Adiantum* Ferns and lightened with the pink trusses of *P. malacooides*. (Silver Banksian Medal.)

Forced shrubs, shown by Messrs. R. and G. CUTHBERT, Southgate, made a bold and striking exhibit. Clumps of Magnolias—*M. speciosa*, *M. alba superba* and others—grouped about with standard Wisterias, were arranged at either corner, and interspersed in the general collection were tall Laburnums, Lilacs, *Prunus triloba*, double-flowering Cherries and similar shrubs employed for forcing, with a ground of Japanese Maples and Azaleas. (Silver-gilt Flora Medal.)

Messrs. R. GILL AND SONS, Falmouth, exhibited Himalayan Rhododendrons, a number of splendidly-flowered plants of *Primula Winteri*, vases of *Cyclamen Coum* and Violets. The most imposing feature in the group was a plant of *Rhododendron argenteum*, carrying from 50 to 60 trusses of the large cream flowers. (Bronze Flora Medal.)

Messrs. JAS. VEITCH AND SONS, King's Road, Chelsea, filled a long table with batches of flowering plants—Azaleas, Lily-of-the-Valley, *Primula sinensis alba plena*, *Freesia*s of exceptional quality; varieties of the pretty Javanico-jasminiflorum hybrid Rhododendrons and the beautiful, blue-flowered *Tillandsia Lindenii*. The fine new Azalea Blushing Bride has very large, soft pink blossoms. (Silver Flora Medal.)

Messrs. W. CUTBUSH AND SON, Highgate, showed indoor flowering plants and forced shrubs, alpine and rock-garden plants and Carnations, for which a Silver Banksian Medal was awarded.

Messrs. STUART LOW AND Co., Bush Hill Park, Enfield, staged excellent plants of Cyclamens in pans. A new variety named Pink Pearl has rose-pink coloured blooms; it is a good companion to their fine Salmon King variety. This firm also showed hybrids of Erica Wilmoreana; the best was named King Edward VII.; E. lusitanica (codonodes), is hardy, and the flowers are sweet-smelling. Adjoining the Ericas were many vases of Carnations. A new variety named Countess of Pembroke, with salmon-red flowers, was noticed; also Gorgeous and Satin Robe. (Silver Flora Medal.)

Messrs. W. PAUL AND SONS, Waltham Cross, staged pot plants and baskets of cut flowers of Camellias, for which a Silver Banksian Medal was awarded. Many of the varieties were raised at Waltham Cross, and they included some fine singles. The well-known alba plena was shown numerous and well; another old favourite, L'Avenir, was much admired for its exquisite shape. Others of note were alba simplex, single; Apollo, large red semi-double variety; Mercury, rose; imbricata and Mars, rosy crimson.

Messrs. SUTTON AND SONS, Reading, again exhibited bowls of forced flowers, this time Freesias. They were almost as dainty as the bowls of Roman Hyacinths at the last meeting.

Messrs. ALLWOOD BROS., Wivelsfield Nurseries, Haywards Heath, exhibited fine Carnations of the perpetual-blooming type. Scarlet Glow, Wivelsfield Wonder, Mary Allwood, La Rayonnante and Empire Day are a selection of the varieties. (Silver Banksian Medal.)

Messrs. W. WELLS AND Co., Merstham, showed new Carnations, including Champion, scarlet, Yellow Prince, Philadelphia, rose-pink, and Peerless, cerise.

Carnations were also exhibited by Messrs. YOUNG AND Co., Hatherley; the Misses PRICE AND FYFE, Grove Park, Lee; Mr. J. C. JENNER, Rayleigh; Mr. C. ENGELMANN, Saffron Walden (Bronze Flora Medal); and Mr. H. BURNETT, Guernsey, who showed a novelty of crimson-maroon colour named Monarch. (Bronze Flora Medal.)

Messrs. J. PIPER AND SONS, Bayswater, arranged a large bank of Azaleas as a table group, with a rockery at one end, on which we noticed Primula Juliae, P. megasaefolia, P. Winteri, Cyclamen Coum, Saxifraga burseriana major and other Alpines in flower. Blooms of the clear yellow Richardia Elliotiana in vases were of excellent quality. (Silver Flora Medal.)

Mr. L. R. RUSSELL, Richmond, Surrey, showed flowering shrubs, for which a Silver Flora Medal was awarded. Azaleas were all freely flowered, the best varieties being Apollo, Dutche Perle and the dwarf, red-flowered Hexe. Wistarias, Clethra arborea variegata, Kenneyda monophylla, small Orange trees in fruit, and varieties of Hamamelis were included in the exhibit.

Messrs. J. CHEAL AND SONS, Crawley, showed dwarf shrubs on a rockery, and were awarded a Silver Banksian Medal. The plants were mostly dwarf Conifers, such as Pinus Balfouriana, P. aristata, Thuya occidentalis var. Spaethii, P. obtusa pygmaea and Abies Hookeriana.

Messrs. WILLS AND SEGAR, Florists, South Kensington, again exhibited Azaleas, for which a Silver Banksian Medal was awarded. There were large plants of the pink and white President Oswald de Kerchove variety on either side of banks of Temperance (semi-double, mauve) and purpurea grandiflora.

Messrs. H. CANNELL AND SONS, Eynsford, Kent, staged bunches of Zonal Pelargoniums. A large scarlet variety named John Watts and Dr. Crawford, crimson, are both new, whilst of the older sorts the finer were Lucana, orange-salmon; Scarlet King, Mars, crimson; Sir T. Hanbury, crimson; and Venus, white.

Messrs. H. J. JONES, LTD., Hither Green, Lewisham, exhibited varieties of zonal-leaved Pelargoniums as small plants in pots.

Mr. G. REUTHE, Keston, Kent, filled a corner by the east annexe with Himalayan Rhododendrons, interspersed with Berberis Bealii, B. nepalensis, Hamamelis mollis, Drimys Winteri and Eucryphia cordata. In the annexe Mr. Reuthe showed Alpines in pots and dwarf shrubs. (Silver Banksian Medal.)

Mr. JAMES BOX, Lindfield, exhibited hardy flowers. Magnolia alba superba was conspicuous at the back, and we also noticed Iris histrioides

major and I. Danfordiae and I. Krelagei. Narcissus, Tulips, and other bulbous flowers contributed to a very showy group.

Mr. MAURICE PRICHARD, Christchurch, Hampshire, made bright patches of colour with clumps of Hepaticas, Iris stylosa, Primula denticulata in variety, Anemone St. Bavo (scarlet), Megasea speciosa rosea and other Alpines. (Bronze Flora Medal.)

Messrs. WARES, LTD., Feltham, had splendid clumps of Iris reticulata and I. stylosa in their exhibit of hardy flowers, which was backed by dwarf shrubs. Pans of Adonis amurensis, Crocus biflorus and Hepaticas were also shown well.

Messrs. R. WALLACE AND Co., Colchester, showed Crocuses, Irises, Tulips, Fritillaria citrina, F. aurea, F. armeria rubra, Cyclamen ibericum, C. Coum and other early flowers against a background of dwarf shrubs. (Bronze Banksian Medal.)

form of Cyclamen Coum, Orobus cyaneus and Primula megasaefolia are other good subjects.

A rockery was also arranged by the WAR-GRAVE HARDY PLANT FARM, Twyford, for the purpose of displaying Iris tuberosa, Omphalodes Cappadocica, with flowers of clear opal blue colour and Cydonia japonica nivalis.

Mr. CLARENCE ELLIOTT, Stevenage, also contributed a rockery, on which we noticed in flower Crocus biflorus, C. susianus, C. minimus (a little gem with violet flowers), Saxifraga Burseriana in profusion and Iris Danfordiae.

A rock-garden was also exhibited by the Misses HOPKINS, Shepperton, who showed Petasites japonica uncommonly well.

Messrs. G. AND A. CLARK, LTD., Dover, exhibited Primroses and shrubs. The former were some of the best in the Hall, especially those of blue shades. Juniperus pachyphaea elegantissima has very glaucous stems—almost blue.



[Photograph by R. A. Malby.]

FIG. 51.—IRIS CANTAB: A CHANCE SEEDLING WHICH FIRST APPEARED IN MR. BOWLES' GARDEN. (R.H.S. Award of Merit, February 10, 1914.)

Messrs. WHITELEGG AND PAGE, Chislehurst, Kent, exhibited a flat rockery brightened by patches of Iris reticulata, Houstonia serpyllifolia, Saxifraga Burseriana major and Primula denticulata.

Messrs. BARR AND SONS, King Street, Covent Garden, exhibited batches of Irises, Hyacinths, Crocuses, Tulips, Freesias in pots, Primula malacoides and varieties of P. obconica, of which Queen of Roses has rosy-crimson blooms. This firm also exhibited a rockery planted with hardy flowers in big patches. In the centre of the rockery were branched Tulips. (Silver Banksian Medal.)

Messrs. R. TUCKER AND SONS, Brookside Nurseries, Oxford, arranged a rockery in which we noticed choice and rare Alpines. The collection of Saxifragas included S. Burseriana gloria, S. Boydii alba, S. Rocheliana (a splendid clump), and S. oppositifolia grandiflora. A fine dark

Mr. G. W. MILLER, Wisbech, showed boxes of Alpines, including Primula Winteri and Hepaticas, Daffodils, Snowdrops, Christmas Roses and other early flowers.

Mr. GEO. KERSWELL, St. Thomas, Exeter, exhibited flowers of Gentiana acaulis.

The Rev. W. EARLE, Reigate (gr. Mr. Chambers), showed a variety of Cyclamen named Antarctica. The petals of the white, flattish flowers, have wavy edges.

AWARDS OF MERIT.

Rhododendron moupinense.—This is a new, white-flowered, Chinese Alpine species introduced by Mr. E. H. Wilson. The few large flowers remind one of Azalea ledifolia and the Indian Azaleas, but R. moupinense is sturdier in habit, the leaves are much more leathery and tough and the whole plant is nearly glabrous. The flowers are borne in small trusses of one to three blooms,

but they are individually very large, reaching $2\frac{1}{2}$ inches in diameter, and the rounded, overlapping, flat-expanded segments terminating the open, broadly-conical tube give the flowers a roundness and fulness that will be appreciated by florists. The corolla is pure white, of glistening, silk-like, thin and crumpled texture, with two groups of palest sulphur guide dots on the upper part of the tube. The anthers are chocolate-coloured and the stigma green. The tough, dull-green leaves which are more crowded around the tips of the shoots vary in shape from ovate to ovate-lanceolate, being from $\frac{1}{2}$ to $1\frac{1}{4}$ inch in length by $\frac{1}{3}$ to $\frac{2}{3}$ inch in breadth. Shown by Miss ELLEN WILLMOTT, Great Warley.

Iris Cantab (see fig. 51). — A pretty bulbous Iris belonging to the reticulata group, with soft amethyst-blue or pale-violet rather than Cambridge-blue flowers, which show a little white ground at the throat and the typical orange-coloured ridge. It originated as a chance seedling in Mr. A. E. Bowles' garden, and is probably derived from *I. Krelagei* or Max Leichtlin's *I. cyanea*, which were growing near to the place of origin. The flowers have the form of *I. Krelagei*, but they are a little earlier and slightly taller. The leaves overtop the flowers. The variety is especially valuable because of its constitution, for it thrives easily and multiplies rapidly, whilst the colour is very beautiful. The specimens exhibited had been slightly forced under glass. Shown by Mr. HERBERT CHAPMAN.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the chair), and Messrs. Jas. O'Brien (hon. sec.), Gurney-Wilson, E. H. Davidson, F. Sander, R. G. Thwaites, F. J. Hanbury, T. Armstrong, A. McBean, C. H. Curtis, W. Cobb, J. Charlesworth, J. Cypher, W. H. Hatcher, J. E. Shill, W. P. Bound, A. Dye, W. H. White, S. W. Flory, W. Bolton, C. J. Lucas, R. A. Rolfe, R. B. White, C. Cookson, De B. Crawshay and Sir Harry J. Veitch.

The event of the meeting was the magnificent group staged by Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt, Tetbury (gr. Mr. H. G. Alexander). Both in the fine quality of the plants and in their artistic arrangement, the group was well up to the very high standard which Sir George has set at these meetings. The Society's Gold Medal was awarded as some recognition of the treat given to Orchidists and garden-lovers generally by so good a display early in February.

The exhibit was arranged with the lower line, or body of the group, composed mainly of showy Laelio-Cattleyas and hybrid Odontoglossums, the centre having the lightly-poised sprays of about 100 fine spikes of white varieties of *Laelia anceps* arching over, and the two sides made up of the elegant white and rose-coloured *Cymbidium insigne* and hybrids of it, which made a fine feature throughout the whole group. The hybrids were principally *C. Alexanderi* and *C. Gottianum*, the Westonbirt variety of which secured an Award of Merit. *C. Dryad* (*insigne* × *Parishii Sanderæ*) was a perfectly new hybrid flowering for the first time, with large, bluish-white flowers with ruby spotting on the lip. The plant bore five flowers on the spike. *C. Holfordianum*, the fine cross of *C. grandiflorum*, was well represented, and at one end stood a grand specimen of *C. Lowi-grandiflorum* with seven spikes. *Cypridiums* were in variety and all good, the Westonbirt variety of *C. Cyclops* and *C. Viking* showing them in even better condition than when they received their Awards of Merit. The many forms of *Cattleya Trianae*, including *C. T. Imperator* and *C. T. Mooreana* were very beautiful. *Laelio-Cattleya Ariel* gave rich yellow and red colour, as also did *Sophro-Laelio-Cattleya Marathon* and some other *Sophronitis* crosses. At one end a grand specimen of *Vanda Watsoniana* bore eight spikes of pretty, white flowers, and near it a batch of scarlet *Sophronitis* was a mass of bloom, and each specimen was worthy of admiration, the *Odontoglossums* and *Odontiodas* being specially fine.

BARON BRUNO SCHRODER, The Dell, Englefield Green (gr. Mr. J. E. Shill), showed four very large and handsome varieties of *Cattleya Trianae*, the best of which, *C. T. Mrs. de B. Crawshay*, secured an Award of Merit. The others were *C. T. The Premier*, a well-known,

good variety; *C. T. The Baron*; and *C. T. Goliath*, a large and finely-formed flower. *Cypridium Pyramus*, a great beauty, secured a First-class Certificate (see Awards).

H. S. GOODSON, Esq., West Hill, Putney (gr. Mr. G. E. Day), showed *Sophro-Laelio-Cattleya Herbertii* and a finely-coloured *L.-C. Charlesworthii*.

SIR JEREMIAH COLMAN, Bart., Galton Park (gr. Mr. Collier), showed a fine plant of the singular *Tainia penangiana*, a good *Miltonia Bleuana*, *Zygo-Colax Wiganianus* in very fine form and the beautiful *Dendrobium Lady Colman* (see Awards). Also a very fine *Lycaste Skinnerii*.

DE B. CRAWSHAY, Esq., Sevenoaks (gr. Mr. Stables), showed *Odontoglossum Boadicea* of good shape and well marked.

E. H. DAVIDSON, Esq., Orchid Dene, Twyford, was awarded a Silver Flora Medal for a good group of rare Orchids, all of fine quality. In the

also shown, but none could compare with the chaste beautiful seedling *O. crispum Palatine*, a model flower of the purest white, and which was superior to any typical *O. crispum* ever imported. *O. eximium Fascinator* was also fine in all respects and rich in colour. Others noted were *Miltonia Bleuana*, with eight spikes; *Odontioda Bradshawiae*, four spikes; a fine *Phalaenopsis Stuartiana*, *Dendrobium nobile virginale*, *Brasso-Cattleya Mrs. J. Leemann*, a good *Brasso-Laelia Digbyano-purpurata* and the new *Odontonia Lucillae* (see Awards).

MESSRS. ARMSTRONG AND BROWN, Tunbridge Wells, were awarded a Silver Flora Medal for a group of hybrids, some of them flowering for the first time and which will be duly recorded. *Cypridium Mrs. E. S. Rashleigh* (*Hera Euryades* × *Bassano*) was a very fine hybrid, nearest to *C. Hera* and with a similar richly-blotched dorsal sepal, but the spotting is larger



FIG. 52.—CYPRIDIUM PYRAMUS.

(R.H.S. First-class Certificate, February 10, 1914. See p. 115.)

[Photograph by R. A. Malby.]

centre was a specimen of a very fine form of the pure white *Cattleya Susanne Hye de Crom*, with handsome hybrid *Odontoglossums* around it, the best noted being a very fine and richly coloured *O. Aireworth*; *O. Louise*, a very pretty spotted flower; *O. ossulstonii*, with a seven-branched spike; a fine form of *O. ardentissimum*; and two *O. Rossii* hybrids. Some scarlet *Odontiodas*, a beautiful specimen of scarlet *Sophronitis* with twenty flowers, *Sophro-Cattleya Thwaitesii*, a good *Laelio-Cattleya Fascinator*, some white *Masdevallia tovarensis*, a very fine white *Lycaste Skinnerii*, and a handsome coloured form and other good things were also included.

MESSRS. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a select group, in which appeared two spikes of the large rose-and-white *Eulophiella Peetersiana*. Some good hybrid *Odontoglossums* were

and darker. *C. Helen II.*, *C. Venus Orchidhurst* var., *C. Beryl* and others were staged, and a good plant of the *Orchidhurst* variety of *Cymbidium Woodhamsianum*; another pretty hybrid between *C. giganteum* and *C. insigne*; some finely-blotched seedling *Odontoglossum crispum*, the brilliant scarlet *Odontioda Keighleyensis*, several *Cattleya Maggie Raphael* alba *Orchidhurst* variety from a batch which has been flowering profusely for several months, and a selection of *Laelio-Cattleyas* were also noted. One of the best plants was *Cattleya Trianae* Mrs. de B. Crawshay.

MESSRS. STUART LOW AND CO., Bush Hill Park and Jarvisbrook, Sussex, secured a Silver Flora Medal for an excellent group containing two plants of the best white *Cattleya Percivaliana* alba, *C. Trianae* alba and other white forms. Specially good also were *Laelio-Cattleya*

luminosa, L.-C. Orpetiana (C. Gaskelliana alba × L. tenebrosa), L.-C. Bella Crowborough variety and some well-flowered Brasso-Cattleyas, Sophro-Cattleyas, Phalaenopsis Schilleriana and Oncidium splendidum.

Messrs. J. CYPHER AND SONS, Cheltenham, were awarded a Silver Flora Medal for a good group of Cypripediums, with examples of Cymbidium insigne, C. Gottianum and C. Alexanderi, with which were well-flowered Calanthes, Phalaenopsis Schilleriana, Miltonia Bleuana and varieties of Cattleya Trianae. Cypripedium Bridgei was distinct and all were excellently well bloomed.

Messrs. SANDER AND SONS, St. Albans and Bruges, were awarded a Silver Banksian Medal for a small group in which were several good examples of their new strain of Odontoglossums raised at Bruges, and which, although flowering for the first time, give great promise. O. Rio-Tinto (gandavense × sceptrum) is a brownish-copper colour with narrow, primrose margin; O. Cyrus (Rolfeae × eximium) is of fine shape and tinted with rose at the back; O. Verulam (Rolfeae × Wilckeanum) is of good shape, pale yellow, heavily blotched, and with white front to the lip; O. St. Bavon (Lambeananum × gandavense) is dark chocolate-red with lighter lip; O. chryseum (Pescatorii × excellens), O. Philomene (Rolfeae × percultum), O. Desdemona (Hallii × ardentissimum) and some others displayed attractive colouring and good shape. Some fine Cattleya Trianae, bright red Odontiodas, Brasso-Cattleyas, Laelio-Cattleyas, Cymbidiums and two hybrid Lycastes were also shown.

Messrs. J. AND A. McBEAN, Cooksbridge, staged a small group of good Odontoglossums, Odontiodas, etc., their brightly-coloured O. Diana var. Gladys gaining an Award of Merit.

Mr. HARRY DIXON, Spencer Park Nursery, Wandsworth, showed some good Odontoglossum-crispum and an attractive hybrid between O. cirrhosum and O. excellens named O. aurosum.

Messrs. W. A. MANDA, St. Albans, staged a good selection of varieties of Cattleya Trianae.

Messrs. SWAN AND PRICE, St. Albans, showed a group of very good Cypripedium excellently well grown.

Mrs. THATCHER, The Manor House, Chew Magna, Somerset, sent a plant of Brassavola glauca, the greenish-white flowers having a purple spot at the base of the lip.

AWARDS.

FIRST-CLASS CERTIFICATE.

Cypripedium Pyramus (Hera Euryades × Mrs. W. Mostyn), from Baron BRUNO SCHRODER, The Dell, Englefield Green (gr. Mr. J. E. Shill). A very fine and distinct Cypripedium with large dorsal sepal, which is white above and heavily blotched with shades of dark purple changing to rose towards the margin. The petals and lip are yellow with dark mahogany-red surface.

Dendrobium Lady Colman (Artemis × Findlayanum) from Sir JEREMIAH COLMAN, Bart. (gr. Mr. Collier). The largest and best hybrid Dendrobium, which had previously secured an Award of Merit. The flowers are white flushed with rose-pink, the large lip having a distinct maroon blotch.

AWARD OF MERIT.

Cymbidium Gottianum Westonbirt variety (churaneum × insigne), from Lieut.-Colonel Sir GEO. L. HOLFORD, K.C.V.O. (gr. Mr. H. G. Alexander). A large and finely-formed flower, white with a pink flush, and crimson spotting on the lip.

Odontioda Margaret Westonbirt variety (Odontoglossum ardentissimum × Odontioda Bradshawiae), from Lieut.-Col. Sir GEO. L. HOLFORD. Flowers of good shape, deep red with light yellow showing on the petals between the blotches and a yellow flush on the lip.

Cattleya Trianae Mrs. De B. Crawshay, from Baron BRUNO SCHRODER (gr. Mr. J. E. Shill). When well-grown, as in the present instance, one of the very finest form of C. Trianae. The broad sepals and petals are light rose-pink; the lip rose-purple in front with rich yellow disc.

Cattleya Trianae Mrs. Phillips, from C. J. PHILLIPS, Esq., The Glebe, Sevenoaks. A very remarkable and beautiful variety with the sepals bearing a distinct line of crimson up the middle, and the petals a broad feather of the same colour. Front of lip purplish-rose.

Cymbidium Schlegelii Southfield variety (insigne × Wiganianum), from W. WATERS

BUTLER, Esq., Southfield, Edgbaston (gr. Mr. Jones). A handsome large form with white flowers flushed with pink. Lip broad, white with reddish-purple spots.

Odontonia Lucelia (O. cirrhosum × M. spectabilis Moreliana), from Messrs. CHARLESWORTH AND Co. A remarkable cross; the hybrid having erect spikes of attractive flowers of stellate arrangement, rosy-lilac with attractive claret-coloured marking.

Odontioda Diana var. Gladys (O. amabile × C. Noeliana), from Messrs. J. AND A. McBEAN, Cooksbridge. Flowers of a uniform scarlet, with yellow crest to the lip. The general appearance is like O. Charlesworthii.

Fruit and Vegetable Committee.

Present: Jos. Cheal, Esq. (in the chair), Messrs. W. Bates, George Woodward, Jesse Willard, Wm. Pope, Edwin Beckett, W. E. Humphreys, J. G. Weston, A. R. Allan, W. Poupard, A. Bullock, G. Reynolds, J. Jaques, Geo. Wythes, H. Somers Rivers, C. G. A. Nix, Geo. Kelf and C. O. Walter.

FRUIT.

Messrs. T. RIVERS AND SON, Sawbridgeworth, Hertfordshire, had an imposing display of various Citrus fruits disposed in a most tempting manner. Well-grown pot plants of goodly size bore large ripe Citrons of pale golden colour or Oranges with brighter skins, whilst the centre of this magnificent exhibit was formed of an arbour of Lemons and Oranges. Such an exhibit of Citruses has probably never before been seen in this country, and it merited the Gold Medal which was bestowed by the Council.

Messrs. SEABROOK AND SONS, Chelmsford, displayed, in the east annexe, a table of brightly-coloured and plump Apples of such sterling varieties as Northern Spy, May Queen, Beauty of Kent, Newton Wonder, Gascoyne's Scarlet, Blenheim Pippin and Cox's Orange Pippin. (Bronze Knightian Medal.)

Messrs. J. CHEAL AND SONS, Crawley, showed several large dishes of their new Apple—Crawley Beauty, which well illustrated its keeping qualities.

VEGETABLES.

Messrs. SUTTON AND SONS, Reading, set up an attractive collection of high-class vegetables. The coloured Kales were very showy and served to draw attention to the adjoining stands of milk-white Broccoli, Savoys, Brussels Sprouts, Mushrooms and saladings. (Silver Knightian Medal.)

Mrs. E. H. DENNISON, Little Gaddisdon, Berkhamsted (gr. Mr. A. J. Gentle), contributed over 40 dishes of Potatoes, all of them being of typical shape and examples of first-class cultivation. (Silver Banksian Medal.)

Messrs. BARE AND SONS, Covent Garden, London, arranged a semi-circular group of coloured Kales.

ANNUAL GENERAL MEETING OF FELLOWS.

The 110th annual general meeting of the Fellows was held at 3 o'clock in the Lecture Room. Sir Harry J. Veitch presided over a large attendance, and was supported by Sir Daniel Morris, Sir George Holford, Mr. J. Gurney Fowler (Treasurer), Rev. W. Wilks (Secretary), and others.

The Chairman said: Since last we met at the annual meeting you are aware of the very grievous loss that the Society sustained in the death of our late President. It was moved at the last Council meeting, and seconded and carried unanimously, that we should ask at the commencement of our meeting to-day that every Fellow present should rise and receive in silence the following resolution.

The whole audience then rose, while the Chairman read the resolution:—

The Fellows of the Royal Horticultural Society in Annual Meeting assembled the 10th day of February, 1914, desire to express their great regret at the death of their late President, Sir Trevor Lawrence, Baronet, K.C.V.O., V.M.H., &c.

They wish also to put on record their profound appreciation.

(1) Of the most eminent services rendered by Sir Trevor to the Society during the very difficult days which beset the commencement of his Presidency in 1885 and the years that followed; and also

(2) Of the patience which he showed during the gradual building up again of the Society during the middle period of his office; and, lastly,

(3) Of the tact and wisdom with which he directed the Society's affairs during the later years of its

prosperity—a prosperity due in no small degree to the personality of its President.

It was proposed by Sir Harry Veitch, and seconded by Mr. J. Gurney Fowler, Treasurer, and carried in silence, all upstanding, "That the above Resolution be entered in the Minute Book of the Society, published in the *Journal* and communicated to Lady Lawrence and to Sir William Lawrence, together with the Address which had been prepared by the Council for presentation to Sir Trevor, but was delayed by his illness and death."

On resuming Sir Harry said: "Those members who have been behind the scenes for many years know more of the work that Sir Trevor did for our Society than those of you who only met him occasionally outside. I am one of those who remember the time when Sir Trevor was asked to take the Presidency in the very dark days at South Kensington. Sir Trevor took the Presidency at that time, when the Society was really bankrupt, but he faced the situation, and although for some years we were not able to see very great progress, we saw some eventually—due, I am sure, to the confidence that was felt in our then President. Sir Trevor was always glad to face any work. He never spared himself any trouble, but from the first, up to the time when we had the misfortune to lose him recently, he gave of his very best to the work of this Society. Sir Trevor, as we all know, was a great lover of flowers. We knew him, perhaps, best as a cultivator of Orchids. He had, without doubt, the finest collection of Orchids, as a collection, to be found in Europe, because he not only bought the more showy kinds, but added to his collection everything he could get that was distinct and beautiful. It was a pleasure to go with him into his houses, and see how he could admire a plant, however diminutive, because of its intrinsic value to him as an amateur. We knew him as an exhibitor of other kinds of plants besides Orchids. He was also fond of fruits, and had received awards for fruits at our show. He was also a keen and enthusiastic cultivator of vegetables, and at the Council table has told us that we ought to pay more attention to vegetables than we do in this country. We have lost our President, but his memory will be green for us for many years. (Hear, hear.) I am glad to think that we have upstairs the portrait, painted a year or two since, which will be a reminder to generations to come of what Sir Trevor was to this Society. We also have what is called the Lawrence Medal, which is awarded to the exhibitor who shows the finest collection during the whole year, and that also will help to perpetuate the memory of our dearly-loved President. After the loss of such a President, our difficulty was great in finding a successor, but I am thankful to say we have in his successor a gentleman who is passionately fond of flowers. I allude, of course, to Field-Marshal Lord Grenfell. Lord Grenfell came to us with a desire to do all he possibly could to maintain the prestige of our Society, and I have to express his very deep regrets that he is not able to be present with us to-day."

The Chairman then read a letter, addressed to Mr. Wilks, from Lord Grenfell, in which he said:—"I fear it is quite impossible for me to be present in the chair at the annual meeting of the Royal Horticultural Society to-morrow, as I have to be in personal attendance on the King at the opening of Parliament. I much regret that I am prevented by duty from attending the first annual meeting after I have had the honour of becoming President of the Royal Horticultural Society.—I am, yours truly, GRENFELL."

The Chairman added that, to show that Lord Grenfell's fondness for horticulture was not confined to this country, he would read a letter which the Secretary received last month from the President and Committee of the Malta Horticultural Society, asking him "to be good enough to convey to Lord Grenfell, the patron and founder of this Society, their heartfelt congratulations for his lordship's election as President of the Royal Horticultural Society. The Society remembers with pride the kind support and encouragement received from his lordship when Governor of this island."

The Chairman thought they would agree they were very fortunate to secure Lord Grenfell as successor to their lamented late President.

Proceeding to refer to the report (Paragraph 3, "New Committees"), the Chairman said that last year the Council informed the Society of the formation of a Parliamentary Committee. During the past year they had formed two

other committees, a Diploma Committee and a Research Committee. "The work of our Society," he proceeded, "is increasing rapidly, and the influence of our Society is increasing rapidly, and it is therefore necessary that those different committees should be formed. There are members of the Council on those committees, and there are also gentlemen from outside, and I am glad to say that both those and the Parliamentary Committee are doing excellent work. Of course, of one of them only the foundation has been laid, but I am quite sure before long we shall find they will render valuable assistance to our Society. The National Diploma in Horticulture is referred to, and in that case we had the assistance and help of the Board of Agriculture, which I think you will admit is a very important matter. We are not going to lose sight of the practical side of the question, and I know gentlemen over from India intending to take this examination in this National Diploma in Horticulture. Therefore its influence will be felt far and wide."

PARLIAMENTARY COMMITTEE.

The Parliamentary Committee (Paragraph 5), Sir Harry Veitch continued, had held twelve meetings between April and December. Perhaps some of them might be surprised at some of the subjects which were named—for instance, the sale of wet coke by weight. They all knew coke was very largely consumed by gardeners in this country, and if, as had been proved, it was thoroughly saturated with water and bought by weight, the purchaser was paying for the water as much as the coke, and they could understand it did not help to heat his house. (Laughter.) It had also to be taken by rail, and then carriage had to be paid for the water as well as the coke. Sir Albert Rollit kindly undertook to bring the matter before the Board of Trade on the Council's behalf, and the Chairman said he was glad to report that Sir Albert had held out hopes that day that they should be able to get something done to minimise the quantity of water that may be legally contained in coke offered for sale.

Referring to Paragraph 6 ("Wisley Gardens"), the Chairman said: "The gardens continue to exercise more and more influence on gardening every year. We had over 14,000 visitors last year. When the gardens were formed—I think some ten years ago—we had 3,000 visitors. Now we have got 14,000, and many of those visitors do not come solely as a matter of curiosity; they come so as to gain information, to ask questions, and therefore it is a thorough school of horticulture. The work is carried on in the most practical possible way. The trials which are conducted there—both for flowers and vegetables—are increasing every year." As an example of the work done, the Chairman mentioned that 217 packets of garden Peas were sent for trial, which had all to be sown, tabulated, and compared, in order to test which were the best varieties. There were so many samples of Antirrhinums that the trials occupied over half an acre. Everybody, he believed, had confidence in the work of the gardens and in the Committee. They were now building a Water-lily tank, and, thanks to the liberality of Mr. Leopold de Rothschild, it was to be stocked with blue Water-lilies from Mr. Rothschild's own collection.

Referring to Paragraph 7 ("Pelargonium Nomenclature"), the Chairman said everybody for years seemed to give names to species as they thought fit. Mr. Fraser, who was dealing with the question, had already named 124 species or varieties, and was proceeding with his task as the plants flowered.

In reference to Paragraph 8 ("Trial of Tulips"), the Chairman said over 4,000 parcels of bulbs had been received. They had arranged for a number of Dutch growers to stay at Wisley for some time, so that the whole collection might be thoroughly studied. He could not pass over this portion of the report without thanking Mr. Cory, of Cardiff, for the very great assistance he rendered to the Society last summer in connection with the trials for Dahlias. Many would think it was difficult to get 7,000 Dahlias together for examination, and the Committee from the Society found nearly 1,000 distinct varieties, 291 being selected for garden ornamentation. It showed the great ex-

tent to which the love of flowers was growing in this country.

Dealing with Paragraph 12 ("Chelsea Show"), the Chairman remarked that last year the show was a very great success, but the Council were not blind to the fact that there were certain faults in connection with the show, which he hoped would be corrected this year. In the large tent there would be no staging, except at the far end for Orchids, where beautiful sprays could be tabled and staged above the ground. The whole of the body of the large tent would have no staging, and all the groups would be staged on the ground. It struck him they would have a beautiful effect, and would be very pleased with that arrangement, which he was sure was a great improvement. No sundries would be admitted to the large tent, but would be put in another tent by themselves, and smaller pot plants would be in a tent.

The Chairman next referred to Paragraph 17 ("Pritzel's Index Iconum Botanicarum"), and said it was intended to bring this most important and valuable work up to date, as they felt the time had now arrived when this should be done. The International Horticultural Exhibition of 1912 had given the work a start by contributing £250, which was earmarked for that purpose. The Veitch Memorial Trustees had given £100, and the Council of the R.H.S. proposed out of their profits to give £250 until such time as sufficient money had been raised. Of course, the work would take a long time, but no time would be lost, and when it was completed they should have the thanks of everybody. The Secretary considered it would cost £3,000.

They had a very interesting conference last year on Primulas (Par. 18). Sir John Llewelyn very kindly came forward and took the chair. The report they had already seen in the *Journal*. Many congratulations had been received on this special report, which was considered one of the very best and most complete ever issued by the Society.

The next conference they proposed was on Saxifrages (Par. 19). It was a most interesting family of plants. They had had much correspondence with all the authorities on this family, more particularly with Dr. Engler, of Berlin, and were hoping to receive from him an advance copy of his monograph, to be published early next year. The Conference would take place in 1915, and if any lady or gentleman had any information, or could make any suggestions, the Secretary would be very glad indeed to have a communication from them.

Referring to the Lindley Library (Par. 24), the Chairman said that £600 was spent last year in purchasing books as additions to the library—money not spent without considerable thought. The Library Committee met every fortnight, and books were submitted to them. They had experts on the Committee, and they would see by the books purchased that they had added some very valuable ones. He hoped they would continue to add such rare and valuable books relating to horticulture as had been offered to them.

MR. FARRER'S EXPEDITION TO CHINA.

In Paragraph 26 it would be seen that the Council had arranged to share part of the expense of another collection. Mr. Reginald Farrer had started for China. They had not involved themselves to a large extent. They thought in fitting the rock garden at Wisley that they should try and get as soon as anyone any novelties which came over. They had spent a considerable sum of money in purchasing plants, and many thousands had been raised from seed and cuttings at Wisley. They must make some allowance for time, and he hoped it would look very much better than last summer, and next summer they would find it still further improved.

The Chairman commended the work of Mr. Wilks, remarking that none of them was aware of the work he had done for the Society. The whole staff, whether there or at Wisley, were loyal to them to the last degree. They, as a Society, could not be more fortunate, and he only hoped they would continue to work for them for many years to come. He moved the adoption of the report and accounts, which he invited the Treasurer to explain to the meeting.

Mr. Gurney Fowler, Treasurer, said the most important item in the accounts was the balance of profit, £8,938. It was not quite so much as last year, when it was £9,194, so that there was a difference of some £256 to the bad, if they might call it so. It was principally owing to the cost of the show at Chelsea, which, of course, had the International Show last year, and it was rather difficult to make any proper comparison of figures. The annual subscription list, he was glad to say, was larger by £915, which showed, he thought, life. The income from investments naturally went up as they invested other funds. The expenses, with the exception of the show expenses, were not anything more than the ordinary expenses which would be incurred in carrying on the increased business. On the capital account, £35 was spent on the hall and £217 on the garden. The account showed details of the money they had invested, he hoped well. It had not been an altogether easy time for the investment of money, but he did not think they were a great deal worse off than a great number of their fellows. All the investments were what they called first-class. Since January 1 a great change seemed to have occurred, and he thought they should find the deficiency nothing like what it was in December, 1913.

The Treasurer pointed out a clerical error in the schedule of investments, where the amount of Local Loans should be £5,800 instead of £8,500, costing £6,006.

The list of new Fellows—95 in all—was adopted earlier in the meeting, and Mr. Mark Fenwick, Stow-on-the-Wold, asked if it would not be possible to limit the number elected each year. The show was getting very crowded now, and there seemed to be a feeling that the Fellows were increasing too rapidly. He suggested that there might be a waiting-list, as in the case of a club.

The Chairman: We won't forget the question.

Mr. Fenwick: I think it might meet the case to increase the entrance fee.

The Chairman: The Council will take that into consideration.

TEMPERED CRITICISM.

Mr. R. W. Wallace, Colchester, referring to Paragraph 14, providing for shows being kept open an hour later, asked what result that was having on the attendances. If the Council were fairly satisfied on that point they would be justified in continuing the arrangement, but as one who was against the innovation, he would ask the Council to consider that there were other people to be considered, and those were the employees of the firms and the owners of the firms themselves.

Referring to the proposal that the Society should take a share in the expedition to China organised by Mr. Reginald Farrer, he asked if the Council considered it a wise move altogether that they should help to finance the expenses of an expedition run in the interests of a gentleman who was practically a trader in horticulture. He spoke as a member of the trade, especially after the remarks of Mr. Mark Fenwick that the Fellows came in such increasing numbers to the shows now. The success of the shows was made by the horticultural trade in Great Britain, and the success of the Society was due to the trade, and to those few amateurs—especially Sir George Holford—who so nobly supported the Society. Therefore he said that the trade exhibitors were deserving of the highest consideration from the Council, and he ventured to point out the restrictions placed upon the trade with regard to the most important exhibitors year by year. Some were extremely harsh, extremely hard, and extremely unfair. Outside exhibitors at Chelsea were threatened if they did not lay down a big deposit that they could not put up exhibits, and the deposit might be taken from them in the end. Those remarks were not made in any spirit of antagonism to the success of the Society. He wished to congratulate the Chairman as representing the President of that remarkable Society on the wonderful growth it had made, and the wonderful position it occupied at the present time, and the wonderful power it still had for the advancement of all sections of horticulture; let them be advanced with equal justice to all concerned.

The Chairman, in reply, said that having the fortnightly meeting open till 7 o'clock was purely tentative. Before they arrived at that decision all the exhibitors were consulted, and the majority expressed a desire that it should be open till 7 o'clock in the summer. If they found that the people did not come, it would be very easy next year to go back to the former time. They were not committed to any great expense in connection with the collector who had gone to China. They had involved themselves to the amount of £100 a year for two years, and they felt, as they were really a horticultural society, they ought to try to get the novelties which might come home as soon as any one else. People came to Wisley and expected to see the latest novelties, and it was only in that way that they could keep pace with the desire of their Fellows. If they waited until the seeds of the plants had bloomed, and until the person who had them had a stock to distribute, they should be some years behind. That was the main object they had in trying to get a portion of the collection.

In regard to a suggestion that the show might be opened an hour earlier, the Chairman said he did not think it would be possible to open an hour earlier. With regard to the Chelsea Show, they were bound to a large extent by what the authorities of the Chelsea Hospital demanded of them. They dictated certain conditions which they were obliged to comply with. When an exhibitor made an exhibit the deposit was returned. They had been disappointed a number of times by exhibitors making an entry, and getting their name in the catalogue, and a certain amount of advertisement, and then not exhibiting. The Chelsea authorities complained of the way many exhibitors left the ground. They excavated the ground, and in the majority of cases the site was not left as it was found. A considerable sum of money was required to put the ground right. They were anxious to meet exhibitors in every possible way, but they had also to please the authorities of Chelsea Hospital.

With regard to a suggestion for more seats at Wisley, the Chairman said it was a very good one.

The reports and accounts were unanimously adopted.

Referring to the elections to the Council, the Chairman said that Colonel Lockwood was appointed to succeed the late President. The elections proposed by the Council were agreed to.

PROPOSED DEVELOPMENT AT WISLEY.

Consideration was next given to the following notice of motion:—

"The Council of the Society be requested to create a Special Trust Fund to carry on and augment the Society's work at Wisley, and this Meeting would approve of a part of the present Surplus Funds of the Society being allocated to that purpose."

Sir Daniel Morris said he moved the resolution on behalf of the Council, which had taken the matter into very careful consideration. The Council wished to submit that day a proposal to the Fellows in order that certain other extensions in the work of the Society might take place. He would mention first of all that this matter of the extension of the work at Wisley was brought forward in July of last year. A committee was appointed consisting of three members of the Council and five members of the Scientific Committee, including Mr. Wilks and Mr. Chittenden. That Committee was appointed to take the matter into consideration and report to the Council. Before the Committee met a large number of circulars were sent out inviting the opinions of the Fellows of the Society on what should be done in order that the work at Wisley might be extended in such a manner as to be of advantage to the Society. About fifty replies were received, and those replies were very carefully gone into, and on the first scrutiny of them the Committee decided to avoid first of all recommending any duplication of work that was being done elsewhere—for instance, at the John Innes Institution, or at Woburn or Rothamsted. Further, they agreed that they would not undertake any work which should rightly fall to the individual. They decided that they would not

recommend any extending whatever in the case of what was not attainable. For instance, suggestions were put forward from time to time that they should undertake certain work which led to nothing definite. They decided they would not allow it. They decided they would in no case subsidise work which lay outside the actual control of the Society. Some of the subjects suggested to them were in regard to their publications. In addition, they were asked to deal with nomenclature, and bring out stud books and catalogues, and so on. They were recommended it would be very useful occasionally to have an exhibition of scientific work, and were again recommended very strongly in some instances that they should assist expeditionary work by various bodies not really connected with the Royal Horticultural Society. Further, they were asked to improve the horticultural experiments and trials at Wisley. Then they were asked to take up the work of extending education at Wisley, and also to introduce at Wisley standard methods of research. They carefully reviewed the work that had already been done or was in course of being done, but when they had had several meetings they decided to confine themselves to three different matters—first of all research; second education; and third, experimental trials of work. Anything he would say would relate to those three subjects, because those were the subjects that were of immediate interest, and those were the subjects that they thought could be taken up at Wisley at once, and results could be obtained that would be a credit to the Society. In research they were recommending that the work should be first of all upon conditions that affected the growth and treatment of plants. They had had many representations made to the Society with regard to losses that were being sustained by nurserymen and others. Those losses were due in many cases to diseases. Those diseases were often brought to the notice of the Scientific Committee. Well, voluntarily, a number of members of the Scientific Committee undertook to look into those diseases. They mentioned, when they could, the name of the disease, and they also gave some general hints as regards the best way of dealing with them. This had not gone quite far enough. They were quite convinced they must do the same as was being done in other countries. They must systematically take up the investigation of those diseases. When disease was caused by insects they must try and find out the natural enemies of those insects, and if not already in this country, it might be possible to introduce them. It was not enough to try to destroy them by insecticides. There were many other ways. Then the Committee recognised fully that, while useful work had been done and was being done at Wisley, the accommodation and the staff were quite inadequate for dealing with the questions waiting immediate attention. Then under the head of education they were now going to institute a Diploma of Horticulture. They found that the scientific work at Wisley, if they were to keep up to the standard of the Diploma, wanted revising throughout. They recommended that the Society should direct its earnest attention to promoting a National School of Horticulture at Wisley, and provide for the output of generations of practical gardeners, scientifically trained, who would be the skilled horticulturists of the future. Experimental and trial plots had been carried on for many years at Wisley, and, considering the staff and the opportunities there, he (Sir Daniel) believed the trials had been appreciated, but if they were to be placed on a thoroughly scientific footing, and if they were to command general confidence, it was necessary for the Society to increase the staff at Wisley. First of all there should be a Director appointed of proved capacity, wide knowledge of plants, and a man with a talent for administration. Under that Director there would be three experts, one for the fungous diseases, an entomologist for insect diseases, and a chemist; those three to be resident at the garden. In order to provide for the scientific staff that he had just suggested, it would be necessary to incur an expenditure of something like £2,500 a year. In addition to that, it would be necessary to have a capital expenditure which had been estimated as something between £6,000 and £7,000 for laboratories and buildings, also for equipment of labo-

ratories and for the supply of material for carrying them on. As stated in the balance-sheet, Wisley was not absolutely the property of the Society. If anything should happen that they should cease to carry on Wisley as an experimental garden, they would be liable to lose control of it. The gardens were vested in Trustees; three members of the Council were amongst the trustees, and there were three outside trustees. All the expenditure which so far had been made on the gardens had been expended on property which really belonged to the trustees. Now that they were going to increase their expenditure at Wisley, they ought certainly to make sure that they were protected, that the work there would continue, and that the Society would feel that there could not be any possible chance of the gardens being lost to the Society or to horticulture. The way that might be done would be by creating a trust fund under the terms of the resolution. In order that they might keep control of the gardens and provide for the work being carried on there permanently for horticulture, it was necessary for them to do something in the way of endowing the gardens. They were asked by the Council at that meeting to increase the expenditure in regard to the Wisley Gardens, and in order to show the reasonableness of that proposal he ought to mention that many years ago the Council held 33 acres of land at Chiswick. That was renewable from year to year at the Society's pleasure. Because the Society fell into difficulties and was unable to maintain those 33 acres, the Society gave them up and accepted an agreement for 14 acres simply from year to year on an ordinary lease. It was an extraordinary thing that at that time they had a most valuable property there and they were obliged to give it up simply because the Society fell into difficulties and could not carry it on. They had also to bear in mind that the Lindley Library, also owing to difficulties, was actually sold because they could not maintain it. Since then they had been trying to get back a library in the name of the Lindley Library, and at present, after an enormous amount of trouble and expense, they were getting back a library which was really worthy of the Society. In the case of Wisley, were they going to allow any chance of losing it to horticulture, or were they going to make an effort to save it? They had something like £80,000 surplus money. Last year there was a clear profit of nearly £9,000. They had got a Hall that cost them £40,000, and were getting a regular income from the Hall of £2,000 a year, which was practically 5 per cent. on the outlay. Taking all those circumstances into consideration, what the Council arrived at was the conclusion that they should be willing to set aside a certain portion of that large surplus as an endowment for Wisley Gardens and for the maintenance of Wisley as a first-class School of Horticulture. It was most important, he wanted them to bear fully in mind, that the reorganisation now contemplated by the Council was strictly supplementary to the work now in hand. They were spending there now £3,000 a year. They had expended £20,000 in buildings and in various improvements, so that they had really a large stake in the garden. Now the point was that the Council by the proposal that he moved that day sought to safeguard the continuance of the work at the garden, and in all its branches to make it more efficient by a higher organisation and administration as far as the experimental work and the trials were concerned. They had been told they were capable of improvement. The only way in which they could be improved was to place them under scientific control. That control would be available if this scheme was adopted. It would secure to the Society a status in the world of horticulture enjoyed by no other society, nor even any other body throughout the world. Great and wide as was the work of the Society, there was not a shadow of doubt that the alterations suggested would be great improvements, and would in every way make the work of the Society completely and thoroughly worthy of the prestige it had always enjoyed.

Mr. W. Cuthbertson, who seconded the motion, said he was interested in the matter from a different standpoint to Sir Daniel Morris. He was a practical man, and, after all, he supposed 75 to 85 per cent. of the Fellows of the

Society were practical men. They must remember that a truly scientific Society would appeal only to a minority of the Fellows. He was glad to be assured by Sir Daniel Morris that the practical side of their work at Wisley was not to be overshadowed in any respect whatever. Did he for a moment think it was, he should be a critic of a scheme instead of a supporter. For some time there had been a very insistent demand in the Press for the Society to make this forward movement, and the Committee was inundated with suggestions. It was a very difficult task to select what were thought to be the best. He quite agreed there was room for improvement in what might be termed the practical work of Wisley. All of them knew that it had been conducted very efficiently by Mr. Wright and his staff within the bounds allotted to them. They had done their utmost, but those who knew the trials best knew how much they might be improved. A number of them had been trying to get the Council to adopt better methods for some time, but immediately the professors said it was impossible to divorce experimental work from the side of scientific research, the Council accepted that doctrine, and they got forward and said they were going to achieve something. He thought it would not be out of place to say that the Committee had recommended to the Council, and he had no doubt the Committee would honourably carry it out, that in any changes which might come the position of the present heads at Wisley would not be affected. He thought that should be said straight away. When he was on the Committee he demanded that they should get an answer to that question, and they got that assurance. He thought they would have to trust the Council that the scientific men would not run away with them and overshadow the practical men, and so long as the Council was composed of men like Sir Harry Veitch, Mr. May, and Mr. Hudson he thought they could do so. They must always remember that the Society was a Society of Gardeners. He hoped that the success which had hitherto followed the action of the Council would continue to follow it. He heartily agreed with Sir Daniel Morris when he said that if these new developments were carried out on proper lines they would give the Society increased prestige and renown.

Mr. H. B. May, who supported the proposal, said he was pleased his bantling had such excellent sponsors as Sir Daniel Morris and Mr. Cuthbertson. He (Mr. May) had long cherished the hope that the society, sooner or later, would undertake such a work as that indicated in the resolution, but he thought it prudent to wait until the time when its resources would permit it to be done without detriment to existing arrangements. His friend Mr. Cuthbertson had referred to the anxiety that existed or might exist as to the practical work at Wisley being overshadowed and dominated by scientific men. If for one moment he thought such a result was probable, the present proposal would have no sturdier opponent than himself. If the proposal met with their acceptance, as he trusted it would, it would lead to the appointment of a management committee, and in appointing that committee he felt certain that the Council would not be influenced by circumstances of wealth or social position, but would select men who were qualified to carry out the important duties which would be entrusted to them. The scientific members of the committee who had formulated this scheme he felt sure entirely recognised the efforts of those lay members associated with them in their work, and it was his hope that on a similar fusion of interests on the management success would be based.

Prof. Bayley Balfour thought the proposal was a natural development of the responsibility of the Society which it accepted when it took Wisley. He did not think he need emphasise the importance of the points Sir Daniel Morris had put before the Society. He would like especially to emphasise that there was no point of antagonism between practical horticulture and science in any suggestion that had been made. They often heard of a great number of institutions doing scientific and research work for horticulture and agriculture. That was true, but he thought none of them had

the same position and the same advantages as were attached to Wisley and the property of the Royal Horticultural Society. It seemed to him that was an ideal place where practical horticulturists and scientists could meet and work together for the good of horticulture and also for the good of science. It had been pointed out that practical horticulturists had done a good deal for the Society. If the Society imported a practical access of strength on the scientific side, members could have a body of scientific opinion to which they could go and appeal with a right in a way which they could not exercise in relation to any other institution. Science itself would always benefit from the practical horticulturists. He had frequently said that the practical horticulturist was a great experimenter. A great deal of the work of the gardener was empirical, and died with him, and the practical gardener going to Wisley with some problem he could not solve, and which had occurred to him in his work, might be able to get the organised methods of science applied to it, and not only help himself, but also by giving of his empiricism to science he would directly and emphatically benefit science. He thought it was only by such a transfer of funds that the scheme could be carried out. He hoped the motion would be carried, because he was sure there was no place in the world where the opportunities were greater for benefiting practical horticulture as well as science than at Wisley.

Mr. Chas. E. Shea congratulated the Council most heartily on the step they had taken. He asked if the adoption of the scheme was to be deferred until an appeal was made to the public, or could it be done immediately.

The Chairman said there would be no appeal. Mr. Shea asked if there would be an opportunity for members to consider the scheme in greater detail, or would it be finally adopted that day. He did not like the phrase about "things not attainable" in Sir Daniel Morris's speech.

Sir Daniel Morris replied that so far as the unattainable was concerned, they thought they had better deal with the things of immediate interest that would be of practical value, and meet the demands of horticulturists first of all. He thought a society with £30,000 surplus could not very well appeal to the general public, and if it did he did not think it would get any very large return. He thought they had better accept the situation as it was now. They could not put the scheme in hand unless the meeting accepted it, so far as it had been explained to them.

The matter was put to the vote, with the result that the resolution was unanimously adopted.

HORTICULTURAL CLUB.

FEBRUARY 10.—The annual meeting of the members of the Horticultural Club was held on Tuesday last at the Hotel Windsor, the home of the Club. The President, Sir Frank Crisp, Bart., presided.

The annual report for 1913 showed that the Club continues to prosper and increase in membership. For the first time in its history it registered 200 members in November last, and the total is now 209. Thirty new members were elected during the year.

A separate report of the receipts and expenditure, prepared by the Hon. Treasurer, showed that the gross income for the year was £377 7s. 11d., including a balance brought forward of £152 13s. 8d., also the contribution of Sir Frank Crisp for the purchase of the billiard table. The expenditure was £235 6s. 7d.

Messrs. H. R. Darlington and E. A. Bunyard were elected members of the Committee in place of Messrs. C. E. Shea and A. H. Pearson, who resigned. Mr. George Bunyard retired from the office of Trustee, and Mr. H. R. Darlington was appointed to fill the vacancy.

THE ANNUAL DINNER.

Later in the evening the members assembled on the occasion of the annual dinner, at which Sir Frank Crisp presided. There was a company of about 100, including ladies. The tables were charmingly decorated with flowers and foliage plants by Messrs. James Veitch and Sons.

After the usual loyal toasts, Mr. Arthur W. Sutton gave the toast of "The Horticultural Club." He referred to the greater comfort of

the new club room and other privileges, such as the presence of ladies at the house dinners—a concession which the members greatly appreciated—and to the opportunity which the Club afforded for meeting distinguished members of the horticultural world, and learning what they were doing. They were much indebted to their President, who had not only entertained them on the occasion of the annual outing, but had contributed in many other ways to the comfort of the members.

The President, in response, said that the Club was prospering and its financial position was sound. He thanked Mr. Sutton for his kind remarks, and if he could do anything to forward the interests of the Club he would always be happy to do so.

The toast of "The Visitors" was proposed by Sir Harry J. Veitch. Miss Willmott, one of the most distinguished lady horticulturists, was with them, also Sir Sidney Olivier, Secretary of the Board of Agriculture and Fisheries, and Professor Veitch, from America, with whom he believed he could claim a common ancestry. Miss Willmott expressed pleasure at being present, and thanked Sir Harry Veitch for his kind remarks. Sir Sidney Olivier and Professor Veitch also returned thanks. Sir Sidney referred to the work of the horticultural branch of his department, which at present was mainly concerned with pests and diseases, but they hoped in time to get in touch with other branches of gardening.

The toast of "The President" was proposed by Mr. W. B. Cranfield. He referred to the many institutions and societies with which Sir Frank Crisp was connected and his great love of gardening as his beautiful gardens at Friar Park testified. Mr. A. Worsley gave the toast of "The Hon. Secretary, Mr. R. Hooper Pearson."

ROYAL GARDENERS' ORPHAN FUND. ANNUAL MEETING.

FEBRUARY 6.—The annual general meeting of subscribers to the Royal Gardeners' Orphan Fund took place at Simpson's Restaurant, Strand, on the date above named. The Chairman of the Executive Committee, Mr. Henry B. May, presided. There was no election on this occasion, as explained in these pages last week: all the candidates on whose behalf applications had been made for relief were placed upon the fund by resolution as proposed by the Committee.

The proceedings were as follows:—After the minutes of the last meeting had been confirmed the secretary read the report of the Executive Committee for 1913. This was as follows:—

It is with the liveliest sense of gratification that the Committee has once more to congratulate the supporters of the Fund on its continuously increasing prosperity and usefulness, as apart from the receipt of a one-third share of the net profits of the Royal International Horticultural Exhibition, 1912, amounting to £765 0s. 10d., the receipts from all the ordinary sources of income show an appreciable increase over the previous year's total. At the same time the amount disbursed in allowances to the children elected to receive the benefits of the fund has been increased to the extent of £62 2s. 6d., the total expenditure for the year being £1,868 12s. 6d., the largest amount yet expended in any one year since the fund was established.

The allocation to the fund by the directors of the Royal International Horticultural Exhibition, 1912, of such a substantial contribution, afforded great satisfaction to the Committee, inasmuch as its receipt enabled the whole of the twenty-five candidates at the last election to be placed on the fund, and also afforded it an opportunity for making a somewhat belated investment, enforced by the rules. Your Committee gladly embraces this, the earliest opportunity that has been afforded it, of expressing the gratitude of all supporters of the charity to the directors for their generosity.

The number of children supported by the fund at the commencement of the year was one hundred and twenty-five, and there were then twenty-three candidates waiting for election, who in their sore need of help were receiving temporary relief. At the annual meeting in February twenty-five candidates appealed for election, but at the time when the arrangements for the annual meeting were made the Committee could not see its way, prudently, to make provision for the addition of more than nineteen to the list of full-pay beneficiaries. Happily the substantial gift previously alluded to came along, and the six unsuccessful candidates at the poll were elected by special resolution, with the hearty approval of all present. During the year fifteen children ceased to receive the benefits of the fund through the operation of the age limit, and the Committee believes that it will be a source of gratification to the subscribers to know that through their generosity most of these children received extra grants to assist in providing them with much-needed outfits on entering upon the various forms of employment provided for them. Up to the close of the year only nineteen candidates had sought the aid of the Fund, and as about the same number will retire

during 1914 the Committee has pleasure in recommending that they be all placed on the Fund this day by resolution.

The annual Festival, held on May 15th, again brought together a large company to the Hotel Cecil, and with such an enthusiastic lover of his garden as Col. the Right Hon. Mark Lockwood, M.P., in the chair, it goes without saying that the function was a most delightful one socially, and financially of the most gratifying character. The genial Chairman, whose humorous sallies and pointed wit add to the gaiety and enthusiasm of any company in which he may find himself, made a stirring appeal to all present to help by their generous contributions to his list to make the Festival a great success, the more especially as the Fund was in need of wider support, and had to depend largely upon the dinner for its income. A garden, he pointed out, gave for the small amount expended a great return in providing a constant fund of pleasure, which could never fail but was always increasing. Many there were, however, who keenly enjoyed the pleasure of their gardens, and who thought when they had paid their gardeners that they had done all they were expected to do; but they should remember that many gardeners died before they were able to make any provision for their dear ones left behind, and it was the bounden duty of employers to help the Fund which conferred its inestimable benefits on so many helpless orphan children, and was so capably administered.

The response to the Chairman's appeal, which included a generous donation from himself, one hundred guineas from Mr. Sherwood and his son, fifty pounds each from Mr. Leonard Sutton and (the late) Mr. J. Newton Mappin, and one hundred and fifty-five pounds from friends in Covent Garden Market, was of a most gratifying character. Your Committee feels under the greatest obligation to Col. Lockwood for his kindness in presiding, and greatly valued help, and tenders him its most grateful thanks. It also most cordially invites the supporters of the Fund to add Col. Lockwood's name to the list of Vice-Presidents.

To the Stewards at the annual Festival: to the Honorary Local Secretaries, and especially the representatives of the Fund in the Leeds, Reading, and Westerham districts, Mr. Carver, Mr. Neve, and Mr. Rowe; and to the Committees of the Chislehurst Gardeners' Society, the Altrincham Gardeners' Association, the Bradford and District Chrysanthemum Society, the Reading Gardeners' Association, the Spem Valley Gardeners' Paxton Society, the Sevenoaks Gardeners' and West Kent Chrysanthemum Society, the Croydon Horticultural Society, the Wargrave Gardeners' Association, and the Reigate Chrysanthemum Society, one and all are most cordially thanked for their continued devotion to the charity and earnest endeavours to extend its usefulness.

For greatly valued contributions, derived from opening their private gardens—so rich in beauty and interest to all garden lovers—in aid of this and other charities, the Committee again desires to express its gratitude to the Rt. Hon. Mary Countess of Ilchester and Sir Frank Crisp, Bt.

The Fund has, alas! during the past year suffered grievous losses by the hand of death. The late Sir Trevor Lawrence, Bt., early evinced his kindly interest in the work of the Fund by becoming a Vice-President in 1890, and subsequently in 1904 by presiding at the annual Festival, which proved one of the most successful of the series which had been held up to that date. His constant support, so generously given, will be greatly missed. The late Mr. J. Newton Mappin, who was present at the last annual Festival, was a most liberal benefactor on that occasion. Of other generous supporters at various times, and some of them highly valued annual contributors, the Committee has very regretfully to include the names of the Right Hon. the Countess of Hambleton, Mr. Martin John Sutton, Mr. R. A. Milligan Hogg, the Right Hon. G. W. Palmer, Mr. Robert Sydenham, Mr. Nathaniel L. Cohen, Mr. A. Kingsmill, and Mr. Amos Perry.

To the Auditors, Mr. P. Rudolph Barr and Mr. Frank Reader, the Committee again desires to tender most hearty thanks for their careful examination of the accounts presented herewith. The retiring auditor, Mr. Reader, has so admirably filled the position so long held by the late Mr. Rowan that the Committee has the greatest pleasure in recommending his re-election.

The members of the Committee who retire by rotation at this meeting are: Mr. G. H. Barr, Mr. G. H. Cuthbert, Mr. W. Howe, Mr. J. Lyne, Mr. G. E. Messer, Mr. W. Poupard, Mr. T. W. Sanders, and Mr. W. P. Thomson, and, all being eligible, offer themselves for re-election.

In moving the adoption of the report and balance-sheet, the Chairman said that there was every reason to be satisfied with the result of the year's working. The receipts from donations and subscriptions had not only been good, but they showed an increase over the amount collected in 1912. It was very seldom indeed that the Committee found itself in the position in which it stood that day—namely, being able to recommend the meeting to place by resolution all the candidates for election—but there was no other course that would have been justifiable in the circumstances. There were reasons for knowing that there would be nineteen vacancies in the coming year amongst the annuitants, and that was the exact number of candidates awaiting election. He thought no one would regret the action of the Committee in determining to dispense with the election. The money was given them to spend upon relief rather than to hoard. The adoption of the report was moved by Mr. GEORGE GORDON, and was carried unanimously.

Mr. T. W. SANDERS moved a vote of thanks to Colonel Lockwood, M.P., for presiding at the festival dinner. He referred to Colonel Lockwood's interest in his own garden, and to his humorous and genial presence at the dinner, also to his eloquent appeal for support on that occasion. After being duly seconded the resolution was adopted. On the proposition of Mr. R. HOOPER PEARSON, Mr. Frank Reader was re-appointed auditor. The retiring members of the Committee were re-elected, and on the proposition of the Chairman Mr. B. Wynne was re-appointed secretary at the salary of £200. At this point Mr. PEARCE moved a resolution to the effect that the following candidates be elected:—Albert F. Alderman, Kathleen B. Appleford, Winifred S. L. Barnes, Marjorie Birchenough, Margaret Annie Goff, Elsie Norah Holloway, Henry Charles Holloway, Lena Phyllis Link, James George Link, Jack Perry, Ronald Perry, William Pettit, Alan Piper, Alex. Livingstone Reid, Leslie M. W. Reid, William Thomas Scott, William Slater, Philip R. Smith, Sidney A. Smith. The resolution was seconded by Mr. RIDGEN and carried unanimously.

In the evening a company of about thirty members of the Committee and their friends dined together at the same hotel.

SCOTTISH HORTICULTURAL.

ADDRESS BY THE PRESIDENT.

FEBRUARY 3.—The monthly meeting of this Association was held in the Goold Hall, 5, St. Andrew Square, Edinburgh, on the 3rd inst. Mr. King, the President, was in the chair, and there was an attendance of 70 members. The President delivered his opening address for the session, taking as his subject "The Gardener's Education." We publish the following extracts from Mr. King's paper:—

"By the term 'gardener' I do not mean the mere student of horticulture, who may take up the subject as a pastime or a hobby, or, as is more frequently the case, with a view to the theoretical teaching of it, but the practical man, who has to take it up seriously as a means of livelihood.

"In Scotland the only organised horticultural education is to be found in the agricultural colleges. We have an excellent day course of instruction in the Edinburgh and East of Scotland College of Agriculture, and evening classes are also provided there, and there are horticultural courses in the other agricultural colleges also. But these courses are not within the reach of the working gardener. The only other institution from which the working gardener may derive educational benefit is the Edinburgh Royal Botanic Garden, into which both young gardeners and young foresters are taken for a period for the purpose of going through a course of instruction in the sciences underlying the practice of gardening and forestry, and where they are provided with subsistence in the form of work and wages. Under the Education (Scotland) Act of 1908 Burgh and County Secondary Education Committees are empowered to give assistance to such men by giving 'contributions in aid of the travelling expenses and the maintenance when residing away from home of persons selected by the Committee to attend special courses within or without their district provided by the governing body of an agricultural college, a technical college, or other central institution.' But, useful as this provision may be in many cases, it scarcely meets the case of the working gardener. These bursaries vary in amount according to circumstances from £10 to £30 per annum, and they are generally tenable for three years, but a young man could scarcely subsist on these amounts without some other means of support.

"It is highly desirable that, in the interests of the young men themselves, there should be some linking up of their work with their education, and it is, therefore, almost essential that the two things should be under the same control. Now, how is this to be accomplished? So far as I can see, the only way out of the difficulty would be to provide something in the shape of horticultural experimental areas in connection with the agricultural colleges, where the labour of the men could be utilised, and for which they would receive part payment in the form of technical instruction, as is done in the Royal Botanic Garden and in the Forest of Dean, and I can see no reason which can be urged against a plan of this sort that could not be urged against a demonstration area in silviculture or a demonstration farm in agriculture. If a sufficiently large garden were attached to each of the agricultural colleges to employ, say, a dozen to twenty young gardeners in each for a sufficiently long time to enable them to pass through a course of scientific instruction, as is done in the Royal Botanic Garden for both gardeners and foresters, it would not only bridge over the gap which separates the working gardener from the college courses at present, but it would give a steady supply of highly-trained, practical men. So far as I can see the plan would not be impracticable, and if something of the sort could be instituted in connection with the agricultural colleges it would do an immense service to horticulture, and would be an inestimable boon to a large and deserving body of men. Moreover, it would not deprive the men in any way of their independence. They would give their labour for the benefits they received, and it would give young men of exceptional ability an opportunity to place their foot on the ladder of promotion more securely than they could hope to do otherwise, while it could have no other effect than to raise the status of the gardener."

CASH STATEMENT FOR THE YEAR ENDING DECEMBER 31st, 1913.

RECEIPTS.		EXPENDITURE.	
	£ s. d.		£ s. d.
To Subscriptions: General	358 16 1	By Allowances to Orphans	1,724 15 0
Local Secretaries	95 3 9	.. Grants in Aid	104 17 6
	453 19 10	.. "Emma Sherwood Memorial" ..	13 0 0
.. Donations: General	122 7 7	.. "Maybud Campbell Grant" ..	13 0 0
Local Secretaries	20 13 5	.. "James Campbell Grant" ..	13 0 0
	143 1 0		1,868 12 6
.. Receipts from Annual Dinner	986 2 11	.. Secretary's Salary	200 0 0
.. Royal International Horticultural Exhibition, 1912	766 0 10	.. Printing and Posting List of Subscribers	42 4 2
.. Advertisements in List of Subscribers	33 4 6	.. Rent, Insurance, Firing, Lighting, etc.	47 5 8
.. Dividends on Stock and Interest on Deposit	400 5 2	.. Printing and Stationery	64 19 11
.. Income Tax returned	7 2 10	.. Advertising	7 18 6
.. Miscellaneous Receipts	3 5 0	.. Annual General and Committee Meetings	17 19 7
	2,790 2 1	.. Postages	42 7 5
.. Balance last Account	945 16 8	.. Bank Charges	2 11 6
	£3,735 18 9	.. Petty Cash: Sundries	3 12 4
			186 14 11
			2,297 11 7
Note.—Investments.		.. Purchase of £570 Metropolitan Railway 3½ per cent. First Debenture Stock, cost	499 13 0
3 per cent. London and County Consolidated Stock	£7,240 15 1		2,797 4 7
3 per cent. Canada Stock	2,000 0 0	.. Balances: Cash at Bank	486 4 3
L. and N.W. Railway 4 per cent. Preference Stock	340 0 0	Cash on Deposit	450 0 0
Great Indian Peninsula Railway Guaranteed 3 per cent. Stock	514 0 0	Cash in hand	2 9 11
2½ per cent. Consols	1,100 0 0		938 14 2
Metropolitan Railway 3½ per cent. First Debenture Stock	570 0 0		£3,735 18 9
"Thomson Memorial Trust"			
East Indian Railway B. Annuity of £14, cost	430 11 0		
"Emma Sherwood Memorial"			
Metropolitan Water (B) 3 per cent. Stock ..	516 15 11		
"Maybud Campbell Grant" ..			
Metropolitan Railway 3½ per cent. Preference Stock	391 0 0		

Having inspected the Securities and examined the Books and Vouchers supplied to us, we hereby certify the above Account to be correct.

P. RUDOLPH BARR } Auditors.
FRANK READER }

January 20, 1914.

The exhibits were *Garrya elliptica* and *Helleborus guttatus*, from Mr. COMFORT, Broomfield; *Acacia Baileyana* and *Eucalyptus Globulus* (in flower), from Messrs. TODD AND CO., Edinburgh; and *Camellias* from Mr. McDONALD, Trinity Cottage, Edinburgh.

At the meeting to be held on March 3, Mr. G. M. Taylor will read a paper entitled "A Talk About Potatos."

Obituary.

MRS. W. L. CORRY.—We regret to record the death of Mrs. W. L. Corry, wife of Mr. William Longman Corry, head of the firm of sundriesmen, of Bedford Chambers, Covent Garden. Mrs. Corry passed away on the 8th inst. at St. Katharines, Caterham, Valley.

H. J. CLAYTON.—The news of the death of Mr. H. J. Clayton reaches us shortly before going to press. Mr. Clayton, who retired from the charge of Grimstone Park Gardens, Tadcaster, Yorkshire, in April, 1907, after 35 years' service, was a frequent contributor to these pages, his notes being usually signed *Yorkshire Gardener*. We hope to give particulars of Mr. Clayton's work at Grimstone Park and elsewhere next week. In the meantime we may express the very general regret that gardeners will feel for deceased, whose strong personal character and gardening skill placed him amongst the leading gardeners of his day.

ANSWERS TO CORRESPONDENTS.

COLEUS LEAVES SPOTTED: *G. R.* The injury has been caused by deleterious fumes. There is no disease of any kind present.

CLUBBING IN CABBAGE: *E. Y.* Dress the soil with lime and sulphur, applying the lime now at the rate of 15 cwt. per acre, and the sulphur later in the spring, using 5 cwt. to the acre. Do not grow Cabbages or any of the Brassica family on ground that has been recently cropped with these vegetables for at least a year.

LILIUMS WITHERING: *G. A. P.* The injury is at the roots and has been caused by a minute white worm—*Fridericella bisetosa*. The only certain remedy is injecting carbon bisulphide into the soil.

MANURE FOR POTATOS: *W. L. M.* Your query could have been better answered had you informed us if the ground has been manured with dung. If it has, and the soil has been properly cultivated, then a dressing of superphosphate of lime, 1½ to 2 lbs. per square rod, applied to the surface previous to planting would be suitable. If the soil is very poor re-dig the ground at once, first dressing it with sulphate of potash at the rate of 2 lbs. to the square rod, pulverising the soil as thoroughly as possible, and at the time of planting apply superphosphate as above. As the soil is heavy apply a slight dressing of ground lime, say ¾ lb. to the square rod, a week or two subsequent to planting. Once growth is well started, or when the haulm is 6-9 inches in height, apply a dressing of superphosphate 1½ lb. and sulphate of ammonia 1 lb. per square rod, and hoe the soil afterwards. Remember that constant stirring of the soil with the hoe, and an occasional deeper disturbance with the fork, is of the greatest value as a means of increasing Potato cropping. Plant main crop varieties well apart, as they need more room than is usually given them.

MELON: *E. Y.* The Royal Horticultural Society is conducting a trial of Melons in the Wisley Gardens this season. Send ten seeds of the variety not later than the end of the present month, addressed to the Superintendent, R.H.S. Gardens, Wisley, Ripley, Surrey. There is no fee to pay for varieties sent for trial.

MUSHROOMS: *Subscriber.* Better results are often obtained with Mushrooms when cultivated in simple sheds than when grown in up-to-date Mushroom houses. Nothing answers

the purpose better than an old shed, but draughts of cold air must be excluded. It is an advantage to thatch the portion where the bed is formed, so that a moist atmosphere and uniform temperature may be maintained. Horse manure is undoubtedly the best for the purpose, but it is not essential to have fresh droppings only; indeed a reasonable amount of short litter is beneficial, if the long straw is removed.

NAMES OF PLANTS: *D. F.* *Taxodium distichum*; Swamp Cypress.—*A. R.* *Garrya elliptica*.—*B. C.* (1) *Akebia quinata*; (2) *Eranthemum pulchellum*; (3) *Eupatorium Weinmannianum*; (4) *Dendrobium primulinum*.—*R. O. S.* (1) *Masdevallia amabilis*; (2) *Eria floribunda*; (3) *Bulbophyllum auricomum*; (4) *Tainia barbata*.—*H. C. (Surrey)* (1) *Begonia sub-peltata*, garden form; (2) *Calanthe Regneri*.—*Constant Reader.* *Billbergia nutans*.—*Lady I.* *Azara microphylla*, a Chilean shrub, hardy in this country.—*A. B. (Somerset).* *Brunfelsia (Francisca)* latifolia, the blue flower, and *Griselinia macrophylla*.—*Enquirer.* (1) *Chimonanthus fragrans*; (2) *Garrya elliptica*.—*G. C. R.* *Sparmannia africana*.—*E. A. H.* *Polystichum angulare*.

PEACH TREE: *M. P.* There is no disease present; the root system is unsatisfactory.

PELARGONIUMS DISEASED: *J. H.* Sprinkle the leaves and soak the soil once a week with a



THE LATE HENRY J. CLAYTON.

solution of sulphate of iron—½ oz. in a gallon of water. There is no disease on the Potatos.

PLANT IN A VACUUM: *Mulligan.* An active plant placed in a vacuum would die very speedily; for in the first place the gases dissolved in its sap would be given off with some violence, and hence would be apt to disorganise the living substance; and in the second place, all vital activity would be stopped owing to the absence of oxygen. Respiration, the oxidation process which results in a liberation of energy would either cease altogether or at best would be insufficient to supply the energy necessary for the plant's activity. Finally, in the absence of carbon dioxide, all manufacture of sugar and starch would cease, and hence no new material for growth would be produced. Reference to the results of growing plants under reduced atmospheric pressures will be found in Jost's *Plant Physiology* (English translation), published by the Oxford University Press.

POTASSIUM SULPHIDE: *H. W.* For destroying Orange Rust on Roses dissolve 1 oz. of the sulphide popularly known as liver of sulphur in a quart of hot water, and make this up to 2½ gallons with cold water.

ROSE ON A GREENHOUSE WALL: *Denny.* Prune some of the lower shoots severely with the object of securing strong, basal growths that will furnish the bottom part of the wall.

SCENTED FOLIAGE POT PLANTS SUITABLE FOR EXHIBITION. *W. R.* *Aloysia citriodora* (syn. *Lippia citriodora*), lemon-scented Verbena; *Myrtus communis* var. *angustifolia*, the Box-leaved Myrtle; *Pelargonium capitatum*, the Rose-scented Geranium, and *Eucalyptus citriodora*, the scented Gum Tree, would be suitable for your purpose. The plants may be obtained from the nurserymen.

SCENTED PLANTS FOR THE HERBACEOUS BORDER: *G. S. Y.* The following list of sweet-smelling plants offers a selection for planting in the hardy flower border:—*Aloysia citriodora*, Lemon-scented Verbena (tender in many localities), *Artemisia Abrotanum*, *Asperula odorata*, *Melissa officinalis*, *Ocimum Basilicum*, Carnations, Pinks, *Matricaria Chamomilla*, Wallflowers, *Santolina chamaecyparissus*, *Cytisus fragrans*, *Eucalyptus*, *Marrubium vulgare*, *Iberis odorata*, *Narcissus jonquilla*, *N. Tazetta*, *Lavandula vera*, *Lilium candidum*, *Lily-of-the-Valley*, *Malva moschata*, *Mentha odorata*, *Rosmarinus officinalis*, *Tanacetum vulgare*, *Thymus vulgaris*, *Tussilago iragrans* and Violets.

SLOW COMBUSTION STOVE: *M.* If the stove has sufficient draught to consume the coal dust it may be mixed with the coke used as fuel. Fine coal would be useful for banking up the fire the last thing at night. Try the effect of damping the coal dust before burning it.

SLUGS: *C. H.* Your plan of placing Cabbage leaves as traps is one of the best methods of combating these destructive pests, and you should continue to employ this system. Soot and lime placed around the plants act as deterrents, but we have known the slugs to reach the plants when these materials were used, probably by burrowing. The best system we know is searching for the slugs amongst the crops at night with a lamp. Slugs are very fond of Oranges, and if these fruits are halved, the pulp scooped out, and set hollow side downwards, you will trap numbers of them.

STERILISING SOIL BY STEAM: *J. B.* and *G. D.* You must first obtain a suitable boiler for furnishing the steam, which may be led through pipes made of gas-piping, furnished with a gridiron arrangement for the outlet of the steam (see fig. 54). The gridiron may be 2 feet 6 inches square, and if tyne are used

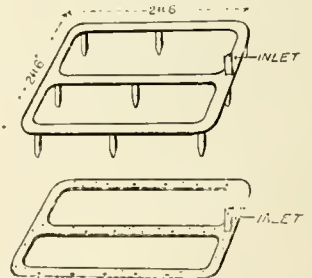


FIG. 54.—THE "HARROW" AND "GRIDIRON" METHODS OF STERILISING SOIL.

these should be about 9 inches long. You will require to construct a box without top or bottom, capable of holding a cubic yard or more of soil. The instrument is placed tyne downwards in the case, the soil is filled in, and steam at a pressure of 50 to 80 lbs. is blown in for twenty minutes. As each yard of soil is treated it should be thrown into a heap to cool gradually. By having two instruments at work the boiler may be kept constantly going. The heap should not be exposed unnecessarily to rain as valuable plant food speedily forms, and is liable to be washed out. The instrument without tyne may be used in the same manner, the steam escaping from a series of small holes drilled in the pipes.

Communications Received.—*T. T.*—*M. A. C.*—*J. G. B.*—*J. A. J.*—*E. B.*—*E. H. J.*—*T. W.*—*G. O. S.*—*E. M. H.*—*J. O.*—*Uppsala*—*W. M.*—*E. A.*—*C. T. M.*—*A. de J.*—*St. Petersburg*—*A. C.*—*W. B. F.*—*A. F.*—*C. M. V. S.*—*T. J.*—*R. A. M.*—*C. F. B.*—*G. M. Co.*—*J. W. R. M.*—*Plantsman*—*M. C. A.*—*H. R. D.*—*H. J. C.*—*West Surrey*—*P. E. C.*—*J. D.*—*C. E. T.*—*C. T. D.*—*J. A.*—*W. R. B.*—*E. M.*—*A. T. H.*—*T. B.*—*A. C. F.*—*Member*—*T. J. S.*—*Ireland*—*A. S.*—*Guildford*—*M. A.*—*Co. Kerry*—*E. F.*—*L. G.*—*W. H. W.*—*H. S.*—*A. O.*—*P. A.*—*Foreman*—*R. P. B.*—*J. H.*—*E. H.*—*Bavaria*—*C. F. C.*—*G. T.*—*W. F. B.*—*Oxonia*—*Ireland*—*A. R.*—*D. P. W.*—*E. B.*—*Amateur*—*E. B. A.*—*Dublin*—*J. B. F.*—*Grower*—*H.*

THE
Gardeners' Chronicle

No. 1,417.—SATURDAY, FEBRUARY 21, 1914.

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THE TESTING OF FARM SEEDS.

IN the course of his interesting address to the Farmers' Club recently, Professor Biffen, of Cambridge, gave an account of the results of tests carried out on 2,500 samples of farm seed. Of the samples, some were sent by the members of the Royal Agricultural Society, some, which represented generally the seed sold by the small dealers in provincial towns, were received from the Board of Agriculture, and some were selected by Professor Biffen himself from casual village dealers—greengrocers and ironmongers.

The results of the tests and analyses show that whereas in the case of Wheat and Barley the seed generally has a high germination capacity, in that of Oats the seed of the last year or two has proved somewhat poor in germination.

When defects occur in the former cereals they are due rather to a mixing of varieties than to poorness in germination. Professor Biffen paid a high tribute to the quality of the seed—e.g., of Red Clover—which is distributed by the leading seed houses, and to the care with which the seed is cleaned. At the same time he observed that much of the Red Clover sold in this country is unsatisfactory and that unscrupulous dealers are apt to pass off as English Red Clover seed

grown in foreign countries. The foreign article is frequently mixed with the English, and such low-grade Clover seed is often found in small market towns and villages. Moreover, it happens not infrequently that seeds of different years' harvests are mixed, with the result that germination is faulty and growth irregular. Of weed seeds found in Red Clover the chief are: *Campion*, *Clover Dodder*, *Dock*, *Geranium* and *Plantain*. In 45 Red Clovers analysed from seed obtained by the Board of Agriculture from small dealers 29 contained seeds of *Clover Dodder*. Worst among the seed was that grown and distributed by the farmers themselves, and in such cases impurities amounted sometimes to so much as 10 per cent. Professor Biffen insisted on the importance of sale under guarantee, and stated that whereas the merchants selling thus put, in the case of *White Clover*, purity at 98 per cent. and germination capacity at 96 to 98—and are not far out—unguaranteed seed is found often to be extremely bad. Low-grade seed samples were found often to contain many weeds, much old seed and also impurities deliberately introduced.

In the case of *Lucerne* the seed tested was found to be good and adulteration rare. *Sainfoin* showed considerable variation, both in purity and germination. *Mangold* seed was generally satisfactory, and the same was found to be the case with the seed of root crops generally.

In the case of *Grasses*, *Foxtail*, *Sweet Vernal* and the finer *Fescues* and meadow *Grasses*, the seeds showed themselves generally to be good; but some of the cheap *Grass*-mixtures were among the worst rubbish that the Professor ever handled. Professor Biffen holds that the system of selling seed under guarantees has led to enormous improvements, and doubts whether a system of compulsory guarantee is necessary. Growers are becoming more and more alive to the importance of pure seeds, and the spread of agricultural education is helping to this desired state of affairs. Agricultural Institutes are also playing both a direct and indirect part in raising the standard. He advocates that use should be made of the advisory staffs attached to the Agricultural Colleges, and that they should help in the testing of the seeds of *Clovers*, *Roots*, certain *Grasses* (perennial and *Italian Rye Grass*, *Cocksfoot* and *Timothy*). He allows that from the seedsman's point of view a case of some sort may be made out for a Government seed-testing station, but does not think that the case is a strong one, observing that if a national station were really required the trade could have established one before now. He inclines to the view that such a station would not touch the small and careless dealer, nor help him to mend his ways and purify his seed. If a Government seed-testing station be founded it must be accompanied by a system of universal guarantees: but Professor Biffen holds that it should be left to the trade to decide whether it is prepared to put up with the inevitable

Government interference which such a station and system would necessitate.

Professor Biffen's paper was followed by a discussion, in the course of which Mr. Martin H. F. Sutton referred to the lecturer's statement concerning the high quality of *Red Clover* offered by the larger seed houses. He pointed out that there are nevertheless a large number of farmers who are still content to sow brown weathered seed containing a considerable number of weed seeds, and that one result of the increasing habit of the farmer to save his own seed is the inclination which he has to sow his uncleaned seed—for the necessary cleaning machinery is not and cannot be at the farmer's disposal—or to barter his seed in the local market. This fact that the farmer is tending to become a seed merchant would have to be reckoned with if any system of Government inspection were put into force. Mr. Sutton pointed out that the difficulty of hard seed in *White Clover* has been solved by the use of machinery which cracks the seed coat and thereby increases germination by 10 to 20 per cent. In referring to the subject of *Grass* seed mixtures, Mr. Sutton suggested that farmers would do well to insist upon knowing the composition of the mixture they sow. He concurred with Professor Biffen in thinking that there is no considerable demand for a Government seed-testing station, and pointed out that the seedsman has his laboratory and carries out the testing of the seeds which he sells. He agreed with the lecturer that the Agricultural Colleges could, if necessary, supplement this testing of seeds. In any case, a Government seed-testing station could not perform the whole of its task unless it were supplemented by a vigorous system of inspection.

We may add that the subject of a Government seed-testing station was dealt with editorially in our issue for September 13, 1913, p. 188, and that there is close agreement between the views expressed therein and those which were presented at the Farmers' Club.

TREES AND SHRUBS.

PROPAGATING RHODODENDRONS.

THE propagation of *Rhododendrons* may be effected in a variety of ways, each having its peculiar advantages, and a few words on the several methods may be useful.

SEEDLINGS.—Raising the plants from seeds is best for several reasons, notably because by it alone can new varieties be produced. It must, of course, be remembered that only the species can be depended upon to come true from seeds, and even these have been known to vary, but the seeds of most of the *Himalayan* species will be found reliable. For raising moderate quantities of seedlings shallow pans or boxes about one foot in diameter will be found the best receptacles to use. They should be half filled with clean materials for drainage, over which a layer of dry moss or rough pieces of leaf-mould or peat should be placed. After this a mixture of equal parts of leaf-mould, peat and sand should be prepared, and the compost strained through a fine sieve. A layer of this should bring the soil nearly to the level of the rim, and the whole will then be the better for being firmly pressed down. A thorough watering through a

fine rose should then be given and the seeds distributed evenly over the surface. A square of glass should be placed over the top and the pans stood in a shady place, the soil being kept moist. In about two to four weeks the seeds, if kept in a temperature of about 65°, will germinate. A position on a shelf near the roof-glass is well suited to the germinating seeds, which require a close, damp atmosphere. When the seedlings appear the light should be gradually

LAYERING.—The method of layering is a very simple one, and also reliable. It is a somewhat slow process, as it takes two years for a layer to form sufficient root to allow of its separation from the parent plant. A slice is pared off with a sharp knife from the underside of one of the outer branches, and the latter is pegged down to the soil. A little fine peat and leaf-mould may be placed on the surface of the soil under the layer to form a rooting medium, and it may also

and as soon as the sap is flowing freely the grafting may begin. Saddle and cleft grafting are the best methods to employ, a perfect cut in both stock and scion being essential to success. The union should be immediately bound with matting and dressed with clay, after which the plants must be placed at once in a warm frame or house at a temperature of about 60° or 65°. The worked plants will require to be kept close and moist for a time, shaded from bright sunshine, but as soon as growth begins the temperature can be lowered gradually and the plants finally placed outside. Both for seed sowing and grafting, March is the best month in the year. *W. A. C., Richmond.*

SYMPHORICARPUS RACEMOSUS VAR. LAEVIGATUS.

MANY are under the misapprehension that the attractive Snowberry exhibited at the R.H.S. meetings by Mr. Vicary Gibbs under the name *S. mollis* is new. The plant, which received an Award of Merit by the Floral Committee in 1910, a First-class Certificate last year, and is figured in the *Gardeners' Chronicle* as a Supplementary Illustration in the issue for February 18, 1911, is botanically identical with the common Snowberry of gardens, introduced, according to Aiton, in 1814. The fruits of the novelty are much larger and more freely produced, but there seems no reason to dispute the assertion that this is due to selection and superior cultivation. To make a comparison one might say there is as much difference between the Onions staged at an exhibition and those grown under ordinary garden cultivation for kitchen use. Professor Sargeant has identified the Aldenham plant as *S. racemosus* var. *laevigatus*, but this is simply a recent name given to the shrub we have so long known as *S. racemosus*. Dr. Fernald (see Gray's *Manual of the Flora of North America*, seventh edition, page 757) points out that the original type of Michaux's *S. racemosus* has leaves hairy and green on the under surface. Our common Snowberry has both leaf surfaces smooth, and the lower surface is more or less glaucous. Dr. Fernald, therefore, to differentiate it, gave the plant we grow in gardens the varietal name of *laevigatus*. It is very doubtful if the true *S. racemosus* Michaux (in Dr. Fernald's interpretation of the name) is in cultivation. *A. O.*

CIRRHOPELALUM MASTERSIANUM.

THE beautiful East Indian Orchid (see fig. 55), named in honour of the late Dr. Masters, was introduced to cultivation by Messrs. Linden, of Brussels, with whom specimens first flowered in 1890. The species formed the subject of a coloured plate in *Lindenia* of that year, the accompanying text being written by Mr. R. A. Rolfe. *Cirrhopetalum Mastersianum* is distinct from others of the genus in cultivation; it is nearest to *C. gamosepalum*, but is different in colour, whilst the cilia are much smaller. The plant under notice flowers at intervals throughout the year, and grows best in a basket suspended from the roof-rafters in a moist, warm glass-house. The best rooting medium is a mixture of peat, *Osmunda*-fibre, and *Sphagnum*-moss in equal proportions. The fleshy, recurved lip is the largest floral segment, and measures 1½ inch in length. The lip, and also the sepals and petals, are coloured yellow, shaded with umber-brown. The *Cirrhopetalums* are now included with *Bulbophyllum*; but *C. Mastersianum* and others of the genus differ in an important particular from the Burmese *Bulbophyllums*, such as *B. auricomum* and *B. hirtum*; for whereas the latter require a period of rest, the former are evergreen and need no resting period.



[Photograph by C. P. Raffill.]

FIG. 55.—CIRRHOPELALUM MASTERSIANUM: FLOWERS YELLOW SHADED WITH UMBER-BROWN.

increased, and as soon as they are large enough to handle they should be pricked out into larger pans prepared as for the seeds. For about a fortnight they may remain in the same temperature, but afterwards the atmosphere should become gradually cooler and drier until the plants can be removed into a cool frame or house, still shaded from too bright sunshine. The following season they can be placed in the nursery beds outside.

be covered with a similar mixture, making it quite firm.

GRAFTING.—This method of propagation is usually resorted to as a quick means of increasing stock, but it is not always reliable, especially in the case of the Sikkim varieties. *R. ponticum* is the stock usually employed. The stock plants should be raised from seed and potted in the autumn at the end of about three years' growth. They should be placed in frames after potting,

THE RECLAMATION OF LAND IN HOLLAND.

THERE is a charming legend in Brittany that somewhere beneath the sea a city lies submerged. In halcyon days the bells of the city of Is may be heard by the devout; but where that city is none may say. Brittany claims it, and so does Greece. For our part, we think it is in Holland, and that some day soon the city of Is will rise—like an urban Venus from the sea—and send its peal of bells, untroubled by the waters, direct to the ears of men. For whilst the learned contend, Holland is prepared to act, and to raise not a city, but a province from the sea. At least, that is the news which the *Times* special correspondent at The Hague reported recently. The Zuider Zee is to be drained, and Holland is to be presented with a

the State will establish model villages, each with 125 acres of common land, and when fully occupied the "city of Is" will provide ample room for a quarter of a million people. The land reclaimed from the sea will grow corn and roots, sugar-beet, potatoes, and vegetables. The crops are estimated to produce an annual return of £5,000,000, and will require the labour of 40,000 cultivators. The rental to the State will be £1,250,000 per annum. The remainder of the enclosed area will form a vast fresh-water lake fed by the River IJssel, a branch of the Rhine, and by other rivers. The fishermen of the Zuider Zee—some 3,000 in numbers—will sail away, with compensation for change of boat and tackle, to pursue their craft in the North Sea, and in time fresh-water fisheries will be established in the IJssel Meer. It is true that the vast scheme has yet to receive the sanction of the Dutch Parliament; but a country which reclaims

THE FERNERY.

OUR NATIVE SHIELD FERNS.

UNDOUBTEDLY there is no species of evergreen Ferns which has proved itself so prolific in "mutational" or "sport" forms as two of our three species of *Polystichum* or Shield Ferns—namely, *P. angulare*, the Soft Shield Fern, and *P. aculeatum*, the Hard Shield Fern. The third species, *P. lonchitis*, or the Holly Fern, which is only found at high levels, has not been found wanting in this respect, but it has varied to so much less a degree that we may ignore it in this article. Considerable discussion has taken place—especially among foreign botanists, but also among our own—as to the specific distinctness of the two first-named species, but no practical Fern hunter or grower can possibly feel any doubt upon this point. The two species are very often associated, and under precisely the same environments display their distinctive characters clearly. *P. aculeatum*, the Hard Shield Fern, which merits the term by being much harder in make, has a shining, lustrous and divisional character which renders it unmistakable. *P. angulare* is of much laxer habit and of softer texture and duller surface. Apart from this, there is a true specific difference of make, inasmuch as while the secondary subdivisions or pinnales of *P. angulare* have a quite distinct stalk attaching them to the rachides or secondary stalks of the pinnae, those of *P. aculeatum* are quite stalkless, the pinnales having a wedge-shaped base, by the blunt end of which they are attached, no actual stalk being formed. The two species also differ in the range of their habitats—*P. aculeatum* extending far north into Scotland, where *P. angulare* is very rare; while *P. angulare* is only found in abundance in the South and West, and in the vicinity of our warmer coasts, and also in Ireland, where *P. aculeatum*, it is true, may also be found in comparatively small numbers, but always of its specific type, as described above. In the direction of wild variation or "sports," *P. angulare*—no doubt owing to some extent to its far greater numbers in our best Fern-hunting districts—far excels *P. aculeatum*, and ranks, as we have indicated, among the Ferns of all the world, as the most generous of all the evergreen species in the way of distinct forms as regards dissection, form of subdivisions, habit, and appearance generally. It is, perhaps, the only British Fern which has become popularly familiar in the varietal way as a house-plant, owing to the beauty of its proliferous form (*P. ang. proliferum*), found very long ago, and distributed generally by the trade by reason of its easy propagation and culture. This is a much-dissected variety, with its subdivisions greatly multiplied, very slender and acutely pointed, giving its fronds quite a mossy look. Under congenial culture the stalks of the fronds break out into innumerable little buds, these sometimes even extending to the secondary mid-ribs, so that a frond, if layered and kept close, produces an abundant crop of youngsters. Hence trade growers have found it easy to raise in large quantities and distribute widely, while, as it is perfectly hardy and evergreen, its popularity as a house plant has been maintained. In addition, however, to this particular example, those who for more than half a century have devoted themselves to the search for new "sports" among our wild native Ferns have found hundreds of other forms of equal and even greater value, embracing not only forms similar to *P. ang. proliferum*, but many others of very different character. Thus we have some forms still more finely dissected, and with their subdivisions differently shaped; some which have their terminal points expanded into tassels on varied lines; some with tubular fronds; and some dwarfed and congested—so that a collector may include examples ranging from plants a few



FIG. 56.—RECLAMATION OF LAND IN HOLLAND.

new province. Eight hundred square miles of that inlet are to be converted into dry land, and the remainder, 550 square miles, is to become a fresh-water lake. The cost is estimated to be about £15,000,000, and the work is to take thirty-three years. The scheme to be adopted may be understood by reference to the accompanying map, which we reproduce by the courtesy of the *Times*. A dam or embankment 18 miles long is to be thrown across the narrow part of the Zuider Zee, leaving a canal, with locks, at the Wieringen end. To construct the dam an island is first to be built midway between Wieringen and Piaam, and from the island the embankment will run out till it joins either shore. In the enclosed region four great polders, of a total area of half a million acres, are to be formed. This reclaimed land will be ready for occupation within seventeen years after the work is begun, and it will be sold gradually by the State. On the polders

already, year by year, some 24,000 acres, may well prove bold enough to adventure on this great and splendid undertaking. If it does, and if it be brought to a successful issue, the Dutch will once again have won the title, and this time by greater arts than those of war, of Mistress of the Seas.

YOUNG PEACH TREES.—The pruning of young trees to be grown in reserve must be different from that commonly practised for established trees. Very young trees with a few strong growths only should be cut back to firm wood, training the shoots at regular intervals to form the main branches of the tree. Great care is necessary in disbudbing and pinching the new growths. Keep the centres of young trees open, and bend the stronger shoots down to retard the flow of sap, and in this way a balanced tree will be obtained. *J. G. Weston.*

inches long only, up to others of as many feet. From the wild examples of such varied types, the selective cultivator—by sowing spores and profiting by the experience that spores or seeds collected from plants which have once sported away from the normal type are apt to vary again—has been able to add another large number of “improved” types, some of which constitute undoubtedly the most beautiful Ferns the world possesses. So much, indeed, is this the case, that although our other native species—such as the Buckler Ferns, Lady Ferns, and Hartstongues—have each yielded an abundant store of wild sports producing similar results of improved offspring in the same way, the Fern specialist is apt to become in time a Polystichum specialist by preference. The Lady Fern (*Athyrium Filix-foemina*) has indeed eclipsed the Polystichum in the range of fashions which it assumes, some of which are unique among the Ferns of the world, and does its best to rival it by the feathery character of its “plumosums,”

idea of the enormous stride made, an ink-print of a pinna of this variety (*P. ang. plumosum ramulosissimum* R. Bolton), as compared with a normal pinna, is shown in fig. 55. The result of this expansion, multiplication, and repeated ramifications of the divisions is an overlapping and piling up of frondage, which transforms the normal and comparatively simple flat frond into a dense and deep triangular mossy mass of extreme beauty. Forms akin to this have been raised by H. Stansfield, of Sale, but none has gone nearly so far in its development, while the apparent exotic rivals in the mossy way—the wonderful *Nephrolepis exaltata* Marshallii compacta and *Willmottae*—are structurally on quite different lines, owing their beauty, as they do, entirely to repeated dissection.

To the finer forms of both *P. angulare* and *P. aculeatum* we have so often referred in these pages, and so many of them figure nowadays in the trade catalogues of Messrs. H. B. May, H. Stansfield, and others, that I can only

in a prepared bed in the conservatory. Such a method has been adopted here, and that it answers admirably a fine plant of *L. gratissima* bearing large trusses of flower fully testifies.

In preparing a place the position should be so chosen that it allows of being enclosed by slates or a low brick wall, so that the roots are always under control. If the bed be made about a yard square, and after ample drainage is secured room left for a 2-foot depth of soil, it will answer admirably. The compost should be turfy loam and peat, with sufficient sand to ensure porosity.

When making its growth the *Luculia* requires to be kept fairly moist at the root, but whilst the flowers are opening I find it best to be more sparing with the supply of water, and then after pruning has been done (i.e., as soon as all the flowers have dropped) only enough water is given to keep the wood in a healthy condition. At pruning time, with the exception of those growths which are required for extending the tree, the remainder should be cut hard back; in fact, in the case of an established plant, it may be pruned like the vine.

The methods of increase are by cuttings or seeds, and although plants raised from the latter are generally slow in arriving at the flowering stage, it is perhaps a safer way, as the cuttings are extremely difficult to strike. *H. Turner, Serlby Gardens, Bawtry.*



FIG. 57.—POLYSTICHUM ANGULARE PLUMOSUM RAMULOSISSIMUM R. BOLTON.
Normal pinna below to show the extraordinary development of the new variety.

but is handicapped by its deciduousness and consequent invisibility for six months in the year. The evergreen Polystichum, on the other hand, under congenial conditions, may be kept beautiful the whole year round. In the spring growth, too, the Polystichum possesses a unique charm, particularly its best plumose forms, its new crop of fronds, then clothed with almost snow-white scales, rise in a series of reflexed coils of a surpassing beauty. For all-round charm on the most varied lines, *Polystichum angulare* must therefore be recognised as an easy first among our native species, and in the foremost rank in the Fern world generally. Great as have been the achievements of the selective cultivator in connection with this species, fresh triumphs are being frequently added, an example of which has recently come before us, raised by Mr. R. Bolton, of Warton, near Carnforth, from a mixed sowing of a number of fine forms. To give an

suggest a reference thereto by those who would profit practically by the above remarks. *Chas. T. Druery, V.M.H.*

CULTURAL MEMORANDA.

THE LUCULIA.

BEAUTIFUL, sweetly-scented greenhouse shrubs, the *Luculias* comprise but two species—namely, *L. gratissima*, a native of the temperate regions of the Himalayas, and *L. pinceana*, of the Mountains of Khasia. Both are handsome plants, the former (by far the better-known species) bearing heads of rosy-linted flowers, and the latter more fragrant and larger white ones.

Whilst it responds very well to pot treatment, a better way to grow the *Luculia* is to plant it

ALPINE GARDEN.

PRIMULA WINTERI.

At the present time, and judged by the rich profusion of flower-buds calculated to endure for some weeks to come, there is no plant in the Alpine house just now more interesting or beautiful than this Himalayan *Primula*. It flowers in winter and early spring, and if afforded a little protection such as is provided by the Alpine house it yields freely of that charm of leaf and flower which knows no peer. So good, indeed, is it in the cold house, so unsullied the well-powdered leaves, and so exquisite the fringed, rosy-mauve, nearly white-throated flowers that no attempt will be made to grow it in heated structures to mar its beauty. Luckily—the word is used advisedly—the plant resents artificial heat and soon becomes a prey to red spider, hence it is more likely to be grown in its rightful place among hardy subjects. In the open a small plant has wintered quite well and the hardiness of the species is thereby proved. Grown thus, however, it is bereft of the beauty of its powdered leaves, and, like the mealy-leaved *Auriculas*, repays for the protection of a cold house or frame. *E. J.*

THE COMMEMORATION OF PARMENTIER

AMONG the men whose services to agriculture deserve to be held in grateful memory is Parmentier, whose work in the popularisation of the Potato has been recognised in a commemorative exhibition held recently in France. The following account of the exhibition and of Parmentier's work is from a communication sent to us by M. Lortel:—

The exhibition in honour of Parmentier, organised by the Society of Horticulture and the Municipality of Neuilly, under the presidency of the Minister of Agriculture, was held at Neuilly on January 25 and 26 in the Hôtel de Ville.

Peculiar interest attached to this exhibition of the “Irish Potato,” as it was called in France in the 18th century, for by a curious chance it was possible to exhibit at Neuilly the actual descendants of Parmentier's Potatoes. In 1815

the Agricultural Society of France handed over to Messrs. Vilmorin Parmentier's collection of Potatos, and entrusted to that firm the task of preserving and completing the collection. The catalogue of 100 years ago (1815) mentions 150 varieties, and it is interesting to note that up to 1856 there were added no more than 25 new kinds; whereas to-day there are upwards of 1,000.

The exhibit at Neuilly displayed by Messrs. Vilmorin included, besides Parmentier's autograph and works, some of the tubers planted by him in 1787, on the occasion of his memorable and successful effort to popularise the plant "which has saved France 20 times from famine."

Of all the varieties enumerated in the catalogue of 1815, and preserved with faithful care Messrs. Vilmorin, there remain pure at the present time only five. These are Marjolin, Vitelotte (called by Parmentier *Violette*), Shaw

cal and esculent properties of the Potato—with which, and with Meyer's daughter, he fell in love. Patriotism forbade him from marrying the latter, but for the rest of his life he was wedded to the Potato, and devoted himself to making known its economic virtues. On his return to France he put himself in communication with prominent cultivators—M. Elleraie, the Baron de Sainte-Hilaire, Lemery, and particularly with English Potato growers, such as John Howard, of Carlington, and Philip Miller.

In spite of various previous efforts, the cult of the Potato had made little progress in France. Thus the Comte de Lambertye, after a visit to England to congratulate King James on his accession, had brought back a variety of Potato much better than any in use at the time in France. The new variety was planted largely in Noirmontiers, Belle-Isle, and in the neighbourhood of Boulogne.

Again, in order to popularise the "noble

extent, the dwellers in towns, and particularly in Paris, looked askance at that vegetable.

At this point of his labours Parmentier hit upon his famous and successful method of advertising the merits of the plant. He selected as the place for his experiment the Plain of Sablons, close to Paris. On this plain the King held each year a review of his regiment of Guards, and it was famous also for its utter sterility.

After much effort Parmentier received permission and funds for his experiment. Since the review took place on May 10 he could not do his planting till the following day—that is, six weeks later than the proper time. Moreover, the weather was bad, the "seed" Potatos—Hative and La Grosse Blanche, the latter a red spotted kind, and so vigorous 'that it would grow in powdered glass'—arrived in a deplorable state, having germinated en route in spite of care in packing.



FIG. 58.—THE BOG GARDEN AT PENRHYN CASTLE, CARNARVONSHIRE, THE SEAT OF LORD PENRHYN.

(For description of the garden see the issues for January 17 and 24, 1914.)

or Chaw, Clairebonne, and Bonne-Wilhelmine. In addition to the collection of modern varieties exhibited by Messrs. Vilmorin were others by the firms of Cayeux and Leclerc, Robert, etc. Of these modern kinds *Excelsior*, an enormous yellow-fleshed variety, was exhibited by M. Hyacinthe Rigaut.

It was during the Seven Years War that Parmentier's attention was first directed to the value of the Potato as an article of food. In his capacity of 'pharmacien en chef' he observed that many of the French soldiers saved themselves from starvation by digging up, cooking by the camp fires, and devouring Potatos found in the fields. Taken prisoner, Parmentier remained in Germany, where he was lodged with a well-known doctor—Meyer, of Frankfurt. He used his enforced leisure in studying the chemi-

tuber" in France, the Duke of Hamilton (as Chevalier Binet) invited sundry great personages to dinner, and served them with morue and Pomme de Terre (cod and Potatos), as being one of the finest of English delicacies. The attempt was not particularly successful, and only led to the planting of a few acres.

Parmentier likewise attempted to popularise the tuber by means of dinner parties, at which the fare consisted of nothing but Potatos; but, needless to say, the device was fruitless of result except that in consequence of these Potato feasts he failed to be elected Representative of the Government—the electors fearing that he might, if appointed, attempt to feed them exclusively on this unpopular diet.

Although the cost of living compelled the peasants of that day to grow Potatos to some

The Parisian crowd, which had watched the planting of this barren land with amused contempt, was stupefied. All day the crowd thronged to see the luxuriant vegetation springing up, and all day the ripening crop was guarded by regiments of soldiers. But at night the guard was withdrawn in order to encourage pilfering, as the surest, if not the most moral, means of popularising the Potato. The yield from 35 arpents was 8,880 kilograms, or nine-fold the weight of the tubers used as seed.

Louis XVI. appeared at Court with a Potato flower, presented by Parmentier, in his button-hole, and the King's gardeners were commanded to plant Potatos in the Royal domain of Rambouillet—the Potato had arrived! *Translated and abridged from a special article by M. J. Lortel.*

NOTICES OF BOOKS.

THE JAPANESE CHRYSANTHEMUM.

At the Paris Autumn Show, held by the National Horticultural Society of France in November, 1908, there was organised by the committee what was called a Retrospective Chrysanthemum Exhibition. Old books, pamphlets, prints, engravings, photographs, and every conceivable literary and artistic curiosity relating to the Chrysanthemum, were exhibited. The exhibition was in every way a success—so much so that two years afterwards a Retrospective Rose Exhibition was held by the same society and at the same place. At the Chrysanthemum exhibition the walls were covered with many choice engravings and portraits, not the least attractive being an original oil painting of Captain Blancard, the introducer of the flower into Europe. In the numerous glass cases were enclosed bibliographical treasures and literary rarities, all having some special reference to or bearing upon the flower in honour of which the show was held.

We are reminded of this most interesting event by the receipt of a large octavo brochure from the pen of M. René Momméja, entitled *Le Chrysanthème au Japon*. It is apparently a reprint of an article that has appeared in the *Bulletin* of the Société Franco-Japonaise de Paris. Although quite complete and an independent publication in itself, no price appears upon it, and we do not know even if it is on sale. If so, as the brochure bears the imprint of the library of the society, any applications must probably be made there for copies.

M. Momméja's work is neatly printed and occupies twenty-three pages of text; the illustrations—most of them extremely quaint, as is usual with Japanese pictures—are full-paged and *hors texte*.

The story opens with a history of the Chrysanthemum in Japan, including its culture, the Emperor's fête, the Feast of Happiness, and the introduction of the flower into Europe. There is then a botanical chapter, which is followed by another dealing solely with the Japanese method of classification. Exhibitions, amateur and imperial, are dealt with descriptively. It is, on the whole, an interesting contribution to the literature of the Chrysanthemum, and only an enthusiast such as M. Momméja is could have produced it.

A word may be given to the illustrations, of which there are thirty-six in black-and-white and one in colour. In some cases there are six different types of flowers on a page. The first we notice is the reproduction of a kakemono, entitled "To En Mei," a great Chinese poet and lover of the Chrysanthemum. We wonder, in our sublime ignorance of the Japanese vernacular, whether this is the same man whose name has been given in Chinese as Fao-yüan-Ming, and who is recorded to have lived about the year 365-427 A.D., and to have given up his official cares so that he might devote himself to versification and the pleasures of the wine cup, coupled with the growing of the Chrysanthemum (see p. 5 of *Chrysanthemums*, in the Present Day Gardening series). There are some Japanese drawings of Chrysanthemums grown in 1736, sketches by the great artist Hokusai about 1815, and examples of the various types according to Japanese classification. A picture, full-paged, of a wonderful trained specimen plant on a single stem, bearing 1,083 blooms, is also given, as are views of exhibits in the shows. But we must conclude with just a bare mention of the only coloured illustration, which represents the seven varieties originally introduced from Japan into Europe by Robert Fortune in 1862.

HISTORY OF THE GRAPE VINE.*

The literature of the vine at the present day is probably unequalled by that of any other fruit, and it might seem at first that no part

had been left unexplored. The work before us fills, nevertheless, a distinct gap in this literature, and will be welcomed by all students of pomological history. The author has certain qualifications which render him especially well-equipped for his task. His experience as a practical Grape-grower in the district of Beaujolais has been of inestimable service in his study of the ancient history of the vine. It is not always that the wide culture and patient enthusiasm of the savant is superadded to the intimate knowledge of culture which comes from a lifelong experience with one particular plant. M. Billiard is, however, an example of this happy combination, and his book therefore stands out from the usual kind of pomological history.

The work treats with the utmost detail all aspects of the vine, beginning with its geological history and following its culture through historical periods, and the making, storing and selling of the wine are also fully described. We will therefore notice briefly these subjects in the order in which they appear.

Recent developments of paleontological botany have considerably modified opinions as to the "native home" of the vine. Older writers generally placed this in the country lying between the Black and Caspian Seas. M. Billiard, however, brings forward the evidence of Saporta, Heer, Zittel and others as to its existence in Central Europe in very early times. In the eocene deposits in champagne many species of *Vitis* have been found, some of which bear considerable resemblance to *V. rotundifolia* of Central Asia.

Coming to later times, there is proof of the use of the Grape by the Lake Dwellers, seeds having been found in various stations extending as far north as Belgium, though, of course, more frequently in southern latitudes. Whether the fruit was then used for wine-making is a moot point, but the author views its probability with some favour.

In historic times the matter becomes naturally more certain, and the great outpouring of the Aryan peoples into Europe had probably much to do with the progress of vine culture and the use of wine. The remarkable similarity between words of the Armenian, Greek, Attic and Romance languages proves the westward progress of the conquering vine. The large part it played in the lives of the Greeks and Romans is too well-known to need repetition, and those interested will find much information as to the worship of Dionysos and Bacchus in these countries.

A particularly interesting chapter is that upon the vicissitudes which viticulture has undergone from many varied causes. The unlimited powers of the Roman Emperors had much to do with these fluctuations, and to read of the purchase of uncultivated lands and their plantation with vines by Aurelius, and the gratuitous distribution of wine to the people reminds one of the frequency with which history repeats itself!

The second part of the work is concerned with the history of the culture and maladies of the vine, and is of the greatest interest. Those who consider plant diseases to be a scourge of modern times will find material here to bring about a change of view; even in the tenth century washes were used as preventives against these troubles.

Of the interesting details of the wines of various localities, their manufacture, storage and usage this is not the place to dwell. The pages of Athenaeus and memories of Trimalchios' banquet will be recalled and many interesting sidelights thrown upon them.

Not the least important feature of the work is the numerous pictures of sculptures, pictures and ceramics which illustrate in a manner generally lively the large part which the Grape played in the early days of civilisation. From Egypt to Europe museums have been ransacked for these evidences, and they form a unique collection.

On the format of the work no adverse criticism can be passed, except the regrettable necessity of the heavily-loaded paper, which makes it too weighty for armchair reading. Type and spacing are alike excellent, but the work, as is usual with Continental productions, is unbound.

La Vigne dans l'Antiquité is of the type of work usually called "standard," and it is certainly one which must be included in every pomological library. So thoroughly has the author explored his field that it will, we venture to think, be long before a successor will be needed, and probably still longer before an author so gifted as M. Billiard will be found. E. A. Bunyard.

THE DISEASES OF TROPICAL PLANTS.*

Dr. Cook, the author of this volume, has had considerable experience of the subject of disease in tropical plants, and, although he recognises that much work remains to be done in this field of investigation, has published his work in the hope that it may prove of use to the planter, and may lead to the filling up of the present gaps in the knowledge of tropical fungous diseases. Dr. Cook has rendered a service of considerable value to the tropical agriculturist. His labours must have been severe, for the descriptions of tropical diseases are to be found scattered in a hundred periodicals, and, moreover, the descriptions themselves are often anything but precise.

In illustration of the need for the thorough investigation of the diseases of tropical plants is the fact that not one of the crop-yielding plants of the tropics is free from the attacks of serious fungous pests. Thus Rubber suffers from canker—which, like that in our Apples, is due to a species of *Nectria*; from bark disease, due to *Corticium* sp.; from stem disease (caused by *Diplodia rapax*); from die back; from fruit disease, due to a species of *Phytophthora*; from seedling disease (caused by *Pestalozzia guelpini*); and other pests almost too numerous to mention.

Dr. Cook introduces his subject by a short account of the structure and functions of plants.

Following this chapter are others on classification of fungi, and the rest of the book is taken up with a description of the diseases of the chief tropical food-plants, and with an account of methods of prevention and control. Investigators of tropical fungous diseases will be particularly grateful to Dr. Cook for including as an appendix a carefully drawn up list of references to original papers. So far as we have been able to test it, this list is remarkably complete; one omission may, however, be noted—that of Mr. Ball's interesting observations on sore shin disease of Cotton. We hope that those of our readers who reside in the tropics will bring Dr. Cook's useful work to the notice of planters and others concerned with the incidence of fungous diseases on tropical plants.

FORESTRY.

AVONDALE FORESTRY STATION.

In the *Journal of the Department of Agriculture, Ireland*, for October, 1913, pp. 102-125, there is an account, with a plan, by Mr. A. C. Forbes, of the progress of the Avondale Forestry Station from its foundation in 1906 to the end of 1912. The greater part of the report is devoted to a detailed description of the forestry plots, which are 104 in number and cover an area of 121 acres. Each plot is composed of a main crop of one or of two or three species, which will remain as a pure or mixed group when the nurses have been gradually removed. Of the nurses employed the common Silver Fir was a complete failure, while Larch, Spruce and Scots Pine have been successful for this purpose. All the Silver Firs suffer severely from frost at Avondale, except *Abies grandis*, a plot of which is very thriving. Of the Maples, the Norway

* *La Vigne dans l'Antiquité*. By Raymond Billiard. Lyon: Librairie H. Lardanchet. English agents: Messrs. Wesley and Co.

* *The Diseases of Tropical Plants*. By Melville Thurston Cook, Ph.D. (London: Macmillan and Co., Ltd.) Price 8s. 6d.

Maple plot is the best, this tree keeping pace so far with the Larch nurses. Sitka Spruce is growing vigorously, but many plants were attacked last year by aphid and lost most of their needles in spring. The *Picea rubra* plot is also very thriving.

The species which have proved most difficult to transplant are *Pinus insignis*, Maritime and Corsican Pines. With these there have been repeated failures, but the best results were obtained by using three-year-old plants, which had been transplanted in the nursery during the previous year, and planting out in the plots in late spring. A few *Pinus insignis* were killed by frost in winter when under 12 inches high, and this species is difficult to establish unless raised in pots and planted out with balls of earth.

Larix sibirica was tried, but all the plants died in two years. This plot has now been filled with *Larix occidentalis*, which was raised from seed obtained from Montana in 1910. Of the different kinds of European Larch, the Silesian variety is much superior to that raised from Tyrolean seed.

There are numerous notes on the different species, and an estimate, based on the experience gained in forming the different plots, of the approximate cost of planting the various species will be found useful, as it includes labour, trees and replacing the failures during the first three years.

FLORISTS' FLOWERS.

PENTSTEMON.

THE value of Pentstemons for massing in beds or borders or for filling gaps in the hardy flower border is greater each year owing to the high qualities of the newer varieties. They are easy of propagation, require but little attention during winter, and grow freely in spring when transferred to their flowering quarters. The following varieties are all to be recommended. John Ruthven, growing fully 3 feet high, has a handsome flower spike which develops extra large blooms with a shade of rich pink, a delicate edging of the same colour and a pure white throat. Thomas Heron has a dwarf, compact habit of growth and is extra free in flowering, making a first class bedding variety; the colour is rose with crimson stripes in the throat. William Goodman produces handsome spikes fully a yard high; the salmon-scarlet flowers have a white throat. Mrs. N. F. Barnes is pink in colour with a white throat. Mrs. Lockett Agnew has large violet flowers thickly set on tall spikes. Lady Hamilton has dark purple blossoms with a white throat, a very effective variety. Albert J. Smith is deep pink with an open throat of white. Hilda Stevenson has a rose-coloured tube and white throat. Miss Lella Stewart Peter is scarlet except for the white throat. There are in addition Lord Granard, crimson with scarlet stripes; Mrs. Robertson, rose pink with white throat; Louis Paulham, bronze-chocolate with white-feathered throat; Mrs. Alexander Brown, rich rose with white throat; Lady Forbes, the strongest-growing variety, producing spikes 4 feet long, deep pink with white throat; Parachute, with blossoms 2½ inches in diameter, scarlet, with white throat; République, bright vermilion, and Thomas H. Cook, a variety with flowers 2½ inches in diameter, produced on a short spike, colour rich rose flushed with red. *E. Molyneux.*

PERPETUAL-FLOWERING CARNATIONS.

PERPETUAL-FLOWERING Carnations are grown extensively and most successfully at the Lynwood Nurseries, Raleigh. The glasshouses are situated on high, open ground, and slope sharply to the west. They are 200 feet long, 50 feet wide, and proportionately high, and provided with ample front and top ventilators. All the flow 4-inch pipes are fixed on brackets at about

8 feet above the floor-line of the houses, the returns being nearer to the ground-line. The plants are growing on benches 4½ feet wide, fixed 3 feet from the ground, seven centre and two side benches with eight narrow paths between them, and one wide central path with double doors at each end. The plants in one house are planted in a suitable compost on the benches, 1,500 plants, consisting of Rose Pink Enchantress, White Enchantress, May Day, and Windsor, and the growths are trained to an almost invisible network of wire running lengthwise and crosswise over the individual benches. Fifteen thousand plants in 32-size pots occupy the benches in No. 2 house. All the plants in every stage of growth, from the cutting upwards, bear evidence of good cultivation, being sturdy, perfectly clean, and floriferous. They are propagated from selected stocks of the best varieties and grown in ideal conditions. In one of the propagating houses 33,000 cuttings of perpetual-flowering Carnations are being rooted. The varieties include, among others, Lady Alington, Lady Northcliffe, Mary Allwood, Mrs. G. F. Dutton, R. F. Felton, Empire Day, Scarlet Glow, Carola, Mikado, and Fairmount. In four large houses *Asparagus plumosa* is grown for cut foliage. *H. W. Ward.*

ASHRIDGE PARK.

ASHRIDGE PARK, the residence of the Rt. Hon. Earl Brownlow, is about four miles from Berkhamsted, separated therefrom by a wide common. The mansion may be described as one of "the stately homes of England"; the style of building is massive, the proportions ample; and the gardens around the house are well suited, in size and magnificence, to adorn this handsome edifice. At each end of the house a fine avenue runs forward, one of Limes the other of Elms. The trees are of noble proportions, being of considerable age and well developed. Beyond the avenues a beautiful view stretches out as far as the eye can see; the home park lies just beyond the shrubberies and gardens, and beyond that again miles of well-wooded, undulating country.

The park is extremely rich in matured timber. Spreading Oaks, tall Beeches and Ashes, gigantic Chestnuts and all the other trees to be found in English woodlands are here represented. The famous "Queen" Beech formed the subject of the Supplementary Illustration in the issue for January 27, 1912. The companion tree, the "King" Beech, fell a victim a few years since to a severe storm; it is said to have been even larger than the "Queen," though the bole of this latter tree was officially stated by the Royal Arboricultural Society to be 80 feet from the ground to the lower branches. Some of the Chestnuts are hardly less remarkable, the branches of one of them spreading over an area of 108 feet in diameter. There are numbers of fine Cedars, among them some good specimens of *C. atlantica glaca* (the largest 45 feet in height), *Abies nobilis* (50 feet), *A. grandis*, American Scarlet Oaks, *Quercus Ilex*, and *Q. suber* (the Cork Tree).

Ancient Yews, both green and golden, adorn the terraces and flower garden. They blend well with their younger kindred. Close by is the Italian garden, which contains a number of Irish Yews, planted as a relief to the main design, which is carried out in Box, round a massive fountain in the centre. Last year a bold design in blue, scarlet, yellow and white was carried out, each of the large beds containing masses of one colour only. The ordinary annuals and bedding plants were used, and the effect was very fine.

The spacious lawns are broken here and there by groups of evergreen and flowering shrubs. Rhododendrons and Azaleas grow well, in spite of the chalky formation of the soil. There are some fine plants of Sweet Bay, particularly large specimens, which have come safely through many

winters; some good examples of *Cupressus sempervirens*; and a very fine bush of *Ceanothus dentatus*.

A picturesque waterway intersects the grounds and forms a boundary to the lawns, opening out at one end into a skating pond. The pond is surrounded by clipped Yew hedges, which form on the other side a background for the Old English garden, the fragrance of whose herbs extends far beyond the confines of the garden. The waterway is spanned at one point by a bridge, from which a number of fine avenues radiate. The central avenue is planted with trees of *Sequoia gigantea*, nearly fifty years old—they stand from 50 to 55 feet high. The rest of the walks are planted with *Quercus Ilex*, *Juniperus chinensis*, Walnut and *Cupressus nootkatensis*. Close to the last-named avenue is a circle of *Libocedrus decurrens* about 25 feet high. A stone pedestal in the centre of the circle, bearing an inscription on an open book, denotes the intention of the planter to make of the circle a kind of open-air temple.

There are many good specimen Conifers, such as *Cryptomeria elegans*, from 18 to 20 feet high; *Juniperus Youngii aurea*, 18 feet; *Pseudotsuga Hookeri*, 16 feet; *Retinospora filicoides*, 14 feet; *Sciadopitys verticillata*, "Weeping" Spruce, *Picea pinsapa*, and a number of *Cupressus erecta viridis*, 30 feet or more in height.

Several groups of *Cotoneaster frigida* are to be seen, covered in winter with brightly-coloured berries. *Magnolia*, *Catalpa*, *Liriodendron*, *Ginkgo biloba*, Black Walnut, and a large spreading *Cedrus* help considerably in presenting a fine effect; and a rare evergreen Beech—*Fagus betuloides*—is about 24 feet high.

The Rose garden is secluded and restful, with an old-world charm and grace all its own. The middle bed contains a basin, surmounted by a stone figure; it is encircled by Venetian pillars. The garden is surrounded by a Yew hedge, and has four entrances. The beds all radiate from the centre, each bed containing one variety; Richmond, Corallina, Madame Ravary and Caroline Testout were four of the varieties specially noticeable.

The Monks' Garden (so called on account of its being on the site of an old monastery), the Main Terrace, and the Italian Garden are arranged in a formal style, and the unconventional methods employed in the bedding present a very pleasing effect. The flowers chiefly used are tuberous and fibrous Begonias (notably "Crimson Gem"), dark Coleus, dwarf Tropaeolums, *Gnaphalium latifolium*, Antirrhinum (a white variety), and various annuals; and also standard Heliotropes, Fuchsias and Lilies.

On the Main Terrace are some magnificent standard Bays, the heads measuring 9 feet in diameter, and the stems 4 feet high. There are also some large plants of scented Verbena—pyramids 5 feet high, and standards with 4 foot stems, their conical heads measuring 3½ feet to 4 feet across the base.

On the south front of the house several good climbers are doing well, among others *Magnolia grandiflora* (30 feet high) and *Ceanothus azureus*; while over the Orangery a Fortune's Yellow Rose and a plant of *Vitis Cointetiae* are growing together.

Inside the Orangery, Camellias, Oranges and Myrtles grow in profusion; on the inside of the roof a rare plant, *Billardiera longiflora*, occupies a place with other climbers. There is a conservatory, also well filled with climbing and other plants. A well-stocked fernery near the conservatory contains a good specimen of *Angiopteris erecta*; and the outside wall of this house is covered with *Vitis heterophylla variegata*, *Schizophragma hydrangeoides*, *Tecoma grandiflora*, *Berberidopsis corallina*, etc.

Most of the glasshouses (which have been recently renovated) lie near the kitchen garden. In both these departments the same skill and care is observed as elsewhere in the gardens; and the indoor and outdoor crops can only be described as excellent. *G. Arden.*

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

ODONTIODA.—Many of these beautiful Orchids are developing their flower-scapes grown during the winter. When the plants have grown actively during the winter the pseudo-bulbs are usually in a more or less sappy condition at this time, and it is desirable to harden them before the inflorescences develop. Odontiodas may be exposed to considerably more light than may Odontoglossums without detrimental effects to the foliage; therefore plants that are producing their flower-scapes should be suspended from the roof-rafters or staged within a reasonable distance of the roof-glass. Plenty of sunlight will not only favour the ripening of the pseudo-bulbs, but plants that are suspended will be out of the reach of slugs and small snails which damage the young flower-scapes and roots. As the plants pass out of flower they may be repotted or top-dressed according to their several needs. Like *Cochlioda*, one of the parents, *Odontiodas* resent root disturbance, and should not be shifted unless re-potting is absolutely necessary. For this reason a compost with lasting qualities should be used. A mixture comprising two parts fibrous peat and one of broken Oak leaves with chopped Sphagnum-moss and coarse silver sand is suitable; sometimes the tips of the leaves die if a compost of a heavier nature than this is used. Press the materials firmly about the roots, and more firmly than in the case of *Odontoglossums*. Use clean pots filled to about one-half their depth with chopped Bracken rhizomes and place a few crocks in the bottom—just sufficient to cover the drainage-hole. Shade newly-potted plants from strong light and keep the atmosphere humid until the roots grow into the fresh compost.

SHADING.—In view of the lengthening days and increasing power of the sun's rays get the roof-blinds ready for use whenever required. Lath and other wooden blinds are very serviceable during cold, winter nights, for when lowered they obviate the use of much fire heat; but when employed on lofty structures in which the plants are staged at a considerable distance from the roof-glass they have a tendency to cause growth to become drawn and weak. It is therefore preferable to use No. 5 canvas blinds for lofty houses. All gable-ends facing south should be covered during the hottest part of the day. A piece of old shading material may be used for this purpose, cut to shape and furnished with eyes so that it may be hung on hooks, to be taken down quickly as required.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

STRAWBERRIES.—Successional plants that have been growing slowly will now be sufficiently advanced for introducing into the forcing pit. Admit air freely for the first week and until the flower trusses show, when the amount of ventilation should be reduced gradually, and the temperature raised to aid the blossoms to develop sturdily. At this stage apply liquid manure at alternate waterings, and damp the plants once or twice daily during bright weather.

CUCUMBERS.—The beds that were prepared last month are in a suitable condition, and by this time the young plants will be nearly or quite ready for re-potting. This is a most trying time of the year to keep the young plants in a growing state. The roots should be plunged in bottom heat until growth is strong, and the latter sprayed overhead—as well as the surface of the bed—daily as required. Allow the sun to shine direct on the plants, and admit air daily when the outside conditions are favourable.

MELONS that were planted last month are growing freely. Water the roots thoroughly whenever moisture is required. It is a mistake to use too small a quantity of water whilst the plants are growing rapidly or carrying a crop of fruit. Increase the amount of ventilation as the days lengthen, as this will favour the development of healthy foliage. High temperatures at night and an atmosphere surcharged with moisture are both harmful. Aim at obtaining foliage that will withstand the brightest sunshine—for Melons should never be shaded—and this can only be obtained by a moderate degree of moisture, plenty of air, and the smallest amount of artificial heat compatible with the health of the plants. Allow the leader of each plant to run nearly to the top of the wires or trellis, then pinch out the tops and train the laterals horizontally.

VINES.—The airing of the vinery should receive careful attention. The amount of moisture in the atmosphere should be in accordance with the weather and the ventilation afforded. Vines that have been started recently should be syringed several times daily until the buds burst. If ripe Muscat Grapes are required during August and September the vines should be started now. Maintain a night temperature of 48° or 50°, allowing a rise of 10° or 15° by sun heat. Always remember that Muscat Grapes require a higher temperature from the start than other varieties. Use the syringe daily until the vines are well advanced in growth, when damping the walls, staging and pathways frequently will suffice to maintain the necessary atmospheric moisture, and the syringing may be discontinued. When the borders require moisture use water warmed to a temperature 5° or 10° higher than that of the house. Cold water would give a severe check to the vines, which would probably affect them throughout the remainder of the season. Early pot vines in an advanced stage of growth, and on which the fruit is setting freely, will soon be in a condition for the bunches to be thinned. On no account touch the berries with the hand during the process of thinning, or they will present an unsightly, rusty appearance later on. A thin piece of wood, or a stick with a forked end, is all that is required to manipulate the bunch whilst it is being thinned. Do not thin too severely at the first time; it is safer to examine and treat each bunch a second, or even a third, time for the removal of seedless or undesirable berries.

THE KITCHEN GARDEN.

By R. P. BROTHERTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

SEAKALE.—The planting of Seakale need be delayed no longer. The ground, no doubt, has been prepared for some time, and, if in the rough, should be either broken down or re-dug. Mark off the lines and plant the sets with a dibbler at one foot apart, and just so deep as to be covered with a quarter of an inch of soil. Finish by running a Dutch hoe through the surface to leave it smooth for subsequent hoeings.

INTERCROPPING.—A large number of vegetables may be grown on ground which otherwise would lie idle for the time being. Thus, between rows of Peas running 4 to 6 feet apart the supply of Spinach, Turnips, Lettuces, and Radishes for summer can be grown, two or three lines of each between every two rows of Peas. In like manner with Broad Beans, slow-growing crops such as Artichokes and Horse Radish planted recently, an early crop can be secured without doing any harm to the permanent one. But one must discriminate. A fine crop of Broad Beans can be produced by having a single plant at the end of every second row of Potatos, but in this case the Potatos close to the Beans will suffer injury. In like manner I have seen splendid samples of Cabbage and Brussel Sprouts produced, but always at the expense of the Potatos, so that intercropping to pay can be profitably pursued only where there is sufficient space for both vegetables.

FRENCH BEANS.—This crop may from now be forced easily wherever there is space to spare in a structure not over-ventilated and

somewhat warmer than a greenhouse. I do not advise growing the plants in pots, but in deep boxes well drained and three parts filled with a very fertile compost, say, of two parts loam and one part old Mushroom-bed manure, with fertiliser added as required later. A few days are gained by swelling the Beans in water previous to sowing, but this must not be carried to the bursting of the skin or the protrusion of the radicle. Sometimes French Beans are placed in vineries, which is always a highly risky proceeding owing to the susceptibility of the foliage to red spider infestation. I have grown the running type planted out at this season, but, though an enormous crop was secured, it was so late that I should not care to repeat the trial.

JERUSALEM ARTICHOKEs.—It is time that the tubers were planted. I set them in double rows one foot apart, with 3 or 4-foot spaces between. The white-skinned is the more handsome tuber, but the old purple variety is the more profitable.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

IRIS FOETIDISSIMA.—This is a good plant for poor soil, thriving where little else will grow. The capsules open in winter, and display the beautiful scarlet seeds.

PLANTS FOR SHADY SPOTS.—*Hypericum calycinum*, *St. John's Wort*, is a valuable subject for planting in shady situations. *Polypodium vulgare* may be used for the same purpose. *Daphne pontica* and *D. laureola* are two valuable dwarf shrubs for dry, shady banks. All these plants retain their foliage and produce excellent effects in winter.

HERBACEOUS BORDERS.—Certain kinds of herbaceous plants require to be divided and replanted every year or every second year, either in early autumn or in the spring, just as growth commences. It is a great advantage to have a reserve garden where the plants may be propagated and grown. A sufficient number of healthy, vigorous plants should be set this spring in the reserve garden to meet the requirements for next autumn or spring planting. The stock plants should be removed to their permanent quarters and planted in well-prepared ground. Lift the plants with good balls of soil filled with healthy roots, and they will become established in their new quarters and give better results than those propagated straight away by divisions of old stools. The latter plants receive a considerable check at the start and half the season is lost before they recover, consequently they do not always flower at the proper season, the flowers are of inferior quality and the plants are less satisfactory generally. Moreover, when there is a good selection of plants in the reserve garden it is possible to make changes and improvements in arrangement of the flowers every year. This applies especially to such plants as *Spiraea*, *Pyrethrum*, *Hemerocallis*, *Inula*, *Helenium*, *Geum*, *Funkia*, *Achillea*, *Betonica*, *Erigeron*, *Gentiana*, *Linum*, *Oenothera*, *Coreopsis*, *Trollius*, *Rudbeckia*, *Salvia*, *Campanula*, and *Armeria*.

ARRANGEMENT OF THE PLANTS.—Plant in bold, irregular groups of from 5 to 50 plants, according to the height, habit and colour of the species, and, as far as possible, take into consideration the period of flowering. If a little of the exhausted soil is replaced by fresh loam mixed with bone meal and well rotted animal manure so much the better, and the extra labour will be well repaid. Plants that resent disturbance at the roots, including the herbaceous *Clematis*, especially *C. Davidiana* and *integrifolia*, members of the *Eryngium* family, *Monarda*, *Delphiniums*, *Anemone japonica*, *Paeonies*, and others, must be left alone until re-planting is absolutely necessary. At Madresfield we find it most satisfactory to avoid repetition in planting, and to have only one group, large or small, of any one variety of herbaceous plant. And we do not plant any bulbs in any part of the herbaceous borders. Strong-growing, tall-flowering herbaceous plants, such as *Pyrethrum uliginosum*, *Helianthus*, *Miss Mellish*, *H. lactiflorus*, *H. scaber major*, *H. rigidus*, *H. multi-*

florus, *Lythrum Salicaria superbum*, and others, should be planted in open spaces, or clearances in shrubberies, in ground that has been trenched and cleared of tree roots. It is now a suitable time to divide these tall growers; the flowers will light up the sombre tones of the evergreens all through the late summer, when flowering shrubs are mostly over.

LILY-OF-THE-VALLEY.—A few beds of Lily-of-the-Valley should be broken up every year at this season, utilising the strong crowns for forcing, and the smaller ones for re-planting in fresh, well-manured ground. Under generous cultivation the spikes will develop large "bells" that will amply repay for the extra trouble, as compared with those from crowded beds or in exhausted soil.

MONTBRETIA.—These beautiful border flowers should be lifted every third year and re-planted in a fresh site. Select young, vigorous corms and discard the old ones that are exhausted. Do not use fresh manure, especially if the animals have been littered with peat-moss. A sandy loam, with the addition of pure leaf-mould, free from animal manure, suits the Montbretia to perfection.

VIOLETS.—Make preparation for forming new beds in readiness for re-planting the young runners as soon as flowering is over.

SPRING FLOWERS.—We have in bloom out-of-doors Snowdrops, Dutch Crocuses, *Scilla sibirica* (these in the grass), *Spiraea Thunbergii*, *Berberis Aquifolium*, *B. grandiflorum*, *Daphne Mezereum*, including the white variety; *Cydonia japonica nivalis*, *Hamamelis Zuccainiana*, *H. virginica*, and *H. arborea*, also in the wild garden, *Pulmonaria officinalis*, *P. maculosa*, and *Petasites fragrans*. The last-named should be planted in the very poorest soil, or, like all other Colts-foot, it will spread to where it is not wanted. The perfume of the "Winter Heliotrope," as the *Petasites* is called, scents the whole place where it is growing. We have also on banks Primroses, Violets, and *Omphalodes nana*, and, on slopes set apart for peat-loving plants, *Erica lusitanica*, *E. Veitchii*, *E. carnea*, and *E. mediteranea hybrida* in bloom.

THE HARDY FRUIT GARDEN.

By J. C. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

PEACHES AND NECTARINES.—The trees having been loosened from the wires in the autumn, and allowed to hang away from the wall all the winter in order to retard the flower-buds, should now be trained in position again or the expanding buds will be liable to damage when the trees are being cleansed. Well-trained specimens that have been disbudded and pinched as required last season will require but little pruning at this stage. It is a usual practice to go over the trees after the fruit is gathered with a view to removing all old wood that has borne fruit, in order that the energies of the tree may be directed to the development and ripening of the young wood. All weakly or badly-ripened wood that has been previously overlooked should be removed entirely now, cutting the shoots back to a healthy growth-bud. After this is done cleanse the trees and train them to the trellis. After fruit trees have been trained on walls for a number of years the brick-work becomes full of holes, and these should be filled in with cement. I prefer training the trees to wires fastened along the walls, for they are neater and permit the work of training to be done more quickly than when nails and shreds are used. First fasten the main branches securely in their places with strong twine, then fill the intervening spaces with the young wood, which should be disposed thinly and regularly over the wall space. A common error in Peach culture out-of-doors is to leave too much wood in the trees. The shoots should be about 9 inches apart. First twist the twine or matting around the wire, as this will prevent the bark being in immediate contact with the wire and allow room for the wood to swell when making the ties. When the training is completed spray the plants all over with an insecti-

cide to ensure perfect cleanliness both in the trees and the wall.

TOP-DRESSING OLD TREES.—After Peach and Nectarine trees have borne regular crops for several seasons they show signs of exhaustion, and the roots need to be top-dressed. The present offers a suitable time to carry out this work. Remove some of the old soil by means of a fork, taking care not to injure the roots, and replace with compost consisting mainly of sweet loam mixed with lime or mortar rubble, and a little charcoal. Work in fine soil amongst the small roots, and tread or ram the whole firm. Afford a copious watering if the weather is dry, and finish off by mulching with material from a spent Mushroom bed or peat-moss litter. Do not employ a thick layer of heavy animal manure. This will keep the soil cold.

PLANTS UNDER GLASS

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

CALADIUMS.—The plants, having been rested, may be started into growth again. Shake the old soil from the tubers and scrape away any decayed portions of the latter. Large specimens may be cut in halves, dusting the wound with powdered charcoal. If the plants are started into growth in boxes of peat and leaf-mould see that each variety is labelled carefully, and only just cover the tubers. Stand the boxes on a hot-bed in a Cucumber house to promote a quick, vigorous growth. Use the syringe on frequent occasions and keep the atmosphere well charged with moisture. If pots are used from the start the receptacles should not be larger than will just accommodate the tubers. The compost should be open in texture, and may consist of equal parts turfy loam, leaf-mould, lumpy peat, a little well-decomposed manure, some charcoal and sharp sand. After they are potted stand the plants in a house with a temperature of 65°; slight bottom heat is an advantage. Use the syringe two or three times each day, but afford water to the roots sparingly until growth is well advanced. As soon as the pots are filled with roots the plants may be afforded a shift into larger receptacles, using the same compost. Use plenty of materials for drainage, as the plants will require an abundance of water when in full growth. The dwarf, small-leaved *C. argyrætes*, employed as an edging to other stove plants, should be potted in 60's.

CANNA.—The old stools should be removed from their winter quarters, divided and placed in boxes containing leaf-mould and well-decomposed manure on a mild hot-bed. The atmospheric temperature should be about 60°. As soon as the leaves develop the portions may be potted in a rich, porous compost. Grow the plants in an intermediate house and remove them to the conservatory when in bloom.

COLEUS.—Insert cuttings of foliage varieties singly in small pots and root them quickly in a brisk heat.

PALMS.—It is not necessary to re-pot Palms every year, but any that need attention in this respect may be seen to now. It is surprising for how long a period Palms will keep in a good condition in the same pots if the roots are fed during the summer months with manure water. *Cocos Weddelliana*, *Kentia* and *Phoenix Roebelinii* are the best kinds for indoor decoration. They should be grown at the warmest end of the stove or Palm house. Specimens in small pots that are root-bound should be placed in slightly larger pots. Remove the old crocks from amongst the roots and fill the cavity made in doing this with soil. Place the ball of roots whole in another pot and press the added soil firmly. The compost may consist of three parts turfy loam, one part each of leaf-mould, sand and charcoal, with a 6 inch potful of bone-meal added to every barrowload of the materials. A little peat may be used for seeding Palms, but it is not necessary for established plants. Syringe the leaves twice daily from now onwards to promote a moist atmosphere and maintain a mean temperature of 60° to 65°. Seeds sown now will germinate readily if placed in a brisk bottom heat and kept moist.

THE APIARY.

By CHLORIS.

MANAGEMENT.—Draw up a scheme of work for the coming season, for although much of the success with bees depends on the weather, the flow of nectar and the working capacity of the bees, skilful management also tells. Every careful beekeeper is aware that one strong stock well cared for is more productive than half a dozen weak colonies. Occasionally a hive of bees will yield an excellent supply of honey with scarcely any trouble on the part of the beekeeper, but such cases are exceptions. If all or nearly all the nectar-bearing flowers are growing some distance from the apiary remove the hives to the source of honey and thus reduce the length of the journeys, for this will save much valuable time, because the honey season is always a very short one. Again, see that the colonies are each headed by a young and vigorous queen. Should any stock be ahead or behind its companions in the quantity of brood, then a wise apiarist will equalise matters. A watch, too, must be kept upon the wants of every hive, and above all see that swarms, after they are hived, have a good supply of food, because during the swarming season the weather often prevents the bees from going out in search of food and the larder is often empty.

WARMTH.—See that the quilts are ample and place layers of newspaper between them or under chaff or other cushions to conserve the heat, taking care to leave no gaping corners. Breeding has already commenced. Where a number of hives are kept nail a stout card—a postcard is suitable—on the roof of each hive for recording notes instead of trusting to memory, for mistakes are often made through confusing one colony with another.

THE "FRENCH" GARDEN.

By PAUL AQUARIAS.

HOT BEDS FOR CLOCHES.—These beds are formed in the same manner as those for frames. As Cos Lettuces do not thrive in very high temperatures the beds should not be more than 8 inches thick when well trodden, and they should be composed of one-third fresh and two-thirds dry manure. Black soil should be placed in the centre of the bed to form a ridge 4 or 5 inches deep when pressed down. Where only 6 or 8 beds are required it is preferable to make them at the same time and to complete the levelling and sowing on a bright day. When the beds for cloches are adjoining those for frames a 3-foot path should be left between. A similar path, formed half-way along the cloche beds, where there are more than 10 or 12 beds, will also be useful. When ready for levelling the soil mark out the position of each bed, which should be 4ft. 6in. wide. Place a peg at each corner, and stretch a line down both sides. Level the soil with the rake, and throw all lumps on the next bed to be covered. A sowing of Carrot Chantenay should be made very thinly, covering the seeds with sifted soil and pressing them down. It is not advisable to sow short-stumped varieties of Carrot at present, as long-rooted sorts are more saleable when this crop is ready in June. After sowing place the cloches in position. The line should be next placed against the pegs on one side, setting the cloches touching the line, and allowing a space of 1½in. between each to facilitate tilting the glasses when cleaning the crop. To set the middle row place a cloche at each end to determine the room needed. The line should be brought over against these end cloches on the outside, and the whole row is set as in the case of the first one. The same method is adopted for the third row, and it will be found there are about 2 inches of the width of the bed to spare, which becomes part of the path. The planting should be undertaken as soon as the beds are completed. Set two plants of Lettuce Little Gott on the south side only, for although many growers plant one also on the north side it is not to be recommended, as it does not thrive owing to the shade from the Cos Lettuce growing in the centre. Only the best Cos Lettuces are used for this batch. They are cleansed of all decayed leaves, and are set deeply and very firmly at the roots.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are mis-directed.

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY, FEBRUARY 21—
B.G.A. (Godalming branch) meet.
TUESDAY, FEBRUARY 24—
Roy. Hort. Soc. Coms. meet.
THURSDAY, FEBRUARY 26—
Manchester & N. of Eng. Orchid Soc. meet. Roy. Botanic Soc. meet.
FRIDAY, FEBRUARY 27—
Finchley Chry. Soc. annual meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 40°.

ACTUAL TEMPERATURES:—
LONDON, Wednesday, February 18 (6 p.m.): Max. 45°; Min. 42°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, February 19 (10 a.m.): Bar. 29.8°. Temp. 46°. Weather—Dull.
PROVINCES.—Wednesday, February 18. Max. 43°, Mayo; Min. 37°, Aberdeen.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—
Herbaceous Plants and Hardy Bulbs, by Protheroe and Morris, at 67 and 68, Cheapside, E.C., at 12.
MONDAY, TUESDAY, WEDNESDAY, THURSDAY, AND FRIDAY—
The whole of the Nursery Stock at the Palace and Beaufort Nurseries, Stapleton, Bristol, re Parker and Sons (Bristol), Ltd., in voluntary liquidation. By Protheroe and Morris, at 12.
TUESDAY AND WEDNESDAY—
Nursery Stock, at Turners Nursery, Uxbridge (Land to be offered for sale shortly), by Protheroe and Morris, at 12.
WEDNESDAY—
Hardy Bulbs and Forcing Plants, Perennials, Border Plants, etc., at 12, Palms and Plants, at 5. By Protheroe and Morris, at 67 and 68, Cheapside, E.C.
THURSDAY—
Special Sale of Roses at Protheroe and Morris' rooms, at 1.
FRIDAY—
Sale of 1 acre 3 rods 7 poles Freehold Land at the Nurseries, Buckwell, Somerset; also the whole of the Nursery Stock. By Protheroe and Morris, at 12.
MONDAY AND WEDNESDAY—
Rose Trees, Perennials, Bay Trees, Lilies, etc. At Stevens's Rooms, King Street, Covent Garden, at 12.30.

Classification of Roses.

The National Rose Society is considering the advisability of revising the present classification of Roses. The questions to be determined are: Is any alteration desirable, and if so, upon what lines should the revision proceed?

Neither question can be satisfactorily answered until the object to be achieved by any new classification or arrangement has been settled and a definite decision arrived at as to the purpose for which the work is primarily intended to be used. Taken all round the method of arrangement at present adopted by the Society has worked wonderfully well, and on the principle of *beati pascidentis*, or, in other words, that every presumption should be made in favour of a system which time has sanctioned, it should not be disturbed unless there is something better to put in its place, and by better perhaps we should be understood to mean something not merely theoretically an improvement, but

which will be of practical service to the persons likely to make use of the new system.

The Society issues from time to time a catalogue of such Roses as are thought most worth cultivation. Under the present arrangement the statement of the raiser, or, in default of him, of the introducer, of any new Rose is accepted, practically without inquiry, as to the class in which it should appear, regard being had to the desirability of not increasing classes unnecessarily. Thus the Roses introduced as Pernetiana have been temporarily classed with Persian Yellow and Austrian Copper under the head Austrian hybrids, and in like manner all the Wichuraiana hybrids have been grouped under the name Wichuraiana, and the multiflora hybrids under Multifloras.

Then for purposes of exhibition only another classification has been made. A select list of Roses, considered specially suitable for exhibition, has been arbitrarily drawn up, and in some cases the class in which any amateur may show is dependent on the number of plants of Roses contained in this list and cultivated in his garden. Moreover, Roses in this list cannot, except in certain specified cases, be shown in the classes for decorative Roses. We believe entry into this list depends almost entirely on the frequency with which a Rose has been shown in a winning box, records of all the winners being carefully preserved. This list is revised annually, it serves an eminently practical purpose, and it does not seem clear how the method of dealing with it is likely to be altered with advantage.

Another list of new Roses for the purposes of certain classes in the exhibitions is issued annually, and should the requirements of the schedule makers cause it hereafter to become desirable, these lists intended purely for the use of exhibitors can at any time be extended, altered, or restricted.

The classification contained in the biennial official catalogue issued by the N.R.S. seems to stand on rather a different footing from that of the purely exhibition lists, and should the Society think fit to issue a more extended catalogue for purposes of classification, then the same remark would apply to this also.

Now the chief, if not the only, object of a classification is to give as compendiously as possible certain information about the plants or groups of plants contained in its several compartments, the various plants being so arranged that those in each compartment may be, so far as practicable, more like the others in that compartment than like those in any other compartment. What is the information that we desire chiefly to convey? In the task proposed we might proceed on one of two lines: we might attempt to proceed on the lines of a purely scientific classification, arranging the different varieties so as to give as much information as possible of the scientific position of each, examining for that purpose all the different organs, stems, thorns, leaves, and flowers, and grouping them accordingly; or, ignoring these methods, we might endeavour to arrange the varieties

according to the purposes for which they are most suitable for use in the garden. We might direct our efforts to obtain either a scientific or a garden classification. A scientific classification would involve much work of great value, and would quite probably be of much interest to many rosarians, bringing into prominence, as no doubt it would, many characters that down to the present have been passed over unnoticed by the majority, and though likely to raise many difficulties, it would settle some doubtful points, and would, it may be hoped, be of some practical value. To the great majority of the members of the Society, however, it is almost certain that a garden classification would be the more useful of the two, and therefore such a classification is the one that ought to be adopted.

Whichever basis were adopted, there are many difficulties that would be common to the two. Hybridisation has been practised to such an extent that in our garden forms there is often no clear line of demarcation between any two neighbouring groups. Moreover, as Darwin long ago pointed out,* the Rose naturally lends itself to the production of new groups in a comparatively short period, and even in the wild state intermediate forms connecting the different species together by natural links are common.

Let us illustrate this from the group *Villosa*. We have at the one end of the scale *R. pomifera* Herrm, then *R. mollis* Sm., *R. omisssa* Déségl. and at the other end *R. tomentosa* Sm. Now there is no difficulty in finding in nature plants the characters of which accurately correspond to those assigned by botanists to each of these types, but there are also found numerous variations or forms intermediate between these typical plants, which it is extremely difficult, and in some cases impossible, to refer with certainty to either of the two typical plants between which they are interposed.† Exactly the same thing occurs in our garden varieties, and in the last resort recourse must be had to a more or less arbitrary arrangement if some doubtful plant is to be placed in one rather than another division.

Places where such a difficulty is sure to occur lie in the dividing line between the Teas and H.T.s, the Chinas and H.T.s, and between the H.T.s and H.P.s, while the division between the Wichuraiana hybrids and some of the ramblers is in some cases not too easy to distinguish. In such cases those entrusted with the proposed revision will do wisely to be guided when possible by well-established custom, even when the solution of the doubt might seem to lie equally well on the side of change.

Another question not free from difficulty will be the treatment of those Roses now coming into use for bedding purposes, which include the *Polyantha* Pompons, the perpetual flowering dwarf Wichuraianas introduced by Messrs. Paul and Son, and the more dwarf of the hybrid Musk Roses. For the purposes of our gardens it is not unlikely that the employment

* See *Variation of Animals and Plants under Domestication*. Second edition, p. 461.

† *Cl. Crépin Bull. Soc. Roy. Bot. Belg.* Vol. 34, pp. 110, 113.

of these varieties may prove to be somewhat alike, and means might be found of grouping them as subdivisions of some class intended to include many of the bedding Roses.

Whatever scheme of classification is decided upon it will be desirable to be on our guard against attempting too great subdivision of the principal groups. The French have split up the Hybrid Perpetual section into something like thirteen different groups, which for the most part are headed each by the Rose from which the group has sprung or which it is supposed to resemble. Interesting though this is historically, it appears out of place in an arrangement intended primarily to give information as to the garden value of the varieties. That a large group like that of the H.T.s might with advantage be subdivided may be admitted, but subdivision should be carried out cautiously, and only employed where it can be shown to be a means of conveying definite information of the habit or capabilities of the different sub-sections.

The classification of Daffodils attempted a few years ago by the R.H.S. is worth study by those who undertake the proposed revision of Rose classification. The circumstances were in some respects similar, such arrangement as there was had grown up in reliance on the class assigned by the raisers to their introductions. No doubt this classification has certain points of merit, but perhaps the greatest is that it is definite, and on the other hand it affords more than one admirable illustration of what it is generally best to avoid. Two lessons to be drawn from it may be suggested. One is the danger of creating new sections for novelties that have not yet, and possibly may never, become established in gardens, and the other is the necessity for deciding clearly the object in view in working out the proposed arrangement and of adhering closely to it when it is determined.

Should it ultimately be decided to proceed with the proposed revision of a classification of Roses, it may be desirable that it should embrace a larger area than that to which the official catalogue is confined. It is even a question whether advantage might not be taken of the opportunity to make it comprehensive, and bring down the work of the "Noms des Roses" to the present day.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the committees will be held in the Vincent Square Hall, Westminster, on Tuesday, the 24th inst. At three o'clock a lecture on "The Use of Explosives and of the Blow-lamp in the Garden" will be given by Dr. H. E. DERRHAM, Sc.D., in the lecture room.

NATIONAL DAHLIA SOCIETY.—A conference, under the auspices of the National Dahlia Society, will be held at Carr's Restaurant, Strand, on Monday, the 23rd inst.; at 7 p.m. Mr. GEO. GORDON, V.M.H., will preside. The following papers will be submitted: (1) "Observations on the Trials at Duffryn in 1913," by Mr. REGINALD CORY; (2) "The Modern Dahlia," by Mr. H. SHOESMITH.

* The *Noms des Roses* (Paris, 1906) is a complete list compiled by Messieurs Léon Simon and Pierre Cochet of the Roses introduced down to that date. It contains the names of 11,016 varieties, and is a most useful work of reference.

ROYAL VISITORS AT RAYNES PARK.—Their Majesties the KING AND QUEEN OF PORTUGAL honoured Messrs. JAMES CARTER AND Co. with their presence at Raynes Park on Friday, the 13th inst. The Royal party, whose visit extended over an hour, were conducted round the buildings by Mr. HAROLD BEALE, and were particularly interested in the extensive seed-cleaning machinery, and in the various germination tests in the laboratory. Messrs. CARTER have for many years held the appointment as seedsmen to the Royal House of Portugal.

ANIMALS AND PLANTS UNDER DOMESTICATION.—At his fourth lecture of the course, Professor BATESON discussed the origin and development of the Chinese Primula and of *Cyclamen persicum*. The origin of the Chinese Primula is not clear, but the botanists of the present day are in general agreement in ascribing it to the Primula found growing in the Tchang gorge by HENRY, WILSON, and others (see fig. 59). Nevertheless, all efforts to cross this plant with our Chinese

which occurred, and hybridising with them. With regard to the history of *Cyclamen persicum*, Professor BATESON said that it had been thought by many that our cultivated varieties had all come from one form, the *Cyclamen persicum* found wild in Palestine and Asia Minor, which was probably introduced into Europe in the beginning of the eighteenth century. But in the horticultural literature of the first half of the nineteenth century there are many records of attempts made to hybridise this plant with the European species of *Cyclamen*, and some of these claim to have been successful. At least, it is noteworthy that such attempted hybridisations were followed by the appearance of many new forms.

TRADE BANQUET AT LEICESTER.—The National Federation of Fruit and Potato Trades' Associations (Incorporated), Ltd., will hold important meetings at the Grand Hotel, Leicester, on Tuesday next, the 24th inst. There will be a meeting of the Executive Committee in the

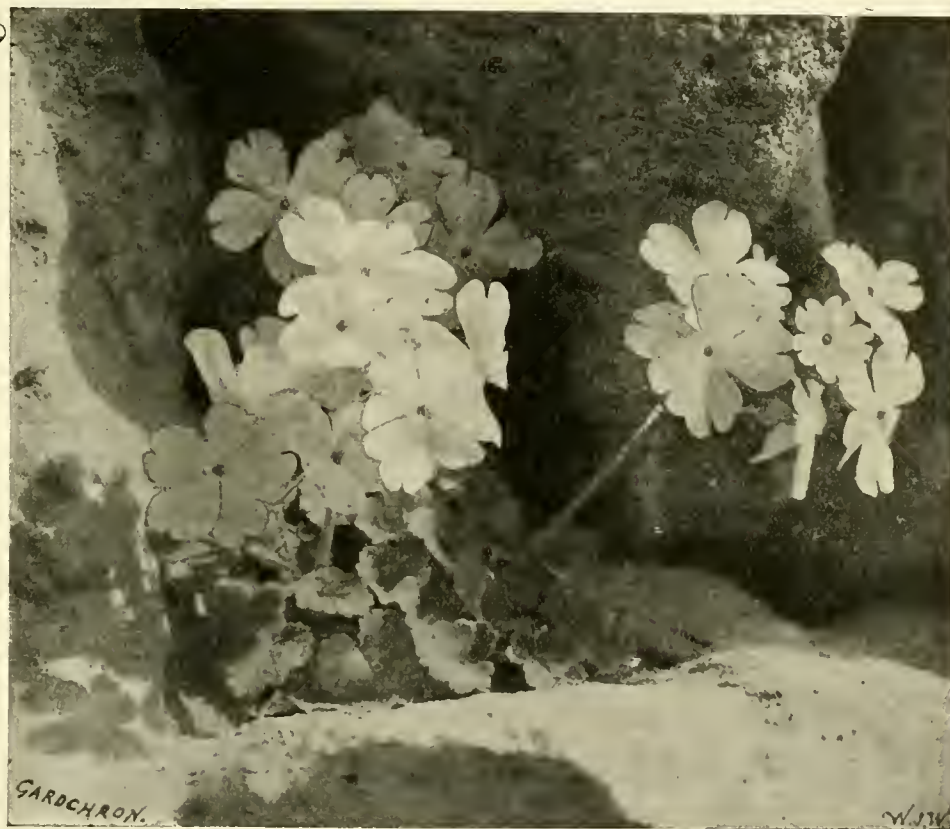


FIG. 59.—PRIMULA SINENSIS GROWING ON THE ROCKS AT PING-SHAN-PAI, WESTERN CHINA (NAT. SIZE).

Primula have failed, and Professor BATESON considers it impossible that it has anything to do with our cultivated forms. It is known that the Chinese Primula introduced into Europe in 1821 had been already in cultivation in China, and in a Chinese book of the date 1828 a plant resembling our Primula is figured, and is said to have been grown in the gardens of Yunnan. The plant originally introduced and figured in the *Botanical Magazine* was of the pyramidalis type, and we now know that this is a hybrid form, which does not breed true, but throws plants with star-shaped flowers, and also plants with fimbriated flowers. Besides the plant introduced in 1821, seeds were imported in 1824 and distributed by the Horticultural Society. Between the years 1837 and 1842, nine varieties are said to have arisen, and this appears to have been the first break. Professor BATESON discussed in detail the behaviour of the different types on hybridising. He pointed out that these types have not been produced by a slow process of selection of one form from another, but by choosing the large variations

morning, from 12 noon until 1.30, a public conference in the afternoon from 2.30 to 6 p.m., and a banquet at 6.30 for 7 p.m. The secretary is Mr. HENRY W. GOODALL, Tavistock Hotel, Covent Garden, W.C.

THE KEW FLAGSTAFF.—The recent lowering of the flagstaff owing to decay removes for the time being one of the most conspicuous objects in the garden. The pole, a fine specimen of the Douglas Fir, *Pseudotsuga Douglasii*, came from Vancouver Island. It was brought to the London Docks slung to the side of a large vessel, towed up the river and erected in 1861. Its possession by Kew is due to the generosity of Mr. EDWARD STAMP, of the firm of Messrs ANDERSON, ANDERSON AND Co., who were at the time engaged in the timber trade of British Columbia. Commercially, the wood of the Douglas Fir is known as the Oregon Pine. The spar was originally 159 feet high and 20 inches in diameter at the base, the age of the tree from which it was cut being about 250 years and the total height 180 feet. When high up in the air

the top of the pole looked thin, but when lowered the apex was found to be as thick as a scaffold pole. Once previously, in 1896, it was found necessary to take down the spar, remove the base and splice on a piece of Pitch Pine. As might have been expected, the evidences of decay are now more serious. Even if it is decided to re-erect the sound portion, the pole will not form such an imposing feature as formerly, towering, as it did, above the tallest trees in the Gardens. We hope it may be possible to obtain an equally fine specimen from British Columbia. *Kew Guild Journal*, Vol. III., No. XXI.

FATAL ACCIDENT TO A GARDENER.—JOHN DONSON, a gardener, aged 65 years, living at Highbury, was killed on the 10th inst. whilst engaged in felling trees. The unfortunate man was sawing a branch at a height of 33 feet from the ground, whilst another person was holding a rope attached to the branch. It appears that the wood commenced to crack suddenly, and he was knocked from his position and fell to the ground, being killed instantaneously.

"THE BAZAAR, EXCHANGE AND MART" is going to issue one of its three weekly editions, namely, that published on Saturday, at a penny. The *Bazaar* has been a great public favourite for the past forty-six years, and this development should greatly increase its popularity.

TRANSIT OF FRUIT.—MR. WILLIAM RAWSON, a representative of the fruit importers in the Hull district, laid a grievance before the Railway Commission on the 6th inst., as to the practice of railway companies owning steamships giving foreign fruit-growers a preference on the sea which enabled them to send their fruit right through and undersell the English importers, who had to import their goods and then ship them on from Hull.

MR. KENNETH GRAY, a director of JAMES GRAY, LTD., horticultural builders, Chelsea, has this year been elected President of the Institution of Heating and Ventilating Engineers. Our contemporary *The Ironmonger* prints an appreciative notice and portrait of Mr. Gray in the issue for the 7th inst.

COCAINE IN INDIA.—The discovery, development, uses and, what is worse, the abuses of drugs, many of which are of vegetable origin, have in recent years followed each other in rapid succession and have been greatly assisted by the advent of the patent medicine vendor. So important, indeed, has the matter become that a select committee was appointed some time since to inquire into the present state of the law affecting the sale and advertising of patent or proprietary medicines. The important part taken by Kew in years past in the successful introduction into our oversea possessions of valuable economic plants, is exemplified by the success of the Cinchona cultivation in India, which has resulted in India producing her own quinine and selling it in penny packets at any post office. Another important medicinal plant which received attention from Kew was the Coca (*Erythroxylon coca*), the active principle of which is cocaine. The plant has been long known in Bolivia and Peru as a valuable nerve stimulant, and is used to prevent hunger, for which purpose the leaves are chewed by those undertaking long and arduous journeys. The chief use of cocaine with us, however, is as a local anaesthetic, but in India it has become a scourge, and an outcry is being made for more stringent penal legislation against smuggling and the illicit sale of the drug. The maximum penalty for cocaine smuggling in Bengal is three months' imprisonment, which is declared to be altogether inadequate considering the evils arising from the traffic. It is suspected that smuggling is largely carried on through Goa or other of the French settlements, and cocaine is also brought into the country from Germany by Austrian steamers.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION, SAN FRANCISCO, CALIFORNIA.—MR. LEWIS L. SANDER, of Messrs. SANDER AND SONS, St. Albans, has recently visited the Exposition Grounds at San Francisco as the guest of Mr. GEORGE A. DENNISON, chief of the Exposition's department of horticulture. Messrs. SANDER intend to exhibit Begonias and Orchids. We are informed from San Francisco that already a large representation in the department of horticulture is assured from England, the reasons being, according to Mr. SANDER, that the opening of the West as a market for English shrubs and other products of the horticulturist is full of promise for the future. Mr. SANDER is reported to have expressed his appreciation of the preparations that are being made in the following terms: "This horticultural scheme is alone worthy of a visit from Europe. No exposition that I have attended—and I have seen them all during more than a decade—has ever approached your present undertaking, either in magnitude of conception, comprehensiveness of scheme, or grandeur of setting. This is the biggest exposition that was ever attempted."

"KEW GUILD JOURNAL."—The *Journal* of the Kew Guild for 1914 maintains the interest of former numbers. The frontispiece is a portrait of Mr. W. J. BEAN, the Assistant Curator, who entered Kew in 1883. Mr. BEAN's connection with the arboretum at Kew is well known, and he has seen it practically replanted. His first position was as sub-foreman in the Palm house, and he afterwards held a similar office in the Orchid department. Kew "Notes" give many interesting details connected with the Gardens. Many will be surprised to learn that no fewer than 3,792,581 persons visited Kew in 1913, the largest number on one day (August Bank Holiday) being 107,085. Members of the permanent staff have received substantial additions to their salaries during 1913, whilst the constables, labourers, and some others have also been granted concessions, but the young gardeners appear to have been overlooked. Two cottages have been purchased on the south side of Kew Green and will be used by the herbarium staff, chiefly for microscopic work.

BIRMINGHAM FLOWER SHOW.—The Birmingham Horticultural Society, which, it will be remembered, was formed three years ago from the nucleus of the old Handsworth Horticultural Society, has decided to hold a three days' show this year instead of two days, and the dates are fixed for Thursday, Friday and Saturday, July 16, 17 and 18. Money prizes are offered of the value of £600, and the awards include nine challenge cups, of the total value of 130 guineas, besides gold, silver-gilt, silver and bronze medals. The secretary is Mr. WM. G. CARRADINE, 36, Hamstead Road, Birmingham.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting of the members of the Surveyors' Institution—an afternoon meeting arranged for the convenience of country members—will be held in the lecture hall of the Institution on Monday, the 23rd inst., when a paper will be read by Mr. CHRISTOPHER TURNOR, entitled "Comments on the Land Enquiry Committee's (Rural) Conclusions." The chair will be taken at 4 o'clock.

TOMATO GROWING IN CEYLON.—Experimental plantings of Tomatos in the gardens at Peradeniya indicate (see *Topical Agriculturist*, 42, No. 1) that the crop may prove a paying one. The chief trouble in cultivating the Tomato in Ceylon is due to its liability to attack by *Bacillus solanacearum*, which causes a large amount of disease.

NEWSVENDORS' BENEVOLENT AND PROVIDENT INSTITUTION.—The attendance of subscribers, the Press, the trade generally, and all interested in the objects of this institution is

particularly desired upon the occasion of the seventy-fifth annual general meeting of the friends and supporters of this fund, which will be held at 15, Farringdon Street, London, on Thursday, the 26th inst., at 7 p.m. The President, Col. the Hon. HARRY L. W. LAWSON, M.P., will occupy the chair.

OLD GLASGOW GARDENS.—In a lecture delivered recently to the Junior Imperial and Constitutional League on "Glasgow in the Eighteenth Century," says the *Glasgow Evening Times*, Mr. THOMAS LUGTON made special mention of gardens and orchards. Till the middle of the eighteenth century Glasgow was a big village remarkable for its gardens. In 1683 HUGH WOOD, gardener at Hamilton, could supply the following fruits:—Gooseberries of three kinds, Red and White Currants, Strawberries, Apricots, three sorts of Plums, Black and Red Cherries, Swanegg, Achans, Wardens and Bergamot Pears, Peaches, and nine varieties of Apples. In vegetables WOOD could supply varieties of the following:—Beans, Peas, Shallots, Onions, Lettuce, Parsnips, Beets, Asparagus, Spinach, Kale, and Cabbages. In 1740 Baillie AUSTIN had for sale grass and garden seeds, flowers, and small fruit bushes at his nursery in Trongate, north side. In 1752 WILLIAM BOUCHER, nurseryman and seedsman, Edinburgh and Camlachie, Glasgow, could send, carriage free by carriers, a large assortment of shrubs, fruit and forest trees from his large nursery at Camlachie. Stobercross Mansion, at Anderston—removed about 1870—had a garden producing a great variety of fruits, roots, and flowers in 1750. The still well remembered Park House in Paisley Road had in the same year an orchard containing 1,000 fruit trees and half an acre of Asparagus.

TIGRIDIAS.

(See Supplementary Illustration.)

SEVEN species of Tiger Iris are known to science, and they are natives of Mexico, Central America, Peru, and Chili. Only three are in cultivation, whilst those generally grown are all forms of *T. Pavonia*, the Peacock Tiger Iris. Few flowers are more gorgeously coloured or more beautiful than the members of this genus, and they make a brilliant display during the months of July and August. Although the blossoms soon fade, numbers of fresh ones are produced in succession over a long period, which compensate for this fugitive character.

T. PAVONIA has scarlet flowers, with an orange-yellow basin, also spotted scarlet, whilst other forms have darker markings. It is a native of Mexico, and has been in cultivation since 1796. Of the numerous varieties, *Conchiflora*, which is one of the three reproduced in the coloured plate, has pale-yellow flowers, the centre depression being covered with crimson blotches. Although such a charming variety, it is of somewhat weaker constitution than the others. *Grandiflora* is a large-flowered form, with rich colouring, while the variety *alba* has white segments and cup spotted with ruby; flowers of *Immaculata* are often from 6 inches to 7 inches in diameter, and nearly pure white throughout. An exceptionally fine variety known as *Lilacea*, and sometimes as *Ruby Queen*, has large flowers of a vivid clear rose-colour.

Although generally considered to be only half-hardy, *T. Pavonia* is very easy of cultivation, provided the plants are grown in a warm, sheltered border or recess where they are protected from cold winds. They grow best in open, well-drained soils, and in warm districts the bulbs may remain in the ground all the winter, especially if planted deeply and afforded a thick mulching of leaves and litter. In heavy soils they are



VARIETIES OF TIGRIDIA PAVONIA (NAT. ORD. IRIDEAE).



best lifted in the autumn and stored in moist sand in a cool, frost-proof shed. The best time to plant is early in March, and the bulbs should be placed at least 4 inches below the surface. The plants need a plentiful supply of moisture at the roots, and if this and other details of cultivation are attended to, the plants will furnish an abundance of large flowers. *Tigridia Pavonia* has been much improved during recent years. "Le Geant Rose" has large flowers of a clear, unspotted rose colour, whilst "Le Geant Rouge" is similar in habit, but with intense orange-red coloured flowers with an unspotted rose-tinted cup.

T. PRINGLEI.—This species was introduced in 1883 from South Mexico, and is less hardy than *T. Pavonia*. The flowers are scarlet, the cup blotched with crimson. The stem is slender, and grows from 1 to 2 feet high.

T. VIOLACEA.—This species is also from Southern Mexico; it is less hardy than the forms of *T. Pavonia*. The perianth is coloured violet and

little affected by the inclement weather usually experienced at this time of year. It will thus be seen that *Rhododendron moupinense* is a most welcome addition to our gardens. *E. Willmott, Warley, Essex.*

A FASCIATED TROPAEOLUM.

ONE of the most remarkable examples of the very common phenomenon of fasciation is illustrated in fig. 61. Mr. Charles Prentis, who sends the specimen, states that the malformed plant (*Tropaeolum tuberosum*) produced the ribbon-like stem (E and C in the figure) to a height of 12 feet, and then threw up more normal growths, which reached to about 40 feet and flowered profusely.

The specimen is interesting, not only because of the fasciation which it exhibits, but also because of the tuber-like growths which occur along the course of the stem—for example,

fasciation, and we have seen a row of *Euonymus* in which most of the plants were fasciated, and have satisfied ourselves that the malformation was called forth by the persistent attentions of cows, which gained access to and browsed upon the young shoots. With respect to the formation of the aerial and monstrous tubers, it may be observed that many climbers—*c.g.*, *Dioscorea* sp.—form aerial tubers normally, and that Sachs, as recorded by Goebel in *Organography of Plants*, found that it is possible by artificial means to induce the roots of *Cucurbita* to form tubers. By removing all the growing points of the shoot Sachs showed that the root rudiments which lie right and left in the stem, close by the stalks of the leaves, grow out into short tubers, each about the size of a hazel nut. Inasmuch as a study of the abnormal is calculated to throw light upon the course of events which determines normal growth, it is to be hoped that botanists will devote attention to phenomena such as those presented by the *Tropaeolum* here illustrated, and generally carry on the interesting studies in teratology which Dr. Masters did so much to advance.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

MANAGEMENT OF THE L.C.C. PARKS.—It is with feelings of satisfaction that one who has been in touch with the inner working of the parks finds the *Gardeners' Chronicle* calling attention to the methods of management of the public parks under the control of the London County Council. We have seen not only an avenue of trees disappear at Finsbury Park, but also flower-beds abolished from several other parks. The excuse offered is that either a playground for children or extension of football ground is necessary. Surely the best place for children to play is under the shade of trees, where grass or plants will not grow. Again, we find, contrary to the usual practice, that football or other grounds are now allowed to be used when quite "unplayable." One can realise how costly such grounds are to keep up. The position of the superintendents must seem untenable, even from an outsider's point of view. Interference with the work of practical men by those with little or no knowledge of horticulture has of late years greatly lowered the prestige of our London parks. I, in common with several others, left the service of the L.C.C. several years ago, because it was increasingly evident that gardeners wishing to rise in their profession were not wanted. Just recently it has come to my knowledge that the men probably required for responsible positions in the future will only be those of fine physique, and soldiers will possibly have priority over all others. Perhaps other readers will know if my informant was right. *Private Gardener.*

PLANTS AT BITTON VICARAGE.—I send a photograph of a specimen of *Clematis cirrhosa* covering a tall holly, which I think you may like to see; but the picture does not do justice to its great beauty. I also send fruiting spray of *Zanthoxylum planispinum*, very pretty and a mass of red berries the size of pepper-corns. Also spray of male flowers of *Parrotia*. There is a promise of an abundance of flowers this year. *H. N. Ellacombe, Bitton Vicarage, Bristol.*

HORTICULTURAL REPORT OF THE BOARD OF AGRICULTURE.—I notice on p. 111 that the first report of the Horticultural Branch of the Board of Agriculture has just been issued, and that the price of this report is 2s. 2d. The price seems hardly fair to horticulturists, seeing that the *Journal* of the Board of Agriculture may be had monthly at the nominal price of 4d. *C. Frankish, Waltham Hall Gardens, Grimsby.*

CHICORY GROWING IN ABERDEENSHIRE (see p. 111).—I cultivated a fairly large quantity of Chicory last season of the variety Witloof, the seeds sown in deep soil on May 2; this variety must not be sown too early, as a number of my plants bolted. I should be glad to know



FIG. 60.—RHODODENDRON MOUPINENSE: FLOWERS WHITE (NAT. SIZE).
(Photograph by R. A. Malby.)

the outer segments are rosy-purple. The flowering season is a short one, for the plant usually produces only a few blossoms towards the end of May. *W. Irving.*

RHODODENDRON MOUPINENSE.

RHODODENDRON MOUPINENSE, which I exhibited at Vincent Square last year, and again last week, when it was given an Award of Merit, was raised at Warley from seed sent over by E. H. Wilson, whilst collecting in Western China for the Arnold Arboretum.

This *Rhododendron*, briefly described in the *Gardeners' Chronicle*, February 14, p. 113, is a very beautiful plant, whether grown as a pot plant or in the open. Its neat and compact habit renders it especially well suited to the rock garden, and the fact that it flowers the third year from sowing is an additional point in its favour. The beautiful, fragrant white flowers are of considerable substance, and are in consequence but

at F. The habit which in the normal plant results in the formation of periform, irregular tuberous roots manifests itself in the fasciated stem in true stem-tubers. That these structures are true tubers is clear; for, as illustrated at A in the figure, transitions occur between the thin lateral shoots and the extraordinary massive tuber-like shoot A. As shown in A, the base of such a transition shoot is swollen, and the leaves around the swollen part of the stem are reduced to mere scales. Imagine this swelling of stem and reduction of leaf to go further, and the result is a tuber shown at F in the figure.

As to the cause which has led to the fasciation we can say but little. Excess of nourishment is sometimes responsible for this form of "over-growth." For example, fasciation occurs not infrequently on shoots from stools and suckers, and it is said that it may be induced by pinching out the main shoot of seedling beans and allowing one of the cotyledonary buds to develop. Injury of the growing point may also lead to

if the roots of this particular variety are of use for making Chicory, as my plants had roots as large as big Parsnips. Our plants were grown for salad purposes. Witloof Chicory must not be grown in a very damp soil, as the foliage is very subject to damping. *C. R., St. Hilary Gardens.*

THE RUCKSACK.—There seems to be a doubt in the minds of some readers of the *Gardeners' Chronicle* as to the correct way of spelling the word "rucksack," and also as to the derivation of the word itself, so it may be useful to state the facts a little fully, and to indicate the conclusions which appear to

the terminal syllable sack (or sac) is of Latin origin (*Fr. saccus*), and as rucksack is a German and not a French word, sack is to be preferred. But it is in connection with the first syllable that controversy has arisen. There is no doubt but that rucksack (or rücksac) is wrong. It is etymologically incorrect, and in any case it could hardly convey the intended meaning of "a sack carried on the back." It remains, then, to consider what is the origin and historical meaning of the word written as rucksack. Some ingenious people have endeavoured to save the notion of "back" by appealing to a dialect—or archaic form of rücken (back)—namely, *ruck (-e)*. But there seems to be little real evidence for this

of that jumbling together of the contents of the bag, such as actually occurs in the ordinary rucksack. Moreover, this view of the derivation is that taken by German authorities most competent to form an opinion (*cf. Muret-Sanders, Encyclop. Wörterbuch, IV., p. 1681*). The original meaning of this word ruck is well seen in the expressions, "Einen kräftigen ruck geben" (give a good push), "Ein ruck am zügel" (pulling the reins). Anyone who has carried a heavy rucksack weighing 40 to 50 lbs. will vividly realise the aptness of the meaning embodied in the word ruck. It is not the position on the back of which one thinks, but of the load itself; and it is the shoulders, not the back, that really feel the strain. It appears, then, that the latter solution of the problem is probably the right one. *J. B. Farmer.*

ORIENTAL LILIES AND THEIR CULTURE IN SCOTLAND.—I have read with much appreciation the admirable article of Mr. A. Grove, entitled "Lilies in 1913," on pp. 33, 34 and 35 of the *Gardeners' Chronicle*. My own experience of the Lily season of last year—so memorable for its unusually long continuance of sunlight—almost entirely coincides with his. It is indeed seldom, as your correspondent has so clearly indicated, that we have such a uniquely beautiful period and of such comparatively extended duration, for the maturation of their resources and the revelation of their utmost powers. Not often have I seen such Lilies of commanding aspect as *Lilium giganteum*, longiflorum, Wilsonii, Henryi (a Lily of vigorous growth, of enduring character and much floral fascination), auratum platyphyllum, vars. Witte and virginale; *Lilium excelsum*, an exquisitely graceful garden hybrid, between the beautiful Madonna Lily and the scarlet Martagon; Brownii, Hansonii, a variety of distinctive attributes, or speciosum magnificum and Kraetzeri, grander in growth or more impressive in aspect than they were last year. *Lilium candidum*—one of the finest of Levantine Lilies, which is never more effective than when grown in borders among bright pink and crimson Roses (such as the incomparable Hugh Dickson and Mrs. Sharman Crawford)—I have seldom seen in Scotland to greater advantage, and its fragrance in the calm evenings of last summer was simply exquisite—"Like odours rapt from remote Paradise." The noblest specimen of *Lilium giganteum* I had the gratification of seeing last autumn was grown in the famous "wild garden" of the Viscountess Dalrymple at Lochinch Castle. I recently received a communication from Her Grace Millicent Duchess of Sutherland asking me to select Oriental Lilies of a vigorously growing and floriferous description for the garden and orchard of her new residence at Roehampton, consist chiefly of varieties that flower contemporaneously in June and July. Among others of hardly less beauty and reliability I have suggested *Sovizitanum*, *giganteum*, *Hansonii*, *candidum*, longiflorum, *Wilsonii*, the various beautiful forms of *Lilium elegans*, with auratum virginale and rubro-vittatum, and Brownii, Sargentiae, and Henryi, to flower somewhat later in the season. It is much to be regretted, in connection with this subject, that the speciosums so often delay, especially in shady gardens, their appearance till October, as they are, perhaps, the fairest and most fragrant of all. *David R. Williamson.*

A DICTIONARY OF HARDY PLANTS.—Writing in the *Gardeners' Chronicle* (Vol. LIV., November 29, p. 386) on the above subject, in my remarks concerning the plates I was so anxious that these should be the best possible that I was led to criticise somewhat severely the plates in Mr. Thompson's book on *The Alpine Plants of Europe*. In justice to Mr. Thompson, I wish to say that my criticism was indeed very severe, and did not allow sufficiently for the good figures that certainly are present in the book, and also to point out that I criticised equally severely the plates in Mr. Farrer's volume *The Rock Garden*. Owing to the omission of the latter remarks, I seemed only to be commenting on Mr. Thompson's book, which was not the case. I take this opportunity of reiterating my remarks as to the value of Mr. Thompson's book to all interested in Alpine plants. *E. B. Anderson, Dublin.*—[We append the words omitted. The reason they were de-



FIG. 61.—FASCIATION IN TROPAEOLUM TUBEROSUM.

A, B, tuber-like shoots of different strength; C, section of fasciated stem; D, section through swollen apex shown at F; E, ribbon-like stem; F, swollen apex. (See page 133.)

follow legitimately from them. The word rucksack originated among the German-speaking people in the Alps, and it has spread of late years through Germany, England, and other nations accustomed to visit the Alps. The word has largely displaced knapsack in this country, and also the corresponding word ränzen (satchel or knapsack) in Germany. As the rucksack is a bag slung across the shoulders, and rests on the back, the forms rücksack (or rücksac), from rücken (back), have been used, especially by English people, instead of rucksack (or rucksac), as the word is written on the Continent. Now,

view. Rücken is the current word meaning the back, even among the people who commonly carry, and speak of, the rucksack. It is not obvious why two different forms of the word should continue to be used, even if it could be shown that the article itself is old enough to render such a derivation historically probable. A more likely origin is, however, to be sought in another word, ruck, which has nothing to do with rücken, but means a push or pull, with a secondary implication of jerking or jostling, as well as expressing the notion of hauling a load. At the same time, it excellently conveys the idea

leted was that Mr. Anderson's criticism and recommendation rested on inaccurate assumptions. The "excellent plates of the *Gardeners' Chronicle*," are not reproductions from paintings, but from colour photographs taken by the same artist who took the photographs for Mr. Farrer.—Eds. "If there must be a coloured plate or so, let them be from actual paintings, such as the excellent plates of the *Gardeners' Chronicle*, and not from colour photographs, or such rather poor reproductions as the plates in Mr. Farrer's *The Rock Garden*; plates for which, I am sure, Mr. Farrer is not responsible, and which must have maimed and bruised his artist's soul when he saw them."]

BUCK SAVIN (see *Gard. Chron.*, Feb. 7, p. 99).—Waggoners here use the Juniperus Sabina to mix with horses' food. They are very particular to inquire for the male or "buck" variety. *A. Hillman, Hailsham.*

CROSSING THE CHRYSANTHEMUM.—Since the publication of my letter in the *Gardeners' Chronicle* of January 17 last, I have tried to get information from Kew Gardens, and the correspondence received from there has led me to believe they hold no records of a cross between the single Chrysanthemum and the Ox-eyed Daisy, or they will not inform gardeners upon the matter. I think this is a great pity when horticulturists are seeking for knowledge. I am also extremely disappointed that my letter had no response from your readers, and especially from some of those who attended the National Chrysanthemum Society's Conference. Mr. Norman Davis has made a suggestion that the cross was made. Is it possible? *M. E. Mills, Coombe House Gardens, Croydon.*

"CLEAN CULTURE."—In the *Gardeners' Chronicle* of November 29, 1913, there is an article entitled "The Philosophy of Manuring," which contains the following paragraph:—"The gardener must build up a soil of such constitution that it will both hold water and part with it readily to the plant, since decaying or organic matter, farmyard manure for example, imparts this property to the soil. This class of substance is looked upon as an ideal manure." In the answer which you give to *Clean Culture* in your issue of the 7th inst. you say "clean culture" appears to consist in "merely excluding the use of all animal and organic manure." As I understand "clean culture," it consists not in the exclusion, but in the use of all kinds of vegetable organic matter rotted down to a suitable consistency, but in the entire exclusion of animal matter. The question, therefore, seems to resolve itself into this: What does the animal matter in stable-dung or dung from the cow-house or pig-sty contain, which assists in "building up a soil of such a constitution that it will both hold water and part with it to the plant," and what advantage is derivable from animal manure which cannot be better obtained from chemical manure, especially as to the times and mode of applying the same? For garden purposes (and it is with regard to these that I write) chemical manures can generally be kept in solution and be applied whenever required as well as be applied in their original condition as a top-dressing. The question is of importance, for, even supposing stable dung to be an "ideal manure," it is becoming every year more difficult and expensive to obtain. *Clean Culture.*

DAHLIA "MARIANNE."—In reply to *Curious* (p. 95), who asks for the origin of Dahlia Barlow's Bedder, I believe that Messrs. Ware, Feltham, Middlesex, are the raisers, or at any rate they introduced the variety to commerce. When asking *Grower* if he had ever seen this variety and Gluchauf growing side by side with Marianne I did not intend to convey the idea that they were synonymous varieties. Far from it; for, as he states, Gluchauf is quite distinct, though classed with Marianne as a dwarf bedding Cactus, whilst Barlow's Bedder is scarlet, and described in Messrs. Ware's catalogue as a dwarf bedder rivalling *Salvia Zurich* in colour. My reasons for asking was because of *Grower's* emphatic statement that "there can be no two opinions about its being the best dwarf decorative Dahlia in existence." Waiving my own opinion, I can assure him that, to my knowledge, the varieties I named have found more admirers than his favourite. I thank *Curious* for correct-

ing my spelling of Gluchauf. Purchased from three sources, the name was spelled differently in each instance. *A. C.*

THE PRESERVATION OF WILD FLOWERS.—I believe there are in certain counties by-laws prohibiting the digging up of wild flowers and Ferns for sale. If these were in force in every county much destruction of our native flora would be prevented. I have in mind a district in North Staffordshire where thirty years ago every hedgerow and coppice was packed with Primroses. Now they are nearly exterminated, and only a few plants here and there are to be found. Hart's Tongue Ferns, too, were fairly common; at the present time I can only find one plant in the countryside. They have all been dug up and sent to the towns by the country people. The same thing is happening in the Nottingham district. Ferns and Primroses are being dug up wholesale and sold by hawkers in the streets. *W. Parker, Superintendent's Office, Nottingham Corporation Public Parks.*

PROPOSED AMALGAMATION OF THE ROYAL CALEDONIAN HORTICULTURAL SOCIETY AND THE SCOTTISH HORTICULTURAL ASSOCIATION.

—I am not aware of the source from which the latter part of the report of the annual business meeting of the Scottish Horticultural Association which appeared in the *Chronicle* of January 31 emanated, but the statement that I "explained that on the last occasion on which an effort was made to unite, the difficulty of the Charter of the Royal Caledonian Society was considered insurmountable" is incorrect. I made no such statement. What I said was, that the Crown would not agree to accept surrender of the Charter, and that were amalgamation to be brought about without this the Crown could appropriate the funds of the Caledonian Society. I trust this correction will receive the same prominence in the paper that the allegation has received. *A. D. Richardson, Secretary of the Scottish Horticultural Association.*

GRAFTING ROSES (see pp. 52, 106).—In my experience 65° is the most suitable temperature to start with under the propagating frames, with bottom heat, of course, a degree or two higher. The amount of warmth may be increased gradually after the first week or two up to 70° and 75° on bright days, and I have always found a few degrees lower to answer best during the night. I agree with *Experience* that for the first few days the frames should be kept closed, as the grafted plants requiring little moisture at the start there would not be sufficient condensation for the time being to cause any injury through damping. If after the fifth day there is too much moisture the lights can be tilted for a couple of hours in the morning, or the ventilation may be graduated according to the weather, closing the frames early in the afternoon. The best time to take the grafts from the frame is when there is a good callus at the junction of stock and scion and the top growth begins to be active. The plants will not be all ready at the same time, and it is usual to pick out the more forward specimens daily and place them on the stage of the house close to the roof-glass. The difference in the flow of sap arises from several causes. The kind of stock used is one factor. Again, plants worked on established stocks that have been stood outside during the summer will respond differently from those that have been lifted from the ground a few weeks before being brought under glass with little or no root action to start with. The former will be quite a fortnight in advance of the latter, which, probably, as *Amateur* observes, might take six weeks before being ready to work. On established stocks the earliest grafts would be ready to take out of the frames by that time. I am referring now to dormant grafting, which is usually finished early in February. *J. D. G.*

—When I advised that no ventilation should be afforded for the first six days after grafting, I did not imagine any gardener would refrain from wiping the glass each morning to remove condensed moisture, which is necessary whether in the case of a cloche or any other covering. The few moments occupied in doing this cannot be considered ventilation in the strict sense of the

term, such as I indicate later in my remarks by placing a label under the light for half-an-hour twice a day. In the short space of five days there can be no damage by damping provided dormant, well ripened wood be used as scions. I know there is a difference of opinion about temperature for grafting Roses, but most experts will agree with me that, provided a stock is established, the quicker it can be induced to form a callus the better. *Amateur* states that it sometimes takes six weeks before some grafts commence to grow, but if delayed until this time the chances of ultimate success are very remote, and on the contrary no propagator would, I think, remove the grafts from the case in a few days, no matter how promising they appeared. *Experience.*

CYANIDING TO DESTROY MEALY BUG.—Mr. James Fulton criticises on p. 94 the remark of your correspondent, *J. H. Y.*, that a vinery in fruit cannot be cyanided, and that he cannot understand why. But Mr. Fulton says nothing to show *J. H. Y.* or any of your readers how it can be done. I consider that it is useless for anyone to write in the strain of Mr. Fulton's letter unless he is prepared to state definitely the exact quantities of potassium or sodium cyanide used per 1,000 cubic feet by himself. I have used here Edward's cyaniding apparatus for the last three years, but, like *J. H. Y.*, I do not as yet approve of cyaniding a vinery whilst in fruit, and this conclusion is the result of actual experience. Three years ago I cyanided a house of Muscat Grapes when the berries were beginning to colour. I used $\frac{3}{4}$ oz. of sodium cyanide, 130 per cent. per 1,000 cubic feet, with the following proportions of water and sulphuric acid:—6 oz. water and 2 oz. sulphuric acid to each oz. cyanide, the sulphuric acid being that known as commercial acid. All the young leaves and points of the lateral growths were killed, consequently the Grapes did not swell to their usual size. If Mr. Fulton would state clearly the quantities of cyanide he uses per 1,000 cubic feet, and whether sodium or potassium, and the percentage of same, he will assist many. There is not the slightest doubt but that cyanide is most dangerous to the operator unless handled very carefully. In cyaniding a late vinery which adjoins a plant house, several plants were damaged by the gas getting through the crevices of the partition, and our houses are all in first-class condition, being as good as new. I paste paper around the crevices of the door in this house, and also over any crevice where the gas might get through, and still some plants have to be removed for safety. *James Colville, Epsley Hall.*

—When Mr. Fulton (p. 94) is so emphatic in stating that a vinery can be safely cyanided when the fruit begins to colour, and he repeats the operation for four or five weeks, I hope he is right. Although it is hard to believe that the fruit does not become contaminated by the fumes, I may give the following instances of fruit being affected by other fumes. Some time previous to taking charge of these gardens every glasshouse here was put in thorough repair, and it so happened that a vinery in fruit was painted inside. Those who partook of some of the grapes afterwards suffered severe intestinal disorder. On another occasion the same effects were produced after lightly fumigating a few Nectarine trees with X.L.A.I. compound; therefore I say be careful of subjecting fruit approaching maturity to fumes of any kind. Of course, the effect of the fumes is not apparent after the fruit has been allowed to hang for any length of time afterwards. Mr. Fulton also states that cyaniding is certain death to white fly. It will be a benefit if it is. I have tried nicotine vapouring compounds at different strengths, and I notice that, although the flies fall down as if completely dead, they are only dazed and most of them rise again, some soon after, others after many hours. I find it best to well syringe the pests with an insecticide when they are down in this dazed condition. *Chas. F. Coates, Manor Park, Potton.*

—Mealy-bug is present in the vineries here, and we cannot get rid of the pest. I read with interest the article by Mr. Fulton (p. 94), and I would very much like him to give the full particulars of bowls and quantities of cyanide and water he uses; also the quantities accord-

ing to the size of house. Is there no danger of cyanided fruit causing poisoning? *T. P. Colvin.*

JOURNEYMEN GARDENERS' WAGES.—*Journeyman* (page 96) says, "A journeyman receiving 18s. per week, with bothy, etc., is better off than many head gardeners. The journeyman need only pay 7s. or 8s. a week for his board, and if steady can save 10s. a week." That may be the case with himself, but what about those in lodgings, and how many journeymen get 18s. a week, with bothy, etc.? I think, take it on the whole, the average wage for journeymen nowadays is 16s. or 17s., with bothy. The cost of living being so high, how many can save 10s.? But one cannot wonder at wages being low, for those advertising for journeymen require applicants to state experience and wages required, and, nine times out of ten, the man that states the lowest wage is engaged. What have the head

a week. I am glad to see that in many establishments the staff is allowed the Saturday half-holiday; and why not, considering that the men have to undertake Sunday duty and work overtime in many places without extra remuneration? *Journeyman* (p. 96) says a steady lad can save 10s. a week out of 18s., but to do that one must possess a very contented disposition to remain always in the isolated bothy in the country. Much of the blame rests with gardeners themselves, and I urge upon young gardeners, especially those taking responsible positions, to demand a wage equal to meet the increased cost of living. *Another Journeyman.*

—The correspondence on journeymen's wages seems to have drawn from several of your correspondents the fact that to obtain better wages and better conditions it is necessary to be unanimous on the point at stake. Several, too,

mittee the benefit of his views, we should get on towards his ideal and ours a little faster. How many bothies are not fit to live in? The B.G.A. endeavours to point out existing evils, trusting to get them righted, by using common-sense methods and not force. The Association wants employers to grant their men a half-holiday on Saturday, and a living wage. Surely, too, we need protection against the influx of unskilled labour to responsible positions. The B.G.A. has encountered apathy, fought it, and is winning; and if the gardening profession as a whole breaks down this barrier not only wages but the status of our honourable calling will be raised to its proper level. *A Member of the London Branch.*

—Thanks are due to Mr. Hudson for his remarks on the abilities of present-day journeymen. Mr. Hudson, being at the head of a first-class establishment, would naturally be able to obtain the pick of the available men, and it may be argued by some that his opinions on this subject are therefore inaccurate. But Mr. Hudson does not employ all the good men, and those he does employ do not serve all of their time as journeymen with him. I agree with Mr. Hudson's remarks about apprenticeship at a premium, but he does not say whether such a system tends to keep wages down or not. Probably it does do so, but the practice appears to be dying out, and has no appreciable effect on wages to-day. In reply to *Agra*, may I point out that we may, without being unduly pessimistic, count on the present prosperity in trade being followed by the inevitable slump, and the concomitant result will be that our profession will again be over-crowded. We must therefore search at once for a remedy for the admittedly bad state of affairs. In my opinion, the only thing that will provide a remedy is combined action. This can only be brought about by some form of union. There is some doubt as to whether the B.G.A. is proceeding on the right lines, but, at any rate, it is a beginning, and as such deserves encouragement. Another of your correspondents says that the practice of journeymen accepting a low wage for the sake of getting a reference is not conducive to the production of the best work, but I should think that the reverse is more likely to be the case, as the better the work is done the better will be the reference. But I believe this practice tends to keep down the standard of wages, as the heads of some establishments may take advantage of it to secure good men at a comparatively low wage, with the certain knowledge that the men will do their best for the sake of the reference and the chance of getting a good job when they leave. Mr. Evans seems to insinuate that the chief interests of journeymen nowadays lie in sport and penny novelettes; but I think I showed in my last letter that this is not so, and my view is supported by Mr. Hudson and *Forty Years' Head*. I may also add that I do discuss my work whilst doing it, and also after work hours, and I find most journeymen are ready to do so. Only last evening five of us discussed horticultural subjects for several hours, and that is no infrequent occurrence. Personally, I never read a penny novelette. With reference to *H.*'s remarks, I can assure him that we do appreciate the head gardener's difficulties. If he approaches the subject in the manner he suggests, he will most certainly put his employer's back up; but if wages are low in his establishment he may point out that he can only get indifferent men in consequence. *Modern Journeyman.*

—One would think, after reading the correspondence on this subject, that a gulf—more or less wide—existed between head gardeners and journeymen. Experience, based on a number of years in the profession, has proved to me the contrary, their interests being comparatively identical; therefore any effort intended to improve their lot must be a united one. That both are inadequately paid is only too evident; indeed, a number of cases brought to my notice would only be described as "sweating." Young gardeners would do well to supplement their horticultural studies with the study of legislation likely to affect them, such, for instance, any proposed Housing Bill, as it would affect the abominable hovels called bothies where the young gardeners are housed. In other branches of legislation the young gardener especially might be indirectly, if not directly, affected. *J. T.*



FIG. 62.—CATTLEYA TRIANAЕ MRS. PHILLIPS: SEPALS AND PETALS WHITE WITH CRIMSON SHOWING IN THE CENTRE OF EACH SEGMENT.
R.H.S. Award of Merit, February 10, 1914. See p. 115, ante.

gardeners to say about that? Can journeymen expect to get a working wage while this sort of thing goes on. I think head gardeners getting 25s. a week and house are as well off as journeymen getting 18s. *C. H.* states in the issue for January 24 that he has been in his present place six years, and gets 23s. 6d. and has to pay 8s. rent. While head gardeners work for such a wage as that the employer is not going to pay under gardeners a good wage. Who is to blame? One cannot wonder at journeymen sticking up for a working wage. I quite hold with what *R. J. D.* said on page 96. *J. H.*

—I have read with great interest the discussion on journeymen's wages, and I hope it will have good effect. It is indisputable that not only journeymen, but gardeners in general, are underpaid. But we are told the employment is steady and constant. I quite agree—seven days

have urged combination, and yet no one seems to point to the British Gardeners' Association as an effective remedy for the admitted weakness of an unorganised profession. Teachers, lawyers, journalists, and many other craftsmen have combined and formed associations which rightly guard their several professions. These are not trade unions in the general sense, and do not work on quite the same lines as trade unions. They exist for the object of ensuring adequate remuneration for their services, to keep out unqualified men, and to raise each profession to a certain status. Who will argue against such? I contend that the spirit of the B.G.A. is similar. I often wonder why gardeners take their lot so quietly, for many have a hard life. The B.G.A. is out to better it, if possible, and I make bold to say that if every gardener who "sits on the fence" and picks holes in the B.G.A. would join, and give the Executive Com-

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

FEBRUARY 10.—Present: Mr. E. A. Bowles, M.A., F.E.S. (in the chair); Dr. A. B. Rendle, M.A., F.R.S., Sir J. T. D. Llewellyn, Bart., Messrs. A. Rolfe, W. C. Worsdell, A. Worsley, R. H. Curtis, W. Fawcett, C. E. Shea, W. E. Ledger, G. Wilson, J. Fraser, E. M. Holmes, G. Gordon, and F. J. Chittenden (hon. sec.).

Hybrid Pelargoniums.—Mr. FRASER continued his remarks upon the origin of scented Pelargoniums, and illustrated them by specimens from the Wisley collection. He dealt principally with Pelargonium zonale, P. inquinans, P. betulinum and P. cucullatum.

Odontoglossum sp.—Mr. ROLFE exhibited on behalf of Mr. H. S. Goodson, of Fairlawn, Putney, a rare species of Odontoglossum from Peru. Mr. ROLFE took a specimen to examine and report upon it.

Odontonia × Luciliae.—A plant of this new hybrid was submitted to the Committee from the Orchid Committee. It was raised from seed of Odontoglossum cirrhosum fertilised by pollen of Miltonia spectabilis Moreliana. It has apparently proved difficult to raise a cross the other way, and the result has given a remarkable purple flower. A Certificate of Appreciation was unanimously recommended to Messrs. CHARLESWORTH, the raisers.

Fusarium bulbigenum.—Mr. SHEA referred to this parasite of Narcissus and other bulbs, and the Secretary recounted its history in England. It was described some years ago by Messrs. Cooke and Masee, and was apparently lost sight of for about twenty years until in the hot summer of 1911 specimens were shown before this Committee, and in that year the fungus proved troublesome also in Holland. There are grounds for supposing that rather high temperatures are necessary for the development of this fungus, and that therefore it is likely that the disease will be evident only in certain seasons, at any rate to a harmful extent. It was again found in several places in the past summer, and in both seasons rotting of the bulbs was brought about by it. It is important, of course, that bulbs showing any sign of the attack should not be planted, and it might be well to plant, at least for a year or two, newly imported bulbs, whether grown in England or abroad, quite apart from those already in the garden.

Crocus aerius.—Mr. BOWLES showed a Crocus which has recently been imported under the name of C. Tauri, but which appears to be only C. aerius, a species native in Persia and described by Herbert in the *Journal of the Society* in 1847.

Violets with two or three flowered stems.—Mrs. ALMA BAKER, of Newton Abbot, sent specimens of Violets with two or three flowers on a stem. This mode of flowering occurred in several gardens a few years ago, and was recorded in the Minutes of the Committee, since when it has been observed in many parts of the country.

Propagation of Hemionitis.—Mr. CHITTENDEN showed young plants of this fern growing from the junction of leaf-stalk and blade after they had been removed from the plant and inserted in sand in a propagating pit, much as is done with Begonia leaves. Young plants are quickly formed, and grow rapidly. In one case a young plant had been found in this position while still attached to the parent plant.

NATIONAL CHRYSANTHEMUM.

FEBRUARY 16.—A meeting of the Executive Committee was held at Carr's Restaurant on this date. Mr. Bevan presided. To commemorate the twenty-first year of the Stoke Newington Chrysanthemum Society it was resolved to offer that body the N.C.S. large Silver Medal for competition at their next show. The Derby Gardeners' Association was admitted in affiliation. The interim financial statement, which was submitted by the secretary, showed a satisfactory working balance. The vacancies on the Floral Committee, necessitated by the retiring of one-

third of the members according to rule, were filled by the election of Messrs. C. H. Curtis, Emberson, Prickett, Springthorpe, T. Stevenson, H. J. Jones and R. Ballantine. The members of the Finance, Schedule and Publications Committees were also elected. It was decided that the annual outing should be a river trip, and take place on Monday, July 20, or failing that date, July 27. Mr. Leach was thanked for his kind invitation for the committee to visit Woodhall on June 22. Subject to the President's approval, the annual dinner will take place at the Holborn Restaurant on November 26.

ROYAL METEOROLOGICAL.

JANUARY 21.—The annual general meeting of this society was held on Wednesday the 21st. ult. at the Institution of Civil Engineers, Great George Street, Westminster, Mr. C. J. P. Cave, M.A., president, in the chair.

The Council's annual report referred to the various branches of work which had been carried on by the society during the past year. These included researches in the upper atmosphere, meteorological lectures, the collection of phenological observations, and the commencement of the preparation of a series of normal values of the climatological elements of the British Isles.

The Council awarded the Symons Gold Medal for 1914 to Mr. W. H. Dines, F.R.S., in recognition of his distinguished work in connection with meteorological science.

Mr. CAVE in his presidential address dealt with the subject of upper air research. He pointed out that research in the upper air may be by means of manned balloon with observer and instrument, or by self-registering instruments sent up in kite, captive balloon, or free balloon. Kites were first used for this purpose by Dr. Wilson, of Glasgow, 1749; and also in Arctic expeditions in 1821 and 1836. The box kite and the use of steel piano wire instead of line enabled greater heights to be attained; and both were adopted by the Blue Hill Observatory in 1895. The use of kites was not taken up in England till 1902, when Mr. Dines flew them from a steamer. After referring to the use of balloons and the ascents made by Glaisher and others, the President said that danger to life in high ascents caused M.M. Hermite and Besancon to use a registering balloon in 1893; a free balloon carried a recording instrument, the recovery of the instrument being dependent on the balloon being found after its descent; a height of nine miles was reached in France, and thirteen miles in Germany soon after. He next referred to the various types of instruments used in the research, and described Mr. Dine's meteorograph, which is an extremely simple and light instrument. Rubber balloons are usually used, and as they ascend they record the winds above the surface, a special theodolite being used for observing the balloons. The International Commission for Scientific Aeronautics directs the studies for upper air research, and special days are arranged for international ascents of balloons and kites, stations in various parts of the world taking part in the work. The first great result of these researches has been the discovery that the atmosphere is divided into the Troposphere, where the air is in constant movement, horizontal and vertical, and the Stratosphere, where turbulent motion seems to cease. The Stratosphere begins at about 7.5 miles in these latitudes. The method of investigation is new, but many other results are beginning to come to light, and it seems as though changes of weather do not begin at the surface of the earth, but are dependent upon movements taking place about 7.5 miles up.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

FEBRUARY 9.—The monthly Committee meeting of this society was held at the R.H.S. Hall on Monday the 9th inst. Mr. Chas. H. Curtis in the chair. Three new members were elected. Three members were assisted from the Distress Fund, and two members were allowed to withdraw double the amount of interest, viz., £3 12s. 8d and £2 1s. 2d. respectively. The Secretary reported that the accounts on the State Section of the Society had been passed by the

Government auditors. The annual meeting will be held on March 9 at the R.H.S. Hall at 7.30 p.m.

ABERDEEN CHRYSANTHEMUM.

FEBRUARY 14.—The annual meeting of the members of this Society was held in the Young Men's Christian Institute Hall, Aberdeen, on Saturday, the 14th inst. There was a good attendance, and ex-Baillie Middleton, chairman of the Society, occupied the chair. The chairman moved the adoption of the report and financial statement for the past year, which were considered very satisfactory, and they were cordially approved. Lord Provost Maitland, Aberdeen, was re-elected hon. president, and ex-Baillie Middleton was appointed as hon. vice-president. Ex-Baillie Allan, Aberdeen, was unanimously elected chairman, Mr. David Ritchie vice-chairman, Mr. Magnus H. Sinclair secretary and treasurer. The committee was also elected. It was decided to hold the next annual exhibition in the Music Hall Buildings, Aberdeen, on Friday and Saturday, November 20 and 21.

ABERDEEN NATURAL HISTORY.

JANUARY 16.—A largely-attended meeting of the members of this society was held in the Botanical Classroom, Aberdeen University, on Friday, the 16th ult., when Dr. JAMES W. H. TRAIL, Professor of Botany in Aberdeen University, delivered an illustrated lecture on the "Arctic-Alpine Flora of Scotland." Dr. Gibb, Lecturer in Geology, occupied the chair, and in introducing the lecturer said Dr. Trail was the first president of their society. Most of the plants, said Dr. Trail, were found at an altitude of 2,500 feet above sea-level, and he proceeded to show numerous illustrations of Alpine plants, including the Dryas, the Snow Gentian, Saxifragas, Willows, Silene and Whortleberry. The lecturer pointed out that many of the Alpine plants have beautiful flowers and flourish in great profusion during the short summer season.

Professor J. Arthur Thomson, Aberdeen University, in moving a vote of thanks to Dr. Trail, referred to the excellent lessons which the doctor had pointed out as to the way in which Alpine plants overcome difficulties and suited themselves to the conditions in which they flourished. In acknowledging the heartily-given vote of thanks, Dr. Trail mentioned that those present might have an opportunity of examining the collections of Alpine plants made by the late Professor Macgillivray and the late Mr. John Roy, who was for many years a head schoolmaster under the Aberdeen School Board. Dr. Trail mentioned that Mr. Roy had prepared a flora of the north-east of Scotland, but had handed it to the Rev. Dr. Ferguson, of Fearn, with instructions to his executors to have all papers burned. That had, unfortunately, been only too faithfully carried out, but his collection of plants had been saved by Mrs. Roy and presented to the Aberdeen University, where it was likely to remain as a worthy memorial of one who was a most conscientious worker, and one whose memory they would ever hold in high esteem.

ST. GERMAN'S HORTICULTURAL.

FEBRUARY 7.—The fifth annual dinner of this excellent local society took place on the 7th inst. at the Victoria Mansions Restaurant, when, owing to the indisposition of the President, Sir Edward Coates, Bart., M.P. for Lewisham, Mr. W. E. Robinson took the chair. The toast of the evening, "Success to the St. German's Horticultural Society," was proposed by Mr. T. W. Sanders. The Chairman of Committee, Mr. W. H. Collins, replied. Among other speakers were Mr. Harman Payne, who replied for the visitors.

PUBLICATIONS RECEIVED.—*One and All Gardening, 1914.* (London: Agricultural and Horticultural Association.) Price 2d.—*Wild Flowers.* By Macgregor Skene. (London and Edinburgh: T. C. and E. C. Jack.) Price 6d.—*Transactions and Proceedings of the Botanical Society of Edinburgh.* Vol. xxvi. Part II. Secretary, Mr. W. W. Smith, Royal Botanic Gardens, Edinburgh.

MARKETS.

COVENT GARDEN, February 18.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing cut flowers and their wholesale prices, including Arums, Daffodils, Gardenias, Lilies, and various orchids and roses.

White Freesia, and Anemone fulgens are arriving in good condition from Sicily and Guernsey. There is a good supply of Carnations, Azalea, Arums, Lilium Harrisi, Tulips, Lily-of-the-Valley and Forget-me-Nots. There are exceptionally fine blooms of Violet Princess of Wales on sale. Snowdrops and Wallflowers are very plentiful. Roses show an increase in numbers, especially the varieties Richmond and Niphotos; there are also some fine blooms of Lady Hillingdon, Sunburst, Mrs. Ward, and Liberty. Roses are selling freely, and at reasonable prices. In the foreign flower market Violets are the most plentiful subject, but many baskets of these flowers are arriving in an unsaleable condition, pointing to the finishing of the season. Pink, Red, and single varieties of Anemones, similar to the St. Bridget varieties, but with larger blooms, are on sale. There is a fair supply of Mimosa, Yellow Marguerites, White and Pink Stocks, and Freesias. Parma Violets are more plentiful, but they show the effects of the long journey sooner than the singles.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing plants in pots and their wholesale prices, including Aralia Sieboldii, Asparagus plumosus, and various ferns and cacti.

Continental growers are lessening, and the prices have risen. Tomatoes from the Canary Islands are a full supply, but trade in them is slow. Mushrooms are sufficient for the demand. Asparagus is arriving from the Evesham district. Forced Beans from Guernsey have been scarcer, also Peas. The quantities of Seakale are more than sufficient to meet the demand. Ordinary vegetables are plentiful.—E. H. R., Covent Garden, February 13, 1914.

Vegetables: Average Wholesale Prices.

Table listing average wholesale prices for various vegetables such as Artichokes, Asparagus, Beans, Cabbages, Carrots, Cauliflowers, Celery, Chicory, Cucumbers, Endive, Garlic, Horseradish, Lettuce, Leeks, and Onions.

Potatoes.

Table listing prices for different varieties of potatoes including Bedford, Blacklands, British Queen, and Kent.

REMARKS.—In the plant market flowering subjects form the leading feature just now. Some very fine Cyclamen are still on sale. The other subjects include Cinerarias, Genistas, White Marguerites, Erica Willmorei, E. persoluta, White Spiraea, Hyacinths, Tulips and Daffodils. Azaleas are very plentiful.

Fruit: Average Wholesale Prices.

Table listing average wholesale prices for various fruits including Apples, Lemons, Limes, Lychees, Mangoes, Nectarines, Oranges, Pears, Pineapples, Plums, and Strawberries.

REMARKS.—A few fruits of Bramley's Seedling are the only home-grown Apples obtainable. Supplies of Apples from overseas in boxes and barrels are sufficient for all demands. The first shipment of Australasian Apples is in course of transit. Arrivals of Cape fruits to hand comprised 12,000 boxes of Plums, Peaches, Nectarines, Pears, Grapes, etc. Another boat with fruit is expected to arrive on Saturday next. Forced Strawberries from the Worthing district are arriving daily. Supplies of Grapes (Black) from English and

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending February 14, is furnished from the Meteorological Office:—

THE WEATHER IN WEST HERTS. Week ending February 13, 1914.

The Wettest Twelve Days as Yet of the Present Winter. —This was another very warm week, and the third week in succession in which both the day and night temperatures have been as a rule unusually high for the time of year. On the warmest day the highest reading in the thermometer screen was 57°, making this, with three exceptions, the warmest day recorded here in February during the last twenty-eight years, and on the warmest night the thermometer exposed on the lawn only fell to 46°, making this, with three exceptions, the warmest night recorded here during the same period. There were no cold days, but on the one cold night the exposed thermometer registered 11° of frost. The ground is at the present time 4° warmer at 2 feet deep, and 5° warmer at 1 foot deep, than is reasonable. Rain fell on five days during the week, and to the total depth of 1½ inch. During the last twelve days 2 inches of rain has fallen, which is rather in excess of the average quantity for the whole of February, and more than fell during the two previous months of the present winter. Of that amount, 8½ gallons has already come through the bare soil percolation gauge, and 7 gallons through that on which short grass is growing. The sun shone on an average for 2½ hours a day, which is about the average duration for the same period in February. The winds were, as a rule, moderately high, and on one day the mean velocity for the windiest hour reached twenty-one miles—direction S.S.W. Since the beginning of the present month there has been a great prevalence of winds from some point between south and west. The mean amount of moisture in the air at three o'clock in the afternoon fell short of a reasonable quantity for that hour by 8 per cent. A selected patch of yellow Crocuses in my garden first showed an open flower on the 14th inst., or ten days earlier than its average date for the previous twenty-seven years, but ten days later than last year. E. M., Berkhamsted, February 13, 1914.

REMARKS.—The supplies generally show an increase on those of last week. Trade has improved a little, and prices are lower. Except for a few best varieties of English-grown Daffodils the value for these flowers is higher. Supplies of Narcissus Poeticus are sufficient for the demand. Yellow and White Daffodils, Poet's Narcissus,

TRADE NOTE.**MESSRS. ROBINSON BROTHERS, LTD.**

WE are informed that Messrs. Robinson Brothers, Ltd., manufacturers of Carmona garden-alities, West Bromwich, are opening a London office and warehouse at 101, Long Acre, W.C. Mr. A. J. Macself, until recently a member of the staff of the *Gardeners' Magazine*, will take charge of this branch of the business.

NEW INVENTIONS.**HORIZONTAL THERMOMETER.**

WE have received from the Harrow Speciality Co. a specimen of their "Max-Min" horizontal thermometer, which is so constructed that no magnet is required to move the pointers that register the maximum and minimum temperatures. By the simple movement of tipping the thermometer on one end the small floating pointers fall into position again. It is said also that should the mercury itself become separated it is only necessary to lift the scale out of the case and give it a sharp shake downwards, when the mercury will at once unite. The thermometer is contained in a strong metal case, which is enamelled, and it is fitted with a folding rain and sun shield.

THE "STANDALONE" FOOT SCRAPER.

FROM the Gripper Manufacturing Company, Leicester, we have received a bi-prong foot scraper and brush for use in gardens. It consists of a wooden shaft 4 feet high, the lower end being inserted in a galvanised steel frame with two prongs, the feet of which insert into the ground and hold the scraper erect. By grasping the staff with one hand the sole of the boot can be scraped and the sides brushed with the greatest convenience, and the creosoted wood handle by drawing attention to the scraper tends to the preservation of clean paths.

LAW NOTES.**LIABILITY OF A RAILWAY COMPANY FOR DAMAGED GOODS.**

A JUDGMENT of importance to traders was delivered by Mr. Justice Banks, in an appeal by a Railway Company against the decision of the Judge of the City of London Court, in a case of action to recover damages for injury to a machine carried by them. The machine—a milling machine—was delivered to a van sent by defendants to convey it to their station at Smithfield, en route for Minehead. The plaintiff's servant handed the carman who was sent to collect the goods a consignment note containing no restrictions exempting the defendants from liability for damage during transit. The carman refused to take the machine without a special contract note, and asked the plaintiff's servant to write O.R. (owner's risk) upon the note tendered to him and to initial it. This was done. The machine was carted to Smithfield Station, where afterwards it was found with its steel bore cracked. The Judge held that the effect of the above-described special contract was that the owners took the ordinary risks of transit, but that the defendants remained liable for injury resulting from negligence of their servants; that the broken condition was not conclusive evidence of such negligence. He gave judgment for defendants, but in case the Divisional Court should hold that there was evidence justifying the inference that the injury was caused by negligence, he assessed the damages provisionally at £50. The plaintiffs appealed, and the Court allowed the appeal. In giving judgment Mr. Justice Banks said that there was no evidence that anything which occurred between the plaintiff's servant and the carman justified the inference that the former agreed to any special stipulations or conditions as to the liability of the defendants. It was not disputed that under an owner's risk contract the defendants would be liable for the negligence of their servants. On the question of evidence of negligence a witness called by plaintiff had given his opinion that the damage was caused by a severe blow. The blow must have been given whilst the machine was in the custody of the railway company. There was *prima facie* evidence that the damage could only have re-

sulted from improper treatment of the machine whilst in the custody and control of the railway company. The appeal was allowed, and judgment entered for the plaintiff for £50.

SALE OF LILY-OF-THE-VALLEY CROWNS.

ON appeal, Sheriff Gardner Millar has adhered to the decision of Interim Sheriff-substitute Macdonald given in an action brought in Glasgow Sheriff Court by Messrs. Eugen Schaffeniuss (Limited), London, against Messrs. J. and R. Thyne, nurserymen, Glasgow, for £36 3s. 8d., the cost of Lily-of-the-Valley crowns sold to defenders in 1911. The terms of the contract were disputed, defenders contending that the order given was for prime quality crowns of similar quality to those supplied to them the previous season and seen in bloom by pursuers' representatives who took the order. Defenders further averred that the crowns supplied proved to be of inferior quality and worthless to them. The Sheriff-substitute found for pursuers, and granted decree for the sum sued for, as well as for £1 9s. 11d., also due by defenders.

In the course of a note affirming that decision, Sheriff Millar said it seemed to him clear that defenders were to get first-quality Berlin Lily-of-the-Valley crowns. Their agents argued that that meant Lily-of-the-Valley crowns of the same quality as the previous season, but it was explained that as the crowns vary in different years the quality may be of less excellence in one year than another, and be thought that what was meant was that it was the first quality of the particular year. Pursuers averred that they sent first-quality crowns, and if there was a failure in the crop it must have been due to lack of proper cultivation of them. Probably the most serious question was, could the quality be discovered at the time they were sent? If defenders could have discovered the quality of the goods by examination when they received them, and failed to do so, but proceeded to plant them, then he thought they were liable for the price. The case seemed to him to be distinguishable from the cases of seed, the quality of which could not be discovered till after the crop was raised from it.

Obituary.

HENRY J. CLAYTON.—Mr. Henry James Clayton, whose death was announced in our last issue, served his apprenticeship in the Earl of Wharnclyffe's gardens at Wortley Hall, Sheffield. After leaving Wortley he served for a time in the gardens at Strathfieldsaye, the seat of the Duke of Wellington, and later was foreman at Hackwood Park. He was appointed head gardener to Lord Bolton at Hackwood Park in 1866, and remained there for six years, removing in the autumn of 1872 to Grimston Park as gardener to Mr. John Fielding, who had just purchased the Grimston Park estate from Lord Londesborough. Lord Londesborough and his gardener, Mr. William Denning, removed to Norbiton. Mr. Clayton remained at Grimston until 1907, and he served under three different owners—Mr. John Fielding, Mr. Tom Fielding, and Mrs. Fielding. Many important alterations and improvements were carried out in the large establishment at Grimston during the long period of years the place was under the care of Mr. Clayton. He set to work to convert the Orchid houses into serviceable houses for growing Pines and Melons. The houses being span-roofed, the centre beds lent themselves splendidly for Pines, and slate boxes took the place of the side stages for growing Melons in, the arrangements answering splendidly. Then he grew in another wide lean-to house most excellent pot vines. The vines were grown the first season in 10-inch pots. They were then cut back to 6 or 9 inches from the surface of the soil and shifted on into pots 2 feet in diameter by about 1 foot deep. Gros Colmar, which was somewhat new at that time, was exhibited quite ripe at York Show in June, but the variety grown was chiefly Black Hamburgh. He managed every department of the garden with the utmost credit to himself and satisfaction to his employers. Many gardeners now holding responsible positions in the profession have served at one time or another under Mr. Clayton, and one and all bear testimony to the general respect in which he was held. He

was a strong man, big in frame. He stood head and shoulders above most of his companions, whilst his intelligence appeared to be in proportion to his build. He found it easy to influence the minds of others, and the young men who came into association with him benefited very much from his influence during their training at Grimston. Mr. Clayton's name will always be associated with the Royal Gardeners' Orphan Fund. He not only assisted in establishing the scheme, but it is a question whether the idea of creating such a fund originated first in the mind of Mr. Clayton or Mr. Penny, who was then head gardener at Sandringham. At any rate, the suggestions of both these men came before the public at practically the same moment, and Mr. Clayton followed up his proposal by maintaining an unflagging interest in the welfare of the fund. Many a time since 1887 has the committee received helpful suggestions and practical advice from Mr. Clayton, and he has always been a missionary for the cause in the great county. He was a member of the Ancient Society of York Florists, in which he took much interest; indeed, he was in the habit of sending us notes on the shows promoted by that society and those of the York Gala. He was one of the founders of the North of England Horticultural Society. He was twice married, and leaves four sons and three daughters. One of his sons is manager to Messrs. Daniels Brothers, Norwich. The remains were buried on the 11th inst. in the churchyard of Kirkby Wharfe, the parish where Mr. Clayton was Vicar's Warden up to the time of his death.

Mr. E. Mines, Abbey Gardens, Bury St. Edmunds, has sent us the following note:—"It was with regret I read on p. 120 of the death of Mr. H. J. Clayton. As one who had the pleasure of serving under him from August, 1899, to August, 1901, I can testify to his abilities as a gardener and instructor. Although in working hours he carried a rather stern appearance, he had a very kind heart, and was always ready to listen to any request for advice, which was freely given. Mr. Clayton wanted no "slackers," but when duty was over he encouraged us in our games, especially cricket, of which he was very fond. I cannot let the present occasion pass without recording the great respect and admiration I had for him."

JAMES JOHN COMONT.—There are many in the seed trade who will learn with regret of the death of Mr. J. J. Comont, who was for over half a century a representative of Messrs. James Carter and Co., of High Holborn, London, and Raynes Park. Few men were more widely known, or more highly respected in certain seed-growing circles, as the deceased gentleman always proved himself a straightforward and honourable business man. He was for many years an annual visitor to Canada and the United States of America, where his knowledge was eagerly sought after by those in the trade. Those of his immediate associates who enjoyed the pleasure of his close acquaintance for a great number of years mourn the loss of an open-hearted and generous comrade. He died on February 13 at Acton, London, after a long illness borne with great fortitude.

ANSWERS TO CORRESPONDENTS.

AMOUNT OF LABOUR REQUIRED TO WORK A SMALL GARDEN PROFITABLY: P. A. Bearing in mind all the particulars given in your letter regarding the size of garden, number of glasshouses, and the character of the subjects grown therein and the fact that you are expected to make the place pay by the sale of surplus garden produce, you will require at least five men to keep the garden and grounds in good order and to do the extra work which the growth and sale of surplus produce incur. Two guineas per week, with house rent free, coal and vegetables, together with a commission of 5 per cent. on profits, would be a fair wage for the person supervising the work.

BUD-DROPPING IN PEACHES: W. P., Notts. The reason Peaches cast their buds in the spring is because of an unequal balance of growth

between root and shoot. It is not met with to any great extent in trees grown out-of-doors, where the plants enjoy a complete rest in winter, and, when growth develops, it occurs concurrently in root and shoot, but is very slow at the start. In glasshouses it is not an easy matter to regulate top and bottom growth, for the conditions may at one time favour root development and at another time that of the buds. The experienced cultivator endeavours to regulate the conditions of the border and house to ensure equal growth by seeing that the trees receive a sufficient supply of water at the roots during the resting season and keeping the house cool, attending especially to the ventilation when the sun is shining, for this may cause the temperature to rise many degrees in a few minutes.

EXPIRATION OF ENGAGEMENT: Gardener. You state that the employee refused to work after 12 p.m., although the proper time for leaving is 3 p.m. The man ought to have stayed his full time, and technically his employer could sue him for damages for not serving the proper hours, but the damages would be so small that it would not be worth his while to bring an action.

FRUIT TREES AND CANKER: Anon., Weston. We thank you for the extract from the volume on market fruit growing relating to the prevention of and cure of canker in Apple trees by means of pruning. This advice is sound enough so far as it goes, and we believe the reasons for the pruning are pretty generally understood by cultivators. The fungus (*Nectria ditissima*) causing canker is usually a wound parasite, that is, a parasite the spores of which find a lodgment in shoots on which the bark has been injured by some cause or another. When immature wood is left upon the trees there is always the liability that frost will injure such wood during the winter, in some cases causing the bark to crack. Its connection, therefore, with the spread of canker is close enough to be easily understood, and most gardeners know better than to leave immature wood upon trained trees, their efforts on the contrary being directed towards preserving the bark of the tree from injury, so that lodgments are not provided either for fungous diseases or pests, such as American blight and others. We do not think it of general interest to print the extract in full.

HOOF-PARINGS: A. C. This material forms a valuable nitrogenous manure. The parings should be divided finely, and they will be better used after having been kept for some time.

KENTIA PALM ROOT INFESTED WITH WHITE INSECT: E. W. R. The insects affecting the roots of your Kentia Palm are *Ripersia terrestris*. The plants should be removed from the pots, spraying the exposed roots and soil with carbon bisulphide, using a small glass spraying apparatus. Scald the pot and have it in readiness for replacing immediately after spraying. The carbon bisulphide will not kill the eggs of the insect, therefore the process must be repeated. Shade the plants from bright sunshine for a week after treatment.

LILY BULBS SPLITTING: W. F. B. The trouble is not due to disease, but to an excess of moisture in the soil.

"MALMAISON" CARNATION: W. R. B. Both the plants have been injured by insect punctures earlier in the season. There is no fungus present to cause disease. Keep the plants clear of pests by the use of an insecticide.

MELONS: C. C. Melons may be grown in a minimum temperature of 60° to 70°, without bottom heat, but you must be careful in the distribution of moisture in the house until the temperature has risen to 70°. In some market nurseries Melons are grown successfully without bottom heat on mounds placed 2 feet apart on the floor of span-roofed houses pretty close to the flow and return hot-water pipes. As you intend growing your plants on the staging, which is 18 inches above the hot-water pipes, place about half a bushel of the fermenting material you mention at intervals

of two feet, and over this about one peck of good loam. The soil should not be mixed with the fermenting material, but simply placed on the top of it, and should be in the house at least 24 hours previous to planting, in order that it may become fairly warm before setting the plants therein. If you intend training the plants to a trellis fixed under the roof-glass, it will be advisable to shift the young Melon plants out of the 3-inch pots into 32's (6-inch pots), and grow them on until about 15 inches high before transferring them to the mounds. Press the soil firmly about the roots in planting, watering through a rosed can to settle the soil. When the roots push through the mounds or hillocks, top-dress them with a compost consisting of one part horse-droppings, or short manure, quite free from worms, and four parts loam, well mixed, and which should be in the Melon-house for the period indicated to become slightly warm. Continue to apply top-dressings as the roots appear and until the intervening spaces are filled nearly level with the summit of the mounds.

NAMES OF PLANTS: T. B. 1, *Lonicera*, but cannot identify the species without flowers; possibly *L. japonica*; 2, *Azara microphylla*; 3, *Cotoneaster microphylla*; 4, *Ceanothus dentatus*; 5, *Pyracantha* (*Crataegus*) *coccinea*.—*J. A.* *Juniperus bermudiana*.—*W. D.* 1, *Lopezia miniata*; 2, *Solanum jasminoides*.—*W. J. M.* *Nandina domestica*.—*T. B.* *Dendrobium tortile*.—*R. J. W.* 1 and 2, *Dendrobium nobile*; 3, *Cypripedium Numa*; 4, *C. Calypso*; 5, *C. nitens*; 6, *C. Argus Hybrid*; 7, *C. (Selenipedium) Sedenii*; 8, *C. villosum*; 9, *C. Prospero*; 10, *C. Harrisianum*; 11, *C. Ashburtonae*.—*J. L.* *Billbergia nutans*, a Bromeliaceous plant generally epiphytic. Native of Brazil.—*W. B.* *Cornus Mas*.

PLUMBAGO ROSEA: A. R. Eelworm is present at the roots. The infected loam should be sterilised by heating, or it may be mixed with gaslime, but this must be done about two months before it is used for plants.

PRIMULAS FOR MOIST PLACES: Dorset Gardener. The following species of *Primula* will grow in the mud of ditch-bottoms or on pond edges, and are indifferent to actual inundation at times: *P. japonica*, *P. pulverulenta* and its cream-coloured form *Mrs. Berkeley*; *P. Poissonii*, *P. rosea* and *P. involucrata*. For planting in spongy ground just above the water-level select *P. sikkimensis*, *P. Bulleyana*, *P. rosea*, *P. involucrata*, *P. sibirica*, *P. frondosa*, *P. farinosa*, and *P. capitata*. The following species will grow in damp woodland soil, where deep leaf-mould overlies loam:—*P. Bulleyana*, *P. Veitchii*, *P. cortusoides*, *P. Sieboldii* vars. *P. Juliae*, *P. denticulata*, *P. malacoides* (which is flowering now after 18° of frost three weeks back), *P. luteola* and *P. elatior*. We cannot say if any of the species is rabbit-proof.

QUANTITIES OF SEEDS FOR SOWING ½ ACRE: Amateur. The following quantities of seeds will be sufficient for raising half an acre of the respective crops:—Mangold, 4 lbs.; Swedes, 1 lb.; Turnips, 1 lb.; Carrots, 4 lbs.; Parsnips, 3½ lbs.; Cabbage, 2 lbs.; Potatoes, 12 bushels of "seed" tubers, weighing 1½ to 2 ozs. each; Lucerne, 12 lbs.; Clover, 8 lbs.; Oats, 2 to 2½ bushels (some may consider this too much, but rooks devour some and the Oat does not tiller so much as Wheat, and hence does not require so much space); and Barley 2 bushels.

STERILISING SOIL: Mulligan. Sterilise the soil as you suggest, and also that used for seedlings. There is no need to sterilise the water.

TOMATO-SICK SOIL: Grower. Remove the soil which has been in the house for several years, and replace it with fresh, rich loam. If this is not obtainable fork a good dressing of freshly-slacked lime or soot into the old soil before planting.

TREES FOR A SCREEN: Beta. The following is a list of evergreen and deciduous trees which will suit the conditions named in your letter.—*Deciduous.* *Acer Pseudo-platanus*, *Betula*

alba, *B. lutea*, *Fagus sylvatica*, *Fraxinus excelsior*, *Juglans nigra*, *Larix leptolepis*, *Populus deltoidea aurea*, *Ulmus cornubiensis* and *U. montana*.—*Evergreen.* *Abies grandis*, *A. Nordmanniana*, *A. nobilis*, *Cupressus Lawsoniana*, *C. macrocarpa*, *Picea Engelmannii*, *P. excelsa*, *Pinus Cembra*, *P. Laricio*, *P. sylvestris*, *Pseudotsuga Douglasii* and *Quercus Ilex*. The best ultimate effect would be obtained by planting selected species in groups, twenty to twenty-five feet apart, and closely planting deciduous forest trees between them as nurse plants, these latter to be thinned as circumstances require. The row of established Spruce would not make a satisfactory permanent hedge.

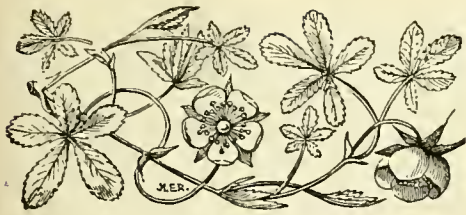
TREATMENT OF JAPANESE PYGMY TREES: L. M. When the trees commence to grow in the spring afford manure twice a month—say, in March, April, May and June, and again in September and October; in the hot days of July and August no manure should be afforded, nor in winter and early spring, the plants then being at rest. The best kind of manure is finely-powdered oilcake and bone-meal, and to a jardinière 1 foot in diameter three or four large teaspoonfuls, not heaped, of this dry manure should be spread evenly around the edge of the jardinière. Re-potting should be done once in two or three years as follows:—Lift the plant out of the receptacle and, with a sharply-pointed stick, remove about one-third of the old soil around the edges and bottom, cutting away a portion of the old, fine roots, but none of the strong roots; then replace the plant in the same jardinière, first seeing that the drainage is in order. For a small, shallow bowl use a flat piece of tin or a flat crock over each hole, and over this spread some rich, fresh soil, filling up with rich soil to within ½ in. of the rims. In the case of large plants, concave crocks should be employed for drainage. The work should be done in February or March, just before growth re-commences. To maintain dwarfness in the trees, pinch the young growth from April to the middle of June. In the case of *Thuja obtusa* pinch out the points of the young growth all over the plant, to maintain the correct form; and this practice is also applicable to *Cryptomeria* and all other Conifers except *Pinus*. *Pinus* should have the points of the irregular growth pinched out simply to maintain the shape of the plant. In *Pomegranates*, *Lagerstroemia indica*, and the flowering Peach and Cherry, pinch back the non-flowering shoots either before or after blooming. *Wistaria* is best pinched in July and August so far as regards the young shoots, leaving only four or five leaves on each. Maples and other deciduous trees are pinched back at the same time as *Thuja obtusa*, leaving two to four leaves, as may be necessary to maintain the desired shape of the plants. Should a second growth be made the same rule is followed of pinching out the points.

VINE ROOTS: T. D. S., Ireland. The roots are injured by the presence of stagnant water in the soil, showing that the drainage of the border is in an unsatisfactory condition.

VIOLETS DISEASED: Oxonia. The fungus *Cercospora violae* is causing the injury to the leaves. Spray the plants with liver of sulphur—1oz. to four gallons of water—also soak the soil with the same specific.

WARTY EXCRESCENCES ON VINE STEMS: H. B. Excrecences, such as those you send, are sometimes produced in vines by high feeding and a close, moist atmosphere. It is a condition of growth known as intumescence, and is akin to the warty excrecences found sometimes on the undersides of the leaves. Ventilate the vinery more freely, and promote less atmospheric moisture.

Communications Received.—*T. T.*—*F. J. C.*—*J. R. B.*—*Waningen*—*J. O.*, Uppsala—*W. E. K.*—*W. G.*—*Mr. M.*—*J. B. B.*—*T. S. H. D.*—*C. T. M.*—*T. W.*—*C. T.*—*E. G. A.*—*L. G.*, Brussels—*H. T.*—*R. F.*, Moscow—*W. W.*—*H. C.*, Geneva—*W. T.*, Salisbury—*H. W. G.*—*W. H. W.*—*A. C. H.*—*T. G.*—*A. P.*—*A. C.*—*R. E. A.*—*J. D.*—*P. E.*—*E. J. C.*—*C. T. D.*—*Plantsman*—*E. S. R. T.*—*T. A.*—*C. H.*—*G. D.*—*R. P. B.*—*W. N. O.*—*Rico Tropical Fruit Co.*—*W. B.*, Marlow.



THE

Gardeners' Chronicle

No. 1,418.—SATURDAY, FEBRUARY 28, 1914.

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ROSES THAT FLOWERED AT CHRISTMAS.

IN a well-known passage in his *Animals and Plants under Domestication*, the late Mr. Darwin, when treating of the Rose, wrote: "From the effects of crossing and variation Mr. Rivers enthusiastically anticipates that the day will come when all our Roses, even Moss Roses, will have evergreen foliage, brilliant and fragrant flowers, and the habit of blooming from June to November. A distant view this seems, but perseverance in gardening will yet achieve wonders, as assuredly it has already achieved wonders."

The first edition of Darwin's book was brought out in 1868, and Rivers' *Rose Amateur's Guide*, from which he quoted, in 1837, while to-day, after a mild autumn such as we have just experienced, we may say that, with the exception of the Moss Roses, in which little advance has been made, the prophecy has been to a large extent fulfilled and even surpassed; for in 1913 we gathered fair Roses up till Christmas, and, notwithstanding the cold weather which then set in, a few stray blossoms were picked till nearly the close of January.

It may be interesting, after the exceptionally mild yet dry autumn, to notice the varieties that were specially useful during November and December. I think the three that provided us with most flowers were Richmond, Lady Hillingdon, and Mme. Léon Pain. Richmond

was wonderful and produced an almost constant succession of flowers, in quantity almost equalling all the rest together right up to Christmas. It is very curious that in my own garden General McArthur gave me very few flowers during this period. My garden is on a Middlesex hill-top, with from 8 to 4ft. of gravel or stony soil, and a friend some few miles off at the bottom of a Hertfordshire valley had a similar experience. On the other hand, about as many miles away in the opposite direction, in a nursery on a clayey slope, General McArthur flowered finely, as the nurseryman said, just as if it were summer. This is very puzzling and illustrates the danger of assuming that the results of one garden can be relied on in one of a different character. Now in North Middlesex all the hill-tops are cut off with gravel and the slopes and valleys are heavy clay, while in Hertfordshire, speaking very generally, the conditions are almost precisely reversed, the valleys being gravel or alluvial soil, and the higher ground very often more or less heavy clay, though seldom so heavy as that of Middlesex. It looks as though one might provisionally assume that Richmond is the better suited for a light and General McArthur for a heavy soil. I am, however, experimenting further with these two Roses, and for this purpose have planted a bed of Richmond and another of the General close together, in another part of the garden from that in which I have grown either of them before. I am inclined to think soil has a good deal to do with it and not merely climate, and in this connection I remember noticing a bed of Richmond and Hugh Dickson in the extreme North of Scotland, not a great many miles from Thurso, in which, to my surprise, Richmond had proved far more vigorous in growth than Hugh Dickson.

Lady Hillingdon is another Rose that seems much affected by soil, and though I have little to complain of in the behaviour of this Rose, it has often seemed to me that on the stiff loams of the Midlands and the stony, clayey slopes of this district it produces a larger proportion of highly-coloured flowers than it does with me.

It was, perhaps, somewhat unexpected to find Mme. Léon Pain so good last autumn, for it is a Rose which, though producing plenty of autumn buds, is often spoilt by the wet, and so usually suffers from autumn rains, but its unusual excellence is accounted for by the dryness of the weather, which gave the flowers the opportunity of opening.

Next to these three Roses I think I am inclined to place Edu Meyer, which has flowered abundantly and well, though the blossoms have not had the intense colouring of their summer showing.

Very good, too, have been Mme. Abel Chatenay, Pharisæe, Frau Karl Druschki, Mme. Alfred Carrière, Lady Roberts and Camoens, while it is no surprise to pick many flowers of Mrs. E. G. Hill through November. We had also a very late burst of blossom on Antoine Rivoire and G. Nabounaud, though both of these naturally lacked the freshness and delicacy which are so attractive in their summer blooms.

Leaving for a moment the fine-shaped Roses, the Common Pink China was full of flower all the autumn, while Jessie, Orleans and Mrs. Cutbush went on very late; in fact they continued to flower for a time after they had lost a good deal of their foliage, and the bright pink flowers, of the two latter on stems gradually becoming more naked each day, produced rather a weird effect.

Roses which gave us a few pretty flowers at intervals but not in quantity are Dorothy Page Roberts, Lady Pirrie and, curiously enough, the hybrid rugosa Daniel Leseuer. We have also had many flowers from G. C. Waud, which, however, though cheerful in the garden, are really of little use, being too full to open well in winter. The same observation may be made of Mrs. A. E. Coxhead, which produces plenty of flowers, though they are not of much value late in the year.

It is, in fact, a necessary character of a good late autumn or winter flowering Rose that it should be much less full than those Roses which are the joy of the exhibitor's heart. Roses with tightly-packed petals in the sunless time of the year are apt to rot before they can expand properly. Even Frau Karl Druschki, the only n.p. in my list, is rather full for this purpose, but the late flowers are, of course, much thinner than those we get in the summer.

A friend living between this place and London has kindly sent me a list of Roses that flowered well after November. I am interested to find this list very nearly confirms our experience here, and contains most of the Roses I have named, and, in addition, Joseph Hill, Betty, Mme. Ravary, Princesse Marie Mertchersky, Gustave Régis and Marquise de Salisbury.

In addition to the quality of late flowering, one of the characters to which Darwin looked forward in the passage I have quoted was that of evergreen foliage. Several of our modern Roses possess this to a remarkable degree, especially among the Tea group. Last spring, at pruning time, Mme. Antoine Mari and Medea were both covered with the previous year's foliage, Marie van Houtte had retained a large proportion of it, and my beds of these Roses seem as though I should find the same state of affairs this year. The mild autumn, of course, allowed the foliage to remain on in many cases unusually long, but in most cases the bitter east winds of the latter half of January killed the remaining leaves. Coming as it did on leaves that were not ripened but still in active work, it has killed them before they were ready to fall; but the Teas I named above seem to have resisted even those icy blasts.

What the precise effect of this will be I am a little uncertain, and I rather fear it to be an indication that much of the wood is not well ripened and that careful selection at pruning time and the rigorous cutting out of sappy or frosted wood may be called for.

It is rather curious that practically no advance in the Moss Roses has taken place of recent years. The last edition of the official catalogue of the N.R.S. contains only six varieties. These are Common Moss (1596), White Bath (Salter, 1810), De Meaux (Sweet, 1814), Crested Moss (Vibert, 1827), Perpetual White (Laffay, no date), and Blanche Moreau (Moreau Robert, 1830). The date of Laffay's Perpetual White is apparently unknown, as it is not given in the *Noms des Roses*. Laffay, however, was a horticulturist at Auteuil, in France, and brought out most of his Roses between 1835 and 1845. He brought out Gloire des Mosseux, however, as late as 1853, and we may probably place Perpetual Moss somewhere between these dates.

In *Les Plus Belles Roses*, M. Charles Annet gives a more extended list of Mosses, and he mentions six later than 1830, namely, Mousse-line, 1831, Oeillet panaché, 1838, Capt. Basroger and Crimson Globe, 1890, Zenobia, 1892, and

Mme. Louis Lévêque, 1904. The fact that none of these obtained a place in the official catalogue indicates they have not yet become popular. This may be due to Moss Roses being for the moment out of fashion. It is, however, to be hoped that the public will not let this beautiful class altogether drop out in the rush for the more striking and brilliant novelties of to-day. Wichmoss, a mossy hybrid of *Wichuriana* of climbing habit, introduced in 1911, is a new break in this class. *White Rose*.

ALPINE GARDEN.

SPRING-FLOWERING CYCLAMEN.

THE two varieties of *Cyclamen* named *C. europaeum* and *C. hederacifolium* (or *neapolitanum*) are well known; and are cultivated, especially the latter, in many English and Continental gardens. The delicate white flowers are generally admired, and the varieties enjoy considerable popularity. They are, however, both autumn-flowering kinds, and not quite so popular as those which blossom in the spring.

The varieties of the *C. repandum* type are less well known. They are all indigenous to the south and the east of Europe. The first of the white-flowered kinds is *C. coum* (syn. *vernum*), from Greece and Armenia. At Floraire it flowers in January and February, sheltered beneath the shrubs, and at the same time as *Erica carnea*, *Viola Florairiensis* and *Iris stylosa*. The winter Aconite, which flowered last year so early as December, has not yet (beginning of February) made an appearance this season, having been retarded by severe frost; but my small *Cyclamen coum* flowers well, in spite of the cold.

C. ibericum (*C. caucasicum* or *elegans*) is a nearly allied species which might be considered a large form of *C. coum*. The most brilliant variety is the English *C. Atkinsii*; it bears a pretty white flower, with a deep crimson spot at the base of each petal. *C. repandum* (*C. romanum*), from South Europe, is a pretty variety with a sweet scent; the two before-mentioned kinds have little or no scent. *C. repandum* or *romanum* bears deep crimson flowers, with long, narrow, often spirally incurved petals. It blossoms from March until May. The variety, very common in the vicinity of Rome, is found everywhere between stones and rocks. It is quite hardy with us, but cannot stand much damp.

C. latifolium, the *C. persicum* of horticulture, is not hardy with us.

There is a charming variety very seldom met with in gardens, which is known as *C. balearicum*. It was found by a countryman of mine, Mr. William Barbey, thirty years ago, in the island of Majorca. He gave me a specimen, but I lost it many years ago; nor did he himself keep the original plant for long. I was very anxious to replace it in my collection, and ordered it several times from different nurserymen in Italy and elsewhere, but I always got instead the common *C. repandum* or *C. hederacifolium*. Finally, I managed, only last year, to obtain it from Palma, and hope to be able this time to keep it. I have tried growing it in several different places and under various conditions. It seems to do best under wood in good leaf-mould mixed with stones, and in a dry position. It flowers in March and April. This variety differs from *C. repandum* in that the leaves are more deeply indented and are spotted with white, and that the flowers are only half the size of those of *repandum*, and a very light colour. It is a very fragrant variety.

All the sorts I have mentioned are spring-flowering, and are all easily cultivated, except, perhaps, the last named, which is a little tender. I was obliged to cover it up during the late severe winter, but it seems to be going on well, and I have great hopes that it will flower before long. *H. Correvon, Floraire, Geneva.*

TENDER PLANTS IN A WIGTOWNSHIRE GARDEN.

THE sub-tropical scene represented in fig. 63 is in the garden of K. McDonall, Esq., of Logan, Wigtownshire. Many will be surprised to learn that the Club Palms (*Cordyline australis*) and Tree Fern (*Dicksonia antarctica*) grow luxuriantly out-of-doors in this Scottish garden, but

the plants admirably—young specimens planted in 1910 have attained to a height of 9 feet. *Dicksonia antarctica* was planted in 1907, and has made remarkable growth for a plant of this kind in the open. At the time of writing (February 19), the fronds are as fresh and green as they were in the autumn. They measure about 12 feet in diameter. In favourable seasons two new sets of fronds are produced, one in May and another in August or September. The site where the Fern is now growing is a hole



FIG. 63.—CORDYLINES AND TREE FERN IN A WIGTOWNSHIRE GARDEN.

this part of the Rhins of Galloway is very favourably situated, and many other tender shrubs may be grown in the open. The *Cordylines* were planted in 1905, and are now about 18 feet high. More than twenty of the plants flowered freely during the summer of 1912, and their small white, delightfully fragrant flowers made a charming picture in the garden. One head of flowers may be seen in the illustration. These noble plants give a fine sub-tropical effect to the garden during summer, and are also a great acquisition during the winter, when most trees and shrubs are bare of leaves. The soil, a black sandy loam resting on rock, seems to suit

quarried out of the solid rock, which was filled with suitable compost.

Mr. McDonall, who is an ardent horticulturist, has, during recent years, planted many tender plants and shrubs in his garden, and all are growing with equal success. Among the many may be mentioned *Abutilon vitifolium*; *Chamaerops Fortunei*, the Chusan Palm; *Drimys Winteri* (the plant receives no protection and is now covered with seeds); *Embothrium coccineum*, the South American Fire Bush, most appropriately named from the wonderful colour of its fiery-red flowers, which appear in clusters in May; *Solanum jasminoides*; *Solanum*

crispum, too seldom seen as a bush, for in this form only can its real beauty be appreciated; *Calceolaria integrifolia*; the curious violacea; with small helmet-shaped flowers; and Himalayan *Rhododendrons* in great variety. Not one of these plants is protected in average winters, with the exception of the Tree Ferns, which as a precaution have their trunks covered with straw. *A. Findlay, The Gardens, Logan.*

NOTES ON IRISES.

THE RETICULATA GROUP.

THE first sight of the confused fragments of a puzzle which have to be fitted together is apt to be disheartening. Scarcely any two pieces seem to belong together, and the majority, indeed, appear to be so detached from the rest as to be quite meaningless. Such has hitherto been my feeling with regard to the disconnected facts that have constituted our knowledge of the group of early-flowering bulbous Irises, of which *I. reticulata* (see fig. 64) is the best-known example. It cannot be pretended that all the fragments can yet be made to fit together into a complete picture, but it is, perhaps, possible to suggest some definite arrangement and to ask whether facts within the knowledge of others who are interested in the group seem to them to fall into their places in the scheme.

The chief difficulty lies, of course, in obtaining specimens of wild plants from known localities. Importers and collectors are only too inclined, perhaps not unnaturally, to be reticent as to the precise localities from which their supplies come, and herbarium material is not always sufficiently carefully prepared to enable us to see clearly the somewhat minute points of difference.

Anyone who has grown *I. reticulata*, *I. histrio* and *I. histrioides* must have noticed that there are marked differences in the methods of increase of these plants. Flowering bulbs of the two latter species form round their bases a cluster of as many as twenty or thirty small bulblets, no bigger than, and not unlike in outline to, grains of wheat. *I. reticulata*, on the other hand, forms a much smaller number of relatively large bulblets differing considerably in size one from another. The smallest, however, is usually three or four times the size of the bulblets formed by the other two species. As far as my information goes, *I. reticulata* is confined to the Caucasus region, and it is only there that Irises are found which increase in the same way. All the other members of the group form the innumerable bulblets already mentioned, and come from further south. The only exception is *I. Bakeriana*, which is easily distinguished by the character of its foliage, as we shall see later.

There can, I think, be little doubt that the deep violet-blue *I. reticulata* of our gardens is not the commonest form of that species in its native home. Indeed, I have so far failed to find any scrap of evidence to prove that it is not merely a colour form of garden origin. Bieberstein's original figure (*Cent. Plant. Rar. Taur. Cauc.* I. t. 11, 1810) does not even justify the assumption that this is his type. On the contrary, his drawing represents much more faithfully the red-purple flowers, which have always been the product of any bulbs which I have received direct from the Caucasus, and also of those plants that I have raised from seeds from the same source. The actual shade of red-purple is apt to vary and the blade of the falls is usually more or less conspicuously veined; the style-branches are broader than the haft of the falls, and the standards, also, are broad and tend to curve inwards to meet each other instead of pointing outwards at nearly the same angle as the style-branches as do those of *I. reticulata*.

The view that a red-purple flower is the com-

mon wild form is supported by the fact that self-fertilised seed of the type has never given me anything but red-purple forms. This has also apparently been the experience of others, and yet it is a result which no Mendelian theory seems able to explain.

There is yet another tone of colour, which is found among the forms of this Caucasian Iris. It is a peculiar slaty blue, sometimes quite dark, and sometimes so pale that one sturdy example has even received the name of Cantab.

As we leave the Caucasus region and go further south, we come to the home of *I. histrioides* in the neighbourhood of Amasia or Amas. Its habit suggests that it is an inhabitant of mountainous districts where the winters are severe, for the flowers come up almost simultaneously with, and sometimes even before,

is carried all along the haft, as was also the case in Leichtlin's *purpurea*. The latter does not now seem to be in cultivation, but this feature and its short leaves are perhaps enough to justify us in assigning it to this group of plants. We seem also to have lost the colour-forms of *sophenensis*, which Foster tells us (*Bulbous Irises*, p. 7) may vary from red-purple to a lightish blue. The only form which I know, and which comes true from seed, is of a pale blue colour, with a lemon-yellow central ridge, much resembling a rather small pale *histrioides*. Among seedlings of the latter, variation in the exact shade of colour occurs both in the flowers as a whole and in the yellow ridge on the falls.

Going still further south, we come to the region where *I. histrio* (see fig. 65) is native. Our difficulty here lies in the fact



FIG. 64.—IRIS RETICULATA : FLOWERS RED-PURPLE IN THE CAUCASIAN FORM : DEEP VIOLET-BLUE IN THE GARDEN FORM (SEE TEXT).

the leaves. The flowers are flatter and less funnel-shaped than those of the Caucasus group, and of a vivid blue colour, except in the upper part of the blade of the falls, where there occurs a triangular white patch veined and dotted with blue. All these characteristics are found in home-raised seedlings of this species, and, as has been already observed, it differs sharply from the Caucasus plants by its method of increase.

With *I. histrioides* I am inclined to connect somewhat closely the plant to which Michael Foster gave the name of *sophenensis*, in memory of the fact that it came to him from the neighbourhood of Kharput, a district which in ancient times bore the name of Sophene. This Iris has flowers of the same shape as those of *I. histrioides*, but smaller. In neither does the central ridge on the falls fade away, as in *I. reticulata*; in both it

that it is no longer possible to say with certainty to which of two distinct plants the name was originally given. It is, perhaps, rather more probable that it was bestowed on a plant with upright standards and very conspicuously blotched falls, which seems to be confined to Palestine, if not indeed to Lebanon. This Iris has been distinguished as *histrio orthopetala*, and it is evidently closely allied to the form with divergent standards and less conspicuously blotched falls, which is common in the neighbourhood of Marash, and which is now commonly supplied by the trade for the more showy orthopetala. Both produce numbers of minute bulblets, but they differ from the two groups we have already considered by the fact that their foliage, though longer, is more slender and less erect. It is far less rigid, and seems always to begin to curve as soon as it emerges from the

soil. The prevailing colour of the flowers is a blue-purple, and the falls are either dotted or veined more or less distinctly.

It is interesting to notice that of this Iris, too, there is now known a red-purple form, *atropurpurea*. As *reticulata* and *Krelagii* only differ in colour, so does this plant resemble what is probably the northern form of *histrion* in every respect but that of colour, except that the central ridge is here non-existent, though the black tubercles that dot the low ridge in *histrion* are here conspicuous as raised points along the central line of the haft of the falls.

Further south still, we come to *I. Vartani*, which is hardly more than another development of *I. histrion*. It is distinguished by the length of its style-crests, and for us in the north by its inability to survive our climate for more than a year or two at the most. Of the white form of *I. Vartani*, some examples are beautifully

describing a new species under the name of *I. Bornmülleri*.

Definite dates for the flowering of these plants are most misleading. This year *I. reticulata* is in full flower in the middle of February, while I have known it so late as the last days of March. And yet, if, as seems not improbable, all our stock of *I. reticulata* has arisen by division from a single bulb, we might reasonably expect it to be much more constant in its time of flowering than any other of these species, where seedlings are innumerable and differ considerably in their time of flowering. For instance, this season I had some *I. Krelagii* in flower in the last days of November, though this is no doubt exceptional, while others have yet to open their buds at the end of February. Much depends, I believe, on the date at which the growth of the previous year was ripened off, and on the weather during the late autumn and early winter. The embryo

interest of the plant is that there are now considerable differences among the flowers produced by the different bulbs in the extent of the triangular white patch at the throat and of the arrangement and number of the dark-violet blotches upon it. Seeing that such differences, small though they are, do undoubtedly arise among the individuals obtained by vegetative increase, we can form some idea of the possibilities of variation among the forms of these Irises which nature has evolved by sexual reproduction. *W. R. Dykes, Charterhouse, Godalming.*

THE PRUNING AND TRAINING OF FRUIT TREES.

In passing through an otherwise fairly well managed garden last October I observed that trees of Apples and Pears in bush, pyramid and espalier forms had made a large amount of second growth, nearly all the buds on some of the shoots having started and formed thickets of weakly twigs. The leaves were still green and the growths very soft. But on coming to the orchard trees no second growths were to be seen; those which were made in the spring and allowed to remain unchecked had ripened very well. Then in another establishment were some well-trained Pears which had their shoots pinched in the spring. These had made a second growth, which was also pinched in early summer, and there was no further attempt at elongation, while there were good, plump buds on the earlier growths to cut back to at the winter pruning. Here, then, are three distinct systems of treatment, and it is worth while before another growing season arrives to consider the merits and demerits of each. It may be said by the advocates of summer pruning that the first-mentioned case is an extreme one; but I have seen many such, and I have noticed that such fruit as there was on trees so managed was mostly on scraggy spurs out of the reach of sunlight. I am no advocate of summer pruning, not yet for growing fruit trees for the purpose of supplying flower-sticks; but I believe in stopping the shoots with the finger and thumb nails in the spring and again in early summer, and those which are likely to become strong should be stopped some days before the weakly ones. Large orchard trees are best left unshortened and kept severely thinned. If we take the trouble to measure the rapidity of growth of the fruit of an Apple or Pear tree during the week preceding the amputation of growing shoots, called summer pruning, and also during the week following, we find a vast difference between the two rates. And it would be strange if it were not so. We know that if we attempt to bud a stock a few days after beheading it, or even after trimming its side-shoots, the bark will not rise and our efforts will be vain. The same thing happens to a tree bearing fruit. The channel of communication between the leaves and the fruit is blocked, and the fruit for a time is starving, because it has little or no power in itself to draw nourishment from the soil or from the atmosphere, but is dependent on the leaves both for the supply and the preparation of that nourishment. The unskilled man will tell you to cut off some of the leaves and throw strength into the fruit, but the skilled grower knows that this will have the opposite effect. Superabundant leafage will prevent light and air reaching the fruit and the primary buds. But why allow such leafage to be formed, using up energy which could be turned to better account? In a dry summer, such as was experienced last year, there is another reason for preventing unnecessary leafage. Every leaf exposed to the light is taking its part in drawing up water from the soil, through the roots, stems and branches, the greater part of this water being discharged into the atmosphere, and is thus making the soil drier than it otherwise would be.

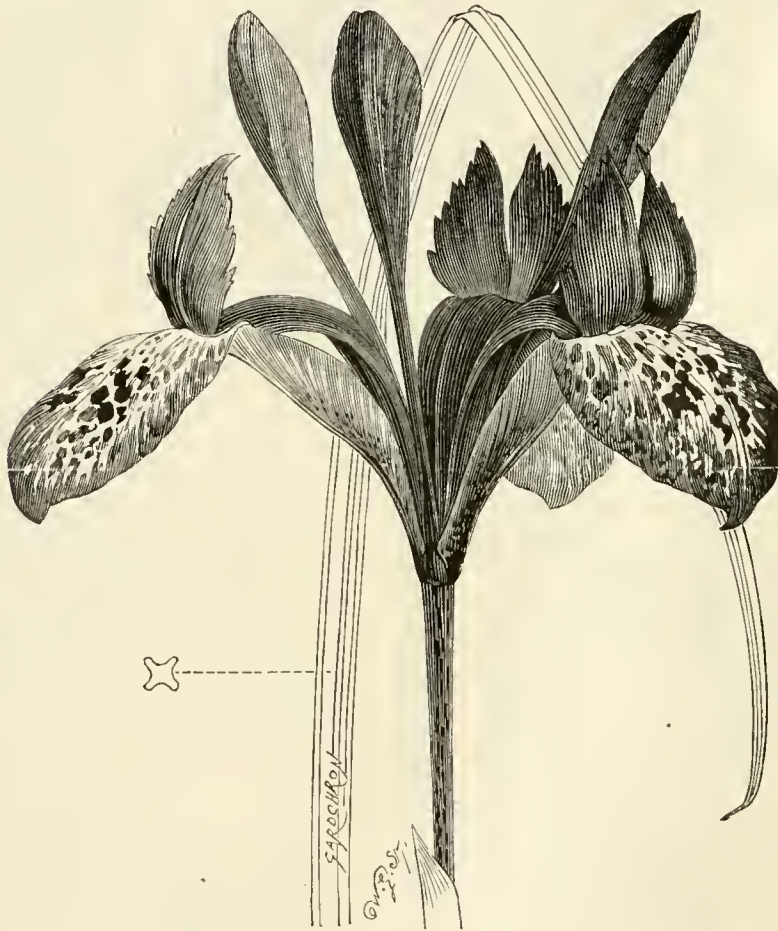


FIG. 65.—IRIS HISTRION: FLOWERS COLOURED BLUISH-PURPLE.

spotted with blue, and we can only regret that this Iris has such a poor constitution.

There remain two outlying species, which are easily separated. To the west, in Asia Minor, occurs *I. Danfordiae* (see fig. 66), which is distinguished by its minute bristle-like standards and by its yellow colour; while to the East is found *I. Bakeriana*, whose eight-ribbed leaves divide it at once from all the other Irises we have considered. That *I. Danfordiae* has been described under more than one name is due not to the variation of the olive-green markings which sometimes occur on the blade of the falls and on the backs of the style-branches, but to the fact that the first-described herbarium specimens had lost their outer bulb-coats, with the result that the description did not mention their reticulated structure. Baker was thus led to class this Iris among the Junos on account of its minute standards, and it was only when the plant was re-discovered by Bornmüller that Haussknecht, seeing the reticulated bulb-coats, thought he was

flower is already in the bulb when we plant it in the autumn, and it is not difficult to imagine that external conditions have great influence on the flowering-time of bulbs which develop their flowers with such amazing rapidity as do these small Irises. My experience is that imported bulbs and those that have been lifted flower earlier than those left in the ground, and this is probably to be explained by the fact that the ripening has been more complete.

There is one other point that may be of some interest. *I. Bakeriana* is admittedly of poor constitution, and apparently nowhere in England does it do really well. For several years now I have grown it side by side with a beautiful hybrid form, of which the late Max Leichtlin sent me a single bulb under the name of *Bakeriana melaina*. The latter increases regularly by offsets, and this year there have appeared ten flowers, though the type has been flowerless. *Melaina* has six-ribbed leaves, and is probably a hybrid of *Bakeriana* and some *reticulata* Iris. Its falls are of the richest velvety-violet, and the

We see many trees which twice in the year—i.e., after winter and summer pruning—are so neatly cut into shape that one might suppose the form of the tree and not the production of fruit was the primary object.

But the neatness is of short duration, for as both weak and strong growths receive very much the same treatment from the knife, the inequalities are speedily made manifest by the stronger and upper growths taking the lead, whereas, by timely pinching the strong shoots you divert the supplies to the weakly ones, which in time become strong, and very weakly ones, such as those which occur near the base of the tree, where the branches are almost horizontal, can be left to grow still longer, and they will at the same time increase in diameter.

It is found that root pruning is seldom necessary when trees are kept pinched in the way recommended, because all shoots inclined to be rampant are checked very early, and in some cases are entirely removed, as are also very weakly ones which can be spared, and it is the rampant growths which encourage corresponding growths of the roots.

Another question arises in connection with late growths forced into existence by summer pruning. In a dry season, where does this growth come from and of what does it consist? The ground was so dry last season that trees on surface-rooting stocks, such as the Quince, could not possibly draw water or anything else from it; yet after the atmosphere became humid, and before the water from the clouds had penetrated the soil, growth was very rapid. The inference is that all mineral matters as well as nitrogen and hydrogen supplied to these useless and harmful shoots were robbed from the permanent parts of the trees. We know that stored-up material can be transferred without root action by the fact that a felled tree will sometimes produce shoots 2 or 3 feet in length.

We had evidence of the almost total absence of moisture in the soil when lifting Chrysanthemums in October after there had been a considerable fall of rain. The surface was damp, but half an inch below there did not seem to be a particle of moisture, and all the lower roots were dark-coloured and hard, those only near the surface, and some actually above it, had new growths. Yet these same plants which had remained dwarf and hard during the summer had afterwards made a large amount of growth and became very tall. They subsequently produced flowers which were soft and thin in texture.

Wm. Taylor.

NOTICES OF BOOKS.

SCHOOL GARDENING.*

THE object which Mr. Brewer has in view in writing this book is expressed succinctly in the introduction, which is written by the Rt. Hon. Henry Hobhouse. This object is to show how the school garden may be used so as to give a less "bookish" form of education than that now prevalent. To this end the author is at pains to indicate how lessons in many subjects—arithmetic, drawing, mensuration, etc.—may be made more real by relating them with the work of the school garden. In accordance with this ruling idea Mr. Brewer recommends that lessons in woodwork—now given in many schools—should take the form of exercises in the making of the simpler garden implements.

With these views we are in fullest sympathy, but we must take serious exception to the author's assertion that "A schoolmaster should not mind if he is not an expert at gardening; he should be an expert at teaching, and it is the teaching that is the thing." The fallacy underlying the statement italicised is responsible for half the evil in modern education. The cry goes up for a change from the old book subjects to more real subjects, and teachers ignorant of

these subjects are obliged to teach them. The result is deplorable, and chiefly in this, that in ignorant hands the "real" subjects soon became as unreal as those which they have displaced.

It is true that a teacher in a school garden need not know the practice of hot-house cultivation of Grapes and Pines; nor need he be conversant with the intricacies of Orchid hybrids; but if he be not an expert in school gardening he will be bound to fail. As Falstaff exclaimed: "I am not only witty in myself, but a cause of wit in others." So a real teacher in any subject must be able to declare: "I can not only tell my scholars how to do this thing, but I can do it." This fundamental fallacy excepted, we are in general agreement with Mr. Brewer's thesis. His purpose is to make the scholars use their eyes and hands and wits, and he succeeds in demonstrating that this may be achieved by making full use of the school garden as a school teaching instrument.

Teachers who find themselves in charge of school gardens and who wish to make the fullest use of them will find in Mr. Brewer's book much useful help. We like particularly the introduction of simple experiments—e.g., in seed sow-



FIG. 66.—IRIS DANFORDIAE: COLOUR OF FLOWERS YELLOW. (See page 144.)

ing—into the ordinary school work, for among too many people there still lingers the idea that an experiment is a mode of mystification instead of a method of getting an answer to a precise question. The help which such teachers may derive is both direct and indirect; not only may they adopt Mr. Brewer's suggestions, but they will be led themselves to conceive of others which they can put into practice in the lessons in the school garden.

PLANTING IN UGANDA.*

THIS very readable book may be commended not only to the planters for whom it is written, but also to the wider public of persons interested in the natural features and fortunes of greater Britain beyond the seas.

The authors, who have had considerable experience in Uganda plantations, possess a firm and apparently well-founded belief in the future of this remarkable country. For in truth Uganda is a remarkable country. Lying on the equator, it nevertheless has a far from tropical temperature and rainfall. The mean maximum temperature is only 80°. and the annual rainfall is from 40 to 51 inches. The relatively low temperature is due first to the highness of the land, Uganda forming an undulating and in parts hilly plateau of from 3,000 to 4,000 feet above

sea level; and secondly, to the presence of a great body of water—the Victoria Nyanza. In the daytime breezes always blow, but at night the air is still. Like that of other tropical regions, the range of temperature is but small (mean maximum 80°, mean minimum 62°) and the relative humidity is high.

One conspicuous advantage possessed by that part of the Protectorate known uneuphonesously as Buganda is that the land is not covered with dense forest. It is dotted with little hills with easy slopes, giving good drainage and running down into swamp or stream fringed with forest. The good land is under a growth of Elephant Grass (*Pennisetum setosum*) so dense as to kill out all other plants except an occasional tree of Muvule (*Chlorophora excelsa*) or of Acacia.

Two rainy seasons with no very set terms occur each year, but although little rain falls in December, January, and February, or in June, July and August, it is rare for a month to pass without any rain. Analyses of soil from various planting centres in the two provinces, Buganda and Busoga, indicate a high degree of fertility, although the soil in certain districts is somewhat deficient in lime.

The rubber industry dates from 1901, in which year a single tree (of *Hevea brasiliensis*) was received from Kew. From consignments of seed received in 1904, 300 trees were raised and planted out in the gardens at Entebbe. The growth of those trees indicates that tapable size—viz., 16 inches girth at 3 feet from the ground—is reached in five years.

The first planting of Cocoa was also made in 1901, Kew again supplying the trees.

Coffee (*Coffea arabica*) was introduced about the same time and has been found to produce its full crop three years after sowing. The plant yields two main crops each year, and, since there are intermediate flowerings, picking is in progress from February to November. The seed takes eight months to ripen. The chief harvest is in September, and the heavier the crop in one season the smaller it is in the next; hence in each year there is one big and one small crop.

Records of the yield from tapping *Hevea brasiliensis* (Para rubber) are somewhat meagre, but lead the authors to estimate that eight-year-old trees will average 2lb. of rubber per tree. Yields of Coffee appear to be remarkably good, reaching so much as 2lb. per tree, and the authors are sanguine of the promise of this crop. Unfortunately, as is pointed out by Prof. Dunstan in the introduction, the Coffee disease, due to the fungus *Hemileia vastatrix*, has made its appearance in plantation Coffee. As everyone knows, this pest was the direct cause of the abandonment of the once flourishing Coffee industry in Ceylon, and it is to be hoped that it may not prove so destructive in Uganda. Those in charge of the administration of Uganda are doubtless taking steps to control this most serious of pests; but it is curious that no reference to the subject is to be found in the body of this book. There would appear to be a good prospect of producing an immune strain, for Coffee (*robusta*) is indigenous, and hence there is ample opportunity for seeking for naturally immune strains, and for experimenting with the object of producing resistant hybrids by cross-breeding. In this connection those interested in the planting industry should note the account given in this journal (March 6, 1909, p. 153) of a new species of Coffee that has been discovered in Central Africa which has so far remained immune to *Hemileia vastatrix*. The species in question is *C. congensis*, and was discovered by Mr. Dybowski on the shores of Oubangi.

The maps accompanying the text show that there is ample room for the further expansion of the planting industry, and any young man with the necessary capital might well make a tour of inspection and enquiry of the Protectorate with a view to settling. The work is abundantly and well illustrated, and concludes with an account by Mr. George Massee of the chief diseases caused by fungi.

* *Educational School Gardening and Handiwork.* By G. W. S. Brewer. (Cambridge: University Press.) 2s. 6d. net.

* *Planting in Uganda.* By E. Brown and H. B. Hunter, with contributions by Prof. Dunstan and G. Massee. (London: Longmans, Green and Co.) 1913. 10s. 6d. net.

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

VANDA.—The different species and varieties of Orchids allied to *Vanda tricolor* are commencing to grow, therefore it is a suitable time to undertake the work of potting them. It is not desirable to re-pot these plants unless a shift is absolutely necessary, but even in the case of very healthy specimens the compost on the surface requires renewing after the long season of rest. Where top-dressings of this kind are necessary it is desirable to ascertain that the drainage is satisfactory. Plants that have become leggy through loss of their lower leaves should be reduced by cutting away a portion of the stem. The length to which the stems may be shortened must be governed by the condition of the roots. Some plants root freely along the stems, whilst others have roots at considerable intervals, and this fact must be taken into consideration. Fasten the growths to strong sticks. Use scrupulously clean pots, and place a few suitable crocks over the drainage holes. The plant should be arranged in position, as many as possible of the lower roots placed carefully inside the pots, and the space filled in with a mixture of clean crocks and charcoal to about two-thirds the depth of the receptacle. The remaining space may be filled with finely-chopped Sphagnum-moss intermixed with silver sand and broken charcoal. Press the compost firmly about the plant, and arrange it in the centre to form a slight mound. Some may prefer to use a compost of *Osmunda* or Peat intermixed with Sphagnum-moss; but it is immaterial which compost is used, provided suitable conditions are afforded the plants. After the work of re-potting is finished soak the roots with rain-water. Shade newly-potted plants from strong sunlight until the roots are re-established, and maintain a humid, warm atmosphere at all times.

AERIDES.—Many of these Orchids require a treatment similar to that recommended for *Vanda*. But the thicker-leaved species, such as *A. crassifolium*, *A. crispum*, *A. Fieldingii*, *A. Lobbii*, and *A. maculosum*, do not grow so rapidly as many of those of a more compact habit. They grow best during the summer in a warm, intermediate house; a shady position in the *Cattleya* house is suitable. The roots are thicker and more fleshy than those of *A. odoratum* and others of its type, therefore good drainage is essential, and a small amount of the potting compost should be used. The dwarfier-growing species, such as *A. Lobbii*, *A. crassifolium*, and *A. maculosum*, grow best in baskets or shallow pans, in which they may be suspended close to the roof glass. During the plant's period of most active growth the roots require an abundance of moisture. Overhead spraying will be beneficial whenever the outside conditions are favourable for doing this.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to EARL BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

THE PINETUM.—Keep an observant eye on the leading shoots of all choice young specimens of coniferous trees, and if from any damage—by squirrels or other cause—to the central shoot there are more than one top growth struggling for the mastery select the best-placed and most healthy shoot and shorten the others by means of long-handled pruning shears. Keep the trunks of all Conifers and forest trees free from Ivy excepting an occasional forest tree that has seen its best days: In such cases the Ivy, when laden with its winter berries, will not only be an ornamental feature in the landscape, but furnish a pretty evergreen for Christmas decorations. A small colony of specimen hush Ivies in variety planted by the margins of shrubberies and laden with various coloured berries gives a charming winter effect.

THE IRIS GARDEN.—How seldom do we see the members of this handsome family of flowering plants given the attention in cultivation they merit! We have a corner of about half an acre set apart for Irises, chiefly the German Flag Iris. There are between forty and fifty irregularly shaped beds of various sizes arranged in the grass, each planted with one variety. When the plants are in flower the Iris garden is one of the loveliest features of Madresfield Court. *I. pallida* and its varieties, *Madame Pacquette*, *Gracchus*, *Victorine*, *Mrs. Darwin*, *Purple King*, *Jacquelineana*, *Madame Chereau*, *Maori King*, and many others, are all excellent plants for furnishing cultivated beds on lawns, whilst many of the commoner varieties may be utilised with good effect in woodland paths. One of the chief details in the successful cultivation of Irises is care in planting; do not cover the rhizomes with soil. If necessary plants may be divided, but this will be at the expense of this season's flowers. The best method of propagation is to spall off side-shoots as soon as the flowering is over and plant them in the reserve garden until autumn.

LILIES may be associated with the Irises, especially *L. candidum*, and *L. speciosum* [*lancifolium*]. Mr. C. Maries, the celebrated plant collector, once informed me that he often found Lilies growing wild in association with a foster plant, such as prairie grasses, a hint I at once acted on by planting *Iris germanica* and the Lilies I have enumerated together. Irregular blocks or groups of *Tulip Gesneriana* major were already dotted about in the grass, and by adding a few more Tulip bulbs to the Iris beds we are able to secure a triple period of consecutive or successional flowering, making this quarter a pleasing or attractive section of the pleasure grounds. *Iris Kaempferi* is best grown by the water's edge, where the gorgeous blossoms are reflected in the water. *I. Monnierii*, *I. ochroleuca* (syn. *gigantea*) and other tall growers are suitable for planting in odd corners, along the margins of lakes, or in the water-garden proper.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the EARL OF DERBY,
Knowsley Hall, Lancashire.

HUMEA.—Plants in 6-inch pots should now be shifted into their final pots—8 or 9 inch. Rich, fibrous loam, leaf-mould, a little manure from a spent Mushroom bed, some charcoal (broken small), and a dash of sharp sand will provide a suitable compost. Watering must be done with extra care, as damping is a frequent cause of trouble.

HANGING BASKETS.—Baskets of foliage or flowering plants are always attractive in the greenhouse and conservatory suspended from the roof rafters. Amongst the foliage plants we utilise for this purpose are *Asparagus Sprengeri*, *A. deflexus*, *Davallia bullata* and other *Davallias*, whilst of the flowering subjects we employ varieties of Ivy-leaved *Pelargoniums* largely, as these make a pretty show during the summer. *Schizanthus Wisetonensis* is also suitable. By twisting the growths and tying them loosely round the baskets the plants will appear like balls of flower. Prepare the baskets by lining the interior with Moss to prevent the soil from falling through the sides. Use an open, loamy compost for the flowering plants and peaty materials for the foliage subjects.

BOUVARDIA.—The plants, having rested for a period of about six weeks, should be prepared for another season's growth. If it is desired to increase the stock an old plant may be utilised to provide root cuttings. Shake the old soil from the roots, cut the latter in small pieces, and place the portions in a pan of light, peaty soil. Plunge the receptacle in bottom heat, and the cuttings will quickly form roots, at which stage they may be potted and grown on in a moist atmosphere with a temperature of 65°. The shoots of old plants should be pruned to prominent buds, and whilst the latter are still dormant thoroughly wash the wood with Gishurst compound, using a brush on the hard, old wood to dislodge mealy bug. Grow the plants in a temperature of 60°, syringe them daily until they show their new growths, when

the old soil should be shaken from the roots and the plants re-potted in slightly smaller pots. Afford a shift when the receptacles are full of roots. Use the syringe freely and fumigate the house on the first signs of aphids.

TUBEROSE.—Successional batches of this sweet-scented bulbous flower should be potted as required. Remove the side bulbs to throw all the strength of the plant into the flowering shoots. One bulb may be planted in each 5-inch pot or three in each 7-inch pot, but the single planting is preferable. Use rich fibrous loam mixed with leaf-mould as compost and pot firmly. Plunge the pots in bottom heat (60° to 70°). Light spraying with clear water will suffice to supply moisture until growth is advanced, when the roots should be watered freely. As the flower spikes appear secure them to neat stakes and remove the plants to an intermediate house. Bulbs for later batches may be kept in a dry place until required for use.

AZALEA.—Remove the old seed vessels from specimen plants of Indian Azaleas that have finished flowering and grow the plants in a temperature of 60°. Syringe them twice daily, regulating the second syringing so that the foliage becomes dry before night-fall. Azaleas do not require re-potting every year; established plants, if in a healthy condition, require only top-dressing. Remove some of the surface soil with a pointed stick and replace with a mixture of three parts peat, one part loam, enriched with a little fertiliser. Ram the soil hard. Young plants should not be over-potted. Pick some of the soil from the ball with a sharp stick, remove the crocks, and press the compost very firmly with a potting stick as the work of potting proceeds.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

PINEAPPLES.—Continue to grow the plants in a steady bottom heat and pay careful attention to watering the roots. As the weather brightens allow the temperature to rise and admit plenty of air when the conditions are favourable. Successional plants may be grown in a temperature of 60° to 65° at night, increased to 70° to 75° by day. Plants that were potted last autumn will soon be growing freely, and the path, brickwork and staging should be kept moist, but do not syringe the plants. Suckers should receive every attention at this stage. Get the bed, pots and soil ready, and pot them without delay, using rich, turfy loam only as the rooting medium. Pots 7 inches in diameter should be used for large offsets, and 5-inch pots for the smaller ones. Let the receptacles be well drained and plunge them at once without watering the soil. The temperature should be 55° to 60° at night and 65° to 70° by day. As the suckers possess no roots much warmth will cause them to become drawn and weakened. Afford shade on bright days from the midday sun.

PEACHES AND NECTARINES.—Syringe the trees in the early house freely, as early as the sun will permit in the afternoons of bright days. Keep the house closed for two or three hours afterwards, when the ventilators at the top of the house may be opened for an inch or so, and a little air permitted at night during mild weather, for this will cause the air to circulate. Hasten with all despatch the work of preparing the successional and late houses for forcing. Take advantage of sunny weather to ventilate the house freely where the trees are in bloom, and pollinate the flowers of shy-setting varieties by dusting a camel hair brush or rabbit's tail gently over the stamens and stigmas.

ORCHARD HOUSE.—Keep the roots in a proper condition as regards moisture, whether pot plants or specimens planted out, for nothing causes the fruit to drop more than dryness at the roots. Apricots and Cherries on the point of blooming should be afforded an abundance of fresh air in mild weather, for plenty of ventilation will assist the flowers to set. In late houses admit air to the fullest extent to retard the flowering of the trees.

FIGS.—In houses where the fruit is swelling maintain a genial, humid atmosphere and a temperature of about 65° by night, rising by day to 75° or 80° and higher by sun heat. A few more pot trees may be started to furnish a succession. Finish any pruning that is required to be done and follow the advice given for the earlier trees.

TOMATOS.—Plants with fruit fast maturing should be fed by top-dressing the roots occasionally with loam mixed with a small quantity of bone meal, also by watering on frequent occasions with liquid manure. Gather the fruits as soon as they are ripe, or even at a little earlier stage. Maintain a buoyant atmosphere by artificial heat and afford an abundance of air during mild weather. A sowing of seed for the main crop plants may be made now. As soon as the seedlings are in the rough leaf pot them singly into 60-sized pots and grow them on as advised in the issue for January 17.

FORCING PITS.—Admit an abundance of air to Strawberry plants in bloom and do not sprinkle them with water overhead as heretofore, but give more frequent and copious supplies of liquid manure to the roots to strengthen the plants.

THE HARDY FRUIT GARDEN.

By J. C. WESTON, Gardener to Lady NORTHCOPE, East-west Park, Kent.

MULBERRIES.—This fruit is frequently grown in unheated houses, where the soil and climate conditions are not favourable for the trees maturing their fruits in average seasons out of doors. The trees may be grown either in pots, tubs, or in a narrow border against a wall. During the growing season afford an abundance of water to the roots, or the fruit will drop. When once the trees have reached average size, little, if any, pruning will be required. Short fruiting spurs will at that stage develop throughout the entire length of each branch. The variety Large Black is the best and most generally grown. The Mulberry, being one of the latest of all fruit trees to start into growth, may be potted, or transplanted late in the season, but care must be taken not to damage the fleshy roots during the operation.

WINTER-SPRAYING.—It is generally found most convenient to apply winter washes as soon as the work of pruning and training is completed. Old, neglected trees may need a second application of the wash in order to cleanse them thoroughly, the first time early in the winter, and again just before the buds open in the spring. The work of spraying with caustic washes should no longer be delayed, the sap being already on the move, and, once the buds commence to open, such washes would cause much harm to the trees. Do the work on a mild, calm day, as much of the spray fluid will be wasted if the weather is windy, and at such times there is a danger to the operator through the wash blowing on to the face. Rubber gloves and old clothes should be worn, as it is difficult to avoid being splashed. Not only does an annual winter spraying keep the trees perfectly clear of lichens and fungous growths, but it also destroys dormant insects and their eggs. For a small or moderately-sized garden a knapsack sprayer is probably the most convenient appliance to use, but in large fruit gardens or orchards, one of the larger spraying machines is of more service. See that the fluid reaches every part of the tree, especially the trunk and main branches, which should be saturated, in order that the wash may penetrate in crevices and rough places of the bark, as these are the lurking places of insects and their eggs.

CONCENTRATED ALKALI WASH may be purchased in tins of small quantities, and after using it for a number of years I can strongly recommend it.

AMERICAN BLIGHT.—Wherever this pest is noticed on fruit trees, measures should be taken at once to destroy it, for the blight spreads very rapidly, and will quickly infect a plantation. Pure paraffin oil is one of the best specifics, and should be worked in thoroughly in all the crevices where the pest is seen by means of a paint brush. This should be done as soon as the leaves have fallen, and again before the trees burst into leaf.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

HERBS.—Any work requiring to be done in the herb garden should be proceeded with when convenient. Chives, if overgrown, should be sub-divided into little clumps and planted a few inches apart, and Sorrel, which is commencing to grow, should be treated in the same manner, but only if it has been too long a time in the same position. The broad-leaved is the preferable variety. Lavender, rooted in frames, should be transplanted into a sheltered spot at a few inches apart for re-planting in the autumn, and Sage should be treated in like manner. Sage, however, roots readily at this time of year from rather long shoots set deeply into the ground. Thyme lasts only a few years here, and has to be raised anew from seeds sown about the middle of March. Where Basil is in request, seeds may be sown now. A moderate heat is essential, and the seedlings are all the better if pricked out into boxes to strengthen them before planting in the open garden. Sweet Marjoram may also be sown now, but for this herb there is time enough, only it saves in labour to grow together as many of these herbs as will succeed under the same treatment.

EDGINGS.—It contributes largely to the pleasure of the garden of vegetables to have the edging to walks trim and neat. Therefore trim Box or relay it, and see to other material before the rush of work comes on.

SPRING BROCCOLI.—Should the plants be small and not growing freely, spread a dressing of horse droppings or Peat Moss litter between the rows and around the plants to give them a much-needed start, and thus favour the production of good heads. The above manures are to be preferred to nitrogenous salts, which, however, may be substituted where the former cannot be had. White Sprouting Broccoli is turning in, and if carefully gathered, that is, just the little white buttons, others will develop on the same stalks.

SEEDS TO SOW.—A small sowing of early Milan Turnip may be made on the chance of the crop succeeding. Also some more Turnip-rooted Radishes, dropping the seeds very sparsely. Turnip-rooted Beet, where required for summer use, is another crop that should be sown now, also Cabbage and Cos Lettuces, with a fair-sized breadth of Spinach. I have grown nine or ten varieties of the last-named, and have found none generally so satisfactory as Viroflay. Lente-à-Monter is very slow to run, and might be substituted in naturally dry soils. Sow also another breadth of Broad Beans.

POTATOS.—The tendency of growers in recent years is in the direction of early planting, and no doubt there is much to be said in its favour, one of the most important reasons being the production of roots while the growths are making comparatively little progress. Early sorts must be selected to secure early crops, and at the other extreme late varieties, unless planted early, yield reduced crops. In garden culture quality is before everything, hence only varieties of the best flavour should be grown, and the selection to be choice need not be large. None has here excelled Puritan for early summer eating. It requires the best culture. Midlothian Early succeeds it, but is less good in quality and less exacting in its wants. Duke of York and British Queen are very largely grown, too, but neither is equal to the last-named. King George V. gave very good results as a mid-season variety, and is one worth a trial, but Nonsuch or Windsor Castle ought also to be planted. From the beginning of September no variety excels Golden Wonder, the best of the Langworthy type, and perhaps the best late variety in existence; but, like others of the class, the tubers run small unless the cultural treatment be of the best, viz.: ground trenched, moderately manured, and further enriched with artificials, with wide-spaced rows, three feet at least, and half that distance between the sets. Among others grown for the first time in 1912 Arran Chief gave no small but an enormous crop of very large tubers, fit only for baking. A lower-class culture would therefore be suitable for

this variety. Baronet, a new Kidney variety, has tubers even larger. Whole tubers of moderate size are preferable to cut sets, though one sometimes has to use the latter, which give better results than the very small "seed" which is not infrequently supplied when bought in. The worst kind of set of all is that which is produced from tubers which are cut to single eyes, sometimes having only a small portion of the tuber attached. The crop from these is never large, and the tubers are small and often unshapely.

THE "FRENCH" GARDEN.

By PAUL AQUATIUS.

HOT-BEDS.—The crops in the frames are making good growth, and should be gone over at least once within the next fortnight, with the object of removing decayed leaves. The Radishes should be marketed as soon as they are ready, removing at the same time those growing wiry or too close to the Lettuces. As soon as the Cauliflowers are well forward they may be set amongst the other crops, 24 of such varieties as Snowball, or 15 of a bigger sort, like Driancourt or All Year Round, to each frame. Plant the roots deeply, burying the bottom leaves, and make the soil very firm. The paths between the frames should again be filled with dry manure within the next ten or twelve days. Spread mats over the lights in frosty or stormy weather, taking care that they overlap one another on the side opposite that from which the wind is blowing. It is advisable to place them in position when they are wet during a clear and breezy night, even though there be no danger from frost, for this will dry them. Afford ventilation to the Cos Lettuces under the cloches by making two apertures with the closed fist, or a triangular block of wood, under the rim of each bell-glass. Take care to keep these openings clear during the season. Another batch of Cos Lettuce may now be planted to each row of cloches, in the spaces between two glasses, on the south side.

MELONS.—The first sowing of this important crop should be made in boxes filled with loam and black soil. Germinate them in a house having a temperature of 65° to 70° Fahr. The soil will not need to be watered if it is used sufficiently damp at the time of sowing. If a greenhouse is not available, make up a bed 14 to 18 inches thick, composed of three parts of fresh and one part of dry manure, to accommodate one frame of one light. As soon as the materials become warm from fermentation place the seed boxes in the centre of the light. Spread mats on the light and round the bed as soon as the temperature falls in the afternoon, and allow them to remain in position until 8 or 9 a.m. the following morning. Some growers instead of raising Melons so early, sow a batch of Vegetable Marrows, and set these plants in the frames during the second week of April, when the frames will be at liberty from the crops grown without heat. Early in June the Marrows will grow without shelter, and the frames will be again available for a late batch of Melons. This method is to be recommended, especially where a big selection of produce is required, and where the staff is a small one.

CROPS IN THE OPEN.—The work of manuring and digging the ground for open air crops is completed. The surplus black soil left from the hot-beds should be well broken with the fork, to be used either for covering seeds or mulching beds previous to planting. Its use increases the amount of food for the plants, favours earlier cropping, because dark soils are always warmer, and prevent clogging of the soil in wet weather. Animal manure, especially when well decayed, is preferable to artificials in the intensive culture of vegetables, as most of the crops grown are of a very sappy nature, and it is essential to use only manure which helps to retain moisture in the ground. Should the weather remain genial, Lettuces, Passion and Palatine, may be planted outside within ten or twelve days. They are set 10 inches apart each way, and made firm at the roots. If the plants are not very strong, or should the garden be an exposed one, it is preferable to defer planting until a little later.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

APPOINTMENTS FOR MARCH.

- TUESDAY, MARCH 3—
Scottish Hort. Assoc. meet.
- WEDNESDAY, MARCH 4—
B.G.A. Ex. Council meet.
- THURSDAY, MARCH 5—
Linnean Soc. meet. British Gardeners' Assoc. meet. at Bush Hotel, Carlisle—
- FRIDAY, MARCH 6—
Dundee Hort. Assoc. meet.
- SATURDAY, MARCH 7—
British Gardeners' Assoc. meet. at Pearith. Société Française d'Hort. de Londres meet.
- MONDAY, MARCH 9—
United Hort. Ben. and Prov. Spec. Com. meet.
- TUESDAY, MARCH 10—
Roy. Hort. Soc. Coms. meet., Special Bulb Show (2 days). (Lecture at 3 p.m. on "Adaptive Degradation the Cause of Many Cases of Evolution Among Plants.")
- THURSDAY, MARCH 12—
Manchester and N. of Eng. Orchid Soc. meet.
- MONDAY, MARCH 16—
Surveyors' Inst. Exam.
- TUESDAY, MARCH 17—
Broughty Ferry Hort. Assoc. meet.
- WEDNESDAY, MARCH 18—
Stevenage and District Hort. Soc. Sh.
- THURSDAY, MARCH 19—
Linnean Soc. meet. Roy. Soc. of Arts meet. Paper by Mrs. Villiers-Stuart on "Indian Water Gardens."
- TUESDAY, MARCH 24—
Royal Hort. Soc. Coms. meet. (Lecture at 3 p.m. on "Pruning Shrubs.")
- THURSDAY, MARCH 26—
Manchester and N. of Eng. Orchid Soc. meet. Roy. Botanic Soc. meet.
- TUESDAY, MARCH 31—
Cornwall Daffodil and Spring Fl. Sh. at Truro (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 40.7°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, February 25 (6 p.m.); Max. 44°; Min. 34°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, February 26 (10 a.m.); Bar. 29.5°. Temp. 45°. Weather—Dull.

PROVINCES.—Wednesday, February 25. Max. 47°, Valencia; Min. 38°, St. Ives.

SALES FOR THE ENSUING WEEK.

- MONDAY AND FRIDAY—
Hardy Bulbs and Herbaceous Plants, Roses, Fruit Trees, etc., at 67 and 68, Cheapside, E.C. by Protheroe and Morris, at 12.
- WEDNESDAY—
Perennials and Border Plants, Hardy Bulbs, etc., at 12. Special sale miscellaneous Bulbs at 12. 1,000 c/s Japanese Lilliums at 2.45. Palms and Plants at 5, at Protheroe and Morris's rooms.
- WEDNESDAY AND THURSDAY—
Nursery stock, at Horsell Nurseries, Woking, by Protheroe and Morris, at 12.
- THURSDAY AND FRIDAY—
Clearance Sale of Nursery Stock, at the Cemetery Road Nurseries, Hitchin, by Protheroe and Morris, at 12.
- THURSDAY—
Roses at Protheroe and Morris's rooms, at 1.
- FRIDAY—
Orchids, at Protheroe and Morris's rooms, at 12.45.
- MONDAY AND WEDNESDAY—
Shrubs, Roses, Perennials and Lilies, at Stevens' Rooms, King Street, Covent Garden, at 12.30.

The Riddle of Species.

Systematic plant-breeding and the analysis of the results thereof, have led to the discovery of such a vast array of new facts that it is by no means astonishing to find the more adventurous-minded among biologists attempting to apply these discoveries to the elucidation of the origin of species. It is true, of course, that among living biologists there are some who maintain that the last words on this subject were said by Darwin. Of these orthodox naturalists some pin their faith to those sections of the tables of the Law of Evolution, which ascribe the appearance of new species to the accumulated effects of environment. Others of them maintain that the source of the origin of species is to be found in the instability of species. Just as *humanum est errare*, so variability is the property of all living things. They do vary, for better and for worse. The better variations survive. The better of these survive again, and so at last the surviving forms are so manifestly dissimilar from the parent form and from one another that the supreme arbiter in these things—the systematist—pronounces them to be so many distinct species. Controversy has ranged round those opposing opinions for so long, the champions of these opposing views have annihilated one another so often and so completely that the dispute has died down—as though it were a Shakespearean tragedy—because there are no performers left. A third group of biologists has tended more and more to stand aloof from the quarrels of the Montagues and the Capulets—the exponents of the doctrine of the inheritance of acquired characters, and of that of the selective accumulation of chance variations. They stand aloof and wonder, applying to the origin of species, it may be regretfully, the aphorism that the mystery of life endures—the closer it is approached the greater it becomes. Such doubting apostles of evolution will greet with mixed feelings the attempt made by Dr. J. P. Lotsy to apply the results of Mendelian discovery to the elucidation of the origin of species. Translating the words of Brutus into the language of a more decorous day, they may be inclined to exclaim—"There is tears for his love, joy for his fortune, honour for his valour, and death for his ambition." Dr. Lotsy's thesis is that new species arise by the crossing of species. Though the thesis is not new, the arguments which the author advances in its support are both novel and weighty. Briefly these arguments are as follow: A species is a thing of infinite variety. It is an assemblage of forms which may be ranged into a larger or smaller number of lesser groups—the petites espèces of Jordan. If the sorting process be carried far enough the species may be separated into a number of micro-species, each of which is unique and immutable. A true micro-species might be grown for ever and anywhere, and it would first and last and always to itself be true.

If, however, one micro-species with one

set of characters be mated with another possessing a different set of characters, an unstable hybrid is produced.

The hybrid characters of this first generation plant or animal are dealt out among its offspring in all manner of combinations. The several characters of the parents are recombined in new and varied ways in the offspring. Some of these combinations are such that the forms which possess them breed true. They are petites espèces or genotypes, and, in so far as they differ from one another and from the parental forms, they are new micro-species. If the two parents belong to different species the assemblage of micro-species which segregate in the second or later generation constitute a new species in the ordinary sense of that heavy-laden word.

To do justice to the argument and to the wealth of illustration which Dr. Lotsy brought forward in its support is not possible within the limits of space at our disposal. We will, therefore, confine ourselves to examining what must be regarded as the fundamental postulate on which the argument is based. This postulate affirms that a genotype or true micro-species is, like the laws of the Medes and Persians, unalterable. Like the germ plasm of Weissman, a genotype cannot change. It is the unit of life. Circumstance, climate, may play upon the individual and may make it tall or short, fleshy or meagre, but such passing influences have no lasting effect, and the progeny of the genotype shows no trace of the changes which circumstances beget in the parent.

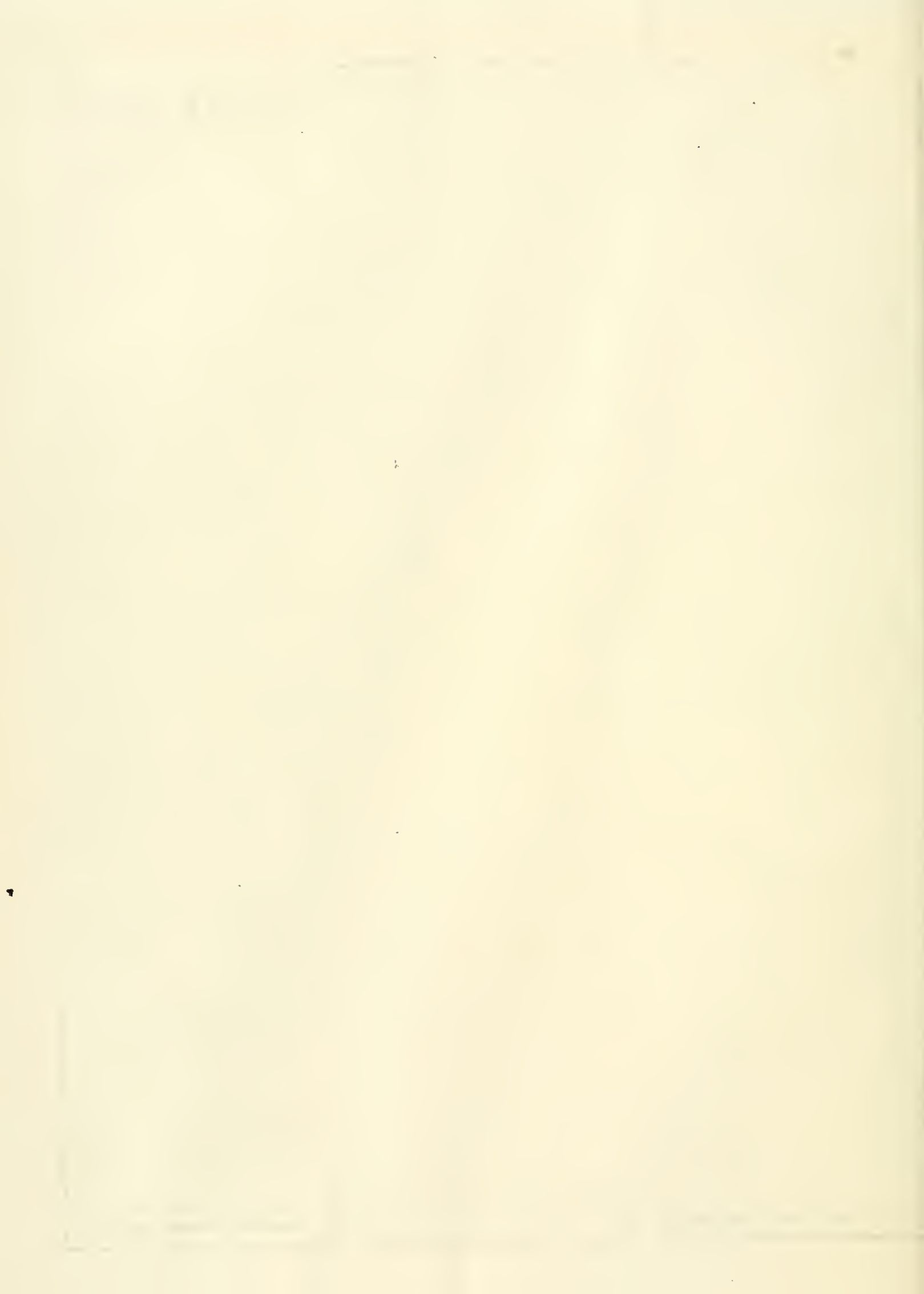
This is a hardy proposition to which those who are best informed will neither assent nor object. They will ask for proof. This proof Dr. Lotsy offers in the results of Johannsen's famous experiments on the inheritance of size and weight of Beans. As is now well known, Johannsen discovered that it is possible to sort out from a race of Beans a number of pure lines. In each pure line the seeds have a certain range of weight and size, and for each pure line that range is fixed, so that although seeds are chosen from either end of the range—a large seed and a small seed, for example—the range of size in the seeds which they produce is the same in the produce of the small and of the large seed and identical with that of the pure line from which the seed was selected: or, expressed axiomatically, all the members of a pure line give rise to identical offspring. Selection in the seedman's sense means, therefore, the picking out of those pure lines which best serve his purpose.

We are not prepared to assert that Dr. Lotsy is wrong in ascribing this un-deviating permanence to the germinal factors on which a plant's manifest character depend. We are inclined to think, however, that Dr. Lotsy ascribes to these factors a too rigid unchangeableness. The factors which determine characters must grow. Therefore, it is possible that in some circumstances the rate of growth of a factor may be so increased that a germ cell may receive "two factorial doses"

Supplement to the "Gardeners' Chronicle."



VIOLA "WALTER WELSH" IN THE R.H.S. TRIALS, WISLEY, 1913



instead of one, and this doubling of a factor may be expressed in the plant by a "new" character — a giant, a brighter flower, or even a change of form. If this be proved to occur, Dr. Lortsy's conclusion that species originate solely by crossing must be regarded as untenable; but even so, the author will have performed a notable service in compelling the wandering or reluctant attentions of biologists to the greatest—or almost the greatest—of biological problems.

Coloured Plate.—The Supplement this week illustrates a plant of the well-known bedding Viola Walter Welsh, as grown in the trial of Violas carried out in the Royal Horticultural Society's gardens at Wisley last season. The culture of the plants at Wisley left nothing to be desired, and the deputation of the Floral Committee that judged the varieties on the ground had rarely if ever seen a better display of these popular flowers. The illustration is reproduced from a photograph taken on the spot, after means had been taken to isolate the plant from the neighbouring specimens. The habit shown is perfectly natural, and nothing had been done in the way of supporting the growths. Amongst the tallest plants were Maggie Mott, Virgin White and Kittie Bell, which grew to a height of 16 inches. The variety Walter Welsh came into the next category, which included plants growing to a height of 12 inches, such as Archibald Grant, W. Robb, Primrose and King Cup. For further particulars of the trial our readers may turn to the *Gardeners' Chronicle* for July 5, 1913, pp. 11 and 18.

R.H.S. DAFFODIL YEAR BOOK, 1914.—Secretaries of Daffodil societies, or of horticultural societies which hold spring shows where Daffodils form a speciality, are asked to send as soon as possible a copy of their schedule for 1914 to the Rev. JOSEPH JACOB, Whitewell Rectory, Whitchurch, Salop, in order that notices of such shows may appear in the *Daffodil Year Book*.

THE TRADE AND THE R.H.S. SHOWS.—It will be remembered that Mr. WALLACE made some remarks at the annual meeting of the Royal Horticultural Society respecting the hour of closing the fortnightly exhibitions at the Vincent Square Hall. We understand that steps are being taken to present a petition to the Council in favour of closing the shows at the usual time, 6 p.m., instead of at 7, the hour now proposed. The firms represented at the Hall on Tuesday last were asked to sign the petition, and most of them did so, the latter hour being very unpopular with exhibitors. In the afternoon an informal meeting of traders was held in the Horticultural club room to consider certain regulations that have been arranged in connection with the forthcoming show at Chelsea, and it is likely that representations on the matter will be made to the Council.

BARON BRUNO SCHRÖDER AND THE ROYAL GARDENERS' ORPHAN FUND.—Supporters of this excellent fund will learn with pleasure that Baron BRUNO SCHRÖDER has consented to preside at the next festival dinner of the Royal Gardeners' Orphan Fund, which will take place at the Hotel Cecil on Thursday, May 21.

ANIMALS AND PLANTS UNDER DOMESTICATION.—At the sixth lecture of the course at the Royal Institution, Professor BATESON said that the study of the histories of those plants introduced during the eighteenth and nineteenth centuries showed that in the majority of cases development had proceeded along very similar lines. A "break" had occurred, generally as the result of a definite cross

between two species, and all the possible re-combinations of the new characters thus produced have then been made by repeated hybridisations. There is, however, one case—that of the Sweet Pea—which forms a definite exception to this rule. So far as is known, all the varieties of the Sweet Pea have been derived from the species found wild in Sicily, and there is no evidence that a cross with any other species has occurred. There is no other case so clearly established of a large number of forms arising from one species without hybridisation with another species. It had been supposed by some that all our garden varieties of the Cineraria had come from *C. cruenta*, without the introduction of any other species. But it is now evident that at least one other species, *C. lanata*, had been crossed with it, giving rise to many hybrid forms in the early part of the nineteenth century. In recent years Mr. LYNCH had crossed the garden varieties back with *C. cruenta*, producing the graceful star forms. Two more "breaks" had been caused by putting in *C. lanata* again, and by crossing with *C. primulinus*, a yellow-flowered species from the Cape. It has been observed that when a change of type occurs it is usual to find that many new forms appear almost simultaneously. Such simultaneous changes may be caused by the introduction of a new species, or they may be attributed to the appearance of a new variety due to the loss of a single factor and the combination of the new character with previously existing varieties. The history of the Rose forms a striking series of periodical "breaks." The whole race of Hybrid Perpetuals was derived from crosses made with a Rose found growing in a hedge in the Ile de Bourbon. The Noisette Roses were obtained by M. NOISSETTE by crossing *R. indica* with *R. moschata*. Similar cases were mentioned as occurring in Dahlia, Calceolaria, and Fuchsia.

NATIONAL CARNATION AND PICOTEE SOCIETY.—Mr. CHAS. HENWOOD has been appointed secretary of the National Carnation and Picotee Society in succession to his father, Mr. T. E. HENWOOD. The new secretary's address is 21, Clifton Road, Maida Vale.

INTERNATIONAL INSTITUTE OF AGRICULTURE, ROME.—Sir JAMES WILSON, K.C.S.I., has been appointed to act as delegate for Great Britain and Ireland, the Dominions of Canada, Australia, New Zealand, the Union of South Africa, and the Government of Mauritius on the Permanent Committee of the International Institute of Agriculture at Rome. Lieut.-Col. Sir DAVID PRAIN, C.M.G., Director of Kew Gardens, Sir JAMES WILSON, K.C.S.I., and Mr. A. G. L. ROGERS, Head of the Horticulture Branch of the Board, have been nominated by the President of the Board of Agriculture and Fisheries to represent the Department at the International Phytopathological Conference to be held at Rome on the 24th inst.

SIR RONALD MUNRO FERGUSON.—Scottish horticulturists and arboriculturists deeply regret that his appointment as Governor-General of Australia necessitates the departure of Sir RONALD and Lady MUNRO FERGUSON from Scotland. Sir RONALD FERGUSON has long been one of the most active and energetic advocates of afforestation, and at his estate of Novar gives a practical demonstration of his deep interest in the subject. He is also a keen horticulturist. The local flower show at Raith has been held annually in the grounds attached to his residence.

SUGAR AND COTTON CROPS.—The Board of Agriculture and Fisheries have received the following telegram from the International Institute of Agriculture:—"The total production of raw Beet sugar during the current season in the following countries was, for the four months ended December, 126 million cwts., or 2.3 per cent. below last season's production in the corresponding period—Germany, Austria, Belgium,

Denmark, France, Italy, Netherlands, Roumania, Switzerland, and the United States. The estimated production of raw cane sugar in Cuba is 49,573,000 cwts., or 10.2 per cent. above last season's production. Final returns show the production of cleaned cotton in India as 18,575,000 cwts., or 12.8 per cent. above last season's production."

ROBBERY FROM A GARDENERS' BOTHY.—The gardeners' bothy at the Moffat Hydropathic Institute was recently entered by burglars, and money belonging to the two gardeners who occupied it taken. Some banknotes were left, but £8 in gold belonging to one and £4, the property of another, was stolen.

AMERICAN CARNATION SOCIETY.—It is interesting to note that the Committee of the American Carnation Society, reporting at the annual meeting held in Cleveland, expressed doubt that Carnations are losing either in fragrance or in keeping qualities. The Committee observes (see *American Florist*, February 7, 1914) that flowers produced during the comparatively sunless winter months are naturally less fragrant than those produced in more sunny seasons. The Committee is of opinion that deterioration where it occurs is largely due to bad and over-cultivation and particularly to improper selection and handling of cuttings. The Burki prize for the best keeping Carnation as tested by its endurance in the cut state during the show was awarded to Mr. S. J. GODDARD, Framingham, Mass., for a vase of Pink Delight. Other varieties which kept well were Rosette, Beacon and Benora. Among new Roses exhibited at this show, our contemporary comments very favourably on Hadley, a bright red rose, shown by Mr. A. N. PIERSON, Inc., of Cromwell, Conn. It is said to be a fine flower and a good keeper, with good stem and foliage.

CASEIN AS AN ADHESIVE.—Experiments carried out by Messrs. VERMOREL and DANTHONY indicate that casein serves well for increasing the adhesiveness of Bordeaux mixture. To dissolve the casein mix thoroughly $3\frac{1}{2}$ ozs. of powdered burnt lime with $1\frac{1}{2}$ oz. of powdered casein. Add the mixture to a little wafer, and work it into a paste. Make up to a quart by adding water a little at a time. This amount will serve to mix with 100 gallons of Bordeaux mixture. As an adhesive for Paris green or for acid Bordeaux mixture gelatine may be used at the rate of 3 to 8 ozs. per 100 gallons.

MAY-SICK LAND.—Here and there, in parts of certain fields on farms in Warwickshire, Cheshire and Nottinghamshire, crops, whether of Wheat, Oats, Mangolds, or Potatos, show year after year symptoms of disease. The leaves turn yellow and growth is arrested. Land producing this effect is said to suffer from May-sickness. The cause of the malady is obscure, but Mr. W. E. COLLINGE, who has published recently (*Journal*, Board of Agriculture, XX., No. 10, 1914) an account of his investigations on the subject finds that May-sickness may be remedied by dressing the land with sulphur at the rate of 6 cwts. to the acre, the cost of which is about 30s. per acre.

THE ORIGIN OF SPECIES BY CROSSING.—The above subject was introduced by Dr. Lortsy at the meeting of the Linnean Society, held on Thursday, 19th inst. A general account of Dr. Lortsy's paper will be found in our leading article, and hence reference need be made here only to the more interesting examples which Dr. Lortsy brought forward in support of his theory. Of these examples the most striking from a horticultural standpoint was his account of the re-making of Petunias with green-bordered petals. It appears that these Petunias arose soon after the introduction of *Petunia violacea* (in 1830). This species was crossed with *P. nyctaginiflora*, and the races with green bordered petals arose as a result of the cross. In course of time these fancy Petunias disappeared from cultivation, as

did also the true *Petunia violacea*. The latter species was, however, rediscovered recently in Messrs. VILMORIN'S establishment at Verrières. Crossed with *P. nyctaginiflora* it yielded in the second generation large numbers of the green-bordered race which had been lost so long. Dr. LORSY also mentioned as a contribution to the controversy as to the real nature of *Oenothera Lamarckiana*—the plant rendered famous by DE VRIES—that by crossing *Oe. grandiflora* and *Oe. biennis* plants are obtained which though not identical with, yet resemble greatly, *Oe. Lamarckiana*. Moreover, among the offspring of the cross are some which throw abnormal plants in the same way as *Oenothera Lamarckiana* throws "mutating forms." Thus the view that *Oe. Lamarckiana* is a hybrid receives considerable support. As an example of the pitfalls which await the naturalist over-eager to explain things, Dr. LORSY cited the case of a glabrous form of *Viola* growing in association with *Viola palmata*. It would seem natural to assume that the glabrous form had arisen as a subtractive mutation from *V. palmata*; that it owed its origin to the loss of a factor for hairiness. Yet it has been shown by BRAINERD that this glabrous form has arisen from the descendants of a cross between *Viola palmata* and *V. papilionacea*. The paper gave rise to an animated discussion, in which the following, among others, took part:—M. PHILIP DE VILMORIN, SIR FRANCIS DARWIN, MAJOR HURST, PROFS. BATESON, FARMER, WEISS, MACBRIDE, DENDY, KEEBLE, DRs. RENDLE, SLAFF, and GATES, and Miss SAUNDERS. In the course of the discussion Mr. ARTHUR SUTTON exhibited an interesting slide illustrating the various types of Beet—Garden Beet, Mangel, Spinach Beet, and others, as well as the wild Beet (*Beta maritima*), from which species these cultivated forms are held to be derived.

A CINERARY URN.

An interesting discovery was made recently on Messrs. J. Carter and Co.'s seed farms at Dedham, not far from Flatford Bridge, made famous by Constable's picture.

While digging gravel out of a pit on the estate, a cinerary urn (see fig. 67) of the Bronze Age was unearthed. It contained human bones, and experts ascribe it to a date from 900 to 1,000 years B.C., or nearly 3,000 years ago. An examination of the gravel pit is interesting as it shows that the interments were made in V-shaped graves some 5 feet below the present ground level, and in several cases a curious layer of charcoal or charred wood near the top gives evidence that funeral feasts were prepared on the improvised hearth. Investigations are still going on under the directions of Mr. A. G. Wright, the Curator of the Colchester Museum, and care will be taken to preserve any other rare specimens that may be there. An authority on the subject writes:—The type of cinerary urn found at Dedham is that known to archaeologists as the overhanging urn type. According to the Hon. John Abercromby, who has made a special study of the Bronze Age ceramics, this type of urn began to make its appearance somewhere about 1400 B.C. in the S.W. of England, and lasted to about 650 B.C., with certain variations in its form.

Urns of this type are generally of thick, coarse ware, made entirely by hand of the local clay mixed with sand and small stones, and vary in colour from pale ochre to a rich brown. At the time of their beginning cremation was the popular form of burial, but inhumation had not entirely ceased. It was customary, too, to raise a barrow (a mound of earth) over the burial site, but about 900 B.C., owing perhaps to the increase of the population, the barrow was discarded and interments were made in small, flat

cemetaries. At Dedham there is no trace of a mound; but the burials appear to have been made in the top of a small hillock or rising ground. If this surmise is correct, we have an approximate date of about 900 B.C. Messrs. Carter intend to place the urn, with any others that may be found, in their entrance hall at Raynes Park.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

DIERAMA PULCHERRIMUM (see p. 105).—I have cultivated this plant since 1907 in heavy clayey loam at an altitude of more than 600 feet, and have had racemes of flowers from 4½ to 5 feet in length. When planted in masses *Dierama* is a beautiful object in bloom, for although the colour of the type is not very pleasing, those of pink and white shades are charming, and the only quality lacking is perfume. Among several hundred seedlings I have only raised one with pure white flowers; I have hope of obtaining a red or scarlet variety. After the flowers have faded the plants are attractive for several weeks



FIG. 67.—CINERARY URN FOUND ON MESSRS. CARTER'S SEED FARM, DEDHAM.

while carrying their seed vessels, and it is interesting to note that, while the first flower to expand is at the bottom of the raceme, the first seed to ripen is usually at the apex, and this appears to be the case with those illustrated in fig. 48, p. 105. Seed ripens in considerable quantities, and if sown as soon as ripe in a cold frame, germinates freely; the seedlings are fit for planting out the following April. As to the hardness of *Dierama*, I have known the plants to withstand 20° of frost, and frost which lasted for 116 hours, without any apparent injury. The rainfall here is about 37.00 inches, and we have registered as much as 25.12 inches during the six winter months, but this great amount of moisture did not appear to harm the plants in any way. They are, however, liable to be killed by eelworm. *John Edwards, Cefn-garthmyl, Berriew, Montgomeryshire.*

CELERY DISEASE (see p. 95).—Regarding manuring of Celery, I will give methods adopted by me in the past two seasons with very different results. In 1912 my Celery trenches were enriched with a 6 to 7 inch layer of well-rotted farmyard manure, cow and horse manure mixed. The material was dug into the bottom of the trenches, and a light dressing of slacked lime was placed in the bottom of part of the trenches. The crop was planted about ten days after the trenches were prepared. After planting a heavy fall of rain occurred, which suited the plants.

I occasionally dusted them with soot and lime, and I fed the roots with liquid manure about once in eight or nine days, always after rainfall. When preparing the soil for earthing up I mixed a little Vaporite with it, generally in the morning, and by the afternoon the ground and plants were in a good order for applying the earth by hand. The summer of 1912 being very wet I had no cause to water the plants, which furnished a fine crop of Celery without the slightest sign of disease. I followed the same methods in 1913, with the exception that lime was used. The ground was adjoining that which was used for the previous year's crop. But the weather of 1913 being dry and warm I had to water the crop, with the result that disease appeared early in August. I sprayed the plants on the first signs of disease with copper compound. The first spraying seemed to check the disease, but further spraying seemed to have very little effect. I picked off leaves that were affected, and that further weakened the plants. After this experience can it be said that manuring has any bearing on the disease? I am more inclined to think in my case that the watering was responsible. Therefore weather and season have more to do with the disease than manure. *M. A., Co. Kerry.*

THE CABBAGE CATERPILLAR (see pp. 82, 100).—You state that the caterpillars of the Cabbage Moth "not unusually" pass the winter in that state, but I think you are probably mistaken in the species. So far as I am aware, as a collector of some thirty years' standing, the larvae of that species always pupate before the winter, as do those of the closely allied species *Mamestra persicaria*, and other pupae are often dug up in the garden during the winter months. On the contrary, the larvae of the Large Yellow Underwing (*Triphaena pronuba*) do live through the winter and pupate in the spring, and these are probably the ones sent. Your reply on p. 82 is in itself contradictory, for you say: (1) It is not unusual for this insect to pass the winter in the caterpillar stage. (2) As a rule, however, it buries itself in the earth and pupates in the early spring. One gathers that these are supposed to be opposite statements, but as a matter of fact they are just two ways of saying the same thing, because, according to (2) if the caterpillar pupates in the spring then it must live through the winter as a caterpillar. This is what the first statement says. If you get any more of the larvae in question I shall be glad to set the matter right for you, and in any case I should like to see "hibernating" larvae of *Mamestra brassicae*. *C. Nicholson.* [Our expert informs us that he has proved that the larvae of the moth in question often pupate in spring. He has reared a number of adults from larvae which had passed the winter in a herbaceous border in the city of Chester.—Eds.]

CHICORY - GROWING IN ABERDEENSHIRE (see pp. 111, 133).—The Witloof is a sub-variety of the Chicory Magdeburg, and could be utilised for the purpose of making commercial Chicory. Roots intended for the purpose must not be forced first to produce salading. The yield per acre would be inferior to the Magdeburg Chicory, which gives roots weighing as much as 18 ozs. each. Sowings of the Witloof variety, made early in May, are liable to bolt in dry seasons such as 1913. *P. Aquatias.*

PISTACIA VERA AND ELEAGNUS ANGSTIFOLIA.—I should be obliged if you would state in the *Gardeners' Chronicle* that I shall be happy to send seed of *Pistacia vera* and *Eleagnus angustifolia* to anyone forwarding a stamped addressed envelope to *A. C. Bartholomew, Park House, Reading.*

THE LATE H. J. CLAYTON.—I had the privilege of serving under the late Mr. Clayton for a period of twelve years, during which time I held five different positions, including five years as general foreman. He has been rightly described as one of nature's nobelmen; a man of broad views, not only on horticultural matters, but on things in general. I have seen more of Mr. Clayton than I have of my own father. I had a letter from him about a couple of weeks before he died, when he wrote

in his usual cheery way. We corresponded at frequent intervals during the whole of the fifteen years since I left him. I cannot express adequately the regret I feel in having lost one of my best friends and tutors. *J. Snell, Briery Gardens, Sunderland.*

THE PARMENTIER MYTH.—(see p. 124).—The recent celebrations in honour of Parmentier have caused this story to pass the round of the daily papers, and even, it must be confessed, of many horticultural journals. I venture, therefore, once again to point out a few facts, which totally contradict this generally accepted idea. It was in 1773 that Parmentier published his *Examen Chimique des Pommes de Terre*, and in 1785 he planted the famous 35 arpents which stupefied the Parisian crowd and enrolled Louis XVI. as advertising agent of the astute Parmentier. The facts of history, however, remain. The Potato was generally grown all over France, from the early days of the eighteenth century, and thousands of sturdy peasants had probably fed upon it long before Parmentier "discovered" it. It is not possible here to give many extracts which prove this statement, but I may mention that Leopold, Duke of Lorraine, in 1719, decreed that certain of his tithes should be paid in Potatoes, and, to come to later dates, in the *Pratique du Jardinage*, by the Abbé Roger Schabol, the Potato is mentioned in a gardening calendar, amongst other vegetables, without any comment as to its rarity or any recommendations as to its uses. In an early catalogue in my possession, namely, that of Messrs. Vilmorin, dated 1771, Potatoes are offered for sale amongst other vegetables. Even more interesting are the remarks of Parmentier himself, in his book above quoted, where he says, on page 1: "The use of this plant has been adopted for a century," and on page 5: "It is so widely spread that there are provinces where Potatoes have become a part of the nourishment of the poor, and one sees the entire fields covered with it in the neighbourhood of the capital, where it is so common that all the markets are filled with it, and it is sold at the corners of the streets, cooked or raw, as they sell chestnuts." The idea of reading Parmentier's book has apparently never occurred to his eulogisers. One may imagine, without unduly exercising that faculty, that the Potato was a new article of diet to the higher circles of France, and that Parmentier's discovery consisted in introducing it to them. In his enthusiasm he recommended it for making bread, an idea which had been tried long before his time; but he was not chemist enough to know that starch without gluten will not make bread. It is somewhat amusing to read that Parmentier's attention was first directed to the Potato as an article of food by the French soldiers digging it up during the Seven Years' War. One asks who can have been the planters of these Potatoes, so unknown at the time? It has also been already pointed out that for 35 arpents seed must have been obtainable in large quantity, and the astute device of withdrawing the guard round these valuable Potato fields, in the light of the above facts, loses its point. It is probable that Potatoes were stolen for the same reason for which they are stolen nowadays. Parmentier, therefore, claims remembrance as a predecessor of the astute dealers who in times not far distant exploited the credulity of Potato growers by offering a variety which would turn the poorest sand into gold. The whole history is an interesting contribution to the study of psychology rather than horticultural history. *Edward A. Bunyard.*

THE MOON'S EFFECT ON PLANTS.—Talking with a fellow-gardener on a variety of subjects a short time back, he made the following (to me) surprising statement. At his previous place as journeyman, in a large establishment, it fell to his lot on one occasion to insert a batch of *Chrysanthemum* cuttings, which he did in the usual way. When the head saw them some time afterwards he told him the cuttings would not be much of a success owing to the fact that they had been inserted when the moon was on the decline, and advised him to take another lot of cuttings directly there was a new moon. On my inquiring whether there was any noticeable difference between the two batches of cuttings my friend said that the second batch *did* appear

to root and make headway more quickly and healthily than the first. Previous to this statement I met a Sussex man who said his father would only sow seeds, plants, etc., when the moon was in the ascendant—to do so when on the wane would be courting failure. There is a similar idea held in some parts of the country by farmers with respect to the birth of animals, lambs in particular, the inference being that those born with a new moon have a much more successful outlook than those born after the moon has reached its full. But the foregoing are the only two cases where I have heard of gardening operations and the moon being associated in present-day practice. *C. Turner, Ken View Garden, Highgate.*

CYANIDING TO DESTROY MEALY BUG.—Mr. Shakelton's remarks on page 106 go to prove conclusively my assertion that the failures in cyaniding are due to using cyanide of an inferior quality, together with an improper graduation of the other requisites. I would warn your correspondent not to put too much faith in the 130 per cent. cyanide of sodium, as this is a meaningless quantity and

reward of 25s. per week, and a free house. Strange it is, but true, that, although the gardener is so poorly paid, the employer frequently consults him upon many important matters connected with the establishment, subjects entirely foreign to horticulture. I think this fact proves that the gardener is looked upon as being an intelligent, observant, capable servant. Personally, it is the deep interest that horticulture possesses that has induced me to remain in the ranks, and I venture to say many others are in a similar position. What is more deplorable than to find an unskilled man in charge of a garden in which he takes no interest. I am inclined to think this fact, with its disastrous results, is the chief cause of the present unsatisfactory conditions. I write from experience. What can we do to remedy this state of affairs? *Roamer.*

—I was very pleased to read the remarks made by Mr. Hudson, on p. 61, on the habit of head gardeners of taking premiums from journeymen, as I think the practice very objectionable. Years ago it was more prevalent than it is at the present time, but it still exists, and I know several



(Photograph by R. A. Malby.)

FIG. 68.—SAXIFRAGA BURSERIANA AS CULTIVATED BY MR. F. LLOYD, CROYDON.
R.H.S. Cultural Commendation February 24, 1914. (See p. 153.)

is no guarantee whatever of its purity. If he insists on being supplied with a guarantee stipulating that there is 98 per cent. of pure cyanide of potassium, he would then be more than half way on the road to success. I have never found it necessary to use a dose of 3 ozs. cyanide of potassium to the 1,000 cubic feet of space (not even in a vinery in winter). Half that quantity will not only kill mealy bug, red spider and thrips, but also mice, toads, woodlice, cockroaches, snails, slugs, and worms. In fact, no animal life can survive a strong dose of hydrocyanic gas. I should like to warn beginners of the great danger they incur of pouring water upon a strong solution of commercial sulphuric acid. *Jas. Fulton, Grims Dyke Gardens, Harrow Weald.*

GARDENERS' WAGES.—The discussion upon this subject is doing a vast amount of service, in so far as it is showing the younger generation the true facts of the case. Doubtless many a youth will "throw up the sponge," and small wonder. We find that after ten or fifteen years' struggling along in unsanitary bothies, working long hours, with often additional unpaid duty, we may, with luck, reach the position of head, with a

instances where it is in force. In one case the premium paid was as high as £25. I have been head gardener for a good many years where a large staff is employed, and I could take premiums if I wished, but my conscience would not permit me to do so. I know that the wages the journeyman will receive and his opportunities for advancement will not warrant it. I am of the same opinion as your correspondent *Forty Years Head* (p. 76), that by taking a premium from a young man, the head gardener is under an obligation to keep him for the term, whether he has an aptitude for gardening or not. In many instances a man would thus be brought into the profession who is not adapted to it. *Thirty-eight Years Head.*

PUBLICATIONS RECEIVED.—*Debentures and Other Charges.* By Herbert W. Jordan. (London: Jordan and Sons, Ltd.) Price 6d.—*Four Essays, written by Students at Wisley.* (London: Royal Horticultural Society.)—*The Journal of the Board of Agriculture.* February. (London: Board of Agriculture and Fisheries.) Price 4d.

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 24.—The usual fortnightly meeting of the Committees of this society was held on Tuesday last in the Vincent Square Hall, Westminster. An excellent exhibit from the Weston-birt collection included enormous plants of *Cattleya Trianae*, *Cymbidium eburneum* and *C. Lowianum*, the Lindley Medal being awarded for excellence of culture. The Orchid Committee recommended two First-class Certificates and three Awards of Merit.

The most imposing exhibit before the Floral Committee was a collection of Tulips, for which a Gold Medal was awarded. There were also bright groups of forced trees and shrubs, Primulas, Carnations, Camellias, Daffodils, Hyacinths and other bulbous flowers, and numerous rock-gardens. The Floral Committee recommended two Awards of Merit to novelties.

The Fruit and Vegetable Committee made no award to a novelty, but four collections were

exhibited on the bulbs. A large mound of *Lachenalias* made a pretty feature in the centre, and these were as praiseworthy as the Tulips. (Gold Medal.)

Lady TATE, Park Hill, Streatham Common (gr. Mr. W. Howe), contributed a great bank of flowers with well-grown pot specimens of Tulips, Daffodils and Hyacinths, relieved with Ferns and Palms. (Silver-gilt Banksian Medal.)

Messrs. SUTTON AND SONS, Reading, filled a table with their fine novelties in *Primula sinensis* set in a ground of *Adiantum* Ferns, which threw the flowers in relief. One corner of the exhibit was composed of the yellow *Primula kewensis* associated with the new White Queen stellata variety, and this led on to rows of Coral Pink, Giant Salmon Pink, The Duchess, Giant Crimson, The Czar, lavender blue; and Reading Blue, a paler shade than the last, with a centre-piece composed of Dark Blue stellata variety intermingled with *P. malacoides*, with a ground of Ferns. Two pretty novelties in star Primulas were seen in Coral Pink and Silver Star, the latter having no colouring in the eye. This firm also showed a batch of fine white

flowering shrubs, but very suitable for arranging along the walls of a conservatory or greenhouse. They had also a rockery which showed great taste in its method of arrangement and planting. (Silver Banksian Medal.)

Messrs. WM. PAUL AND SON, Waltham Cross, filled the corner by the east annexe with Camellias, flowering Cherries, double crimson-flowered and white Peaches, *Pyrus Malus floribunda* and other beautiful flowering trees of this character, making a delightful exhibit, for which a Silver Flora Medal was awarded.

Messrs. STUART LOW AND CO., Bush Hill Park, were awarded a Silver Banksian Medal for Carnations, Cyclamen, and other greenhouse plants.

Messrs. JAMES VEITCH AND SONS, LTD., Chelsea, were awarded a Silver Banksian Medal for an exhibit of Azaleas and other greenhouse flowers.

Messrs. WILLS AND SEGAR, South Kensington, made big banks of flowers with *Cinerarias* and *Cyclamens* in a variety of colours. (Silver Banksian Medal.)

Mr. Geo. PRINCE, Oxford, showed a small group of Roses, for which a Bronze Flora Medal was awarded. Two big vases of Fortune's Yellow were at the back, and in front were such varieties as Mme. Edouard Herriot and Sunburst.

Messrs. H. B. MAY AND SONS, Edmonton, were awarded a Silver Banksian Medal for Pansies, Polyanthuses, and Ferns, the last including a dozen or more excellent plants of the densely plumose variety of *Nephrolepis exalata*, named after Miss Willmott.

Messrs. H. CANNELL AND SONS, Swanley, showed Zonal-leaved *Pelargoniums*, *Cyclamens*, and varieties of *Primula sinensis*.

Varieties of Zonal-leaved *Pelargoniums* growing in small pots and carrying large trusses of blooms were shown by Messrs. H. J. JONES, LTD., Rycroft Nurseries, Hither Green.

Messrs. ALLWOOD BROS., Wivelsfield, Hayward's Heath, had some of the best Carnations in the show, for which they were awarded a Silver Banksian Medal.

Other exhibitors of Carnations were Mr. J. C. JENNER, Rayleigh, Essex; Mr. H. BURNETT, Guernsey. (Silver Banksian Medal); Mr. C. ENGELMANN, Saffron Walden (Silver Banksian Medal); Messrs. YOUNG AND CO., Cheltenham; and Messrs. W. WELLS AND CO., Merstham.

Messrs. R. GILL AND SONS, Falmouth, again showed *Rhododendrons*, *Violet Princess of Wales*, and *Cyclamen coum*.

Mr. J. J. KETTLE, Wimborne, Dorsetshire, showed varieties of single and double Violets. Mr. MAURICE PRICHARD, Christchurch, Hampshire, was awarded a Silver Banksian Medal for a dainty rock garden planted with Alpines.

Messrs. BAKER'S, Wolverhampton, showed several boxes of Alpines, having in fine condition *Primula denticulata*, and its white variety.

Mr. G. REUTHE, Keston, Kent, exhibited Shrubs and Alpines. The two most interesting plants were *Tecophilaea cyanocrocus*, with clear blue petals; and the lovely *Crocus aeneus*, the gem of the genus and very rare. The flowers of the *Crocus* are coloured light blue, passing to white, with gold in the interior at the base, against which the bright red stigma shows conspicuously. The foliage develops after the blooms are over. (Silver Banksian Medal.)

The WARGRAVE HARDY PLANT NURSERY, Twyford, were awarded a Silver Banksian Medal for Alpines exhibited on a rockery.

Messrs. BARR AND SONS, King Street, Covent Garden, contributed a pleasing group of bulbous and other hardy flowers, together with a rock-garden exhibit. They had charming pans of *Iris reticulata*, pots of *Primula malacoides*, hybrid



FIG. 69.—FREESIA EXCELSIOR: FLOWERS DEEP CREAM BLOTCHED WITH ORANGE COLOUR. R.H.S. Award of Merit, February 24, 1914. (See page 153.)

[Photograph by R. A. Maiby.]

awarded Medals. At the three o'clock meeting in the lecture room, an address on "The Use of Explosives and of the Blow-lamp in the Garden" was delivered by Mr. H. E. DURHAM, Sc.D.

Floral Committee.

Present: H. B. May, Esq. (in the chair), A. A. Dorrien Smith, George Paul, G. Reuthe, Chas. E. Shea, E. H. Jenkins, Thos. Stevenson, W. J. Bean, F. W. Harvey, H. J. Jones, C. Dixon, W. H. Page, John Dickson, C. E. Pearson, R. C. Nevill, Wm. Howe, J. F. McLeod, J. W. Moorman, C. Blick, C. T. Druery, E. Bowles, W. A. Bilney, R. Hooper Pearson, George Gordon, W. Cuthbertson, F. Page Roberts, R. C. Notcutt, Jas. Hudson, T. W. Barr, J. Jennings, W. G. Baker, R. W. Wallace, B. Crisp, W. B. Cranfield and W. P. Thomson.

Messrs. R. AND G. CUTHBERT, Southgate, had the largest exhibit in their collection of Tulips, which ran the entire width of the building at the end opposite to the clock. There were some 60 distinct varieties, and each sort was shown by itself in a round basket in a setting of greenery. The blooms were in the very best condition of freshness and colouring and were

Freesias and *Hyacinths* in art bowls. (Silver Flora Medal.)

Messrs. J. CARTER AND CO., Raynes Park, showed their new star *Primula Fairy Queen* and *Princess Mary*, a pretty blush-pink variety of the older type. It was a very dainty exhibit, and showed how well these beautiful greenhouse flowers appear when massed. At either end were banks of Tulips, which gave additional interest and colour. This firm also showed a new Trumpet Daffodil named *Sir Francis Drake*. The big trumpet is of deep yellow colour, being set off by a perianth of Emperor type, with old gold shading. The foliage is most vigorous.

Messrs. W. CUTBUSH AND SON, Highgate, arranged a very large floor group of forced shrubs, and, as a separate exhibit, Carnations and Alpines. (Silver Flora Medal.)

Mr. L. R. RUSSELL, Richmond, staged, in a mass, profusely-bloomed plants of Azaleas, with standard Lilacs rising amongst them at intervals and backed by a row of Palms. (Silver Flora Medal.)

Messrs. PIPERS, Bayswater, exhibited espalier trees of *Pyrus floribunda*, *P. atro-sanguinea*, double-flowered Peaches and Cherries, a system of training not often practised with ornamental-

Gerberas, numerous fine Daffodils, and a big batch of Tulips. A prominent feature was a bank of the fragrant Narcissus Poeticus Grand Soleil d'Or. (Silver Banksian Medal.)

Messrs. WARES, LTD., Feltham, were awarded a Silver Banksian Medal for Alpines. Their Irises were good, especially *I. sindjarensis*, *I. reticulata*, and *I. histrioides*.

The GUILDFORD HARDY PLANT NURSERY were awarded a Bronze Flora Medal for hardy flowers and Alpines; Mr. JAMES BOX, Hayward's Heath, received a Silver Banksian Medal for an exhibit of a similar nature, and Messrs. R. H. BATH, LTD., showed bowls of bulbous flowers.

Hardy flowers were shown well by Messrs. GEO. JACKMAN AND SON, Woking. We noticed the rare *Androsaco carnea alba*, *Morisia hypogaea*, *Helichrysum bellidioides*, numerous fine *Saxifragas*, and *Megasea ciliata* in this exhibit.

Messrs. WHITELEGG AND PAGE, Chislehurst, Kent, exhibited a long, flat rockery on a table, but it had not sufficient depth to appear effective. It was brightened with many well-flowered *Saxifragas*. (Bronze Flora Medal.)

Messrs. G. and A. CLARK, LTD., Dover, were also the exhibitors of a rockery on which coloured Primroses were well displayed.

The rock garden that pleased us most was shown by Mr. CLARENCE ELLIOTT, Stevenage. The stones were of old grey limestone, and the blocks were disposed in a natural manner. (Bronze Flora Medal.)

Rock gardens were also shown by Messrs. THOMPSON AND CHARMAN, Bushey, Hertfordshire; the BURTON HARDY PLANT NURSERY, Christchurch; R. TUCKER AND SONS, Brookside Nurseries, Oxford; R. WALLACE AND CO., Colchester. (Bronze Flora Medal.)

AWARDS OF MERIT.

Freesia Excelsior (see fig. 69).—A new variety characterised by its great substance and vigour. The colour is rich cream blotched with orange, very much like the variety *Leichtlinii*. The outside of the tube was also in some cases lightly shaded with purple. The flowers, however, are larger in size and stouter in substance than any of the varieties in commerce, and the foliage showed such extraordinary vigour that it was nearly an inch in breadth, though grown in ordinary conditions. The remarkable constitution of the plant promises great things in the hands of the hybridist, and may well lead to a new strain. We were informed that under identical conditions it blooms three weeks earlier than *F. refracta alba*, which was displayed with it. Shown by Messrs. SUTTON AND SONS.

Sparaxis King George V.—This is a variety raised some years ago from seed by Mr. W. Barr, who finds that every year it blooms at this early period for a *Sparaxis*. It is also notable for its very rich colour, the brightest tints in which are the deepest shade of blood-red (of the *Répertoire de Couleurs*), and this passes insensibly towards the centre into a dark maroon, which gives a definite edge to the usual light-yellow eye. Shown by Messrs. BARR AND SONS.

CULTURAL COMMENDATION.

To Mr. F. LLOYD, Croydon, for pan of *Saxifraga Burseriana* (see fig. 68). The pan was about 3 inches in diameter, and there were more than three hundred expanded flowers, which were so densely placed as to hide the foliage.

OTHER NOTEWORTHY PLANTS.

Crocus Thomasianus (sativus) Weaveri.—A distinct purple-red variety, shown by the WAR-GRAVE HARDY PLANT NURSERY.

Freesia Robinella.—Mr. F. H. CHAPMAN showed this new variety of Messrs. Van Tubergen's. The flowers are a deep shade of old rose, the darkest of the red shades that we have seen in these flowers.

Orchid Committee.

Present: Sir Harry J. Veitch in the chair, and Messrs. Jas. O'Brien (hon. sec.), F. Sander, R. G. Thwaites, F. J. Hanbury, F. M. Ogilvie, T. Armstrong, C. H. Curtis, W. Cobb, A. McBean, J. Charlesworth, J. Cypher, W. H. Hatcher, J. E. Shill, H. G. Alexander, W. P.

Bound, A. Dye, E. H. Davidson, S. W. Flory, W. Boltou, Gurney Wilson, F. J. Chapman, de B. Crawshay, Stuart Low, R. A. Rolfe, and Sir Jeremiah Colman, Bart.

In the main building Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt, Tetbury (gr. Mr. H. G. Alexander), occupied the same space as on the occasion of the last show, when his group secured for him the Society's Gold Medal.

On this occasion the exhibit was equally interesting, but confined mainly to grand forms of *Cattleya Trianae*, and some huge specimens, marvels of high cultivation. The award was divided, a Silver-gilt Flora Medal being awarded for the group, and a Lindley Medal for the three wonderful specimens, viz., *Cattleya Trianae*, var. *Hydra*, with 96 beautiful flowers (the same specimen which, when smaller, was illustrated in the *Gardeners' Chronicle*, February 18, 1911, p. 108); *Cymbidium Lowianum*, with 15 spikes, bearing together 278 flowers; and *C. Lowie-eburneum*, with 26 spikes of 101 flowers; these three giants being in tubs. A batch of the Westonbirt *Cymbidium Dryad* (insigne \times *Parishii Sanderæ*), with 10

example, in those with labellums spotted all over with rose colour. Messrs. Sander state that they take every precaution to record their seedlings accurately, and with better parents have gone over the well-known Continental crosses with the result that in many cases the reputed parentages have been proved to be incorrect. A finely formed flower (*Rolfeae* \times *Pescatorei*) is a great improvement on *O. Rolfeae* (*Pescatorei* \times *Harryanum*), but it ought to be known by that name, as no new element is introduced except in degree. *O. St. Andre* (*Rio Tinto* \times *ardentissimum*) is a very handsome flower with yellow ground colour heavily blotched, and with the lip covered with rose spotting.

Messrs. STUART LOW AND CO., Bush Hill Park, and Tarvisbrook, Sussex, were awarded a Silver Flora Medal for a very fine group of splendidly grown Orchids, excellently well staged. Most of the showy Orchids of the season were represented, including fine forms of *Cattleya Trianae* and other *Cattleyas*, with a plant of the pretty white-petalled *C. Percivaliana* Little Gem. *Odontiodas*, *Odontoglossums* and *Cypri-*



FIG. 70.—CYMBIDIUM ALEXANDERI HAMILTON-SMITH'S VARIETY; SEPALS AND PETALS WHITE; LIP MARKED WITH CRIMSON.

R.H.S. FRS. Class Certificate, February 24, 1914. (See page 154.)

spikes of fine white flowers, the lip spotted with purple, stood at one end, and a fine lot of the pretty yellow L.-C. Ariel (*C. aurea* \times *L. Cowanii*) at the other. Sixteen distinct forms of *C. Trianae*, with very fine blooms, were included, and among them the large variety *Colossal*, *Madame Louise Hemptinne*, with blush-white sepals and petals; *Lowii*, white with a pink tint on the lip; *Ampliata*, of a pale peach-blossom colour like *C. Schroderae*; *Nooreana*, one of the finest in colour; *The Premier*, *Chrystobel*, white with sulphur yellow in the tube of the lip; and *Perfecta*, a large bloom with crimped edge to the labellum, were prominent. Two exhibits gained Awards of Merit (see Awards), but the fine *Laelio-Cattleya Aureole* (L.-C. *luminosa* \times *C. Iris*), with a strong spike of eight brightly-tinted flowers of a peculiar magenta-red colour on yellow ground, which many visitors admired, was passed without award.

Messrs. SANDER AND SON, St. Albans, were awarded a Silver Flora Medal for a fine group, the most interesting feature in which was the excellent selection of new hybrid *Odontoglossums*, which, while being all of fine size and shape, exhibited great variety of colour, with some novelty in the arrangement of it, as, for

pediums were in variety, and specially attractive were *Brasso-Cattleya Madame Chas. Maron* and other *Brasso-Cattleyas*, and a very bright reddish-rose hybrid between L.-C. *Ophir* and L.-C. *Charlesworthii* flowering on a very small plant.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a small but very select group, all good specimens. The best noted were *Phalaenopsis Schilleriana alba*, the unique snow-white form; *Brasso-Laelia-Cattleya Joan* (*C. Octave Doin* \times *B.-L. Mrs. Greatrix*), a good yellow flower with fringed lip; *Sophro-Laelio-Cattleya Electra* (*S.-L. heatonensis* \times *C. labiata*), ruby-red in colour; *Cattleya Trianae The Baron*, a noble white flower; *Odontonia Langowoyi*, the pretty hybrid of *Miltonia Schroderiana* which recently received an Award of Merit; some bright red *Odontiodas* and showy *Odontoglossums*; the elegant *Angraecum citratum*; and a singular pink-tinted form of *Cattleya Susanno Hye de Crom* (*Gaskelliana alba* \times *Mossiae Wageri*), out of a batch which give white and tinted varieties.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver Banksian Medal for a group, principally hybrids,

some of which were new, and the seedling *Odontoglossum*, flowering for the first time, specially attractive; crosses between *O. illustrissimum* and *O. eximium*, and one between *O. Lambeaunum* and *O. excellens* being distinct. A singular *O. Pescatorei*, with a few violet spots, and some hybrids of it, were also remarked. *Cymbidium Iona* (insigne × giganteum), and a finely marked *C. Lady Colman*; *Cypripedium Venus* Orchidhurst variety; *C. Holdenii*, *C. Leander* Cambridge Lodge variety; *C. Florida* (Fowlerianum × glaucophyllum), a new cross of remarkable features, the broad dorsal sepal and broader lower sepals having blackish lines and greenish margin, the very dark petals a strongly ciliate margin, lip rose-colour.

Messrs. J. CYPHER AND SONS, Cheltenham, were awarded a Silver Banksian Medal for a good group, principally of fine *Cypripediums*, *Phalaenopsis Schilleriana* and *P. Stuartiana* were finely in bloom; a selection of pretty *Masdevallias* included *M. ignea*, *M. caudata* *Shuttleworthii*, *M. Courtauldiana*, *M. Hincksiana*, etc., and the bright scarlet *Epiphronitis Veitchii*, and *Sophronitis grandiflora*, were arranged in front.

Messrs. FLORY AND BLACK, Orchid Nursery, Slough, were awarded a Bronze Banksian Medal for a small group in which were two good varieties of *Odontodia Schroderi*, several *O. Sibyl*, *O. Graireana* and two unnamed *Odontodias*. The best of the *Odontoglossums* were *O. amabile*, *O. Lambeaunum* and *O. Doris*, pretty forms of which were shown. Among *Cypripediums* were a very fine *C. Dicksonianum*, Countess of Carnarvon, with rich rose-purple dorsal sepal, with white tip. New *Cypripediums* were *C. Marcus* (Dicksonianum × Leeanum), *C. Trincolo* (insigne *Harefield Hall* × *Victor Hugo*), and *C. Marina* (aureum × *Lord Wolmer*).

Messrs. HASSALL AND CO., Southgate, were voted a Bronze Banksian Medal for a small group in which were the new *Odontocidium Southgatense* (*Odontoglossum Edwardii* × *Oncidium macranthum*), a very singular hybrid with flowers having broad sepals and petals of a dark purple colour and rose lip with ovate front and yellow disc. The pretty *Odontodia St. Fuscien*, *Brassocattleya Langleyense* albens, good *Cattleya Trianae*, *C. Empress Frederick*, *Cypripedium villosum Stanleyi*, a very large form, *Cymbidium insigne*, and *C. eburneo-Lowianum* were also shown.

Messrs. SWAN AND PRICE, St. Albans, were awarded a Bronze Banksian Medal for a group of *Cypripediums* in great variety and good quality, with *Cattleyas*.

Messrs. E. H. DAVIDSON AND CO., Orchid Dene, Twyford, showed a selection of rare Orchids, including the very large and handsome *Cattleya Trianae* Orchid Dene variety, *C. Harrisoniana* alba, with a good show of pure white blooms; the fine white *Odontoglossum crispum* *Princess May*; and the deep rose and claret-red *O. Twyford Gem*, the most beautiful of *O. Rossii* hybrids; also *Sophracattleya Warnhamensis*, and a charming pan of *Odontoglossum Oerstedii*, with 18 white flowers.

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), again showed the pretty and floriferous brown and yellow *Odontoglossum Boadicea* (triumphans × *ardentissimum*), *O. Damaris* (Rolfæ × *Waltonense*), fine forms of *O. harvengtense* and *O. Hallio-crispum*, and *Odontodia Bella* (*Cochlioda Noezliana* × *Odontoglossum bellatulum*).

Monsieur JULES HYE DE CROM, Ghent, (gr. Mr. Coen), sent *Cypripedium Tracyanum maximum* (aureum *Hyeaunum* × *Leeanum* *Clinkerberryanum*), a very large light-coloured flower.

C. J. LUCAS, Esq., Warnham Court, Horsham (gr. Mr. Duncan), sent the large-flowered *Cypripedium Harlequin*, and *C. Robsonii* (exul × *insigne* *Sanderæ*), first flowered by Messrs. Sander in 1905.

Miss HELEN F. M. SIDNEY, Moreton, Holly Place, Hampstead, showed a finely-flowered *Dendrobium splendidissimum*.

Mr. L. LAWRENCE, Shoreham House Gardens, Shoreham, showed a good specimen of *Selenipedium Sedenii candidulum*.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontoglossum Colossus (parentage unrecorded), from Baron BRUNO SCHRODER,

The Dell, Englefield Green (gr. Mr. J. E. Shill).—A noble *Odontoglossum* with probably the largest flowers of any yet shown, and a fine example of good culture. The greater part of the broad segments was covered with large purple-red blotches, the margins and a few irregular lines between being white. The colour was heightened by the rich purple back of the segments.

Cymbidium Alexanderi *Hamilton-Smith's variety* (insigne × *eburneo-Lowianum*), from HAMILTON SMITH, Esq., Seymour Road, Finchley (gr. Mr. A. Coningsby).—A very beautiful variety, differing from others in its white, wax-like flowers having an irregular band of crimson on the lip as in *C. Lowianum*.

AWARD OF MERIT.

Cypripedium Mogul (Mrs. Wm. Mostyn × *chrysotozum*).—From Lieut.-Colonel Sir GEO. L. HOLFORD. A very beautiful *Cypripedium* of fine shape and thick texture; yellow, tinged with purple, the ivory-white dorsal sepal having a purple band in the middle.

Laelio-Cattleya Ariel (*C. Dowiana aurea* × *L. Cowenii*), from Lieut.-Colonel Sir GEO. L. HOLFORD.—A very floriferous and pretty hybrid as seen in the small batch shown. Spikes tall, with six to ten flowers, reddish golden yellow or copper colour, with ruby-red lip.

Phalaenopsis Ariadne (*Aphrodite* × *Stuartiana*), from Messrs. SANDER AND SONS, St. Albans.—A very interesting and beautiful plant introduced by Messrs. SANDER as a natural hybrid and quite intermediate, the large white flowers bearing some of the spotting of *P. Stuartiana* on the lateral sepals. It was first flowered and home-raised by Messrs. JAS. VEITCH AND SONS in 1896, *P. Aphrodite* being the seed-bearer.

Fruit and Vegetable Committee.

Present: Jos. Cheal, Esq. (in the chair), Messrs. C. G. A. Nix, W. Poupert, W. H. Divers, J. Jaques, W. Crump, A. Bullock, A. R. Allan, A. Grubb, W. Bates, Edwin Beckett, Jesse Willard, and John Harrison.

Messrs. JAMES CARTER AND CO., Raynes Park, were awarded a Silver-Gilt Banksian Medal for 73 varieties of Potatoes. The dishes were arranged on a green velvet cloth, and Palms were employed to enhance the effect. The tubers were clear of skin, evenly matched and very attractive generally. Varieties of the firm's introduction were conspicuous, and of these the more notable were *Advancer*, *King of the Russets*, *Long Keeper*, *Invicta*, *Snowball*, *Early Favourite*, and *Goldfinder*. The old Scotch Regent variety was included for its excellent flavour, although it is not popular with some on account of having deeply set eyes. Another variety of excellent table quality was seen in *Excelsior*, but in this again there is the defect of small size.

Mr. W. E. SANDS, Hillsborough, Co. Down, exhibited 21 baskets of Potatoes, for which a Bronze Knightian Medal was awarded. Many, such as *Emerald Queen*, *Edina*, *Leinster Wonder*, *Irish Hero* and *The Gardener* bore names unfamiliar to growers in this country.

Mrs. DENNISON, Little Gaddesden, Berkhamsted, showed excellent root vegetables and Potatoes, including *Large Record*, *Ailsa Craig*, and *Rousham Hero* Onions; *Summer Favourite* and *Early Market* Carrots; *Early Milan*, *Round Red* and *Jersey Lily* Turnips; splendid *Maltese Parsnips*; good *Musselburgh* and *Holborn Model* Leeks. (Silver Knightian Medal.)

The Duke of RUTLAND, Belvoir Castle, Grant-ham (gr. Mr. W. H. Divers), showed a collection of Apples and bunches of *Black Alicante* Grapes, for which a Silver Banksian Medal was awarded.

Mr. H. HEMSLEY, Crawley, showed fruits of the new Apple *Crawley Beauty*.

NATIONAL FEDERATION OF FRUIT AND POTATO TRADES' ASSOCIATIONS.

FEBRUARY 24.—The eleventh annual general meeting of the members of the National Federation of Fruit and Potato Trades' Associations (Incorporated), Limited, was held on the 24th inst. in the Grand Hotel, Leicester. There was a large attendance of delegates. On being elected President, Mr. Wm. Cann (Manchester)

occupied the chair. The annual report was presented, of which we print the following extracts:—

ANNUAL REPORT.

The hope expressed in the last Report that if the Federation were reorganised on the lines suggested, all the trade associations would become affiliated, has been fully realised. We are glad to be able to report that all known associations connected with the wholesale fruit trade are now members of the Federation, and, in addition, we now have 189 individual members.

It has been decided to form a Foundation Fund to provide a reserve against special contingencies, and up to the present time £337. 18s. has been subscribed. This amount is quite inadequate for the purpose—the reserve should be at least £1,000—and we trust that all members who have not yet contributed will send a donation to the secretary.

In order to relieve the Executive Committee of some of the detail work, a Northern division has been formed to deal with all matters of special interest to the North. The country has been divided by the line of the 55th degree, and all Great Britain north of this line, together with all Ireland, has been allotted to the Northern Division. A Northern committee has been formed of all the executive members resident in the Northern division, Mr. Wm. Cann being appointed chairman, and Mr. Ernest Farrington, of Manchester, secretary.

The members of the Northern Committee have done a very large amount of useful work during the year. They have held committee and sub-committee meetings, and, in addition, have addressed meetings in various parts of the country, with the result that several associations which had broken up or become moribund have been re-formed, and have joined the Federation. They have also been successful in obtaining a large number of individual members. It is hoped, during the coming year, to form other associations where there are sufficient wholesale traders to render this possible.

Railway matters have also taken up considerable time. On May 22 a deputation waited on Mr. Marriott, of the Lancashire and Yorkshire Railway, to lay certain grievances before him. Messrs. Crouch and Bellis attended on behalf of the Federation. Mr. Marriott promised to improve the service, and a number of claims for delay were settled satisfactorily.

The Federation was asked to take up the question of flower cartage in London. The rates had been increased from 4s. 2d. to 6s. 8d. per ton, and the minimum raised from 2d. to 6d. As a result of representations from your committee, the minimum charge was reduced to 3d., but the Metropolitan Conference refused to reduce the tonnage rate.

The demurrage charges came up for consideration owing to the companies issuing new regulations allowing only two days before demurrage was charged. We communicated with the companies in an endeavour to get a longer time allowance, but without any result. It therefore seems that we shall have to make use of our legal remedy under the Railway Rates and Charges Order Confirmation Acts of 1891-2. These Acts provide that if the trader is dissatisfied with the time allowed, or the rate charged, he can create a difference—that is, raise a formal objection—when the company must submit the matter to the arbitration of the Board of Trade.

A Royal Commission on Railways has been appointed to inquire into the relationship between the railway companies of Great Britain and the State in respect to matters other than safety of working and conditions of employment, and to report what changes, if any, are desirable in that relationship. Your committee have applied to be heard by the Commission, and have appointed Messrs. Cann, Dennis, Larsen, Meek, and the two secretaries as witnesses. The chief points on which evidence will be given are late deliveries, classification, owner's risk conditions, delivery of empties, increased rates and reduced facilities.

The report was adopted.

During the afternoon a Conference was held to discuss matters relating to the transit of produce.

The President said that so far as the railway companies were concerned the trade was subjected to the same expensive and irritating treatment as formerly, and that in face of the 4 per cent. increase in the rates. They did not object to the 4 per cent. increase, but they strenuously objected to the inefficient service they got in return; there was no certainty of reaching the market in proper time. In asking for a better service they were only asking for what they were accustomed to get before the railway companies entered into working arrangements, thus doing away with competition. In addition to bad delivery, they had also to complain of demurrage charges and indifference to complaints. Offering suggestions in the way of remedies, the President mentioned the issuing of time-tables for traffic to traders, which he thought would be exceedingly useful. If railway companies broke contracts by running late they should be penalised. They wished to work amicably with the railway companies, realising they could be mutually helpful, and to that end he suggested quarterly conferences between representatives of the companies and local associations to consider suggestions for improvements.

Mr. Major (London) thought it ought not to go forth from the President's remarks that they entirely agreed with the increase in railway

rates, which were most oppressive in many cases.

On behalf of the Leicester Association Mr. Tomlin (Chester) moved a resolution that the question of demurrage be considered by the Federation, the time allowed for unloading trucks of loose Potatoes being totally inadequate.

This was seconded by Mr. Dent (Manchester). The resolution was carried, and on the suggestion of Mr. Eatough (Blackburn) it was also decided that a list of grievances be sent to the Railway Clearing House for consideration.

Mr. Rhodes (Liverpool) moved the following resolution, which stood in the name of the Liverpool Market Tenants' Association:—"That the attention of the Federation be directed to the question of late deliveries on the part of the railway companies, with a view to ascertaining what is considered a just and reasonable delivery." He contended that since the rates were increased deliveries had been later.

In seconding, Mr. John Martin (Liverpool) said that what they wanted to know was what really constituted reasonable delivery.

The resolution was carried.

Another resolution dealing with the same subject was moved by Mr. Shipley on behalf of the Leicester Association. The resolution indicated habitual late delivery to Leicester of goods from Liverpool and Manchester, amounting to two and three days' delay.

Mr. Charles Wilson (Leicester) seconded, and the resolution was agreed to.

Other matters dealt with were signing for goods before receipt, the grouping of small consignments, charges for empties, and propaganda work.

THE BANQUET.

The annual banquet was held in the evening at the Grand Hotel, all the delegates being present. It was decided to hold next year's meeting in London.

NATIONAL DAHLIA.

FEBRUARY 23.—This Society held its annual conference at Carr's Restaurant, Strand, on Monday last. Mr. Geo. Gordon, the President, occupied the chair. The Chairman, in his opening remarks, referred to the trial of Dahlias carried out last year by Mr. R. Cory at Duffryn, and the competition for the Cory Cup and Veitch Memorial Medal. These events should forward the interests of the flower. Raisers were endeavouring to secure varieties that will be as useful in the garden as for exhibition, and he trusted that everyone would take a broad view of the possibilities of the flower and encourage every type. In the absence of the author, Mr. R. CORY, Mr. J. A. JARRETT read the paper on the Duffryn trial, and a second paper on "The Dahlia of To-Day" was read by Mr. H. SHOESMITH. We are compelled to hold over our report until next week.

EDINBURGH BOTANICAL.

FEBRUARY 12.—The fourth meeting for the session was held on the 12th inst., Dr. R. S. MacDougall, President, in the chair.

Mr. MONTAGU DRUMMOND gave an account of a summer vacation in Jamaica, with lantern illustrations, with special reference to the Botanic Gardens at Hope, near Kingston, at Castleton, twenty miles inland, and at Cinchona, in the Blue Mountains, at an altitude of 5,000 feet. He pointed out the special advantages of Cinchona as a tropical station for research, and drew attention to the project which is on foot to make that station more fully available to British students, and in aid of which the British Association for the Advancement of Science has already granted £25.

MISS LAMONT read a paper on "The Ecology of an Argyllshire Area (the Estate of Knock-dow)," with lantern illustrations, in which she indicated the distribution of various types of vegetation taken as representative of the flora of the district.

Dr. R. S. MACDOUGALL exhibited the Citrus white fly (*Aleyrodes citri*), parasitised by the red fungus (*Aschersonia aleyrodidis*) and the black fungus (*Aegerita Webberi*).

Mr. WHYTOCK showed a collection of plants from out-of-doors at Dalkeith Palace.

The following plants in flower were shown from the Royal Botanic Gardens:—*Cullumia squarrosa*, R. Br., a peculiar South African composite; *Rhododendron moupinense*, Franch.; and *Rhododendron oleifolium*, Franch., a hardy species with whitish flowers, tinged sometimes with lilac. Introduced from Western China by Mr. Wilson.

DEBATING SOCIETIES.

WARGRAVE AND DISTRICT GARDENERS'.

At the meeting of the above association held on the 11th inst. Mr. W. H. Scott gave a lecture on "The Evolution of Vegetable Culture." He referred to the vegetables mentioned by Parkinson as being cultivated at the end of the seventeenth century, and showed how by careful elimination of worthless kinds and hybridisation of the best varieties our present-day vegetables have been brought to a high state of perfection. The use of manures was carefully pointed out, and the great advantages of glasshouses in lengthening the season of many vegetables were referred to. The improvement is very marked, said Mr. Scott, if one remembers the quality, size and appearance of the vegetables exhibited at any large show of twenty years ago and those of the present day.

BIRMINGHAM AND DISTRICT GARDENERS'.

At the meeting of this society, held on Monday, the 26th ult., a lecture on "Edible and Poisonous Fungi" was delivered to a large audience by Dr. Jessie Bayliss Elliott, Lecturer on Botany at the University of Birmingham. Miss Elliott emphasised the importance of a knowledge of fungi to gardeners and horticulturists in general as there was no definite rule as to whether a fungus is edible or not. She stated that many more fungi are edible than is commonly supposed, and many could be utilised for food. After giving some receipts for cooking fungi the lecturer proceeded to explain the method of mushroom culture in Paris, the details of which she had gathered from personal investigation. The lecture was illustrated by lantern slides.

READING GARDENERS'.

The first fortnightly meeting of the winter session was held on the 26th ult. in the Abbey Hall, Mr. J. T. Tubb, chairman of the committee, presiding over a large attendance. Mr. J. A. Murray, B.Sc., of the University College, Reading, delivered a lecture on "Farmyard and Stable Manures." Mr. Murray based his opening remarks on the well-known bias of practical gardeners toward farm and stable manure for the cultivation of garden crops generally, and said that the preference was well founded. No artificial manure could or ever would take the place of stable or farm manure. It was quite possible to supply to the soil all the soluble or even insoluble food that a given quantity of stable manure contained by compounding various artificial manures, but their action on the soil in other respects was totally different from that of stable manure. Artificially supplied no organic matter, and the great value of farm or stable manure lay, not so much in the soluble manurial substance it contained, as in the many-sided effect that the organic matter had on the soil itself. The lecturer pointed out the relative values of various kinds of farm and stable manure and how such value was greatly affected by the age and food of the animals, and the treatment the manure received. Where the urine was allowed to drain away, or insufficient litter used to retain it, by far the most valuable portion of the manure was lost. Again, washing by rains would waste nearly, if not all, the immediately available plant food, and some time must elapse before manurial matter less soluble could, by the aid of fermentation, be brought to a condition when it could be taken up in the soil water by the plant.

The evening devoted to "ten minute" papers by the younger members last April proved so successful that a similar gathering was held on Monday, the 2nd inst. Papers were contributed by Messrs. C. Goodchild ("Greenhouse Plants"), J. Lloyd ("Starting a Business"), P. Kaye ("Melons"), R. Baker ("Stove and Greenhouse Plants"), C. Reader ("Violets"), and F. Barnes ("Malmesbury Carnations").

The annual tea and entertainment took place on the 18th inst. About eighty members and friends were present, the president (Mr. F. S. Parfitt) being in the chair. After the tea and during the time the hall was being cleared those present were afforded an opportunity of inspecting Messrs. Sutton and Son's stores and offices. At 7.30 an audience of about 600 assembled at an entertainment, and an excellent programme was provided by the kindness of Mr. Leonard Sutton.

BRISTOL AND DISTRICT GARDENERS'.

The fortnightly meeting of this association was held on the 12th inst. the president, Colonel Cary Batten, J.P., occupying the chair. Two papers were read by Mr. Barrow and Mr. Estence on "Tomatos" and "Decorative Chrysanthemums" respectively. The prizes offered by the president for two Cypridiums were won by Mr. Jennings (1st) and Mr. Curtis (2nd).

BRITISH GARDENERS' ASSOCIATION (Leamington Branch).—A meeting of the members of the Leamington branch of the B.G.A. was held on the 31st ult. Alderman A. Holt, chairman Leamington and County Show, presided. A lecture was given by Mr. J. H. Hays, superintendent of the local public park, on "Propagation by Seed."

BRITISH GARDENERS' (Edinburgh Branch).—The monthly meeting of the Edinburgh branch of the B.G.A. held on the 9th inst., Mr. W. H. Morland presid-

ing. A lecture on "Hybridising," illustrated by lantern slides, was delivered by Mr. Hosking, horticultural lecturer at the Glasgow and West of Scotland College of Agriculture. The next meeting will be on March 9, when the subject of the lecture will be "The Formation and Maintenance of Herbaceous Borders," by Mr. A. McDonald, Darnhall Gardens, Eddlestone.

DUMFRIES AND GALLOWAY GARDENERS'.

The monthly meeting of this association was held in the Wesley Hall, Dumfries, on the 31st ult. Mr. S. Arnott, president, occupied the chair. A paper on "The Rose: its History and Cultivation," was read by Mr. W. Sturrock, manager of the Larchfield Nurseries, Dumfries. Mr. Sturrock dealt briefly with the history of the flower, and more fully with its cultivation. He gave a selection of the best varieties for planting.

SOUTHAMPTON AND DISTRICT GARDENERS'.

The first monthly meeting of the new session was held on the 29th ult., the president, Mr. H. E. Molyneux, in the chair. Mr. Montague Allwood, of Wivelsfield Nurseries, Haywards Heath, gave a lantern lecture on "The Perpetual-Flowering Carnation." Twenty-four new members were elected—a record number for any one meeting.

KILMARNOCK AND DISTRICT GARDENERS'.

The monthly meeting of this society was held on the 11th inst., Mr. R. K. Sillars presiding. Mr. D. Vallance, of Dunakin, delivered a lecture on "Beekeeping," illustrating his remarks with the aid of various sections of hives, etc. The intimate connection of beekeeping with horticulture, and the methods to adopt to ensure the most profitable return of honey, were clearly explained.

BATH GARDENERS'.

Mr. T. Parrott presided at the fortnightly meeting of the Bath Gardeners' Debating Society, held on the 9th inst. There was an excellent attendance. A paper on "Apple Cultivation" was given by Mr. Strugaell.

BIRMINGHAM AND MIDLAND COUNTIES GARDENERS'.

At the meeting held on Monday the 9th inst. two papers were read. Mr. Brotschneider, of Compton Nurseries, first gave a paper "On the Propagation of Roses." After giving full details of the methods of cleft, tongue, and whip grafting he closed his lecture by briefly answering questions raised. The second paper was by Mr. Brown, proprietor of Compton Nurseries, King's Norton, and he dealt with "The Best Varieties of Roses." Amongst the twenty-four best Roses for general purposes, said Mr. Brown, were Hugh Dickson, Frau Karl Druschki, Mrs. John Laing, and General McArthur. He gave lists of the best bedding Roses; the best for standards; the best varieties for pillars—chief of which were the American and Blush Ramblers—varieties for pot culture; and the twelve best suited for town gardens, together with the twelve best Teas and twenty-four best varieties for exhibition.

CHESTER PAXTON.—At the opening meeting of the winter session, under the chairmanship of Mr. A. W. Armstrong, a lecture entitled "Cultivation of Chrysanthemums" was given by Mr. A. Calderbank, Chief Instructor in Horticulture at Holmes Chapel College, Cheshire. The lecturer dealt very fully with his subject under the heads of propagation, composition of soils, manures, their value and method of application, and gave numerous cultural hints. He emphasised the need of fresh air and sunshine, and gave explicit directions as to the composition of soils and liquid and other manures. He gave an extensive list of varieties which he recommended for cultivation, and explained the method of raising new varieties.

At the usual bi-monthly meeting held in the Grosvenor Museum on the 21st inst., Mr. Montagu Allwood delivered a lecture on "Perpetual-Flowering Carnations" to a large audience over which Mr. N. F. Barnes, Eaton Gardens, presided. Mr. Allwood illustrated his lecture with a series of lantern slides (a number of which were coloured), and which gave added interest to what the chairman described as one of the best lectures they had listened to.

BURNLEY AND DISTRICT HORTICULTURAL.

A meeting of this association was held in the Mechanics' Institute, Burnley, on the 5th inst. Mr. W. J. Hargreaves occupied the chair. Mr. H. Jackson, of Ightenhill Park, gave a lecture on "Summer Bedding."

WATFORD HORTICULTURAL.

A well-attended meeting of this society was held on the 13th inst. The president, R. H. Comyns, Esq., occupied the chair. Mr. H. Newman was presented with a marble time-piece as a mark of esteem and recognition of his services as secretary from 1910 to 1912. A lecture on "Potato Culture" was delivered by Mr. R. A. Ayre, of Bushey Lodge Farm. He dealt with the subject under the following heads: Seed, manure, cultivation, profitable side, healthful side, and beautiful side.

BRITISH GARDENERS' (Watford Branch).

The monthly meeting of the Watford branch of the B.G.A. was held on the 19th inst. Mr. W. Phillips presided. Mr. H. Curtis, superintendent of Parks, Northampton, gave a lecture on "Old-fashioned Flowers for Spring Bedding." He dealt exhaustively with the raising of the plants from seeds, their general cultivation and flowering periods. At the next meeting, to be held on March 19, Mr. W. R. Phillips, Kennels, Stanmore, will deliver an address on the "Cultivation of Root Crops."

LIVERPOOL HORTICULTURAL.

A special general meeting of this society was held on the 19th inst. for the purpose of electing a secretary in succession to Mr. H. Sadler, who has filled the office for the past 15 years. Mr. W. Mezer, occupied the chair. The name of only one candidate was submitted, Mr. W. S. Peet, 36, Dale Street, Liverpool, a chartered accountant, and he was unanimously appointed.

GARDENING APPOINTMENTS

Mr. B. Savage, for the past 18 months with Messrs. CUTBUSH AND SON, The Nurseries, Barnet, and previously for 12½ years with Mrs. E. RIDER COOK, Woodford Green, as Gardener to W. H. BROWN, Esq., Harts, Woodford Green, Essex. [Thanks for 1s. for R.G.O.F. box.—EDS.]

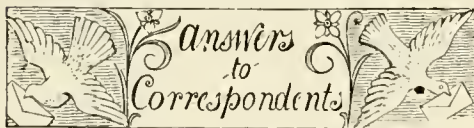
Mr. H. C. Lewis, for the past 2 years Second Gardener at Derryswoad, Womersley, Surrey, and previously at Greenlands, Henley-on-Thames, as Gardener to A. D. HART, Esq., Charnwood, Melbourne, Australia.

Mr. C. Brookes, for nearly 3 years Foreman at St. Osyth Priory, Colchester, Essex, as Gardener to Mrs. FAUDEL PHILLIPS, Mapleton, Edenbridge, Kent.

Obituary.

JOSEPH TOWELL.—The *Florists' Exchange* records the death of Joseph Towell on January 26, who was born in County Down, Ireland, May 24, 1848. He left school at the age of fourteen and worked three years in the gardens of the Marquis of Downshire; thence he went to East Hempstead Park, and later worked in many private and commercial establishments. Mr. Towell settled in the United States in 1872 and engaged himself as a gardener for several years, holding positions in New York, Newport, Long Island, Staten Island and Canada. In 1878 he secured employment in the Bellevue Nursery, U.S.A., which he managed until 1880, when he bought the business, operating the same until about 1910. As a wholesale grower he shipped largely to New York, and he held at one time the best retail store in Paterson.

JOSEPH FELS.—Our readers who are familiar with the work of the Vacant Land Cultivation Society will learn with regret of the unexpected death at the age of 61 years of the founder and president, Mr. Joseph Fels, who succumbed to an attack of pneumonia on the 15th inst. at Philadelphia, U.S.A. In our issue for May 15, 1909, p. 312, will be found particulars of the operations of the society in the Metropolitan area, where there are numerous instances in which vacant land awaiting the enterprise of the builder has been brought into a state of cultivation under the direction of the superintendent, Mr. R. Lewis Castle. Not only have the sites been much improved in appearance, but the gardening operations have provided remunerative employment for men who would otherwise be out of work. In 1905 Mr. Fels acquired an estate of 1,300 acres at Hollesley Bay, which he placed at the disposal of the Central (Unemployed) Body for the formation of a labour colony for the unemployed; and he afterwards bought 600 acres of land at Maylands, Essex, for a similar colony.



APRICOT TREE ATTACKED BY MAGGOTS: A. G. S. P. The caterpillars are those of the magpie moth, *Abraxas grossulariata*; all of them are immature. The best remedy for this pest is to spray with either Paris green or arsenate of lead.

BONE MEAL: A. P. This manure would benefit the Tomatoes and Chrysanthemums. It should be used at the rate of 1lb. to each barrowful of the potting soil, or 14lb. to a cartload.

ERRATUM.—In the note on perpetual-flowering Carnations at Lynwood Nurseries, Rayleigh (p. 127), the number of plants in one house grown on benches should read 15,000 instead of 1,500, as printed.

GLASS FOR A GREENHOUSE: T. G. The clear glass would suit the plants best, but if the untinted, rolled glass is not too dense this may be used. One advantage of the latter is that during very bright weather it would not need to be shaded, but you must remember that there are more dull days in a year than sunny ones.

LADY GAY ROSE: E. P. It is very natural to find a difficulty in accepting Crimson Rambler as a parent of Lady Gay. There seems little or nothing about the plant to render this probable, though in dealing with hybrids it is often the unexpected that happens, and this parentage is believed to have been stated with authority; at least, it is given by Mr. Daniel, who has made a special study of the parentage of Roses. The distinctive characters botanically of *Rosa multiflora* and *R. Wichuraiana* are as follows:—

<i>ROSA MULTIFLORA.</i>	<i>ROSA WICHURAIANA.</i>
Thorns frequently in pairs.	Thorns almost always scattered.
Leaflets rather rough, usually more or less pubescent, lighter green than in <i>R. Wichuraiana</i> .	Leaflets always glabrous, smooth and shining, smaller than in <i>R. multiflora</i> .
Stipules very characteristic, deeply pectinated, the teeth longer than the leaf-like part of the stipule is broad.	Stipules, with fine teeth, not longer than the leaf-like part of the stipule is broad.
Stylar column usually glabrous.	Stylar column often hairy.
Stems upright at first, arching later, strong, rigid and brittle.	Stems, creeping along the ground, lax and flagellate, and easily bent or twined in any direction.

Tried by these tests no one would connect Lady Gay as it has been distributed in this country as a multiflora, but it would be placed without hesitation among the *Wichuraiana* group. We must not expect to find any of our garden forms, which are mostly hybrids, possessing exactly the typical characters of the species; it will always be a case of greater or less. For instance, in *Crimson Rambler*, a multiflora hybrid, and not very far from the type, thorns are seldom noticed in pairs. Lady Gay, however, possesses so many of the qualities of the *Wichuraiana* type that Dr. Williams was justified in classing it among the *Wichuraiana* hybrids. We believe that he has now admitted *Hiawatha* and *Excelsa* to the same group.

NAMES OF FRUITS: W. Manning. Apple New Bess Pool.—J. A. J. B. Apple Royal Somerset.—G. W., Brandon. Ashmead's Kernel.—H. A. Gros Fenouillet.—J. I. S. 1, Reinette du Canada; 2, Calville St. Sauveur; 3, D'Arcy Spice syn. Spring Ribston; 4, Waltham Abbey Seedling.

NAMES OF PLANTS: A. J. W. *Brunfelsia calycina* var. *Macrantha*, also known in gardens as *Franciscea*. Insert cuttings of the ripened growths at once, using only those which have not started into new growth, as these form the best plants. Cuttings are also easily rooted in the autumn if ripened growths are placed in a sandy, peaty soil in a close frame furnished with brisk heat. *Brunfelsias* are best treated as stove plants during their growing period, and may be transferred to an intermediate house during the late summer and autumn.—J. W. R. *Dendrobium Pierardii*.—Constant Reader. The Orchid is *Dendrobium speciosum*, an Australian species, which may be grown in any warm, sunny greenhouse, fruit-house or conservatory. The tree is *Cornus Mas*. *Asparagus plumosus* grows well in almost any situation, and should be potted in turfy loam.—I. M. 1, *Dendrobium cretaceum*; 2, *Dendrobium Parishii*; 3, *Dendrobium sauguiolentum*; 4, *Odontoglossum Lindleyanum*.—Constant Reader (J. C.). 1, Probably a leaf of *Asarum canadense*. Send when in flower; 2, *Anemone Hepatica* varieties; 3, *Libonia Penrhosiensis*; 4, *Nepeta (Glechoma) hederacea variegata*; 5, *Pelargonium Little Trot*; 6, *Hibiscus Rosa-sinensis Cooperi*. G. H. S. 1, *Cupressus filifera plumosa*; 2, *C. Lawsoniana lutea*; 3, *C. filifera plumosa aurea*; 4, *C. pisifera squarrosa*; 5, *Cryptomeria elegans*.

OPPORTUNITIES FOR GARDENERS IN AUSTRALIA: G. Howell. We submitted your enquiry to our valued correspondent, Mr. Gilbert Errey, of Victoria, Australia, who replies as follows:—"The possibilities of gardening employment in Australia depend largely upon the qualifications and tastes of the applicant. The general demand is for men accustomed to the climatic conditions, which differ greatly from those in England. The main features of outdoor gardens in Sydney are shrubs—par-

ticularly Roses—and bedding annuals or foliage plants, such as *Iresine* and *Alternanthera*. Hardy herbaceous perennials, as known in England, are grown in a "bush" house or greenhouse. Bulbs for spring flowering are popular, but Tulips and a few others requiring cooler conditions are seldom grown. The members of the *Amaryllidaceae* are much in evidence. Wages vary from £3 or £4 per week for a very limited number of head gardeners, who are also expert propagators; to '20s. per week and found' for labouring work in the garden. Many gardens are managed entirely by 'jobbing' gardeners, who work for four hours upwards per week at one garden and elsewhere for the rest of the week, frequently keeping six gardens in order by giving one day per week to each. Wages for these 'jobbers' usually average about 8s. to 8s. 6d. per day of eight hours, with no board or lodging—an occasional popular and expert jobber commands 9s. and 10s. per day. Should a good grower of vegetables and flowers consent to go several hundred miles out of Sydney and endure the bush life of a squatter's homestead (10 to 25 human beings centred in an area of perhaps 50 to 1,000 acres) he usually receives good treatment, with £80 to £100 per year with board and lodging. I would advise those who land to make personal application to the secretary of the Horticultural Society of N.S.W., to the Curator of Botanic Gardens, Sydney, or to such a firm as Messrs. A. Yates and Co., 184, Sussex Street, Sydney. You could insert an advertisement in the Sydney daily papers stating your qualifications, experience generally, and the position desired. The cost would be from 2s. 6d. to 5s., according to the space taken and the number of insertions."

PARADISE STOCKS: Constant Reader. These are shallow rooting and more or less dwarfing stocks, obtained from layers, as distinguished from seedling Crab and free stocks, which have tap roots, and are conducive to more vigorous growth in the trees grafted or budded upon them. There are several types of the Paradise stock. The French Paradise is of too dwarfing a character for commercial plantations, and is to be recommended only for use in gardens where space is limited. The less dwarfing English broad-leaf Paradise is recommended for bush trees in large orchards, though for some varieties of Apples and for standards the Crab or free stock is preferable. The English Paradise is a selection, probably from the *Doucin*, a stock intermediate in vigour of growth between the French Paradise and the Crab or free stock. The Crab is the wild Apple, and the free stock is raised from the pips of Apples, usually obtained from cider mills, but sometimes from a particular variety.

POTATO: S., Stepney. No disease is present in the tubers. The superficial scab on the surface would not account for the smell when the Potatoes are cooked.

PRIMULA OBCONICA UNHEALTHY: W. B. The injury is caused by a fungus. Spray the plants at intervals of four days with a solution of liver of sulphur—1 oz. in 6 gallons of water.

RICHARDIA (ARUM) LEAVES UNHEALTHY: C. H. The injury to the leaves is not due to fungous disease or insect pests. The cause of the trouble must be looked for in some wrong cultural treatment.

SOIL FROM A VINE BORDER: W. B. The mycelium present in the soil is that of the vine-root fungus. Soak the soil thoroughly twice at an interval of a fortnight with a solution of sulphate of potash. Lift the soil with a fork to allow the solution to enter freely: the specific should be used at a strength of 1 lb. in 10 gallons of water.

Communications Received.—G. Bates—F. S.—R. T. L.—G. H. S.—A. G. Soames (Your letter has been forwarded)—T. J. R.—G. L.—A. C. H.—F. J. C.—W. G.—T. S.—H. D.—T. W.—E. G. A.—A. S. G.—A. E. T. R.—T. A.—G. C.—W. T.—J. B.—B.—W. E.—Pond Salopian—G. H. M.—J. T. B.—J. G.—R.—A. M.—J. D.—E. F. H.—A. G.—G. A.—A. C., Faversham—R. E. A.—T. O., Cornwall—O. S.—A. J., Harlow—E. F. G.—M. and Co.—R. P. B.—S. A.—T. J. S., Ireland—J. M. B.—G. D.—E. P.—G. H.

THE
Gardeners' Chronicle

No. 1,419.—SATURDAY, MARCH 7, 1914.

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THE MARKET FRUIT GARDEN.

LAST month was my fifteenth February in this place, and the rainfall of 4.02 inches has but once been equalled during the preceding fourteen years. That was in 1910, when the measurement was 4.28 inches. The only other very rainy Februaries were those of 1900, with 3.46 inches, and 1904, with 3.56 inches. In only two other years was the February measurement so much as 1 3/4 inch, namely, 1906, when it was 2.67 inches, and 1912, when it was 2.21. The lowest records were 0.21 inch in 1909 and 0.69 inch in 1905. The February average for the fourteen years ended with 1913 was 1.89 inch, so that the quantity last month was considerably more than double the average for the period named. All but a trifling proportion of the fall occurred in the second and third weeks of the month. The fall at my station may be compared with 3.62 inches for the South-East of England generally. For other districts into which the United Kingdom is divided by the meteorological authorities the figures are as follows, in inches:—Scotland N., 5.87; Scotland E., 2.67; Scotland W., 5.45; England N.E., 1.16; England E., 1.76; England N.W., 3.23; England S.W., 4.58; England extreme S., 3.89; Ireland N., 5.56; Ireland S., 6.32.

In an average of seasons February is one of the driest months in the year, in spite of its unfair nickname, "fill-dyke." Its average rainfall in thirty-five years at Brixton was the lowest for any month but March.

LABOUR LOST.

Unfortunately, my first trial of lime-spraying, so far as Plum trees are concerned, was to a very great extent annulled by the daily or nightly rainfall of February 11 to 21. The work was begun on February 7, and rain fell on the following day. Then we had two dry days; but afterwards rain fell a few hours after each instalment of the spraying, except at the last, although it was carried on only when there seemed to be some hope of fine weather up to the 21st. Consequently a large proportion of the lime was washed off the trees, although the wash was as thick as it could be used, 1 1/2 cwt. of lime to 100 gallons of water being the proportions. The trees from bases to tops were ghostly white when freshly done, but only a few are white now. The worst of lime is that it must be used soon after its arrival, and, as mine came from Buxton, it was necessary to have four tons at a time to avoid the extremely high rail rate per ton charged on less than a truckload. Moreover, it was sent a week sooner than it was directed to be despatched. Lime does not stick on the trees nearly as well as lime-sulphur, and if, as *E. M.* says on page 106, it has no effect in preventing aphid attack, I shall never use it again. Lime-sulphur is much less trouble to use, and, if fungicidal action is of any use in February or March, it has some action of that kind, whereas lime has practically none, while the former is superior to the latter for clearing moss off the trees. By the way, if lime is not a preventive of aphid attack, it is not easy to imagine why *E. M.*'s neighbour applies it when his Plums are bursting into bloom. If it does nothing but cleanse the trees of moss it might as well be applied in winter as in spring. I should be sorry to use it on trees in blossom, as it seems entirely improbable that it can fail to impair fertilisation. A thick coat of lime over the sexual parts of the flowers must interfere to some extent with the spreading and reception of the pollen, by the agency of insects or otherwise. Lime-spraying of young Apple trees will be deferred to a later date. The instruction of those who recommend lime-spraying is to apply the wash when hot. As a matter of fact, this is impossible without constant relays of boiling water for mixing, which would be almost impracticable in field work. Although the Buxton lime is the best that can be had, and generates great heat when slaked, dilution with cold water reduces the temperature below blood heat before a freshly-prepared tub of the wash is half

used. In my case the mixer kept only one tub ahead of the sprayers, and yet the wash, when it emerged from the machines, was quite cool to the hand.

ONE GREAT ADVANTAGE IN LIME-SPRAYING.

In the case of soil deficient in lime there is one great advantage in the use of lime-wash. It requires fully three gallons of the wash to thoroughly cover two mature trees of moderate size, or one very large tree, and each gallon contains 1.68lb. of lime. As my Plum trees number 300 to the acre, the application was over 7 3/4 cwt. per acre, allowing two trees to the three gallons, for, of course, sooner or later, all the lime applied is washed on to the ground. Such a dressing annually would be ample. But, as all my land has been very liberally chalked (about 15 tons per acre a few years ago), the advantage does not occur in my case. The quantity would be very much less in an orchard of young trees.

LIME-SPRAYING WITH KNAPSACKS.

A friend who has had experience in lime-spraying informed me that the work could not be done with knapsack machines. A trial made before ordering a large quantity of lime, however, proved that this is not the case. By wiring and soldering a small piece of brass plate on to a plain jet in such a way that it acts as a spreader my pneumatic knapsacks were found capable of spraying trees fifteen feet high, a seven feet lance being used with each. There is nothing in the jet to get blocked, and the spreader is turned up at just the right angle to catch what would be a solid stream, diverting it in proper spray form. Any ordinary nozzle would be frequently blocked by thick lime-wash, although, of course, the stuff is passed through a fine sieve into the tubs. The piece of brass plate can be bent by pliers to precisely the right angle for making the best spray. The size of the spreader above the part where it is first wired and then soldered on to the jet is 7/8 inch in length and 5/8 inch in breadth. It has its sides very slightly turned up.

HOME-MADE LIME-SULPHUR.

As factory-made lime-sulphur has increased greatly in price since the first sample used in this country was prepared for me, and since manufacturers will not take the barrels back or allow for them, I decided that I would make my own with some of the Buxton lime ordered for lime-wash. A 25-gallon portable boiler was obtained for the purpose, and some empty paraffin casks. The object was to make 20 gallons of the concentrated fluid in one boiling, two lots to fill, or nearly fill, a barrel. The plan of making is as follows:—Place 24lb. of fresh lump lime in the boiler, then beat 48lb. of flowers of sulphur into a paste,

breaking all lumps, dilute the paste and pour on to the lime to slake it, stirring thoroughly. The fire should be lighted as soon as the liquid is poured on to the lime. When the lime has slaked fill the boiler up to 4 inches from the top and boil for one hour, stirring frequently while the stuff is getting to the boiling point, and occasionally afterwards. An old spade is the best tool for stirring. As there is a good deal of loss from evaporation extra water has to be added after boiling has gone on a little while to keep the quantity up to 20 gallons. Great care is necessary to keep the stuff from boiling over. A 30-gallon boiler would be better, for then 25 gallons could be put into it immediately after the lime had been thoroughly slaked, thus avoiding the arrest of boiling caused by adding more water. This quantity would waste to about 20 gallons. There is hardly any sediment when the proportions of

to exclude air. If a draw-off tap is fixed in the boiler it should have a strainer over its opening into the boiler, for otherwise it will be blocked by the lime or sulphur.

A BACKWARD SEASON BECOMING FORWARD.

If the extraordinary mildness of February is not to be followed by a spell of severity, the comparative backwardness of vegetation will be transformed to at least moderate earliness. Last season was a very early one, and comparisons of a few developments of this season with those of 1913 show great differences. This year Snowdrops and yellow Crocuses were both in full blossom in my garden on February 15, as compared with January 28 last season. The double yellow Daffodil was only in bud at the end of February, whereas it was in full bloom on February 14 last year. The Almond, now dormant, was in full bloom at the end of January in 1913, showing phenomenal forwardness. For Elder

ORCHID NOTES AND CLEANINGS.

HYBRID CYPRIPEDIUMS.

MR. E. HILL, gardener to F. J. O. Montagu, Esq., Lyndford Hall, Mundford, sends blooms of four fine Cypripediums raised by him, as follows:—C. Master Andrew (chrysotoxum × insigne Harefield Hall), as large as, and lighter in colour than, C. insigne Harefield Hall. Petals yellowish veined with purple. Dorsal sepal white with rose-purple spots.

C. Rosemary (Hera × aureum Oedippe), with large dorsal sepal flushed and spotted with dark rose colour. The petals and lip are coloured yellow, tinged with chestnut-red.

C. Tracyanum aureum (aureum Surprise × Leeaenum Clinkaberryanum), a fine flower, following C. aureum Surprise in its clear, light yellow tint and clear, white upper part in the dorsal sepal.

C. nitens-Leeaenum, a pretty variety with white dorsal sepal.

All the plants show evidence of remarkably good culture.

ODONTIODAS AND ODONTOGLOSSUMS AT HAYWARDS HEATH.

THE great value of these beautiful Orchids for supplying bloom all the year round is well shown in the many houses devoted to them in Messrs. Charlesworth's Orchid Nursery at Haywards Heath, which is never without a good show of bloom. In the Odontioda house are thousands of spikes in all stages of development, making a bright show of varied tints of scarlet, red, and red and white. There is also a great show of bloom in the Odontoglossum house, the blotched, home-raised *O. crispum* being remarkable in two ways—in that the blotched forms outclass the imported varieties, and the perfect shape, fine substance, and clear white of the white forms are far better than importations can give. In all classes of hybrids here many interesting lessons in variability and heredity, as well as in seed-raising and cultivation, are to be learned.

HIPPEASTRUMS FROM SEED.

THE flowering period, when the plants are giving a wealth of colour, is the best time to mark Hippeastrums for seed production. The selection will depend on the strength of the plant, and what colours, and whether selfed or striped, are preferred. If the strongest plants are selected, the result will be large and well-filled pods of seeds, from which strong seedlings may be expected.

It is a good practice not to allow more than two pods to ripen on each plant. Should any particular flower be fertilised by its own or other pollen, it is advisable to enclose the whole inflorescence in a piece of muslin to prevent bees or other insects from carrying foreign pollen to the stigma. After fertilisation has taken place the pods will soon begin to swell until they burst and expose their black seeds. These are then ready for sowing, and the sooner this is done the better, their vitality is stronger and they germinate more quickly; the result is stronger plants.

The seeds should be sown in a well-drained pan filled with soil consisting of loam and leaf-mould in equal quantities, first passing these ingredients through a $\frac{1}{2}$ -inch sieve, and adding sufficient sand to ensure porosity. The soil should be made moderately firm, the seeds sown on the surface about $\frac{1}{2}$ -inch apart, and covered lightly with the same compost. Give a good watering with a fine-rose can, and, if possible, plunge the pan into bottom heat, placing a square piece of glass over it to prevent excessive evaporation. Shade the pans until the seedlings appear, which will be in about a month's time. After they



FIG. 71.—ODONTOGLOSSUM COLOSSUS: SEGMENTS WHITE, WITH PURPLE BLOTCHES.
R.H.S. First-class Certificate, February 24, 1914 (see p. 154, ante).

lime and sulphur are as stated above, but there would be a great deal if a larger proportion of lime were used. The density of the fluid when cool should be not less than 31° as indicated by the Banmé hydrometer, or 1.2719 on the ordinary specific gravity instrument. The former is much easier to read. One gallon of the concentrated fluid of the density named or a little higher can be diluted with 12 gallons of water for a winter wash, and with 40 gallons for summer spraying. The cost of the concentrated fluid is under five-pence per gallon, including labour and the little coal used; but this does not allow for interest on the cost of the boiler and barrels or depreciation. At any rate, sixpence per gallon would be ample to allow to cover everything. In the long run there would be some economy in using a 50-gallon boiler in order to fill a paraffin barrel in one operation. But for anyone needing only ten to twelve barrels in a season, the expense of the larger size would hardly be warranted. The barrel should be filled quite up to the bung-hole

leaf the comparison is one-quarter expanded on February 15, against January 31. Lilac leaf-buds were bursting on February 28 this season, against February 14 last year. Forsythia was in full leaf at the end of February in 1913, but was not a quarter out at the end of last month, and the difference in *Deutzia scabra* is nearly as much. Gooseberries were beginning to burst their buds in sheltered spots on February 21, a fortnight later than they were last year, and the cases of Red Currants and early Pears are similar. Black Currants are exceptional in being a little forwarder than they were a year ago. Plum buds were no more swollen at the end of February last than they were at the end of January last year. The buds of early Apples are swelling suddenly at the time of writing, bidding fair to be as forward shortly as they were last season. Raspberry leafage was a quarter out last year on February 15, but only a few buds are hursting at present. *A Southern Grower.*

have made six months' growth they should be taken out carefully and transferred to boxes. I use champagne or claret boxes, which are about 10 inches deep. They are drained, and over the drainage material are placed turves, grass downwards, and then a layer of small bones, on which a compost of two parts of loam, manure from a spent mushroom bed and sand is placed and made firm. By planting the young plants out in these boxes much time and labour are saved, for the seedlings take about three years before they reach the flowering stage, and hence if this practice be adopted they require less handling. For the first twelve months these should be kept growing and not allowed to rest, keeping them well supplied with moisture both at the roots and overhead.

At the end of the two years they should be potted in 4 and 5 inch pots. Some of the strongest plants will then flower. Those in bloom should be removed to a well-ventilated

bed manure, charcoal, and a good dusting of bone-meal and silver sand. The size of pots must be governed by the size of the bulbs, which generally are 6 inches. The plants must be placed back again in the hot-bed to encourage root action, and a humid atmosphere must be maintained by damping down the house twice a day. Great care must be exercised with the watering can till the plants have recovered from their disturbance. Once the pots are filled with roots and growing freely, a little liquid manure will be beneficial. Whilst the plants are in bloom they should be gradually removed to a well-ventilated house having an intermediate temperature. After they have finished flowering they must be replaced in heat to complete their growth and to build up new spikes for another season. Manure water in a weak solution may be given two or three times a week, and a humid atmosphere must be maintained, for although the plant loves

NOTICES OF BOOKS.

THE HERBACEOUS GARDEN.*

It is probable that the old-fashioned hardy plantsmen who half a century ago composed the glowing borders in the Countess of Home's garden at Bothwell Castle, and those of Lady Eleanor Balfour at Newton Don, congratulated themselves on having attained almost to perfection. Yet those who can remember the glory of these and of a few other gardens and the stages through which hardy plant gardening has since been passing will experience much pleasure in dipping into the present volume to find the case for the herbaceous gardens of today presented in a novel and fascinating manner, and will easily forgive the clever authoress its production, notwithstanding that it adds another to the perplexingly large number of recent volumes on the subject. Mrs. Martineau's reason for writing is, moreover, a valid one.



[Photograph by R. A. Malby.

FIG. 72.—CATTLEYA TRIANAE VAR. HYDRA WITH 96 FLOWERS: FROM THE COLLECTION OF LIEUT.-COL. SIR GEO. HOLFORD, K.C.V.O.
R.H.S. Cultural Commendation, February 24, 1914 (see p. 153, ante).

house having an intermediate temperature, and they must be afforded water carefully, avoiding a too wet condition of the soil. The bloom must also be shaded from bright sunshine.

In the case of old bulbs during the resting period, say, from November to January, no water is required. Indeed, one great advantage these plants possess is the economical method in which the bulbs may be stored during the winter in odd corners under stages, etc., so long as they are exposed to a fair amount of light and air. By bringing the plants in batches into heat the flowering period may be extended from February to the end of May. When starting the plants into growth it is an advantage to plunge the pots into bottom heat of 65°, but the overhead temperature must not exceed 55°. The plants must not be re-potted until the flower spikes are just showing, which will be about a fortnight if a proper amount of moisture is afforded by syringing. The bulbs should be shaken out of their old soil, and re-potted into a compost consisting two parts turfy loam, one part mushroom-

light, it cannot stand the direct rays of the sun at midsummer. Towards the end of August growth will have well-nigh ceased. The plants then should be removed to a cooler temperature, well exposed to the light to ripen the bulbs, which is of vital importance to the well-being of next season's flowering.

Properly treated Hippeastrums, or Amaryllis, as some people call them, will increase in size and strength of flower, often throwing up two spikes, each bulb giving off one or more offsets every year, which, when large enough, may be detached and grown on as advised for the seedlings. E. F. Hart, Hockley House Gardens, Twyford, Winchester.

PUBLICATIONS RECEIVED.—*My Garden In Spring*. By E. A. Bowles. With preface by Reginald Farrer. (Edinburgh: T. C. and E. C. Jack.) Price 5s. — *The Banana*. By W. Fawcett. With an introduction by Sir Daniel Morris, K.C.M.G. (London: Duckworth and Co.) Price 7s. 6d. net.

She has always been a gardener, has made, or rather built up, several gardens, and for a series of years has, with the help of a sufficient staff, successfully managed a moderate-sized garden. Hence she finds herself in a position to help those who, wishing to help themselves, need a volume such as this to point the way and guide their steps along the road to success. Admittedly it is not a book for gardeners, but primarily for amateurs—garden lovers—and much that a gardener writing for gardeners would include is not to be found in its pages. Still, the gardener who works for his living will gratefully pick out choice morsels to strengthen him in the pursuit of the aesthetic. The authoress has a predilection for gardening in miniature, dividing small spaces into spaces still smaller to make believe that an enclosure is larger than it is. Such devices will not appeal

* *The Herbaceous Garden*. By Alice Martineau, with an introduction by W. Robinson. (London: Williams and Norgate, 14, Henrietta Street, Covent Garden, W.C.) Price 7s. 6d. net.

to those to whom the trivialities of Pope's villa garden are as repugnant as the display of wealth apparent in some of our modern gardens.

Though the book has its chapters and headings, the narrative is somewhat inconsequential, and every now and again the reader finds digressions on current or obscure subjects. "Kew—a mixture of the highest scientific research and the tea garden," where "there is never anyone to explain things," is compared with Bagatelle in France, where "you will find someone willing—nay, anxious—to pour out rivers of knowledge." The French, too, are more to be admired in the use of trellis-work than we. Mrs. Martineau's views on gardeners and their emoluments—another digression—will be received with approbation by the men for whom she pleads. The subject is discussed even more sympathetically than it is in one of Miss Jekyll's early books, which is saying a good deal; and it is interesting to have the expressed opinion of the authoress that her best gardeners have been foremen from big places who have stayed a few years and then passed on to higher and better-paid positions. There is nothing new in this, though young men might lay it to heart and keep it in mind that many well-to-do gardeners have started, like the writer of this review, in a small but well-done garden, and thence to better things. Her one lady gardener, by the way, failed, not through lack of push nor through laziness, but from a deficiency of practical experience. Probably some of the wealthy people who are sinking fortunes in stone and concrete and hundreds of pounds in rockery stones and pavements may be induced by this lady's remonstrances to reconsider and revise the scale of remuneration of their gardeners.

The chapters on "Colour" and "The Mixed Border" are rich in material, and much of this material is new, or at least placed before the student in a new way. I should not care to assert that the chapter on colour is exhaustive, but so far as it goes it must be helpful to those whose training in the colour sense is deficient or has been hitherto neglected. Take these for examples:—"Always remember that the simpler the scheme of colour the more effective it is." "Clear blues should be kept together, and grey or purple blues must not be mixed with them" (an extremely important pronouncement). "Too much white in a border looks spotty, and looks best in a breadth by itself." Concerning "form," she remarks, "It is well to classify mentally the upright, literally spiral growth of some in contrast with the branching or massive forms of others." How important this is may be seen almost any day in gardens where the form of the individual has not been considered in the planting. On the whole, I should be inclined to pronounce the above-named chapter the most important in the volume. Other chapters deal briefly with "Annuals and Bulbs," "One-colour Gardens," "Massing of Distinct Species," "Spring and Autumn," and "My Herbaceous Garden," a short description of which is given, along with details of planting. What are called borders—60 and 52 by 12 feet—are really oblong beds, and the person who has to deal with borders five or six times the length will note how much easier it is to arrange those of Mrs. Martineau than his own. There is much suggestive matter relating to the appropriate furnishing of the border which will be most useful, not only to the tyro but also to those on the outlook for novel combinations. Here and elsewhere in the volume are diagrams showing how the plants are arranged, but, as usual, they are of but slight value. The second part is devoted to an alphabetically-arranged list of plants, with cultural and descriptive remarks, and subsidiary lists of the annuals, blue flowers, Phloxes and Delphiniums, which the authoress holds to be indispensable to the effective furnishing of a garden. The

volume is effectively illustrated by a number of excellently-produced reproductions of garden scenery, remarkable for their softness of expression, and by one or two coloured illustrations. Here and there throughout the text mistakes occur. One such refers to Asters thus:—"A very good variety was Harpur Crewe, but since Climax was introduced, with a flower twice its size and of better growth, there is now no reason to grow the former." The present writer threw out Harpur Crewe years ago for a better *white*, but how it could compete or compare with Climax, a light-blue variety, is not obvious. B.

ALPINE GARDEN.

CROCUS SIEBERI VERSICOLOR.

SOME flowers are like a choice work of art which only the connoisseur can appreciate, and this applies to the exquisite *Crocus Sieberi versicolor*. The variety *versicolor* is recognised by the high canonical authority for the *Crocus*-lover—Maw's *Monograph of the Genus Crocus*—a perfect source of delight to those who possess it. Still prettier than the presentations of *Crocus Sieberi versicolor* in that *magnum opus* is the flower itself. Words fail to describe its beauties, but I will fall back on Maw's description. He says: "The variety *versicolor* is an extremely beautiful plant, the segments being variously striped, like a *Picotée*, with purple and white, which blend into the bright orange of the throat." My plants flowered in February, and the blooms were a delight indeed to examine, either when closed or open. I grew the plant many years ago, but lost my original stock when I removed to my present garden. S. *Arnott, Dumfries.*

CANADA.

HORTICULTURAL OPPORTUNITIES.

A RECENT advertisement in the *Gardeners' Chronicle* from a Canadian firm offering steady garden work at an attractive figure suggests a few thoughts from one who has worked in horticultural circles recently in the Queen City of the Dominion, Toronto. Whether the practical gardener should emigrate depends upon the man himself. There is no chance whatever for anyone who does not bring to bear upon his work, as in England, common sense, downright earnestness, and a willingness to do his level best to push forward the interests of his employer. Horticulture generally is making great strides in the Dominion, especially in Toronto, and things move quickly. Great scope is offered to those with energy and some capital in the direction of market gardening. Toronto, though possessing a population rapidly approaching 500,000, is behindhand in matters relating to the growth of vegetables for market, the most familiar types, such as Lettuces and Spinach, being sold at prices that place them outside the means of those with moderate incomes. Hence well-directed enterprise in this direction should prove remunerative.

Market gardens are, however, already springing up in districts outside the city, and in the course of a few years it is to be hoped that a greater variety of good vegetables will be forthcoming at reasonable prices to help to reduce the present high cost of living. There seem to be an absence of skilled labour, and naturally much of the cultivation has to be accomplished under glass to keep anything like pace with the demand, especially during the long winter months. As in England, so in Canada: it is the produce that comes in before the same kind is ready in the open air that pays best, and in the direction of early vegetables, for example, Mushrooms, Seakale and Asparagus, the possibilities of realising excellent profits are very promising.

And it may be well asked, Why is this? In the first place, it has to be remembered that Canada is, so to say, a new country, and until comparatively recent times gardens were not seriously considered; but an awakening has come. The importance of vegetables in the dietary is now realised, and the use of gardening as a pastime for the sake of recreation and profit is gaining many advocates.

The cultivation of Mushrooms and Asparagus, to single out only two vegetables, is in its infancy, but a quick demand will exist when there is any supply at a reasonable figure. Horticulture under glass is reaching, as it has reached in England, something of a fine art. In St. Catherines, a beautiful city in the Niagara fruit belt, by the shores of Lake Ontario for the most part, an enterprising market gardener tills the soil under his huge glasshouses; it is, indeed, market gardening under cover and a source of great profit. Every effort is being made to make the cultivation of good vegetables a real industry, and for the furtherance of this skilled labour is requisite, with the possibility, when a man is determined to succeed, of his making a quick start for himself.

The experience of a year or so will suffice for the grower to accustom himself to the different conditions of temperature and ways of cultivation which obtain in Canada. Indeed, the differences are not great, though it need scarcely be said that the forcing of vegetables in such a winter as favours Canada demands constant watchfulness and patience. But a good price is willingly paid for good material, which, if it adds to the variety of things offered, means a greater reward for labour and skill expended. The emigrant, in whatever position in life he may be, must learn one thing, and that is to assimilate, remembering that in the land of his adoption he should make himself one with those born in the Dominion, and not stand apart and criticise as a foreigner the people and their ways.

The annual convention or meeting together in the Parliament Buildings, Toronto, of the Vegetable Growers' Association was an occasion of much enthusiasm over the progress of vegetable cultivation in this province, and there was a large attendance. The superb quality of English seed was referred to as one of the great factors in making this forward movement for finer produce in greater variety a reality. It is delightful to have English vegetables in the garden—the same luscious kinds that were enjoyed in the old country—and this is possible when the various kinds are grown in a way suitable to the altered conditions. A new vegetable garden on a farm about thirty miles from Toronto was filled with varieties from Carter and Co.'s splendid store in the city and the crops were remarkable. It is all a question of sowing at the right time, paying regard to succession, which is most important as growth matures with extraordinary rapidity, and preserving for winter use. Nothing save root crops—Parsnips, Beets and Carrots, and similar things—is available in winter. All else—unless forced, which makes them luxuries—must come from the preserved stock.

What has been written of vegetables is true also of flowers—solid progress everywhere, especially with Roses under glass, and an intense desire to acquire the most approved of novelties among the leading types, of which one may cite the Sweet Pea, a universal favourite, as an example. As I pointed out in a former note, the Rose is seen in many gardens in its latest development, the majority of the plants coming from the nursery gardens of Great Britain. The next few years will witness a great change, a gradual quickening of interest in everything that concerns the garden resulting in what is desired—beautiful surroundings to the home, spacious parks and recreation grounds (of which there are many already), and flower beauty everywhere, with an increasing trade with England. *Correspondent.*

THE GARDENS OF SERLBY HALL.

SERLBY HALL, the beautiful residence of Viscount and Viscountess Galway, is situated three miles distant from Bawtry Station on the

designated the East Garden, presumably so named because of its gentle slope eastwards. The plan adopted is gloriously unorthodox in design and execution. Conventional bedding-out, stereotyped floral mixtures, and the familiar row after row way of planting have no place

sections:—Scarlet and orange beds, with bronze foliage (2) (see fig. 75), blue and kindred shades (2), white (2) (see fig. 76), pink and rose shades (2), and 2 yellows. The first six mentioned are each 35 yards long by 10 feet wide; the pink borders are the same width, but not quite so long, and the yellow borders are 38 yards long and 4 feet wide. All the borders are in pairs, and excepting the yellows, which run *cat* horizontally right and left, are parallel with each other, with a grass pathway of 18 feet between. A low Yew-tree hedge about a yard high at the back makes a capital foil to the various plants. No colour arrangements are allowed to clash; too blatant colours are not tolerated, especially those in yellow shades, and the plants in the borders are not graded in height from back to front like galleries in a theatre, the aim being rather the preserving of a natural irregularity of effect.

At the bottom of this East Garden lie the rockery and semi-aquatic section, all together making four acres. The rockery, which is full of good things, is built facing an ornamental piece of water. To the right of the rockery, as one looks eastward, and linking it up with the aquatic part, is a great number of *Iris germanica* in three colours, the sight of which in flower, Mr. Turner said, "was truly gorgeous." Within the bog area two large batches of *Primula rosea* particularly attracted my attention. They looked healthy and vigorous, and had flowered profusely in their shady waterside quarters. Before leaving this delightful spot I should like to mention an extraordinary piece of work accomplished by Viscountess Galway and a friend. It is the hand-painting of trees and shrubs in two shades of green upon the high wooden partition which divides the water garden from another part beyond. The object of this painting was to give an effect of distance, an object which is in good measure unquestionably achieved.

We now pass to the kitchen garden section and glasshouses, but before entering my attention was directed to one of the outer walls covered



FIG. 73.—SERLBY HALL, YORKSHIRE, THE RESIDENCE OF VISCOUNT GALWAY.

Great Northern main line from London to York. The house, which is of a compact, solid appearance, is flanked on the west side by a finely-wooded expanse, which includes many noble Beech trees. The south and north fronts of the Hall give extensive views across the grandly-wooded park, while on the south lawn are two specimens of the Lebanon Cedar. Before the charms of the garden are described it may be mentioned that the Serlby estate and near surroundings are in the grip of a great coal-mining enterprise. I learned that some 60 acres of surface land had been acquired as a preliminary step for the sinking of a shaft and other preparatory work, one item of which is the building of 1,000 cottages.

The hugely terraced lawns of Serlby Hall are separated from the park on the north side by an ornamental lake, skirted on the lawn side by a mixed herbaceous border of some 150 yards length, while on the south side the dividing line is a most uncommon kind of balustrade work formed of semi-circular tiles, which have the appearance of large drain pipes cut in half, lengthways, and inverted row upon row, these in turn being capped with stone flagging. Adorning the top of this wall, spaced at certain distances between, stand a dozen or more examples of stone statuary, which together with the tiled parapet form an effective and imposing line of demarcation from the outer park grounds. I understand that Lady Galway was responsible for this novel and picturesque screen. On the opposite side of the same lawn, at the south front, we enter from near the mansion a massive brick wall and pillar pergola, with wooden crosspieces of a very substantial size (see fig. 74). It is 100 yards long, 8 feet wide, and 8 feet high at one end, but about 15 feet high at the other end, owing to a gradual fall of the ground over which it is erected. As may be expected, the masking of such a structure is no simple task, and many and varied climbers are requisitioned.

We now come to the most striking feature of Serlby Gardens, the hardy flower quarters,

here. Not even a plant of the Zonal Pelargonium, let alone a bed, is bedded out. The north side of this East Garden enclosure is bounded by a brick wall about 10 feet high and 150 yards long, clothed with wall shrubs and many climbers, including a number of



FIG. 74.—PERGOLA AT SERLBY HALL.

Roses; while running parallel with the wall, with a flagged walk between, is a splendid border of Lavender bushes about 140 yards long. Turning to study the chief borders of this garden more closely, we find they are 10 in number, divided into the following colour

with *Wistarias* for a distance of 100 yards; the sight of which in bloom may be better imagined than described. The extent of the kitchen garden is five acres, and this area is divided into two walled-in enclosures, making, by the way, with what has already been mentioned,

a vast amount of wall and training work. Big batches of vegetables, so necessary in large establishments, were in healthy evidence, most noteworthy among them were climbing French Beans, Scarlet Runners, and culinary Peas. Outside fruit is also strong at Serlby, especially Peaches and Morello Cherries. Concerning the

ADDITIONS AND ALTERATIONS AT KEW.

The following details of additions and alterations at the Royal Gardens, Kew, are supplied by the official *Bulletin* :—

RIVERSIDE AVENUE.—The work of providing a new screen of evergreen vegetation to hide the

NEW CHINESE RHODODENDRONS.—The large collection of Rhododendrons raised from seeds of Wilson's gathering, and obtained also from Messrs. Veitch, J. C. Williams, Miss Willmott and other donors, having become too large for nursery quarters, it has become necessary to provide space for them in the Ericaceae collection. This is situated on the western side of King William's Temple. One of the "spurs" of the mound on which the temple stands has been cleared of a nondescript mixture of trees and shrubs for their accommodation. There is still the large collection raised from seeds sent home by Forrest to be disposed of during the next few years. It seems probable that before the whole of the Chinese Rhododendrons and other new Ericaceae have been found permanent places most of the ground in this part of the gardens will have to be given up to them.

ROSE DELL.—The renewal of the Roses in this pretty feature of the grounds, which was begun last winter, has been completed. About 350 of the best free-growing or rambling Roses have been planted. The removal of a large sweet Chestnut that stood in the middle of the dell has given more room for planting and will admit more light and air.

"SEVEN SISTER" ELMs.—The remnants of two more of these famous Elms have had to be removed during the winter. The trees, once of very large size, had become reduced to mere fungus-eaten stumps a few feet high and dangerous to the public. There now remain three of the original seven, two of them lofty trees still vigorous, the other a stump with a propped-up limb on one side only. Judging by an engraving in the *Gardeners' Chronicle* of September 15, 1883, from a drawing by Fitch, six of these Elms were then in good condition. They appear as good-sized trees in an old eighteenth century engraving preserved in No. III. Museum, standing near the margin of George III.'s lake, which was filled up about 1814.

ADDITIONS TO ARBORETUM.—The most important contribution to the hardy ligneous collections during 1913 has been made by the pur-



FIG. 75.—BORDER AT SERLBY PLANTED WITH SCARLET AND ORANGE-COLOURED FLOWERS.

latter, Mr. Turner happened to mention that the young growths fruited just as well spurred in as they do when tied in. Apples, Pears, Plums, Figs, Raspberries, Gooseberries, Loganberries and Currants are also well represented. Apple Gravenstein was pointed out to me as being less frequently seen than others, though it is a most useful variety. Two other distinguishing crops in the kitchen garden were borders of single Asters (annuals) and Sweet Peas (see fig. 77). I have never seen a more glorious profusion of the latter anywhere. The rows totalled 150 yards in length, and were literally smothered in flowers at that late date—the third week in September, and disease had been practically unknown.

Looking around the glass-houses, the salient features proved to be Peaches among the fruits and Perpetual Carnations among plants. One other subject growing in the conservatory I must record, as it is seldom seen in such a splendid state; and that is *Luclia gratissima*.

Another most interesting feature in this twenty-acre garden is constituted by the two Mulberry trees. These trees were given to the Moncton family by Cardinal Wolsey. Hence they are of a ripe age, in witness thereof are the props and iron chains which support their declining years. The best example is eighteen to twenty feet high, supported by eleven posts. It covers an area of ten square yards, and is 8 feet 6 inches round the trunk at 18 inches from the ground.

In concluding this brief survey of Serlby Gardens it may not be inappropriate to add that, before taking charge here in June, 1912, Mr. Turner was general foreman at Lockinge Park, and had served previously in the gardens at Windsor, Penrhyn and Elvaston. C. T.

unsightly parts of Brentford from the view of visitors in the north-west part of the gardens, which was begun last winter (see *K.B.*, 1913, p. 51), is being completed. Owing to the number of large evergreens like Holm Oak, Holly and Yew that have been needed to make an imme-



FIG. 76.—"WHITE" BORDER AT SERLBY HALL.

PLANT INSPECTOR IN BRITISH EAST AFRICA.—Mr. HARRY BARRON SHEARPE, formerly a member of the gardening staff of the Royal Botanic Gardens, Kew, has been appointed Plant Import Inspector in the Agricultural Department, British East Africa.

diately effective screen of sufficient height, the work has been of an arduous nature—some of the masses of earth moved with the trees weighing four to six tons. Once planted, however, the belt will be not only increasingly effective but permanent.

chase from Messrs. Veitch of about 250 rare Chinese trees and shrubs collected by Wilson and Purdom. The impending dispersal of the collections at the Coombe Wood nursery made it imperative that Kew should acquire as many as possible of these before this lamentable but in-

evitable event happened. Many of the plants purchased were of species found by Wilson during his first journeys on behalf of Messrs. Veitch, which covered ground not since traversed by any collector. They have consequently not been again introduced, and some, not easy to propagate, are very rare in gardens. Many of the trees and shrubs are still under number, only the genus to which they belong being known. Among the more important ones obtained from Messrs. Veitch are:—*Cladrastis sinensis*, *Corylopsis sinensis*, *Actinidia Henryi*, *Eleutherococcus leucorrhizus*, *Diospyros armata*, *Meliosma Veitchiorum*, *M. Oldhamii*, *Pyrus Folgeri*, *Styrax Hemsleyanum*, *S. Veitchiorum*, and *Tsuga chinensis*. A tree of great interest is the true *Aesculus chinensis* of Bunge. Long known by name in European collections, this Horse Chestnut has not really been represented anywhere (except possibly by a single tree at Segrez, in France) until introduced by Purdom from North China. For many years the Japanese tree *A. turbinata* did duty for it on the Continent, and latterly it has been confused with the tree found farther south, in Hupeh, by

visit to Ireland in February. Among them were two seedlings of *Daphne retusa*, one of the rarest and most beautiful of *Daphnes*. Mr. T. Smith's remarkable nursery at Newry was visited at the same time and purchases made.

The most important contribution of seeds to the Arboretum were 449 packets, gathered by Mr. G. Forrest in South China. Some seeds of interesting species in North-West America were presented by Mr. F. R. S. Balfour of Dawyck.

Acknowledgments are due to Canon Ella-combe, Miss Willmott, the Hon. Vicary Gibbs and other amateurs for their willingness to contribute what they can towards making the national Arboretum as complete as possible.

The following trees and shrubs have flowered in the Arboretum Department for the first time:—*Berberis brevipaniculata* and *B. subcaulialata* (China), *Ceratostigma Willmottiana* (China), *Cotoneaster turbinata* (China), *Davidia involucrata* (China), *Deutzia compacta* (China), *Fatsia horrida* (North-West America), *Jasminum Beesianum* (China), *Meliosma cuneifolia* (China), *Prunus microlepis* var. *Smithii* (Japan), and *Rhododendron nigro-punctatum* (China).

Mrs. Charles Russell, last season's introduction of the Waban Rose Conservatories, Natick, Mass., has done well practically everywhere, and will be more planted than ever next season. As a single forcing Rose Irish Fire Flame has taken quite well. Mrs. Geo. Shawyer has also done well since being sent out by Mr. C. H. Totty, the *Chrysanthemum* expert.

Killarney Queen is enjoying a reign of wonderful popularity. Double White Killarney and Double Pink Killarney have in large measure taken the places of Killarney and the original white sport. Amongst yellows Mrs. Aaron Ward still leads in favour, followed by Sunburst and Lady Hillingdon. Other popular forcing Roses are:—Prince de Bulgarie, My Maryland and Radiance. The little baby polyantha, Mme. Cecile Brunner, also called Mignon and Sweetheart, long a favourite in California, has jumped into favour with the East and West, and is proving useful as a forcing as well as a bedding Rose.

NEW CARNATIONS.—About an average number of new Carnations are this season being offered in America. On the whole they are not equal to those offered in some previous years. None of the novelties secured 90 out of 100 points at the recent convention of the American Carnation Society in Cleveland. Matchless, a beautiful white of the largest size and splendid form, seems likely to take the place of White Wonder and White Enchantress, the two most popular whites grown at present. This variety is being introduced by the Cottage Gardens, Queens, New York, who have also sent out Mrs. C. W. Ward, our best deep pink, Alma Ward, and other sorts. Mr. Peter Fisher, Ellis, Mass., introducer of Mrs. Lawson, Enchantress, Beacon, Benora, and other good varieties, is giving us Gorgeous, reddish cerise in colour. This has been seen at the London and other shows. It is a big fancy flower, carried on very stout stems. Mr. Fisher will next season send out Alice, of a charming shrimp pink colour, freer flowering than Pink Delight, and of very good form. Ratten and Co., Tewksbury, Mass., are sending out Princess Dagmar, an immense deep crimson, the largest of this colour up to date. The Chicago Carnation Company is giving us Peerless Pink, a deep pink, in the way of Rosette, which latter has become quite popular. Philadelphia Pink, being sent out by S. S. Skidelsky and Co., Philadelphia, proved to be a great winner at the late Cleveland Convention; it is of a lovely warm pink colour, and is having an immense sale.

F. Dorner and Sons, Lafayette, Ind., have given us two very fine new yellows. As a rule Carnations of this colour have proved to be failures here, but Yellow Prince is as free as any other Carnation in commerce. Yellowstone is a larger variety, not quite so prolific. Their new Champion, scarlet, seems destined to be the future leader in its colour. At present Beacon is easily the leader, followed by St. Nicholas, Commodore and William Eccles. Messrs. Dorner have introduced some of the finest Carnations, including White Wonder, Pink Delight, Rosette, and Gloriosa. Miss Alice Coombs, from Mr. A. Roper, Tewksbury, Mass., secured a silver medal at Cleveland. It is intermediate between flesh and light pink in colour; a very large flower, beautifully formed. J. Leach and Sons, North Easton, Mass., are sending out Pink Supreme, a very pretty shrimp pink variety, a wonderfully free bloomer. Benora remains easily at the head of our white variegated Carnations. Enchantress has been largely dropped to make way for Pink Delight in the East, but in the West still holds its popularity. In spite of the great annual increase in the production of Carnations, they continue to sell well, and no decrease in their popularity is apparent. *William N. Craig, Brookline, Mass., U.S.A.*



FIG. 77.—SWEET PEAS IN THE KITCHEN GARDEN, SERLBY HALL.

Wilson. The latter has recently been distinguished as *A. Wilsonii* by Rehder. Bunge's *A. chinensis* from North China was included in the purchases from Messrs. Veitch.

A very valuable consignment of trees and shrubs was received from the Arnold Arboretum in December. Besides Chinese species of Wilson's and Purdom's collecting, many interesting North American ones were included. Amongst the more important items were *Larix Potaninii*, *L. Mastersiana*, new American Poplars, Plums and Cherries, Oaks, Hickories and Chinese Willows.

As the result of an official visit made in June by the Assistant Curator to the nursery of Messrs. Leon Chenault and Son at Orleans, this firm kindly presented to Kew over seventy new and rare trees and shrubs noted at that time. Amongst them were species that have been introduced to cultivation by French missionaries in China from districts not traversed by English collectors. Mr. Maurice L. de Vil-morin has also sent contributions from his fine collections at Les Barres.

From the Royal Botanic Gardens, Glasnevin, were sent about thirty kinds of trees and shrubs noted by the Assistant Curator during an official

AMERICAN NOTES.

NEW ROSES AND CARNATIONS.

SEVERAL fine new forcing Roses are this season being offered in this country. Of course, all are adaptable to outdoor culture where climatic conditions are sufficiently mild, but Rose culture under glass is a vastly more important industry here than outdoor Rose growing. In some sections, notably on the Pacific Slope, wonderfully fine outdoor Roses are grown, but in most of our States the hot summers and severe winters render their successful culture a somewhat difficult one.

Killarney Brilliant, one of Dickson's new varieties, is having a great run, and is an improvement on the very popular Killarney. Undoubtedly the latter variety has been the most popular pink forcing Rose ever introduced here. Hadley, a scarlet variety, raised by the Montgomery Co., Hadley, Mass., promises to give Richmond, our leading red Rose, a tussle for supremacy; it is proving very popular. Prince E. C. D'Arenberg is another red flower in considerable demand. Ophelia, one of Messrs. Paul and Sons' novelties, is being popularised by the E. G. Hill Co., Richmond, Indiana.

FLORISTS' FLOWERS.

DAHLIAS.

THE following PAPERS on Dahlias were read at the conference held under the auspices of the National Dahlia Society on February 23:—

THE DAHLIA TRIALS AT DUFFRYN, 1913.

Mr. Reginald Cory's paper was entitled "Observations on the Dahlia Trials at Duffryn, 1913." It was as follows:—

Seeing that the summers of 1912 and 1913 were respectively among the wettest and driest on record, it is instructive to note, from my own experience, that for growth and display of bloom there was little to choose between the two years, and I think there are very few other plants of which so much could be said. The weather of last year was exceptional, also, on account of the fact that we experienced no frost that did practically much damage until November 22, when the entire collection was destroyed, but it gave the Dahlia—rather at the right moment, as it happened—the opportunity of showing to the full its marvellous capabilities of producing bloom both in quantity and over a long period of time. To be able to cut blooms from the same plants in May and again on November 22 is an interesting fact, but to be able, from the same plants, to put up a big display at a local flower show, with summer climbing Roses as an adjunct, and another, yet finer exhibit, on November 5, with Pampas Grass and winter-flowering Kniphofias as accessories, proves pretty conclusively the value of the Dahlia as a bloom producer, and its especial value in those parts where the winters are mild and frosts not generally severe.

Several friends who visited the gardens frequently during the summer time remarked that they thought the seedling beds were, if anything, gayer and more attractive-looking than even the Dahlia garden proper, and as I had rather thought the same myself, I began to look around for enlightenment. The explanation which I arrived at, and which I think is the right one, demonstrates the value of the Singles, and especially of the gigantic Singles, for giving a *brilliant* decorative effect. The majority of my seedlings proved to be Singles, with a large percentage of giant Singles, and I have no doubt that the *transparency* of the great single petals, with the sun shining through, gave that appearance of lustrousness which is lacking where flowers of a double nature are viewed, especially with the sun behind them; for the latter, from their formation, are opaque, and their true colour value is only obtained when the light falls on them in the same line as that from which they are seen.

One of my favourites among the singles were the Mignonnes, which proved very attractive also to lovers of herbaceous flowers, on account of their extraordinary floriferousness and compactness. As a proof of the former good quality, one little plant some 18 inches high, and about the same through, produced, on an average, fifteen to twenty blooms a day. They also have the advantage of being extremely early. The Parisian Singles are another type, somewhat similar to Mignonnes in habit and growth, not quite so free, but exceptionally bright and decorative. I have a great liking for all the various kinds of Singles, on account of their freedom, lightness, brilliance (which I have pointed out, I consider a special attribute of theirs), and stiff stems, all combining to make them very valuable for garden display and as cut flowers.

With the exception of compactness, and in some cases freedom of blooming, these qualifications apply equally to the Colletteres, but the majority of those which have come under my observation I consider—speaking from an all-round point of view—to err on the side of coarseness of bloom and habit, whilst many of those that carry the finest flowers are rather shy and late. Henri Farman and Tuskar are gems of their class, brilliant in colouring, and very free; Diadem, though big, is a thing of beauty and a joy till the frost comes. There will be a great welcome for a plant in this most beautiful section, with small regular flowers, the dainty collar, which is characteristic of, say, Regularity and Diadem, with the freedom of these two, and

not more than some two feet and a half in height.

There is one other section which seems to fall into place here, and of which I had my second experience last year, and, unlike another section (of which I shall speak later), my further acquaintance fully justified the good opinion I had formed of it. I refer to the Stars. I consider they have the longest and stiffest stems of any, and this fact, combined with their prolificness and rather unusual form and colouring, make them very conspicuous, and remarkably useful for vases. These, mixed with the ordinary singles, made one of the prettiest table decorations I have seen.

I suppose there are few flowers that are more intrinsically beautiful than those of the Cactus section. From combination of colour, delicacy, and perfection of shape, they are, as flowers, marvellous, but, taken as a class, and in the mass, I consider that they proved the least decorative of any. I know there are exceptions, and I have no doubt that these will be greatly added to this coming year; but, speaking from my own observations of last season, the great majority of them—even when they threw their blooms well above the foliage—were inclined to look downwards. The blooms also, even before they were quite expanded, had a tendency to turn brown, which gives the whole plant a soiled and faded appearance. This defect is especially noticeable where the flowers are of a white or pale colour. This habit of "browning off," as I might term it, appears to be a fault of the Cactus section generally, as it is observable even in the dwarf bedding varieties, such as Gluchauf and Zwergsonne, both of which, upright in habit though they be, always required to be gone over for any special occasion. The first named of the two has a value quite inversely to its size, for it is very dwarf and bushy, but of brilliant colouring and generally good shape. The remaining members of this set did not come up to the opinion we formed of them the previous season. John Mortensen was very good to look *into*, but not so good to look *at*. The colour apparently is not of the right shade to be effective at a distance. Marianne was new this year to me, and I liked it, and it was most delightful as a cut flower, but for some reason or other it was not a favourite out-of-doors, which, I suppose, was the reason why it did not obtain three marks, which I think it was worth, especially in view of another of the same section which did.

With the exception of the Cactus Dahlia proper, all the other sections which I have mentioned, together with the dwarf bedders, such as Barlow's Bedder, Rising Sun, the Anemone-flowered variety, and Crawley Star (which is rather a variety unto itself, I think) go to form what I call a general utility crowd, suitable and fit for any garden, of any dimensions. I know that in making a general assertion such as this there are usually exceptions, and I have not lost sight of the fact that among the Colletteres Diomede has run up with us to some eight or nine feet high, and one or two of the Giant Singles have grown nearly as tall; but these monsters are the rarities of their classes. Nor have I forgotten that I have not mentioned the Ponpons, which, I suppose, must fall in this class; but I said "general utility," and I am not quite sure that this does altogether apply to them. Like some of the Cactus varieties, they were somewhat behindhand in making a display, and I noticed that the quarters assigned to them, the Shows and the Fancies, seemed to look dull for a very long time, but I must admit they formed a bright spot when they were at their best. The extreme formality of these three sections is, I think, rather against them for garden display, giving a somewhat heavy appearance when planted in big masses. The great multiplicity of the petals, too, results in the absorption of much light, so that it is only at certain times of the day that they show good colour values.

I gave a good trial to several of the "general utility" lot in tubs, but the result was not altogether up to my expectations, as it often happened that one of the group did not thrive so well as the rest, and the result was an unbalanced effect. However, I shall try a few again this year, as I rather fancy Marianne, and some of the Anemone-flowered varieties may prove more suitable.

The latter, together with some of the dwarf Colletteres, I found very valuable for the front and middle of the herbaceous borders, whilst selections from the best of the Paenies and Giant Decoratives gave colour notes in the scheme, which would have been impossible at attainment in any other flower. In fact, I found the Dahlia a very valuable asset in this part of the garden, as, owing to its late development, I was able to plant summer-flowering annuals and early perennials between and around, which, when they were over, were cut down, and the Dahlias took their place, and then, towards the end of autumn, when most of the hardy herbaceous plants were getting ready to hibernate, the former were at their best, and the borders, with the help of a few late perennials, looked almost as gay as during the summer months. But where I think the Paenies and Giant Decoratives seemed to me to be most at home was where they were backed by tall Bamboos, fringing a piece of woodland, or massed around groups of shrubs and trees.

Mr. J. Green, opening the discussion, said that after inspecting the trials at Duffryn he could only endorse what Mr. Cory had written. The trial was an excellent one in every respect, and, unlike nursery trials, the plants were arranged according to height and colour. Many were massed in beds, borders, on banks, and every conceivable place where a Dahlia would grow. It was an object-lesson to those who had charge of public parks and gardens where the Dahlia was not appreciated as it should be at the present time.

Mr. J. T. West was enthusiastic in his remarks on the trials, but was severe in his condemnation of the Cactus varieties sent to Duffryn, as many of them were incapable of producing an effect in the garden. He was of the opinion that the future of the Dahlia was bound up in all sections of the flower and not one class alone. Mr. J. B. Riding said that he was rather surprised Mr. Cory did not say more about the Paenony-flowered varieties in his paper, as at the time the Committee visited Duffryn they were extremely beautiful. He also failed to detect the coarseness alluded to in the Collettere section, with the single exception of Diomede, which was seven feet high the first week in September, and would doubtless grow another two feet before the end of the season. The trials had demonstrated the value of the Dahlia.

Mr. W. Cuthbertson said he took a keen interest in the Dahlia, and he was pleased to hear Mr. West's remarks on types. There had been a rebound from formalism in all types of flowers, perhaps too far; but it was a matter of fashion. He agreed with Mr. Cory's remarks on the Collettere that a smaller flower would be more effective, especially for vase decoration.

Mr. J. Cheal said he thoroughly endorsed Mr. Cuthbertson's remarks. As a raiser it had been his aim for some years past to send out varieties in the Cactus section which carried their flowers well above the foliage. He was delighted to hear that the single varieties had given such a good account of themselves.

Mr. C. G. Wyatt said there were plenty of Cactus varieties that would give satisfaction if the growers would only stake them out well so that the plants obtained plenty of sunlight and air.

THE DAHLIA OF TO-DAY.

Mr. H. Shoemith read his paper entitled "The Dahlia of To-day," from which we print the following extracts:—

"When about three years back Mr. J. B. Riding read a paper at one of these conference meetings, and told us the first and best thing to do would be to make a bonfire of all the appurtenances of showing, I did not think he was foretelling a change which would come about so soon. It really meant that the Dahlia of the future would be named in one word—this is 'stem.' And in this one word we have got the cue for the flower as we know it at its best at the present time. Personally, I am one of a school of gardeners which has been a stickler for beauty of form in a flower, whether it be a Dahlia or anything else; but as we grow older we have to learn to fall into line with changed

fashions and throw our cherished notions to the winds. Still, this fashion comes rather hard sometimes on those engaged in raising new varieties—Dahlias, for instance. All our energies may go to producing something taking to the eye, making the florets more narrow, or what-not, and before we have finished in such directions popular taste proclaims that there must be a change; everything must go before one great point, and that is usefulness in, maybe, kinds of a showy character only. This being so, I for one look back with a longing eye when recalling the many seedlings I have thrown away—how useful they would now be! In this connection I am reminded of an occasion when a market gardener—a man, by the way, who has made money out of the common field Poppy and other wild flowers—on looking through my plantation, pointed to a flower of one seedling and said: 'Were these Dahlias mine I would throw away all except this, then I would propagate it, exhibit it, and ask five pounds for each plant.' The variety in question was original in colour and shape, but it did not satisfy my own notions of beauty and was discarded; so that I lost what may have been a fresh type. Florists, as I have remarked, are usually slow to learn, and even now I think sorts like, say, John Riding, Prima Donna and Frederick Wenham, of the Cactus class, are the highest forms of beauty in the Dahlia, whether the blooms hang their heads or not; but the great difficulty is in making the general public think the same.

"The Dahlia of to-day, then, is one with a good habit of growth, and a stiff, upright stem. Persons may please themselves (within schedule rules, of course) in what way the plant shall be exhibited; but I take it that introducers of new varieties will not employ supports if the flowers can be shown in comely style without them.

CACTUS, SHOW, AND POMPON DAHLIAS.

"The Cactus Dahlia I regard as a fine type of the modern Dahlia, and it is well divided into two groups—the exhibition and the decorative or garden forms; and when the beautiful blossoms we now know in the former are produced on the stiff stems of the latter—this is not so in many instances to-day—then this class will please the greater number of people.

"The old, big, double show Dahlia, in the South at least, may be said to be on the down grade. Standing still practically, in the matter of new varieties we find exceedingly few fresh growers. It is not the same with the Pompons; these are popular as ever, and are likely to remain so on account of their usefulness for garden display and for cutting; and also because in this instance there is no doubt about that important attribute of stem. I should say, however, the acme of perfection in this class was reached some years back; anyhow, improvement upon the old sorts is somewhat slow.

THE COLLERETTE DAHLIA.

"It is justly claimed that the Collette type is showy, and therefore useful for garden decoration; it is valued for cutting because the flowers last a comparatively long time in water. But some think that this showiness is of a gaudy nature of colouring, and the sorts are not particularly distinct. In fact the present position of the class has been made by the blossoms possessing a collar which is a contrast in colour to the other shades of the flower. If, however, we get away from the shades of crimson and red, if we come to lighter shades—say yellow and white—such contrasts are not to be found, at least in varieties we have yet seen, and to my thinking these look very common indeed. Whether raisers will save us from this sameness I do not know; but certainly the novelties which came before the Floral Committee of this Society last year led me to think the process will not be rapid. Except for the distinct collar, what beauty has the Collette, which the ordinary single has not? Is it a better garden plant, more useful in a cut state? In general refinement and flower formation it appears to me to be decidedly inferior. In shades of colouring again, the type of single we have become accustomed to is much more varied. These

are only impressions, and from my point of view the present-day popularity of the Collette rests upon its novelty, aided by persistent exhibiting.

PAEONY DAHLIAS.

"If I were to say that the Paeonies are not of especial value for exhibition, only from a decorative standpoint, I should probably be right; but if I were to state that they are of no great use for the garden, those who saw the display at Cardiff last year could soon inform me that as a type they are the most gorgeously showy of all. There are those who would define the Paeony Dahlia, but it is questionable if this is advisable, for no two sorts are alike in shape. To my thinking the flowers may be composed of a single row of florets, a double or a treble. I would only ask that they be of effective colouring, that the stems shall be stiff, and that the habit of the plant is free-flowering and shapely. Further, it appears to me that all these might be classed with and known as Decorative or Garden Dahlias. For example, last year a variety named Aphrodite obtained the Certificate of this Society. Its value as an effective variety in the garden was apparent, yet it has but one row of petals, and on account of its great size will be found among those termed Paeony. To my mind this reducing of the number of special divisions would simplify matters."

RELATIONSHIP OF SOIL AND PLANT.

At a recent meeting of the Royal Dublin Society, Dr. RUSSELL, Director of the Rothamsted Experimental Station, delivered a lecture on "Mutual Relationship of Soil and the Plant."

Having expressed the thanks of the committee of the Rothamsted station to the Royal Dublin Society for the support given to the movement for erecting a laboratory to commemorate the centenary of the birth of Lawes and Gilbert, the lecturer said the fact had been long ago established by practical farmers that certain crops and plants showed marked preferences for certain types of soil, and would not do as well on other types of soil, no matter what care or skill was used. How was it, he asked, that the close connection between the soil and the plant arose? The answer was that each plant required certain conditions—water, air for the roots, food, etc., and where it found those conditions it grew well. Those were very largely soil conditions, but not entirely; climatic factors cut across the soil factors, and prevented too rigid a classification of flora according to soil types. But closer examination showed there certainly was a specific soil type effect, the study of which was of great practical importance. Investigation had shown that the plant had almost as marked an effect on the soil as the soil had on the plant. Right from the outset the soil had been affected by the vegetation growing on it. The mineral matter that formed the main part of the soil split off from rocks in consequence of various physical and other agencies, and after many wanderings came finally to form the surface of the present soil. But it did not remain bare. It soon covered itself with vegetation. Plants grew, took out from the soil moisture the mineral and nitrogenous food they wanted, built up carbo-hydrate material from the gases of the atmosphere and the rain water. There were two highly important effects produced—(1) organic matter was added entirely different in character from the matter already there, and impressing a new lot of properties on the soil; (2) the organic matter contained stores of energy derived from the sunlight; when it mingled with the soil and began to decay the energy was set free and enabled micro-organisms to live in the soil. The living plant also had an effect on the soil. It took out certain constituents which if not replaced would lead to exhaustion. Recent experiments suggested that that remarkable effect was only produced when soil bacteria were present. It appeared, therefore, that between them the plant roots, the soil, and the bacteria might set up something in the soil that was poisonous to plants. The possibility that a

plant might thus foul the soil and injure it for another plant had long been part of the tradition of the gardener and farmer. During the last year or so a new way had been discovered in which the plant affected the soil. It had been shown that the growing plant somehow interfered with the activity of bacteria that made plant food in the soil, so that less plant food was made on cropped land than on land lying fallow. Modern research showed that the soil was not a mere mass of inert minerals, but a wonderful structure honeycombed with recesses and inhabited by teeming populations, micro-organisms, which science was just beginning to explore. The plant sent its roots into this living mass, and in some way not yet comprehended those roots interfered with the normal life of the organisms, and so effects were produced that one did not get in soil bare of all vegetation. The difficulty of finding out what really was going on was increased by the fact that they could not see into the soil. No microscope existed that would peer into its recesses; they could only gain knowledge by indirect means. But it was imperative that the man of science should go on with exploration.

VEGETABLES.

BROCCOLI.—I never remember this important and useful vegetable having been more plentiful than during the whole of this winter. We have cut heads of splendid quality without a break since last autumn. This is partly due to the mild weather and partly because there is now such a splendid selection of successional varieties, which render the task of keeping up a constant supply much less difficult than it was a few years ago. After extensive trials the varieties we have found to be most satisfactory are as follows, maturing in the order in which they are placed:—Michaelmas White, a splendid autumn variety; Winter Mammoth, a distinct and good sort; Snow's Winter White, an old variety, but still one of the best sorts for winter; Superb Early, producing refined, excellent heads; Snow White, quite distinct from Snow's Winter White; Christmas White, an invaluable variety, one of the best of all Broccoli; Leamington, an old variety that should find a place in all gardens; Late Queen, very hardy and late in maturing; and Model, the best late Broccoli, producing heads of beautiful quality which may be had in good condition as late as June.

VEGETABLE MARROWS.—Early Marrows are much appreciated, particularly in the months of April, May and June. For early cropping the seeds should be sown singly in small pots at once and raised in gentle heat. As soon as the second leaf appears pot the seedlings into 6-inch pots and grow them in a position near to the roof-glass in a temperature of about 60°. When about a foot high they should be planted out into portable two or three light frames on a very mild hotbed composed chiefly of leaves. Afford the plants every care and attention to ensure them making sturdy growth. Very little soil is necessary at the start, and it should not be very rich; fresh compost may be added as often as is necessary, and when the Marrows are developing it should be richer in quality. Immediately it is safe to do so, the frames should be removed entirely. The same plants, if properly attended to, will continue to produce large crops until destroyed by frosts. Grown in this way Marrows will not only produce fruits early, but they will be in full bearing by the time the majority are contemplating planting them out. The situation should be an open and sunny one. We have adopted this practice at Aldenham for many years without once experiencing a failure. Suitable varieties for 'his system of culture include Moore's Cream, Perfection, Pen-y-byd and Custard, which crops abundantly under glass and always much better than when grown in the open. *E. Beckett, Aldenham House Gardens, Elstree.*

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

GENERAL REMARKS.—With the lengthening days and increasing power of the sun, a more liberal treatment in respect to moisture may be afforded to all classes of Orchids that are in a more or less active condition of growth. Let the damping of the floors, staging and spaces between the pots be done in the mornings as soon as the normal temperatures of the different houses are reached. In bright, drying weather the damping should be done again in the middle of the day, and a third time between three or four o'clock in the afternoon, at which time the ventilators are closed. In all departments excepting the cool houses the temperatures of the houses should be maintained about 5° higher at night, as compared with the winter conditions. A night temperature of 53° to 55° will be warm enough for *Odontoglossums*, but I advise every care to be taken to guard against fluctuations in the temperature. Rapid changes in the temperature give a check to the tender growths and developing flower-buds, and the injury resulting therefrom becomes permanent. Cold draughts of air from the ventilators or other sources are likewise harmful. The lower ventilators should be formed below the staging so that the cold air is warmed by passing immediately over the hot-water pipes.

WATERING.—In the north and north-eastern parts of England snow and hail-storms often occur in March and April, and the melted snow or hail dissolving on the roof finds its way to the tanks, lowering the temperature of the water considerably. Cold water is injurious to the plants, and it is advisable to test the temperature at all times after heavy rains or cold storms. At such times warm water should be added to raise the temperature of the water in the tank a degree or two higher than the normal temperature of the house. Overhead syringings will be advantageous, but this should be done sufficiently early in the day to ensure the foliage becoming dry before nightfall.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

EVERGREEN SHRUBS.—There being no great danger now from frosts, evergreen shrubs may be pruned and reduced in size and height, in accordance with requirements. The best system of pruning evergreens is to saw out every year a few of the old and exhausted branches. This will afford space for young growths to take their places. At the same time aim at preserving a proper balance in the individual specimens and prevent them from growing into each other. If the planting has been done too thickly do not hesitate to head down to the ground a plant here and there, as such will send up a crop of new vigorous shoots. A few plants may be treated in this way every year; thus the plantations will be kept in a healthy condition and the shrubs will furnish an abundance of fine flowers.

THE WILD GARDEN.—All planting in this part of the pleasure grounds must be purely informal in contrast with the trim neatness associated with summer bedding on closely-mown lawns. The plants may be arranged singly or in groups and allowed full freedom of growth, in order that they may show their grace of outline and floral beauty: Nature must be followed in all her simplicity and boldness. There are many who imagine that the wild garden means a wilderness or a vast tangle of crowded growths which, once planted, requires no further attention. But indiscriminate planting is the very opposite of the correct system. It must be remembered that there is considerably more difficulty in directing labour to the best advantage in the natural than in the formal garden.

Numbers of very beautiful plants may be grown in spaces which are usually occupied by coarse grass and even weeds, around shrubberies, on the margins of streams and ponds, and in woodland walks. It is not easy to prescribe for all cases, seeing that no two places offer the same facilities, but there are certain general principles to be followed.

PLANTS FOR THE WILD GARDEN.—To give a complete list of suitable plants would occupy too much space, therefore I will only enumerate a few that I have found especially attractive when grouped largely and irregularly in conjunction with clumps of dwarf evergreen shrubs, such as *Olearia Haastii*, *Azara microphylla*, *Veronica Traversii*, *V. Kirkus*, *V. angustifolium*, *Kerria japonica* fl. pl., *Choisya ternata*, *Berberis Darwinii* and *B. stenophylla*. Farthest away from the gravel paths plant bold groups of *Anchusa italica* Dropmore and Opal varieties, *Helianthus* Miss Mellish, *H. multiflorus*, *Galegas*, *Hemerocallis*, *Cimicifuga*, *Delphiniums*, *Clematis Davidiana*, *Epilobium*, *Chicory*, *Hollyhocks*, *Anemone japonica*, *Tree Lupins*, *Pyrethrum uliginosum*, *Valerian*, *Kniphofia*, and others. Plantations of *Hydrangea paniculata*, *Gladiolus Breuchleyensis*, *Papaver orientale* and *Galtonia candicans* will provide a succession of bright colour. Nearer the walks may be planted, both as single specimens and in groups, *Yuccas*, *Ruscus aculeatus*, *Phormiums*, *Hypericum*, *Megasea*, *Bamboos* in variety, beds of the common *Polyphy* and *Lychnis Viscaria*. *Lily-of-the-Valley*, *Polyanthus*, *Thrift*, and other dwarf evergreen plants, may be allowed to grow right up to the margin of the walks and thus obviate having artificial, clipped edges.

COLOUR SCHEME.—I am not in favour of indiscriminate mixing of the colours of flowers, but prefer to commence from a central group of one colour and as far as possible shade off in a subdued tone of the same colour, utilising the next strong colour in the same way, always provided such colours, when nearing each other, do not clash but are in soft, pleasing harmony. Now is the season for re-arranging and re-planting the strong growers, some of which are best shifted annually. Divide the roots and select the outer vigorous, healthy portions, discarding the old exhausted growth in the middle of the clump. The plants used for wild gardening are not over particular as to soil; still, they grow best in a deep root run and will always repay for good cultivation.

STEPPING-STONES.—Where stepping-stones are arranged through and alongside a stream some dwarf half-hardy, creeping annuals should be planted between the stones. A few of the most useful plants for the purpose are *Dianthus neglectus*, *Viola gracilis*, *Mesembryanthemums*, *Ionopsidium*, *Phacelia campanularia*, *Androsace*, *Arenaria*, *Aubrietias*, *Erodiums*, *Erineu alpina*, *Veronica repens*, dwarf *Campanulas*, and hybrid *Dianthus*, known as Mule Pinks, all of which may be raised easily from seed.

TREES AND SHRUBS IN FLOWER.—The following trees and shrubs are in flower in these gardens:—*Amygdalus Davidiana*, *Andromeda*, *Arbutus*, *Daphne Cneorum major* (a lovely plant), *Erica carnea*, *Viburnum Tinus*, *Mahonia*, *Spiraea Thunbergii*, and many others.

THE HARDY FRUIT GARDEN.

By J. C. WESTON, Gardener to Lady NORTHCOTE,
Eastwell Park, Kent.

PROTECTING FRUIT TREES.—The fruit-buds of the earlier-flowering fruit trees, such as the Apricot and Peach, are swelling rapidly, and the question of protecting the blossom from frosts must be considered. Local conditions govern the necessity for protection in a great measure. In cold districts and exposed situations, especially where the gardens are low-lying, spring frosts often ruin the crops unless measures are taken to protect the trees, and the coverings should be got ready at once. Notwithstanding what has been stated the protective material should not be placed in position until the earliest blooms are on the point of expanding, for up to that stage the trees are much better left fully ex-

posed. Heavy coverings of a permanent nature should not be used, as these often prove more injurious than the weather. By excluding the light and air they tend to make the young growths and embryo fruits tender, and therefore more susceptible to injury by inclement weather after they are removed. Fish-netting of double thickness, which has been used for protecting ripe fruit from birds, is often employed in the spring for protecting fruit-blossom from frost. The best coverings are those that can be removed when there is no danger from frosts; but if the nets must be left on during the day means should be taken to keep them well away from the trees or they will be of little use. This is best done by the use of poles or wires, or a combination of both. If the nets are simply hung up in front of the trees and a storm of rain or snow occurs from the quarter opposite to the wall, the wet nets may press directly on to the blossom and thus do more harm than good. One of the best systems is to fix blinds made of shading material or light canvas on to rollers that may be drawn up under the coping and let down whenever they are required. During inclement weather such blinds may be lowered at sunset and allowed to remain in position until the temperature rises next morning.

GLASS PROTECTORS.—In many establishments garden walls are provided with glass protectors on the coping, for the purpose of protecting the trees during bad weather. They are fixed on a strong iron framework and project 2 or 3 feet from the top of the wall. Such protectors are best glazed on a system that permits of the removal of the glass in the summer and autumn, to allow the rain and air to penetrate to all parts of the tree. During the blossoming period light canvas or tiffany can easily be suspended from the sloping front of these protectors, and if the canvas material is hung in position at the time when the sun is setting considerable warmth will be enclosed in them, thus keeping up the temperature to a safe degree during cold nights. Short of entirely covering the wall with glass and converting it into a fruit-case, the use of these glass copings with light blinds is probably the best method of protecting fruit trees from frost in spring. In older gardens slates are sometimes built in the top of the wall in the same manner, but their value is not to be compared with that of the modern glass protectors.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY,
Knowsley Hall, Lancashire.

SOUVENIR DE LA MALMAISON CARNATIONS.—Plants of the earliest batch of "Malmaison" Carnations are showing signs of growth, and they should be afforded plenty of air at this stage. A temperature of 45° to 50° is suitable. Regulate and tie the leading shoots neatly to stakes placed securely in the pots. Water should be only afforded when moisture is absolutely necessary; a more liberal watering and a dusting of concentrated manure will be beneficial when in full growth. Keep the leaves dry and the atmosphere moderately dry. The earliest and strongest of last year's layers that were potted into 6-inch pots last October are making top growth and healthy roots. Plants that have been grown in 60-sized pots through the winter should be shifted in 6 or 7-inch pots. The compost may consist of turfy loam three parts and leaf-mould one part, with sharp sand, wood ash and lime rubble added. The soil may be enriched with concentrated fertiliser at the rate of a 6-inch potful to every two bushels. Pot fairly firm, place a stake in the centre of the pot, and secure the growth thereto. Stand the plants in a close frame for a day or two, affording shade if required. Water the plants once after the first week, but afford moisture subsequently only when the soil is dry.

TREE CARNATIONS.—Plants that were rooted in the autumn are breaking freely into growth, and the points of the shoots should be pinched out when the latter are about 4 inches long. Side shoots will quickly form, and the plants will be ready for shifting into larger receptacles, the strongest specimens into 7-inch pots. Admit air on all favourable occasions, pot rooted cut-

tings as they become ready, and grow them in a close atmosphere and a temperature of 55° for a few days until they become re-established.

ERANTHEMUM PULCHELLUM.—A batch of well-grown plants is very attractive at this season, and the deep blue flowers always attract attention. The blooms are very fugitive, but others develop in quick succession. As soon as the flowering season is over the growths may be shortened; the new growths will form suitable cuttings, and may be inserted when they have attained a length of 3 inches. Root them singly in thumb pots in a brisk bottom heat. When the cuttings are well rooted pinch out the points, which will result in side-shoots developing, and the plants may then be re-potted.

ASPIDISTRA.—Plants that have become pot-bound may be re-potted now, and such as are too large for decorative purposes may be divided. A compost of gritty loam and leaf-mould will be suitable. See that the drainage is efficient. Specimens that require top-dressing should have a little of the old soil removed and replaced by fresh compost enriched with a slight dusting of bone meal. Sponge the leaves, and grow the plants in a warm house.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

VINES.—Mid-season vines should be started in a temperature of 50° by night and 55° to 60° during the day, rising to 65° by sun heat. Under these conditions the buds should break gradually and strongly. As the buds swell the temperature may be increased gradually both by day and by night. Started in this way mid-season vines require less artificial heat during the warmer months of the year—in some instances fire heat may be dispensed with altogether—and much better results will be obtained with less risk from insect pests than would be the case if the vines were started later, and hence needed considerable artificial heat to finish the crop. Late Grapes require, as a rule, a long period in which to ripen satisfactorily, so that the berries may keep well. Few, if any, of the vines should be started later than the beginning of March, therefore get the houses in readiness at once. Keep the inside borders moist and syringe the rods several times daily to favour the bursting of the buds. Should the spurs bleed, as they sometimes do on late vines, wipe the wounds dry and dress them with styptic. Stems that are partially exposed in vines growing in outside borders should be protected and the borders top-dressed with half-decayed manure and leaves, which will give all the protection needed at this time of the year.

MELONS.—Sow seeds for the general crop, and plant out successional plants so that no break may occur in the supply of ripe fruits. Plants that are approaching the flowering stage should be grown in a somewhat drier atmosphere until after the crop has set, but care should be taken that the plants do not lack moisture at the roots. The root-run should be limited, or the result may be plenty of foliage and but little fruit. At night the temperature should be 70°, and from 75° to 85° with sun heat during the day. Admit air regularly, but see that cold draughts do not reach the plants.

CUCUMBERS.—The beginning of March is a good time to make another sowing of Cucumber seed, and in all probability the plants will be sturdier than those sown last month. See that the linings of the bed are efficient where the plants are growing in brick frames, and bear in mind that the manure must be well fermented and turned before use. Make the linings about 18 inches or 2 feet in width and as high as the bed; examine the latter frequently to ascertain that its temperature is all right. Whether for spraying or watering the roots, always use water warmed to the air-temperature in the frame. Close the lights not later than 2 o'clock, thus conserving all the sun heat possible without risk of scalding the foliage. Rapidly-growing plants

should be fed with liquid manure at every alternate watering. Apply top-dressings of soil and manure about every three weeks to plants that are growing in houses, to keep them in a healthy, fruitful condition. Well thin the fruits on plants just coming into bearing, stopping the growths at one, or not more than two, joints beyond the fruit. Remove all superfluous growths and tendrils as they appear, and maintain a moist, brisk temperature of 75° to 80° by day, and 65° by night. The evaporating troughs should be kept well filled with liquid manure or water in which a small quantity of liquid ammonia has been placed.

CHERRIES.—The temperature of the house in the daytime should not exceed 55° by fire heat, but when air is admitted it may rise by sun heat to 65°. Whilst cold draughts are harmful, air may be admitted on every favourable occasion. Afford water in moderation until the fruit has set, when the roots may be soaked with weak manure water, or artificial manure may be applied and the soil watered afterwards. A stimulant may be applied at intervals of about fourteen days, according to the condition of the borders—less frequently if the borders are not well drained, for stagnant moisture at the roots will cause the young fruit to drop. Watch carefully for the first signs of black fly or kindred pests on the young leaves, and lightly fumigate the house with a nicotine preparation. After fumigating wash the trees thoroughly, syringing them with clear tepid water. Such leaves as are curled should be carefully examined for the presence of a small caterpillar, which causes much damage to the tender growths, making them unsightly for the remainder of the season.

FIGS.—Trees in successional houses should be kept steadily moving in a temperature of 55° for the first fortnight, gradually increasing the day temperature as the sun heat increases. See that the borders are neither sodden nor excessively dry. In houses where the trees have reached the fruiting stage watch carefully for red spider on the underside of the leaves. Sulphur made into a paste and brushed over the hot-water pipes will assist in destroying this pest, as well as syringing frequently with clear water. A dry atmosphere and high temperatures favour this pest, therefore maintain moist, genial conditions.

CAPSICUMS.—Seeds of Capsicums may be sown now. When the seedlings are sufficiently strong pot them singly in small receptacles, and keep them growing in a brisk heat, admitting plenty of air during sunny weather. Finally shift them into 7-inch pots, placing three plants of about the same size and strength in each pot. When the plants have recovered from the shift stand them where they will be fully exposed to the sun. If grown in heated pits the lights may be removed for two or three hours daily on warm, sunny days in summer.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

GLOBE ARTICHOKE.—The material used for protecting the plants in cold weather should be removed, which is most easily effected by digging it deep into the interspaces of the rows. For many years I have used leaves for protection, and they seem more suitable as a manure, being less forcing than farmyard litter. Fresh plantations may be made either from side shoots wintered elsewhere or from suckers carefully disjointed from the plants. I allow the sets spaces of three feet in the rows and five feet between the rows. First-year plants are valuable because they produce heads for autumn use, when, as a rule, the old plants are exhausted.

PEAS.—A sowing of the variety Pilot may be made now in one of the main quarters. It is an advantage for the ground to have been trenched deeply in October for this sowing, and for no other reason than that the soil will be warmer. For this and the succeeding sowings

shallow drills taken on the width of a spade are to be preferred to deep drills, also on account of warmth. I invariably have the trainers put in place as soon as the Peas are covered. This protects them from pheasants, etc., and is an assurance that they will not be neglected, as is not infrequently the case when the haulm is growing rapidly.

DRESSING CROPS.—It is safe now to dress Cabbages, Lettuces and Spinach that have been close picked with a stimulating manure, either nitrate of soda or sulphate of ammonia; I prefer the latter. About $\frac{1}{2}$ oz. applied to each Cabbage is a suitable quantity, but for the others it must be scattered evenly between the rows, at the rate of 1 lb. to each 40 square yards. This manure need not be covered, but it is, on the whole, beneficial to stir the surface by means of a hoe subsequent to the application.

EARLY ONIONS AND LEEKS.—Seedling Onions should either be potted singly or transferred to other boxes, using for them a rough compost that will enable the plants to be lifted each with a ball of soil. Leeks for use early in autumn should be treated similarly.

PARSLEY.—If a sowing of this herb was made in heat early in the year the seedlings should be pricked out singly into cutting boxes when they are large enough to handle.

LETTUCES.—The time is at hand when there may be a gap in the supply of this salad vegetable. I find that plants wintered in a cold pit—that is, young plants put into a border in autumn—grow to a useful size by about this time of the year, and continue furnishing a supply of heads for several weeks. During winter water is not needed at the roots, but with the increasing heat of the season applications of moisture are essential, as much to keep the plants growing as to preserve them sweet and free from a bitter taste. See that the leaves are not wetted, as this may set up rotting. For a time only a little ventilation need be afforded.

CARROTS.—A moderate breadth of a stump-rooted variety, which on the whole is the best garden type, may be sown in well-prepared ground. Where the Carrot fly is troublesome it is as well to make this the main crop. There are numerous specifics recommended to save the plants, but it is doubtful if any is a panacea. In light soils at least the drills should be drawn rather deeply, the seeds, first mixed with sand, drilled quite thin, and the drills only filled with sufficient soil to cover the seed sufficiently to enable them to germinate properly. When the seedlings are well established and thinned the drills should be filled with dry sand to cover the crowns of the plants 2 inches in depth. Slight dressings of soot periodically renewed are sometimes beneficial in combating the fly.

THE ONION CROP.—It is still the practice of many to raise this important crop from seeds sown in the open at this season, the object being to get the seed in as soon as the ground is fit after the middle of February, for, like the Leek, the longer the season of growth the larger the individual roots. Since manurial dressings throughout the growing season have been recognised as imperative, the soil need not be so highly manured preparatory to the crop as at one time was deemed essential. At the same time a dressing of superphosphate, 2 lb. to the rod, and a slight sprinkling of pigeon manure, will be advantageous. After applying the manures and just before sowing half dig the ground, preferably with a fork, by means of which the soil may be more easily broken up and the manure incorporated. Then compress the ground by foot-pressure, draw shallow drills, cover with the foot, and again compress the surface as evenly as possible, finishing by raking the surface smooth. Any bulbs of last year's crop which are beginning to grow in the store may be planted for scallions. They ask for no special cultivation. Pickling Onions may also be sown now. These are grown close in the rows, and, being of use only when small, the ground needs no such manurial preparation as for ordinary Onions.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Special Notice to Correspondents. — The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MARCH 9—
United Hort. Ben. and Prov. Soc. Com. meet.

TUESDAY, MARCH 10—
Roy. Hort. Soc. Coms. meet., Special Bulb Show (2 days), (Lecture at 3 p.m. on "Adaptive Degradation of the Cause of Many Cases of Evolution Among Plants.")
Horticultural Club: House Dinner at 6.30 p.m.

THURSDAY, MARCH 12—
Manchester and N. of Eng. Orchid Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 40.8°.

ACTUAL TEMPERATURES:—

LONDON, *Wednesday, March 4* (6 p.m.); Max. 53°; Min. 44°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, March 5*, (10 a.m.); Bar. 29.6°. Temp. 53°. *Weather*—Fine.

PROVINCES.—*Wednesday, March 4*. Max. 52°, Rams-gate; Min. 42°, Aberdeen.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—

Roses, Rhododendrons, Perennials, Lilies, etc., at 12.30, at Stevens's Rooms, King Street, Covent Garden, London, W.C.

MONDAY AND FRIDAY—

Herbaceous Plants and Hardy Bulbs, Roses and Fruit Trees, at 12, at 67 and 68, Cheapside, E.C., by Protheroe and Morris.

WEDNESDAY—

Liliums and other Hardy Bulbs, Herbaceous Plants, etc., at 12, Palms and Plants at 5, at Protheroe and Morris's rooms.

THURSDAY—

Roses at Protheroe and Morris's rooms, at 1.

FRIDAY—

Freehold Property, Willard's Nurseries, Polegate, near Eastbourne, 4a, 2r, 19p., House, Greenhouses, etc., also Vines, etc., Fruit Trees, Crops, etc., at the Mart, London, E.C., by Protheroe and Morris, at 2.

Anyone with a taste for statistics and a leaning to the marvellous may read in the textbooks of botany wonderful estimates of the amount of water absorbed and transpired by trees. They may learn that a sunflower may give off several pints of water on a summer day; that in the case of a young tree the amount runs into gallons, and in that of a full-grown tree into tens or hundreds of gallons. The most recent estimate of this sort has been commented upon in the *American Press* (see *American Fruits*, February, 1914). According to these comments, Professor Pierce, of Harvard, has computed that a giant specimen of the Washington Elm, which he examined, gives off some 2,000 gallons of water per

day. The tree, according to the same computation, possesses 7 million leaves, the total surface of which is equal to an area of about 5 acres. The estimate is arrived at thus: An acre of grass gives off 6,000 quarts of water in 24 hours—presumably on a summer day—and on the basis of this estimate the tree's loss is computed.

We have not the text of Professor Pierce's original contribution, and hence can make no comment on these statements beyond saying that their author is well known for his conscientious, cautious, and valuable contributions to botanical science.

But on the general question of the amount of water given off by trees we may observe that, so far as we know, the estimates in the books have no proper experimental basis whatever.

That the amount of water given off by a tree is very large no one will dispute; but it is very doubtful whether that amount is anything like so large as is generally believed. To determine the amount of water given off by a branch, to estimate the total area of the leaf surface, and to work out a result by rule of three is to reach a valueless result. For no one can say that in the competition for water that takes place between the leaves all the leaves win first place. It may well be that failing in the daily competition the leaves of not a few branches are compelled to close their stomata, to shut down operations and to curtail their rate of transpiration. The poor development exhibited by many of the branches of an unpruned tree would indicate that this happens widely in Nature, and the conviction entertained by gardeners that light and air must be admitted to the centre of a tree, if proper ripening of wood is to be secured, may have its explanation in part in the fact that with a head of dense foliage transpiration of the inner leaves is reduced greatly.

In any case the figures so often given cannot be taken as the results of experiment, and it would be interesting if some botanist would take the trouble to carry out an actual experiment on the amount of transpiration of a large tree. We may confess that we ourselves planned such an experiment some years ago, purchased the necessary balance and potted up the trees. The trees still languish in their pots and the balance ornaments our laboratory, but owing to the pressure of other duties the experiment was never completed. Needless to say, the results of an experiment of this kind made with several different subjects would have a distinct practical value.

The recent researches of Willstätter and Everest appear to have settled finally a question which has vexed the minds of botanists and chemists—namely, the chemical composition of the anthocyan pigments of plants. These pigments, which occur in the flower and fruit and in other parts of the plant, are dissolved in the cell sap, and are generally, and perhaps always, of a blue, violet, or red colour.

By the use of large quantities of raw material—the corollas of the Cornflower (*Centaurea Cyanus*)—Willstätter and Everest have succeeded in isolating the anthocyan pigment in a pure state in sufficient quantity to admit of a chemical analysis. They find that there is, as was to be expected, a close and definite relation between the blue, violet, and red anthocyan pigments. All the pigments are glucosides—that is, substances which, when acted on by acids or other suitable re-agents, unite with water and split off sugar from their molecules. The anthocyan glucoside occurs in the flower in one of three forms. It may occur as a free acid, in which case the anthocyan is violet; or the free acid—known as cyanin—may combine with potassium to form a blue salt; or the cyanin may unite with a plant acid, and give rise to a red pigment.

Into the chemical details of these researches we cannot enter now, but the bare facts deserve to be put on record here, for a knowledge of the properties of these anthocyan pigments cannot fail to be of great service, not only to the student of plant-chemistry, but also to the plant-breeder. When he sets out to produce a new colour in a race of plants the plant-breeder is, in fact, undertaking to perform a chemical experiment. If he could but know in advance the nature of the pigments in his plant and their modes of reaction with other reagents he would have, if not a guide, at least a hint as to what he may expect as the result of crossing different colour-forms with one another.

We understand that Professor Willstätter is now engaged in further investigations on the subject of the anthocyan pigments, and we may, therefore, expect that before long one of the most obscure problems in plant physiology—the nature and relations of the anthocyan pigments—will be solved completely. If so, the plant-breeder will obtain a clue, for which he has long sought, to guide him through the maze of plant coloration.

It is of interest to observe that each of the three anthocyan pigments of the Cornflower, the blue, violet, and red, may be caused to undergo change into a colourless condition, and this without any chemical change other than that of a rearrangement of the parts of its molecule. Hence it might be supposed that the white forms of certain flowers are white because of the occurrence of the colourless (isomeric) form of anthocyan. So far, however, although Willstätter and Everest have examined many different flowers from this point of view, they have failed to obtain any evidence that whiteness is due to the presence in flowers of a colourless anthocyan.

Achillea argentea (see fig. 78).—The dwarf-growing plant known in gardens as *Achillea argentea* is one of the Yarrows which by reason of neatness and compactness of habit are well adapted for the rock garden. The flowers are large in proportion to the size of the plants, and the silvery-grey foliage is very attractive at all seasons. There is some uncertainty as to the origin of *A. argentea*, although it has been



[Photograph by C. P. Raffill.

FIG. 78.—ACHILLEA ARGENTEA GROWING IN THE ROCK-GARDEN, KEW.

cultivated in gardens for many years. The plant illustrated is evidently a hybrid, and has most probably been derived from *A. umbellata* and *A. rupestris*. The tufts of hoary, pinnatifid leaves are about 1½ inch long, and the heads of flowers develop on stems about 5 inches in length. The ray florets are pure white, whilst those of the disc are pale yellow. Like many other plants possessing silvery foliage *Achillea argentea* requires a dry, sunny position in well-drained, gritty soil. It is very liable to damp in winter, and should be planted on a rocky ledge or steep, rocky bank. The name is a synonym of *Tanacetum argenteum*, quite a different plant.

Coloured Supplement.—The subject of the coloured plate to be published with the issue for next week is the Collette Dahlia Skerryvore.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will take place on Tuesday, the 10th inst., in the Vincent Square Hall, Westminster. A competitive hulk show will be held and will continue for a second day. At the 3 o'clock meeting of the Fellows on the Tuesday an address on "Adaptive Degradations: the Cause of Many Cases of Evolution among Plants," will be delivered by Rev. Prof. G. HENSLOW.

DUTCH VISITORS AT THE HORTICULTURAL CLUB.—A House dinner will take place in the Club Room at the Hotel Windsor, Victoria Street, Westminster, on Tuesday, the 10th inst. Members of the Dutch Bulb Growers' Association, who will be present to assist in judging the flowers at the Royal Horticultural Society's exhibition of Dutch bulbs on the same day, and several other bulb experts from Holland, have accepted invitations to be present. After dinner there will be a talk about bulbs. The Rev. J. JACOB will introduce the subject.

THE NATIONAL DIPLOMA IN HORTICULTURE.—The number of gardeners who have registered their names as intending candidates for the forthcoming preliminary examination for the Diploma is 65. The Council of the Royal Horticultural Society has every reason to be gratified with the immediate success which—as judged by this number of candidates—has followed upon the decision to establish the Diploma. The candidates come from all parts of England and from Scotland, and hence it may be found necessary, in all probability, to hold the practical garden tests in some five or six centres in different regions.

THE ROYAL SOCIETY.—Among the men of science recommended by the Council for election to the Royal Society is Professor BIFFEN. As is well known to horticulturists, Professor BIFFEN has devoted himself for many years to the breeding of Wheat, and has been conspicuously successful in raising rust-resisting strains, and also strains which combine the characters of "strength" of flour and heaviness of yield. Professor BIFFEN is a keen gardener, and has a special predilection for Roses. Striking evidence of his wide horticultural knowledge and keen observation is to be found in the Masters Memorial lecture (see *R.H.S. Journal*, Vol. XXXIX., Part II., p. 313), which Professor BIFFEN delivered before the Royal Horticultural Society in July of last year.

ROYAL GARDENERS' ORPHAN FUND.—Mr. F. W. TOPHAM, of Northwick Hall Farm, Claines, Worcester, the local secretary for the R.G.O.F., is in the habit of promoting concerts and whist drives in Worcester in aid of the fund. The latest result of his efforts was a very successful whist drive, which took place a week or so ago, and realised a profit of £11 for the charity.

NATIONAL CHRYSANTHEMUM SOCIETY.—The National Chrysanthemum Society is holding three exhibitions this year; two will be held at the Crystal Palace, Sydenham, on October 7 and 8, and November 4, 5, 6 respectively,

whilst the other will take place at the Essex Hall, Essex Street, Strand, on Wednesday, December 9. Schedules may be obtained from the Secretary, Mr. R. A. WITTY, 72, Savernake Road, Gospel Oak.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held in the Lecture Hall of the Institution on the 9th inst., when the discussion on Mr. CHRISTOPHER TURNOR's paper, entitled "Comments on the Land Enquiry Committee's (Rural) Conclusions," will be resumed. Mr. EDWIN SAVILL, member of Council, will re-open the discussion. The chair will be taken at 8 o'clock.

LEAMINGTON COUNTY SHOW.—The Committee responsible for promoting the Leamington and County Flower Shows may be congratulated on the financial success obtained in 1913, the result of this good fortune being evident in the balance in hand of £65 as against a deficit of £54 at the end of 1912. All the challenge cups which were won outright last year are replaced by the generosity of private donors. Mr. F. A. CHANDLER offers a 25-guinea Cup for hardy flowers, Mr. SHAW a similar Cup for a group of Roses, the MAYOR of LEAMINGTON a Cup for the Warwickshire Amateurs' group class, and the EARL OF CRAVEN a Challenge Cup for a group of hardy plants. In future it will be impossible to win the Challenge Cups outright, but these awards will be accompanied by money prizes as compensation. The forthcoming show will be held in the Victoria Park, Royal Leamington Spa, on July 22 and 23, and we are informed by Alderman HOLT, who takes a special interest in the event, that a good display is confidently expected. The secretary is Mr. LESLIE D. OVERELL.

RETIREMENT OF MONSIEUR TRUFFAUT.—On February 15 the farewell banquet promoted by the Société Nationale d'Horticulture de France in honour of Monsieur TRUFFAUT took place in the Banqueting Hall of the Palais d'Orsay, Paris. More than a hundred guests were present to celebrate the occasion and express their gratitude to the veteran horticulturist who had for so long filled the position of Honorary Vice-President. Monsieur VIGER presided, and Monsieur ABEL CHATENAY, as Secretary, Monsieur TRUFFAUT's oldest friend, was entrusted with the presentation of a beautiful work of art which had been subscribed for by the guests. Several congratulatory speeches were made, to which Monsieur TRUFFAUT responded. He thanked all those present for their kindness and for their good wishes, and observed that it gave him great pleasure to see in Monsieur CHATENAY his successor in office. He then briefly passed in review the chief events in the horticultural world since 1855.

THE FLOWERING OF THE ALMOND.—The first flowers of an Almond tree, situated in a favourable position in Wandsworth, five miles south-west of London, expanded fully on Monday last, the 2nd inst. Previous dates for the flowering of this tree are: January 25, 1913; February 24, 1912; March 11, 1911; March 12, 1910; April 1, 1909; March 23, 1908; March 20, 1907; February 28, 1906; March 7, 1905; and March 21, 1904.

MR. G. H. HOLLINGWORTH.—We are informed that Mr. G. H. HOLLINGWORTH, who has been horticultural instructor to the Gloucester Education Committee for nearly ten years, has been promoted to the position of Organiser of Agricultural Education for the county of Gloucester.

STORM IN ABERDEENSHIRE.—A severe thunderstorm occurred in Aberdeenshire last week, and produced a remarkable effect on a Silver Fir at Newton of Inch. The tree, which stood about 600 yards from the mansion house, was blown to pieces, and scattered far and wide by the lightning. During the night a vivid flash

of lightning lit up the scene, and a terrific report was heard, the windows of the house and outlying buildings being violently shaken. When morning dawned it was found that the tree, which contained about 45 cubic feet of timber, had been completely destroyed. One fragment, weighing about 2 cwt., was found over 250 yards away, and another, of about the same weight, over 150 yards away, and pieces had been carried into the neighbouring wood, where the trees showed the marks of the blows. A strong iron fence near the tree was smashed, and a similar fence over 100 yards away was considerably damaged, apparently by the fragments. From the way in which the fragments were spread in the neighbouring wood it was evident they had been blown to a considerable height. The destruction was complete, the tree had been torn right out of the ground and a big hole left.

ANIMALS AND PLANTS UNDER DOMESTICATION.—At the last lecture of this course, at the Royal Institution, Professor BATESON said that, as he had pointed out in the previous lecture, the development of most of our cultivated plants had followed similar lines, and the question now arises whether our animals have passed through an analogous course of development. Unfortunately, owing to the great antiquity of our domestic breeds, the evidence as to their origin is very incomplete. There are a few cases in which we know how a breed has originated. Such a case is that of the Suffolk breed of sheep, which was produced by crossing the Southdown breed with the old Norfolk breed. Again, a breed of silkworms is still used for the production of coarse silks which was raised by crossing *Attacus ricini* with *A. cynthia*. Nevertheless, the existence of a few such cases does not give any satisfactory explanation of the origin of our types, and when we turn to the critical examination of the part played by artificial selection, we fail to find any adequate basis on which to build a theory. Artificial selection picks out the types which are already in existence; it cannot produce a new type. As an example of the powers of artificial selection the history of the Sugar Beet was given. There was a great increase in the sugar percentage between the years 1850 and 1890. The first improvement was owing to mass selection, in which seed was saved from the best plants, and no precautions against cross fertilisation were taken. Then a further increase occurred when pure line selection began, in which the best plants were self-fertilised, and their offspring grown separately. When a plant which has been selected for a quantitative character, such as tallness, throws plants which are taller than itself, it is possible that segregation of factors has occurred. In this way selection may appear to produce new types, while in reality it is only weeding out the heterozygous plants.

HISTORY OF IRISH WOODS.—Prof. AUGUSTINE HENRY, in the course of a lecture at a recent meeting of the Belfast Naturalists' Field Club, said that the history of the woods of modern Ireland began after the Ice Age, as during this period all the vegetation and mould were destroyed, a barren sterile soil being everywhere left. He explained the occurrence of the submarine forests, found all round the coast, and of the great forests in the peat, which were formed in the Neolithic period, at the time when the climate was drier than now. There were Pine trees, however, in the great Leinster forest in 1010 A.D., which were carried to Kincora on the Shannon to make masts for the ships of King BRIAN. Firs grew, according to a note on an old map, on the mountains of Down in 1570. The association of the Pine with the capercaillie in Ireland was striking, as this beautiful bird gradually became extinct with the increasing rarity of the Pine woods. Ireland always had plains on which trees never grew, like the Curragh of Kildare, Lecale in Down,

and the great plain of Roscommon. During the Bronze Age man began to clear the forests for the cultivation of cereals and Flax, and the agricultural area increased in succeeding centuries. Half the island was probably covered with forest at the time of the Norman Conquest. The woods were remorselessly cut in the seventeenth century, as timber was the main source of profit to the adventurer, who exported oak staves abroad, established ironworks all over the country, and who consumed for charcoal all the smaller trees. Remnants of the old woods still existed in many parts, and are characterised by a peculiar flora and fauna, which is non-existent in plantations and unwooded ground. Professor HENRY gave a list of these plants, and alluded to the lingering of two species of *Pyrola* in a few spots as indications of former Pine woods. These little plants were dying out, and would become extinct like the capercailzie. He gave many instances of remarkable woods in Ireland, as the Oak and Holly woods of Castlewellan, out of which £500 of Holly timber was sold in one year. A remarkable Ash wood at Glaselough, in Monaghan, in 1801 was reported to be the finest in Europe at that day, being worth £1,000 an acre. Crab trees of great age were common a century ago along the shores of Lough Neagh, and the largest Oak that was ever known in Ireland was felled at Portmore about 1750. The most celebrated tree in Ireland is, however, fortunately still alive. This is the famous Yew now in the grounds of Crom Castle, in the townland of Crom, in Fermanagh. This tree is remarkable for the enormous spread of its branches, over 200 people being able to sit down to a banquet under its shade. The lecturer had discovered an early reference to this tree in O'CLERY'S *Contention of the Bards*, 1620, where the Yew of Crom is said to have been discovered, about 125 A.D., on the day when CONN of the Hundred Fights was born. This tree has probably an antiquity of over 1,500 years, and may have been associated with the worship of the pagan idol Crom Cruach.

COLD STORAGE OF FRUIT.—The Report of the Union of South Africa Department of Agriculture contains, in addition to much other valuable information, the result of investigations, made by the Fruit Inspector, Cape Town, on the temperature most suitable for the cold storage of fruit. Experiments were carried out on a large scale with various fruits—Apricots, Peaches, Plums, Grapes, etc.—and the conclusion was reached that 32° is the most suitable temperature. Fruit kept for from 18 to 30 days at 32° was found to last well for from 7 to 10 days when taken out of cold storage. Certain fruits, such as Burbank Plums and yellow-fleshed Peaches, are not amenable to cold storage treatment.

GARDENING IN AMERICA.—Mr. HARRY A. BUNYARD writes us from New York City as follows:—"A few years ago I wrote you relative to the scarcity of assistant gardeners and foremen for private estates in America, mentioning the fact that there were good openings for progressive young men willing to work and to adapt themselves to conditions here. At that time your editor took exception, stating that these young men should go to the British Colonies rather than come to the United States. However, a good many young men came over and found positions practically the day they landed. The immigration laws of the United States do not apply to gardeners, owing to the fact that they are classified as personal servants. This may be somewhat a reflection upon the profession, but it is nevertheless a fact. I am writing at this time to convey the same information, that there is a paucity here of young gardeners, more especially in the spring and fall. The wages run from \$60 to \$75 per month, without board, and \$40 to \$50 per month with board. The average cost for board and room here for gardeners is about \$20 per month. I may at this time state that while gardening is not quite

so far advanced as in the old country along some lines, there are immense private estates and florists' establishments that compare very favourably with those in Europe. I could cite many instances where assistant gardeners have grown up in this country and have now large commercial establishments themselves. It all depends upon the man. Should anyone wish to communicate with me on the subject I should be happy to answer any questions through the *Gardeners' Chronicle*. There are no openings for head gardeners, who are recruited here as in Europe from the foreman and assistant gardener."

GLADIOLUS.—An interesting account of the Gladiolus and of the Gladiolus trials made at Cornell was given recently by Mr. ALFRED C. HOTTES before the New York State Federation of Floral Clubs, Ithaca, N.Y. (see the *American Florist*, February 14). Some 700 varieties of Gladiolus have been grown and described in the course of the trials, and a careful inquiry has been made into the history of the cultivated varieties. Mr. HOTTES points out that up to 1841 the varieties cultivated were of the Gladiolus nanus type, e.g., *G. Colvillei* and its white variety, *The Bride*. Somewhere about this time BEDDINGHAUS, gardener to the Duc d'AREMBURG, crossed various African species of Gladiolus. As a result of certain of these crosses the hybrid known as *G. gandavensis* arose. The precise origin of this famous hybrid is unknown, but Mr. HOTTES gives his support to the view expressed by various experts that it originated in a cross between the brightly-coloured *G. psittacinus* and *G. oppositiflorus*, the flowers of which are opposite and more profuse than those of the *G. psittacinus*. The hybrid was brought out by VAN HOUTTE, and SOUCHER, gardener to NAPOLEON III., who admired the plant, set himself to improve it by crossing Gandavensis varieties, and also by hybridising these varieties with other species of Gladiolus. LEMOINE, of Nancy, also took up a like line and crossed Gandavensis with *G. purpureo-coloratus*, a species with hooded or bell-shaped flowers, greenish-yellow in colour with a conspicuous maroon blotch. The result was Lemoinei—a partially hardy form with deep coloured and velvety flowers, somewhat lacking in size, and often not open enough. Later LEMOINE crossed some of his namesakes with *G. Saundersii*, a species with wide-open scarlet flowers with spotted throat. Hence arose the forms known as *G. nancianus*, with the larger, wider-opened flowers of *Saundersii* and the wonderful colours of Lemoinei. LEICHTLIN, of Baden-Baden, at about the same time crossed Gandavensis with *Saundersii*, and obtained the *Leichtlinii*, a great flowering race. History now follows the plant to the United States. The stock of *Leichtlinii* was purchased by Mr. HALLOCK, of Long Island, and after some improvement passed into the hands of Mr. JOHN L. CHILDS, who rechristened it *Childsii*. The ruffled strain was originated by Mr. A. E. KUNDERD. Recently yet another species, *G. primulinus*, has entered the hybrid mosaic. The yellow of this species has proved useful in toning down the more garish colours of the hybrids, and this has facilitated the production of delicate orange and salmon pink shades. Mr. H. H. GROFF has also raised hybrids, which have been fertile in novelties.

BASIC SLAG.—A useful summary of the properties and modes of use of this important artificial manure is contained in Leaflet No. 267 of the Board of Agriculture. As is well known to many gardeners, basic slag is one of the most serviceable of fertilisers, and, although it exercises its beneficent effects most on a dry soil, it is doubtful whether any garden soil is not rendered more fertile by an application of basic slag. It is easily applied, and one of the most effective methods of application is to dust basic slag over the manure which is being dug into the

ground. The rate of application should be 2 to 4 ozs. per square yard. Good for flowers and for fruit, basic slag should be excluded from the lawn, and this for the very reason which makes it an excellent fertiliser for pastures—namely, that it encourages the growth of Clover. The leaflet draws attention to the importance of securing good basic slag. The goodness depends on several conditions: (1) the total amount of phosphate of lime which it contains, (2) the amount of readily soluble phosphate, (3) the fineness of the powder. The fact that basic slag contains a certain amount of free lime—from 2 to 5 per cent.—is also to be remembered, and makes this fertiliser of particular value for garden soils wherein lime is apt to be deficient. In many cases, for example on light soils, it is advisable to add kainit—at the rate of $\frac{1}{2}$ to 1 oz. to the square yard—as well as basic slag. Anyone who has not tried the effect of the latter should test for himself the value of basic slag when next making up a flower border, applying it in the way indicated to about half the length, and observing the growth of the herbaceous plants, not only in the following, but also in subsequent seasons.

OENANTHE CRUCATA.—A case of fatal poisoning of four heifers by the root of this plant has been reported recently from Wells, Somerset. At this time of the year, when ditches are cleaned out and the mud thrown up on the margins, the roots of this plant contained in it become washed clean by rain, and the white Dahlia-like tufts of fleshy roots then prove tempting to cattle grazing in the fields. The cases of poisoning recorded are almost invariably at this time of year, and, as the leaves do not appear until April, farm labourers do not recognise the root as belonging to a dangerous plant. The fleshy, spindle-shaped roots when broken across exude scattered drops of milky juice, which turn after a short time into saffron-coloured dots (hence the specific name "crocata" applied to the plant), and by this character and its white colour and spindle-shaped form the root may be recognised. Gardeners residing on farms where there are streams in pastures will do well to call the attention of farmers to the danger of this plant, which frequently causes death in cattle in less than three hours after consumption. The plant is illustrated in *Gardeners' Chronicle*, April 10, 1902, p. 265.

ANNUALS.—III.

ANNUALS growing from six to nine or ten inches in height are very numerous, and those to which I shall refer do not by any means exhaust the list; they must be considered only as examples, but that they are good examples, I can vouch.

ANAGALLIS (PIMPERNEL).

These, like all the others, I sowed in the open border on the 5th or 6th of May, and though they took a considerable time—twenty-four days—to get above ground, they did well, and continued in flower till quite late in the season. *A. Monelli Parksii* at the end of the season was nine inches in height. Its fine orange scarlet flowers were very freely produced at the axils right up the stem. *A. Monelli Phillipsii* had rich blue flowers on slender footstalks. The flowers were about one inch in diameter, and on close inspection revealed a deep rose-coloured ring round the centre, although the general effect of the flower was blue. Like the former variety it reaches a height of nine inches.

CAMPANULA ATTICA.

Two varieties of this were grown, both of the same height and habit, and both most floriferous. The flowers were about half an inch in diameter; those of the type being rich bluish purple with white centres, the other form having fine white flowers.

CLARKIAS.

Here I refer only to the dwarf race, which grew with me about nine inches in height. They are called Tom Thumbs, but all had a percentage of giants among them, which, however, are easily distinguished and may be removed. They were all double forms—white, purple, crimson, etc.—and each and all formed charming groups. Mr. Alfred Watkins has for a number of years been working hard at these dwarf Clarkias, and is getting the strains sent out by his firm very near perfection.

CANDYTUFT.

There is now a dwarf white Candytuft called Little Prince. It grows, according to the richness of the soil in which it is planted, from six to nine inches in height. It produces fine large heads, the individual flowers of which are broad and of excellent substance. Messrs. Sutton say, "Little Prince remains in perfection for a longer period than any other annual Candytuft," and this I found it to do.

EUCCHARIDIUM BREWERI.

This must not be judged by the common tall form *E. grandiflorum*, to which *Breweri* is very superior. It grew eight inches high and bloomed most profusely. The flowers were of a charming shade of pale rose marked occasionally with white.

DWARF JACOBEA.

There are many varieties of the dwarf double Jacobeas—white, purple, rose, red, etc. In the early stages of their growth they remain very dwarf. When in full bloom their height, to the top of the flowers, is eight inches. The strain seems quite true to dwarfness, as it gave no tall ones, but there is room for improvement in doubleness. It rather spoils the effect of a mass if several of the plants have large staring yellow eyes while all the others are perfectly double. I do not doubt the difficulty recognised by every seedsman of getting a strain quite true to doubleness. Very hardy and easily grown, the seed of this Jacobea germinates quickly, and plants should be thinned to at least four inches.

KAULFUSSIA.

This annual has other names, and is generally put down as growing six inches tall, but with me it grew to nine inches. *K. amelloides* produced brilliant blue flowers in abundance. *K. Kermesina* gave ruby purple flowers. The former was the more effective. Daisy-like, about one inch in diameter, on slender footstalks, describes the individual blooms.

LIMNANTHUS DOUGLASSII.

This free-blooming very hardy Californian annual grows eight or nine inches high to the top of its flowers. The latter are saucer-shaped, one inch in diameter, yellow in the centre and marked with white round the edges. It is very fragrant and much visited by bees. It germinated quickly, and was in full bloom in July. There is a slight difference between the several strains, some being larger flowered than others, doubtless due to the selection of stock seed from large flowered plants.

NEMOPHILA.

I grew four sorts of this trailing or spreading annual, the well-known *insignis* being the brightest and best of the four. Its flowers are one inch in diameter, bright sky-blue with white centres. *insignis alba* is a white counterpart of the former; the anthers are black and rather conspicuous. *N. atomaria* has white flowers, not quite so large as *insignis*, and covered with minute black spots. *N. discoidalis elegans* is most distinct. The flowers, which are rather over half an inch in diameter, are deep maroon in colour, and are edged or laced with pure white.

ZALUZIANSKIA SELAGINOIDES (see fig. 79).

A most charming little plant covered with myriads of star-shaped flowers— $\frac{1}{4}$ inch in dia-

meter. The colour was white, with only the faintest trace of pink. The pale coloration was no doubt due to the dry season, as it generally is much pinker.

PHACELIA CAMPANULARIA (see fig. 80).

One of the very best blue annuals, growing to a height of eight or nine inches. The flowers are bell-shaped and of the most brilliant ultramarine colour. The plant remains in bloom for a long time, the flowers opening in succession up the stem which carries six or more. The foliage is somewhat large for the size of the plant, it is



FIG. 79.—ZALUZIANSKIA (NYCTERINIA) SELAGINOIDES : FLOWERS WHITE WITH ORANGE-COLOURED CENTRES.

sage green in colour, shaded with purple at the edges and deeply veined.

The Saponarias are too well known to require an extended reference. They form fine clumps, and are literally covered with small star-shaped



FIG. 80.—PHACELIA CAMPANULARIA : FLOWERS BLUE.

flowers, either pink or white. They are most valuable for masses.

SILENE PENDULA COMPACTA (see fig. 81).

There are many forms of *Silene* which run from one to two feet in height, but the compacta varieties are the only ones proper to this division of annuals. They grow six inches or rather more in height. They may be sown in autumn as they winter well and are most useful for spring gardening. There are single and double forms, both of the white and rose varieties. The flowers are freely produced and are from a half to three-quarters of an inch in diameter.

The single rose-coloured variety has white centres to the flowers, and the edges are notched. They rather resemble some of the *Lychnis*, to which they are allied.

TAGETES.

Although invariably sown indoors and treated as half-hardy, or even tender annuals, I had remarkable success with *Tagetes* sown in the open border. Both *signata pumila* and *Legion of Honour* came up well, and bloomed persistently. The former produces small, single, bright yellow flowers in great abundance associated with fine feathery foliage, whereas *Legion of Honour* is a dwarf single French Marigold, also bright yellow but with much larger flowers than *Tagetes*, and blotched with rich brown. They both grow eight or nine inches in height. *Signata* is less formal, and therefore more graceful than *Legion of Honour*.

The remarks made above regarding *Saponarias* apply also to the well-known *Virginian* stock, but the latter is a much less prolonged bloomer. W. Cuthbertson.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

NON-INHERITABLE VARIABILITY.—I note that in the report of the general meeting of the Linnean Society of London, on the 19th ult., Dr. John P. Lott, of Haarlem, read a paper entitled "On the Origin of Species by Crossing," at the conclusion of which these expressions are quoted: "The author expressed his firm conviction . . . that no transmittable variation exists, and that all apparent variability is due to an original cross"; and that "inheritable variability does not exist, with the always possible exception of mutation through loss of factors." As, unfortunately, I was not present at that meeting I missed the opportunity of putting forward a few facts which, to my mind, entirely refute both contentions. With reference to the first, I would point to the easily-proved existence of innumerable variations in our native Lady Fern, *Athyrium filix foemina*, which have been found in a wild state. Since the species is here a solitary one, these variations cannot possibly be ascribed to crossing between it and another; that is absolutely an impossibility. Secondly, as there is no known species of Fern which is normally crested or tasselled at its terminals, how can the innumerable wild sports of many species which are so characterised have arisen by virtue of "original crosses"? Nor can they be imputed to "loss of factors," since they constitute additional ones to the normal plan. That inheritable variability does "not exist" is equally disproved by the fact—again easily demonstrable by living plants in my collection and others—that the spores of these varied individuals produce, as a rule, perfectly characteristic progeny generation after generation. If this be not by virtue of "inheritable variability," then my construction of the term must differ vitally from that of Dr. Lott. Chas. T. Druery, V.M.H.

TAX FOR TREES.—The *Daily Mail* reports that at a recent meeting of farmers in Hertfordshire a strong protest was made against hedges and hedge-row timber, on the grounds that these features of our country represent so much waste ground, and that nothing will grow where the roots of a tree ramify. One member estimated that each tree on his farm represents a potential loss of £1 per year. "The trees stood there 'eating their heads off,' benefiting neither landlord nor tenant." The hedges, which excite the admiration of nearly every visitor to our country, are, according to some of the speakers, simply wasters of the ground, nurseries of weeds and harbours of grain-eating sparrows and rats. Their value as wind-screens and for furnishing shade is apparently not worth considering. But, even though a suggestion for the taxation of every tree on a farm over a certain age was advanced, it is

difficult to believe that these farmers were serious in their remarks. *B.*

YELLOW VIOLAS.—The excellent coloured plate of *Viola* "Walter Welsh" in your issue of 28th ult. must have set many people wondering how such fine plants could be grown on the light sandy soil of Wisley. I was a visitor to the R.H.S. gardens on two occasions last summer, and admired the *Viola* beds very much. They had been well done. Mr. Wright, the superintendent, had delegated the duty of looking after the *Viola* trials to Mr. Blakey, and in conversation with him he frankly revealed his method of culture. The ground was prepared in August and early September. Old cow manure and leaf soil were put into the beds, in liberal quantity, 6 inches beneath the surface, to make certain that the roots would travel downwards, because, said Mr. Blakey, "when they get down among the manure and leaf-mould they can stand drought and other trying conditions and look happy." This they did, many of the individual plants bearing from forty to seventy flowers in the middle of June. Much

low in colour, with a perfect habit; Redbraes Yellow, deep golden-yellow of excellent habit; Royal Sovereign, also a grand rich yellow. Those who want the largest flowers of all produced on fine long stems must grow Moseley Perfection—66 per cent. of the plants of the two last-named stood over two winters at Wisley. No *Viola* has a deeper, richer yellow tone than Walter Welsh, the one you figured in colour. In spring and early summer its rays are apt to run together and assume a blotchy appearance, but that goes off. It is one of the strongest growers, growing if it gets the least encouragement to 15 or 16 inches. *W. C.*

GRAFTING ROSES (see pp. 52, 106, 135).—*Amateur* is correct in his remarks concerning temperature, etc. Having handled thousands of *Roses* in all stages of growth, I think the most important item is to prevent the damping off of the young growth. The temperature should be 70°, not more, and not lower than 65° at night. From the time when the stocks are brought into the pro-

amount of air may be increased gradually until finally the lights may be removed entirely for a short time daily. A temperature of 83° is dangerous for young grafted *Roses*, and I should think bad results would follow, for the high temperature promotes a quick growth, and when taken out of the frame the young growth would hang limp, to be put back into the propagating frame, and ultimately thrown away. *W. E. Kearn, Horsforth, Leeds.*

—In the further remarks by *Experience* it is observed that there can be no damage by damping providing dormant, well-ripened wood be used as scions. It will be remembered that he stated on p. 52 that only novelties were worth while grafting. Where will he get his well-ripened wood from, as the newer varieties are propagated to such an extent that one gets weak, pithy wood for at least the first two seasons? Sunburst was certainly an exception, but take *Rayon d'Or*, *Louise Catherine Breslau* and *Mdme. E. Herriot*, all *Roses* of *Lyons Rose* type, and where does his well-ripened wood come in? I was surprised to see that he has come down to five days as regards keeping the case closed. In a perfectly-kept case enough moisture arises to form big drops on the glass, which would drop in twenty-four hours, when the damage is done. He would also find the raffia round the grafts saturated with moisture. The lights should be taken off for half hour the second day to allow raffia to dry. If unestablished *Briars* were used, being potted only ten days, he would have, if grafting any number, a good number still in the case if left to the proper time of removing at the end of six weeks. If taken out in three weeks I would be interested to know how many per cent. die after coming out of the case. *Amateur.*

RUSCUS ACULEATUS.—The shade-loving *Butcher's Broom*, with its leaf-like branches, is fairly common, but, so far as I am aware, it is seldom seen in fruit. I had that pleasure last week when on a visit to Mr. Wilks' pretty garden at Shirley. As is well known, the species is usually dioecious, and it is only when the male and female plants are grown together that the bright red berries ($\frac{1}{2}$ inch in diameter) are abundantly produced. It might be suggested to those interested in the subject to examine the flowers and ascertain whether they possess male and female plants. This may easily be done as the protandrous male flowers are now appearing. They are star-shaped and about $\frac{1}{4}$ inch diameter. The bright yellow and sessile anthers are readily seen surmounting the short, stout and slightly purple column. In the female flowers, which appear later, the style is short and the stigma discoid. According to *Hooker's Flora* (1884), p. 403, the male flowers are on narrower cladodes; but while this may be borne in mind, a careful examination of the flowers would at once settle whether the plants in any particular locality are male or female, and a mutual exchange of plants might follow. *D. Morris, Boscombe, February 28.*

DER RUCKSACK.—Having grown up in the Austrian Alps, I have been familiar with the Austro-Bavarian dialects from childhood. Professor Farmer will, therefore, forgive me if I question the correctness of his derivation of the word "rucksack." To me there is no doubt that a "rucksack" is a sack carried on the "ruck'n" (i.e., back). An Austrian, Styrian, Tyrolese or Bavarian mountaineer, if asked why he called the thing a "rucksack" would reply, "Because I carry it 'auf'n ruck'n,'" that is, on the back. He would never say "auf'n rücken," unless he affects to speak "Hochdeutsch." The use of "u" in the place of "ü" is characteristic of the Austro-Bavarian dialects, as "buck'n" for "bücken" (to bow or stoop), "bruck'n" for "brücke" (bridge), "druck'n" for "drücken" (to press), "muck'n" for "mücke" (gnat), etc. Further, if the same man were asked what he does if the "rucksack" presses too heavily on his shoulders, he would say, I give it a "rucker" (a jerk) to shift it, but never a "ruck," which is "Hochdeutsch." The form "ruck" for "rücken" (back) also occurs occasionally in place names as "Hausruck" (Upper Austria), a range of hills



FIG. 81.—*SILENE PENDULA COMPACTA*: FLOWERS PINK.

(See page 173.)

the best results were obtained with the plants planted in October, which came through the winter without a single loss. October planting is not always convenient, and in some districts and in some soils not advisable. For spring planting the beds or stations for *Violas* should be prepared in a similar way to that adopted at Wisley. *Violas* need not be in beds. In clumps of six to a dozen plants of carefully selected colours, they are most valuable in the foreground of mixed borders. For such sites varieties should certainly be chosen which possess the power to stand over winter in the open. In the *Journal of the Royal Horticultural Society*, published in December, 1913, there is a valuable key to such varieties. There is a complete list of all varieties in the trial and the percentage of plants which stood successfully through two winters is given, the following yellows being specially commended on that score:—Bullion, Grievei, Kingcup, Molly Pope, Primrose and Walter Welsh. In addition to these, there are yellow *Violas* which most experts would term flowers of a better class. Such are *Sulphurea*, pale sulphur yel-

pagating house to the time when five-inch pots are needed the temperature should always be maintained evenly. The chief detail to observe after grafting is the drying of the lights each morning. I like to do this at one special time, namely, just before going to breakfast. The lights dry during the half-hour, and can then be closed. If the weather is fine no further alteration is needed until next day, but in dull, wet weather it is necessary to lift the light again for a short time in the afternoon, wiping all woodwork and glass to get rid of the condensed moisture. In a temperature of 70° a fair batch of the grafted plants should be ready to be taken out of the propagating frame in ten days or so, but some remain dormant for a long time. Grafts that were made from hard spur growths should be placed at the warmer end of the frame. These generally make nice bushy plants when started. As the plants are taken from the frame each should be labelled and stood in another frame on a layer of ashes, shutting and shading the frame if necessary for a few days. After a week or so a little air may be afforded by using a label as a wedge. The

with a wide, flat back. Finally, I would only add that the "u" in "rucksack" sounds as "u" in "put" or "push." *O. Stapf.*

THE MOON'S EFFECT ON PLANTS.—Your correspondent, Mr. C. Turner, might be interested to hear the opinions of many old men of the labouring class in my native county of Cheshire. Though personally I am at a loss to understand how such an extraordinary notion can be entertained by any educated man, yet the fact remains that I am well acquainted with many old Cheshiremen who profess to have firm faith in the effect of certain phases of the moon on their crops and cattle. They will tell one in all sincerity that one must always sow Peas and plant early Potatoes, to name but two garden crops, in what they are pleased to call "the decrease of the moon," so that these crops may show above the ground in "the increase of the next one." This idea also applies to the hatching of hen eggs, and they will keep a broody hen idle for a week or so rather than allow her a clutch of eggs at the wrong time. Tradition takes a lot of killing, and I well remember, when, in my schooldays, I ridiculed an old labourer for these ideas, he indignantly informed me that they were good enough for his grandfather, and therefore they were good enough for him. *Cestrian, Carnarvon.*

—Referring to the remarks of the effect of the moon on plants, p. 151, it is possible that many gardeners and farmers are guided in their operations by the phases of the moon more than they would care to admit. Some years ago I had the pleasure of the confidence of a very successful old gardener, who was very careful to perform certain operations during the first half of the moon. He carried the idea into the pruning of specimen stove and greenhouse plants. Of these he was then a very successful grower. In 1905 I made a test when sowing seed in the open air; the plants noted were Peas, Spinach, Radish. These plants, growing under exactly the same conditions, sown during the growth of the moon, showed a quicker and better germination and the subsequent growth was more satisfactory than with those sown when the moon was on the wane. Some twenty years ago a successful poultry rearer quietly informed me that if I wished to hatch the strongest chicks I should time them to appear during the second quarter of the moon. This is still practised by some poultry rearers. There is an opinion held by some farmers in mid-Wales that seed sown in the afternoon is more successful than that sown in the forenoon. There is, however, one practical reason why this should be so—that is, the soil is usually in a more workable and warm condition in the afternoon than it can be earlier in the day. Some seven or eight years back opinions were freely given in favour of the soaking in water of the seed of Peas, Beans, etc., before sowing them. I tried this for one season with Peas and could not find any difference in the time taken to get them ready for table. *John Edwards, Cefnarthryl, Berriew.*

SILVER-LEAF IN PEACHES.—In 1869, when I took charge of the gardens at Singleton, near Swansea. I found the Peaches and Nectarines (both inside and out-of-doors) suffering very badly from white or silver-leaf disease. I had no previous experience of white leaf, but it occurred to me that I must go to the roots to remedy the evil, which I did. As soon as we had gathered the fruit from the trees in the early house at the end of June we dug up the border, commencing outside the roots and gradually working inwards, taking care not to injure any of the fibrous roots, of which there were but few, and cutting away all cankered portions. We found a layer of concrete on top of the drainage, instead of the drainage on top of the concrete. After putting this right, we secured freshly-cut turves, and turned them grassy-side down on the drainage. We then filled in with compost, which was composed of fresh turf from the park chopped up roughly about the size of one's shoe, three loads of turf to one of old mortar rubbish. No manure whatever was employed, not even crushed bones, nothing but the mortar rubbish and turf. When the trench was filled to within a quarter of the required height, the roots were spread out on the surface, and covered

with some of the compost chopped a little finer. The roots were then about 2 inches under the surface, and the border would not be more than 1 foot deep. When all was finished the trees were shaded and the soil made just moist. The trees were syringed three or four times daily until the roots began to grow in the new material, when the shading was removed and the trees exposed fully to the sunshine. By the end of August the trees were well established, and the house was thrown open, but the roots were not allowed to lack water, or the fibrous ones would suffer. In the following November the house was again shut up and the trees gently forced. The shoots broke freely and flowered fairly well, but they were only allowed to carry a light crop. A few leaves showed silvering, but they soon grew out of it. Although no manure was used in the borders the roots were fed with weak manure water when the fruit was in the first stage of swelling, and again after stoning. The borders were mulched with half-rotted stable manure, sometimes cow manure, but less of the latter was employed. At the stage of the fruit's second swelling the roots were afforded a copious supply of chilled water (cold water should never be used). In the autumn the mulching, manure, etc., and fine soil were cleared away down to the roots and a good layer of fresh-cut loam and lime rubble substituted before shutting up the house. The border was renovated every fifth or sixth year, one half of the trees, those on one side at one time, to ensure a crop. I am pleased to say that for the 20 years over which I had these old trees under my charge they showed no more signs of silver leaf. I won my 1st prize with fruit from these trees, especially at the Royal Botanical Society's exhibitions in Regent's Park, at that time considered the best shows in London. *South Wales.*

CELERY DISEASE (see pp. 95 and 150).—*M. A.* is right in his assertion that weather and season have more to do with Celery disease than manure. In 1912 our crop of Celery—1,000 plants, grown in the usual way in trenches with well-rotted cow and horse dung to the depth of 6 inches in the bottom—was badly infested with the disease. Celery in several other gardens which I visited were also affected, and sprays failed to check the disease. In 1913 we cultivated our Celery in exactly similar conditions (excepting change of site) and no disease appeared. Nor did I see a trace of disease in any of the gardens visited by me during 1913, thus proving that the farmyard manure is not the cause of the disease. Celery last year was badly injured by the leaf-mining insect. *Wilmot H. Yates, Rotherfield Park Gardens, Hampshire.*

APPLE COX'S ORANGE PIPPIN.—There appears to be just now such a mania amongst gardeners to persuade planters of the value of this and that variety of late Apple for dessert from Christmas onwards, that one could scarcely find room for all the sorts recommended. For years I have wondered why gardeners hanker after so many varieties instead of planting extra trees of Cox's Orange Pippin, either as standards, bushes, or cordons in the open, when they know quite well that no Apple can equal it in quality. It is an admitted fact that when Cox's Orange Pippin is finished we have no English Apple in any way comparable with it; in fact, it is difficult to name one that is but an apology for a good dessert fruit. On p. 52, in your report of the admirably managed garden at Penrhyn Castle, you allude to the fact that fruits of Cox's Orange Pippin Apple are usually placed on the table in a fresh and plump condition in the second week in May. When we know how satisfactorily well-grown fruits of this Apple will keep it is a safe question to ask why do not more persons imitate Mr. Speed and grow more trees of this king of dessert Apples? *E. Molynaux.*

FAILURE WITH FORCED BULBS.—I should be glad to learn how other gardeners have succeeded with forced Narcissus this season. My first batch failed; the buds at the bottom did not develop, although the foliage was 18 inches long but rather weak. The varieties were Golden Spur and Princeps. The bulbs received

fair treatment and were not unduly forced. The varieties Horsfieldii, Empress and Mrs. Langtry that are just coming on are all weak and give little promise of much flower, being far from satisfactory generally. Never having had a failure of this sort before, it would be interesting to know the experience of others. The only variety that has done well with me is obvallaris, which has flowered very well indeed and has been my mainstay. Now the question: Why should this variety do well whilst all the others were failures, seeing that they were grown under the same conditions and obtained from the same source? The most profusely-flowered Narcissus I have seen this season came from Lincolnshire, and in future I intend to give home-grown bulbs a trial. *J. R. Wilson, Sulley Hall Gardens, Rugby.*

JOURNEYMAN GARDENERS' WAGES.—With reference to the subject of the low wages paid to journeymen, I should like to mention a case in which wages were stopped (I consider very unjustly) for time taken off. A friend of mine, having taken a situation not far from here, came to spend a week-end with me, being off duty for Saturday and Sunday. He was unable to get back until twelve o'clock on Monday, and on the Saturday following half a day's pay was stopped from his wages. At Christmas the head gardener asked if any of the men would like some time off, and my friend took Christmas Day and Boxing Day. On the Saturday following a whole day's pay was deducted for Boxing Day. Such treatment appears to me very mean, and I should like to know whether other readers have had the same experiences. *Salisbury.*

—In reply to *Another Journeyman* and *J. H.*, who challenge my remarks on page 96, I consider *A. J.*'s idea that we must demand more money is ridiculous. Perhaps he will explain how it is to be done, also if he has put it to the test himself. Then he blames the head gardener. If he will ask a few heads as to the journeyman's wage and their own, he may afterwards see the light. *J. H.* remarks: "How many situations are there at 18s. per week, with bothy, etc.?" If he will scan the advertisement pages of the horticultural papers he may find an answer to that question. If a journeyman is a good man at his work he will be able to jog along comfortably. As I said before, a higher wage all round will be thankfully received, but we must wait a wee bit longer. I should like to hear the opinions of head gardeners on my remarks on page 96. *Journeyman.*

—Having been a subscriber of your valuable *Chronicle* since 1879, I have read a great many articles on various subjects in Home Correspondence, and I doubt if some of our present-day journeymen are not far better off in every respect than they were thirty years ago. At the same time I am very pleased to see that there is an upward tendency in gardeners' wages. I have here a man aged twenty-eight as inside foreman, who is thoroughly practical in all branches of his profession, and who wishes to secure a post as head gardener and settle down. The following is a true copy of the terms relating to a situation recently offered him:—Wages 18s. per week, with excellent cottage and garden vegetables free. Duties: To have control over four other men and be generally responsible for the care and upkeep of the gardens, including hot-houses, fruit and flower culture, etc., etc. To be under the general supervision of the estate bailiff, who will certify all bills. I note some writers blame the head gardener for the present low wage. What would the journeyman's position be in a nobleman's place of this description? *A Well-wisher for Head and Under Gardeners.*

—In respect to the letters which have been written in these columns on the subject of the low rate at which journeymen are paid, I may say that I have worked with some men who think they ought to get more wages than the head and do nothing but talk about football, cricket, or boxing instead of doing their work. I think that if the head and the journeymen were to make an effort to work together in harmony, and the men were to leave the subject of sport until after working hours, there would be better feeling all round. *A. S., Kingston-on-Thames.*

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

FEBRUARY 24.—*Present:* Mr. E. A. Bowles, M.A. (in the chair), Sir J. T. D. Llewelyn, Dr. A. Voelcker, Messrs. W. C. Worsdell, W. Cuthbertson, A. W. Hill, Arkwright, Hales, and F. J. Chittenden (hon. sec.).

Azalea amoena.—Mr. W. C. WORSDELL showed double flowers of *Azalea amoena*, and drew attention to the fact that the sepals had become petaloid, giving rise to a "hose-in-hose" flower.

Odontoglossum angustatum.—Mr. R. A. ROLFE reported that the *Odontoglossum* shown at the last meeting by Mr. H. S. Goodson, of Fairlawn, Putney, was probably a form of *Odontoglossum angustatum*, Lindl. It had rather shorter segments and a less-toothed crest, but there are several imperfectly known species described by Reichenbach in this group (a group of only slight importance in the garden). The present plant may belong to one of these, but Mr. Rolfe could not quite make it fit any of them. More distinct things, he says, have been referred to *O. angustatum*, and he considers it should belong there for the present.

Tomatos dying.—Some small Tomato plants were shown from Guernsey, the grower complaining that they had drooped to some extent and looked otherwise unhealthy. The Secretary reported that he had found numerous though very small nodules on their roots inhabited by the "root-knot" eelworm, *Heterodera radicola*.

Hybrid scented-leaved Pelargoniums.—Mr. J. FRASER continued his remarks upon the scented-leaved *Pelargoniums* in the Wisley collection, and dealt especially with the hybrids of *P. cucullatum*, *P. angulosum*, and *P. acerifolium*.

Curious growth of Hyacinth.—Mr. R. C. NOTCUTT sent a curious *Hyacinth* with a flower-spike growing downwards into the glass, issuing from the base of the bulb. There was also a normal growth at its apex. A section through the bulb showed an adventitious bud to have developed on the edge of the ascale leaf, as often occurs when, as in the present case, the bulb has been injured. This bulb developed a flowering shoot, and this found its way out of the bulb by the easiest path—viz., through the damaged base of the bulb.

Small Narcissus fly.—Mr. P. D. WILLIAMS sent from Cornwall a bulb of *Narcissus* containing numerous larvae of the small *Narcissus* fly, *Eumerus lunulatus*. This fly is apparently very destructive to *Narcissus* bulbs in certain seasons, and has been reported to attack various bulbs, including onions. The Secretary said he had hatched out the flies from rhizomes of *Iris* attacked by the larvae. They are allied to *Meredon*, the better-known *Narcissus* fly, but are much smaller and more like a house fly in appearance. The larvae, with the three projections from the blunt tail end, the middle one of which is red, are also very distinct.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

FEBRUARY 12.—At a meeting held on this date the following awards were made:—

FIRST-CLASS CERTIFICATES.

Odontoglossum L'Empereur, parentage unknown, a magnificent flower of good shape and substance, bluish purple. A Silver Medal was also awarded; shown by W. R. LEE, Esq.

Odontoglossum crispum Palatine, a fine white flower, from WM. THOMPSON, Esq.

Odontoglossum × *Countess of Sefton*, parentage unknown, a large well-set flower, heavily blotched, shown by R. LE DOUX, Esq.

Cattleya Susanae Hye grandiflora, the largest of the variety seen, shown by Messrs. E. H. DAVIDSON and Co.

AWARDS OF MERIT.

Odontoglossums × *Desdemona*, *O. illustrissimum*, *O. Mrs. McVittie*, *O. eximium* "Walton Grange" var., *O. × Bonar Law*, and *O. crispum aureolum*, all from WM. THOMPSON, Esq.

Odontoglossum amabile var. "Daphne" (crispo-Harryanum × crispum), and *Odontioda Madeleine* (crispum × *Odontioda Charlesworthii*), shown by W. R. LEE, Esq.

Cattleya Trianae "Enimes," shown by Col. J. RUTHERFORD.

Cypripedium Griffin (Mrs. Mostyn × *Archimedes*), shown by Mr. J. EVANS.

LINNEAN.

FEBRUARY 5.—A general meeting of this society was held on the 5th ult., Prof. E. B. Poulton, F.R.S., President, in the chair.

The Secretary for Zoology read the following abstract of a paper on "The Mouth-parts and Mechanism of Suction in *Schizoneura lanigera*, Hausm.," by Mr. JAMES DAVIDSON, M.Sc., F.E.S., communicated by Dr. A. D. IMMS, F.L.S., the author being abroad.

The object of this paper is to give a detailed description of the anatomy and relations of the mouth-parts of aphids, with special reference to the working of these structures during the process of feeding.

As seen in this species, the head is divided by an articulation of flexible chitin into a distal, tapering portion, the "Vorderkopf," and a broader, proximal portion. The former is composed of several sclerites associated with the mouth-parts, and the latter portion bears the eyes and antennae.

The stylets play an important part during suction. They are four in number. The two maxillary stylets fuse together to form a median compound maxillary stylet. By this means two minute canals are formed along its length. The dorsal canal conducts the cell-sap from the plant host to the pharynx, and the ventral canal conveys the salivary secretion into the plant host.

The stylets are supported on the head by chitinous rods, and can be protracted or retracted by means of strong muscles, which are attached to various parts of the endoskeleton of the head. They extend distally from the head, and lie in a longitudinal groove on the anterior face of the proboscis.

During feeding they are forced into the tissues of the host plant, and the plant juices pass along the dorsal suction-canal formed by the compound maxillary stylet to the pharynx.

The salivary glands, situated in the head, secrete a salivary substance, which is conveyed by a median salivary duct to the salivary pump, thence it is forced down the ventral or salivary excretion canal, into the plant tissues.

The pharynx is a chitinous, distensible chamber, the upper wall of which is composed of thin flexible chitin. This wall is acted upon by large muscles, and thus the pharynx exerts a sucking action, the plant juices being drawn into it, and passed backwards into the oesophagus and stomach.

At the oral extremity of the pharynx the walls are continued to form a thick-walled canal, the "pharyngeal canal," which leads directly into the dorsal suction-canal. The anterior or dorsal wall of this region is perforated by eight minute pores, above which is situated a "taste organ." By means of this taste organ it seems clear that the aphid is able to appreciate the quality of the sap before it enters the pharynx.

The ascent of the sap along the suction-canal formed by the maxillae is probably largely due to capillarity.

One function of the salivary secretion is, I believe, to lower the surface tension of the cell-sap so that it may more readily ascend up this minute suction-canal.

LAW NOTES.

ARBITRATION CASE.

AT the Surveyors' Institution on the 5th ult. an important arbitration case was concluded before Mr. George Langridge, P.P.S.I., in the case of Smith v. Rayner. Mr. Bremmer and Mr. Aubrey Spencer appeared for the claimant (Mr. John Smith) and Mr. William Allen represented the respondent (Mr. Richard Rayner).

Mr. Smith claims £2,400 as compensation for tenant-right improvements carried out by him upon farms known as Great and Little Harlington, Middlesex. Evidence was given on behalf

of the claimant by Mr. R. J. Steel, auctioneer and valuer, of Boston Gardens, Brentford; Mr. Thos. Woods, auctioneer and surveyor, of Church Parade, Hounslow; Mr. James Benjamin Slade (of Messrs. Protheroe and Morris, 67, Cheapside, E.C.), auctioneers and valuers, and Mr. H. M. Cobb, of 61 and 62, Lincoln's Inn Fields, W.C. On behalf of the respondent Mr. H. Trustram Eye, F.S.I., Mr. Spencer Pickering, and Mr. William A. Neald gave evidence.

Mr. Trustram Eye, in reply to Mr. Bremmer, admitted he had no personal knowledge of the distance at which Morello Cherry trees should be planted. Taking an average farm in Middlesex, he could not say how many trees should be planted to the acre, as it all depended upon whether the lessee or the owner was planting and the sorts. Consequently planting varied all over the country. Mr. Robbins, the incoming tenant, was going to grub up all the trees. In re-examination, witness said the difference between gardens planted by the lessee and the owner was that a lessee always tried to get as much out of the land during his term as possible, whilst the owner had a long future in front of him and was not influenced by the fact that he had to give up the farm after a certain time.

Evidence was then given by Mr. W. G. Lobjoit, valuer and market gardener, of Heston Farm, Hounslow, Middlesex. He had over 100 acres of land under fruit, and he had been acquainted with the land under review for about twenty years, so was fully acquainted with its appearance and value. His valuation of the tenant right on behalf of the lessor was as follows:—

TWENTY-ONE ACRE FARM.

Planting 13ft. by 13ft.; 237 trees to the acre.	£	s.	d.
Grubbing half the trees: 126½ at 1s. per tree	6	6	6
Pruning and spraying at 6d. per tree	3	3	3
Trenching at 6d. per tree	4	3	0
	13	12	9
Estimated value of trees	20	0	0
Less cost of work as above	13	12	9
	6	7	3

21a. 3r. 18p. at £6 7s. 3d. per acre... 159 2 0

TEN ACRES (LITTLE HARLINGTON FARM).

Estimated value of trees and bushes per acre	£	s.	d.
Estimated value of trees and bushes per acre	40	0	0
Estimated cost of grubbing, pruning and spraying per acre	15	0	0
	25	0	0

10a. 1r. 20p. at £25 per acre

SUMMARY.

	£	s.	d.
Great Harlington Field	159	2	0
Little Harlington Field	259	7	6
Total	398	9	6

Continuing, witness said the trees in the larger field were too close, and consequently encouraging disease, and, in fact, he found a lot of the trees infested with blight. As to the smaller field, he found the trees healthy in parts, but rather interlined and interplanted. They were much too thick and there had been underplanting (bushes) as well. In cross-examination, witness admitted it was the custom in that part of Middlesex to plant closely together.

Morello Cherries could be started thickly, but when they began to grow into each other it was better to thin them out. The trees in this case had been put in in such a haphazard way that it would be a matter of difficulty to thin them out. All sorts were planted at varying distances. In re-examination, witness said that the new tenant of the farm was now grubbing up the trees.

Mr. Roland R. Robbins, J.P., market gardener, of Hollycroft, Sipson, Middlesex, stated he had been a market gardener for twenty-five years and was a member of several institutions connected with the land. He was also acting

partner in the market gardening firm of Wild and Robbins. When the claimant vacated his holding witness was approached by Mr. Rayner as to his taking of the fields, and eventually agreed to take a lease at a rental of £3 10s. per acre, commencing with Michaelmas, 1913. There was a clause in the lease empowering him to clear the land of all trees which were planted. He took possession on October 15 and found the trees were very crowded. Altogether he had cleared 17 acres of the larger field at a cost of £12 per acre, which included the cost of turning over. He would sell the wood whenever possible, but he was burning the brushwood.

Mr. William Allen, on behalf of the respondent, said they were asked to pay for 32 acres of land which had been turned from agricultural land to fruit land. What, however, was the state of the fruit land? Every witness agreed in his evidence, on both sides, that the plantations had been planted very thickly with trees. They also agreed that the time had come when they would have to be thinned to a very great extent. There was no agreement among the witnesses as to the effect of the thick planting, but all the witnesses that he had called (practical market gardeners who were engaged in the industry) were agreed that planting of that nature was conducive to disease. Moreover, the evidence of Mr. Steel, Mr. Cobb, and Mr. Slade, called by the other side, showed that the time had arrived when the plantations should be thinned. The evidence that the trees needed pruning, that there was mildew, and that the Apple and Plum trees were diseased was overwhelming, and even if it was not essential to grub up the whole of the two orchards, yet the trees must to a large extent be thinned. They would require a great deal of attention in the near future. Then with regard to the evidence of Mr. Robbins as to the state of the trees. That gentleman said he had grubbed the majority of the trees in the larger orchard, and 60 per cent. of the Plums were rotten in the middle. He could not see, therefore, how it could be said, as 60 per cent. of the trees were rotten, that the orchard was a valuable one. Indirectly, also, he thought there was evidence that the trees had not been properly pruned. The claimant's foreman had said that "if everybody had pruned as he had done there would have been nothing to grumble at." He (Mr. Allen) understood that statement to mean it was absolutely necessary to thoroughly prune in order to make up for lack of pruning in the past. Mr. Steel's valuation was based on the fact of the orchard being in a thoroughly good and efficient state. But, with the exception of one, all the witnesses agreed that they would not plant the same sort of trees again, as they were out of date. Mr. Miskin, a well-known local grower, told them (continued Mr. Allen) that he would not have these particular Apples in his orchard: the only thing he would be able to do with them would be to graft them with others. If these trees would have to be grafted and were out of date, how could it be described as an efficient and up-to-date orchard, for which an incoming tenant would be willing to pay for existing goodwill. It had been suggested that Mr. Robbins was in the position of partner to Mr. Rayner's son-in-law, but he did not see that there was any objection to this, as they formed quite a respectable firm. He suggested that in this case Mr. Smith had planted these trees so closely together because he wanted to get as much as possible out of the limited number of years he was tenant of the farm in question, and not caring at all whether the trees were of any value when he quitted the farm. A tenant, he contended, always tried to get as much as possible out of his land while he was in the position of tenant, and Mr. Smith was leasing a good deal of land in the neighbourhood as well as the orchard in question. Mr. Smith had kept no record of the fruit sent out from the orchard, although he thought it would have been advisable to do so, and he understood Mr. Smith had kept an account of his sheep stock, and could not understand his omission in this. When a claim of this kind had to be considered they not only wanted the evidence of professional valuers, but also the evidence of practical market gardeners. He said that his client had called three market gardeners on his behalf

and his opponent had called none, and he thought this pointed to the fact that he was afraid to do so. In conclusion, he said they had before them a claim for £2,400, and he submitted the question was whether this claim was reasonable or unreasonable.

Mr. Bremmer then stated the case for the claimant. He said this was not like an ordinary court of law where the jury tried the case. In this instance they had to leave the decision in the hands of one gentleman. When a jury tried a case they looked upon every witness as a wicked conspirator and treated them as such; that was what might be termed one of the "tricks of the trade." The whole question resolved itself into one of simple valuation, and nothing more; that was to say, the value of the estate to the incoming tenant. With regard to the question of costs, he thought when a man was afraid he would have to pay the costs of his own case he naturally made an application to the Arbitrator for an order for the other side to pay his costs.

Mr. Bremmer said he could see no legal answer to the claim; in his opinion, the legal point was absolutely a myth. He could not tell where it came in at all. There was no covenant in the lease about assignment, and he could not see what bearing the assignment by Mr. Smith had on the case. In the lease itself it said the tenant must carry out improvements to the estate, such as planting trees, etc., and trees had been planted; therefore, improvements had been made to the estate. With regard to Mr. Lobjoit, he thought that gentleman had come there not to assist the Arbitrator in arriving at a correct solution to the case, but to further the landlord's cause, and he thought he had done so in the best manner possible for an ordinary country gentleman. He thought he must say a few words regarding Mr. Robbins, but could soon dispose of that gentleman. Mr. Robbins' evidence should be very important, as that gentleman had declared he cared for nobody's opinion on gardening matters, not even specialists, and he himself knew all about gardening, and he did not see how Mr. Robbins' evidence could be excluded from the case.

Returning again to the question of costs, Mr. Bremmer said they had come into that room on several occasions for the Arbitration because they thought there was some legal answer to their claim, and he thought it had been amply proved there was none. They were forced into this arbitration; they did not enter into it of their own free will, and would gladly have settled the matter without these proceedings. He respectfully submitted that his client was entitled to costs. In conclusion, Mr. Bremmer said there was a great deal more he should like to have said, but thought they had been engaged on the case long enough now, and did not wish to waste any further time.

The Referee said he was very pleased with the clear and concise way in which each side had stated their case, and would let them know his decision in due course.

THE DECISION.

We are informed that the arbitrator's decision is as follows:—

"That the said John Smith is entitled to receive from the said Richard Rayner the sum of one thousand one hundred and thirty-nine pounds five shillings and sixpence (£1,139 5s. 6d.) as compensation in respect of the improvements comprised in the 1st schedule to this my Award." Each party pays his own costs and moiety costs of the Award.

DEBATING SOCIETIES.

EGHAM AND DISTRICT GARDENERS'.—The ninth annual dinner of this society took place on the 19th ult.; the president, Mr. W. G. Rigden, occupied the chair, and about 180 sat down to dinner. The chairman said that the principal object of these dinners was to bring together those interested in the work of the association and gardening generally. Mr. Swan alluded to the proposed new scheme of the Royal Horticultural Society, and the effect it may have on gardeners. In response to the toast of "The Chairman," Mr. Rigden said it gave him great pleasure to help gardeners. He was pleased to become their first president. Mr. G. Baskett, among other speakers, made some remarks on the responsibilities of gardeners having control of large gardens.

BATH GARDENERS'.—A meeting of the Bath Gardeners' Debating Society was held at the Forester's Hall on Monday, the 23rd ult. In the absence of the chairman (Mr. T. Parrott), Mr. G. Garraway presided. The chairman informed the meeting that Mr. C. Phillips had promised to give a silver medal to the exhibitor of the best bloom in the Chrysanthemum Show this year. The paper for the evening was delivered by Mr. C. J. Wait, on "Strawberries." The lecturer stated the Strawberry grows best in a deep, rich loam, but success might be obtained on almost any kind of soil by intelligent and liberal treatment. The Strawberry is a gross feeder and it is impossible to overdo it with manure. Any difficulty in the nature of soil can be easily overcome by treatment, but the beds must be given an open situation.

BANFFSHIRE HORTICULTURAL.—The annual meeting of the members of this association was held recently in the county town—Banff. There was a good attendance, and Mr. A. Mann, Broadcroft, presided. The secretary (Mr. Badenoch) submitted the annual balance-sheet, which showed that the income for the year amounted to £103 14s. 8d., and the expenditure to £104 8s. 2d. The ordinary income was £10 0s. 8d. more than in the previous year, and the expenditure was £1 4s. 8d. less, there being due to the treasurer the sum of £9 17s. 9d. A committee was appointed to arrange means of raising money.

BRISTOL AND DISTRICT GARDENERS'.—The usual fortnightly meeting of this association was held at St. John's Parish Rooms on Thursday, February 26, when Mr. Baston occupied the chair. The lecturer for the evening was Mr. Goodger, a member of the Reading Gardeners' Association, his subject being "Melons." The prizes offered by Messrs. Mansell and Hatcher for two Orchids in bloom were won by Mr. Scott (1st), Mr. Baston (2nd), and Mr. Jennings (3rd).

PLYMOUTH AND DISTRICT GARDENERS'.—This association met in the Mutley Grammar School on the 21st ult., Mr. T. R. E. Olver presiding. Mr. T. Willocks delivered a lecture on "The History of Some of Our Cultivated Vegetables." He stated that previous to the Roman invasion of Britain the inhabitants of this country fed on uncultivated roots and herbs. The Romans were famous for their knowledge of horticulture, and undoubtedly they taught us the art of cultivating vegetables. There were no books on plants in English before the sixteenth century, and as in 1552 orders were given for scientific books to be destroyed, it was almost impossible to know much about gardening before the time of Henry VIII., after whose reign rapid strides were made, due to Flemish settlers near London. Many gardens planted by them still flourish. Mr. Willocks traced the history and development of the Potato. The antiquity of the Garlic was spoken of, and the lecturer concluded with the history of the Cabbage.

DUMFRIES AND GALLOWAY GARDENERS'.—The president, Mr. S. Arnott, occupied the chair at the monthly meeting of this association held on the 26th ult., in the Wesley Hall, Dumfries. A paper on "Mannes and Manuring" was read by Mr. Alexander Frame, gardener to Sir J. E. Johnson-Ferguson, Bart., Springkell. Mr. Frame pointed out the value of the different manures, and considered them in regard to their uses to horticulture.

BIRMINGHAM AND MIDLAND COUNTIES GARDENERS'.—At the meeting of this association held on February 22, in the presence of a crowded audience, Mr. J. Smith, of King's Heath Park, Birmingham, read a paper on "The Perpetual Flowering Carnation." He stated that in 1893 he was in the employ of the late Baron F. Rothschild, and that he became acquainted with Carnation-growing when the cultivation of this flower was almost solely in the hands of a few. In those days old favourites like Mrs. Moore, Mrs. Llewellyn, Mrs. L. Rothschild, and Miss Jolliffe were the glory of Waddesdon Manor and Blenheim House. To-day these varieties had been displaced by such specimens as those he had displayed in two vases, comprising Britannia, Mrs. Burnett, Beacon, Enchantress, R. F. Felton, Windsor, and others. Directing attention to two sectional drawings of suitable Carnation houses, he demonstrated that well-ventilated, high-span roofing and good sidelights render it possible to obtain the proper atmospheric conditions which are imperative for cultivating this plant. He recounted all the details of potting, made recommendations regarding the making up of the compost, and advised that certain methodical treatment be observed in order to elude the dangerous insect pests. The paper gave rise to an interesting discussion, in which Messrs. Cryer, Sean, and Webb participated.

READING GARDENERS'.—The Rev. F. Page Roberts (ex-president of the National Rose Society) lectured on "Roses and Their Culture" to a crowded meeting of the members of this society on the 16th ult. Mr. G. G. Hamilton illustrated the lecture by autochrome lantern slides of Roses and of gardens at Bournemouth and neighbourhood. Mr. Roberts emphasised the necessity of proper drainage in Rose growing, pure air also being as necessary for plants as for people. The application of water with a can and a rose was worse than useless, because moistening the top of the ground resulted in the roots growing on the surface, and were then scorched by the sun. His practice was to loosen the ground with a hoe, and then gently pour in water so that it soaked right down to the roots. He confessed he failed to understand mildew. The only way to combat it was to begin spraying immediately after pruning in March. They needed an appliance that would distribute the finest spray into every cranny.

BRITISH GARDENERS' ASSOCIATION (Leamington Branch).—A meeting of the Leamington branch of the B.G.A. was held on the 28th ult., when a lecture on Rock Plants and Alpines was given by Mr. R. T. Law, Rhine Hill Gardens, Stratford-on-Avon. The subject was most exhaustively dealt with by the lecturer, and at the close of his remarks a discussion ensued, all members present taking part.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending February 28, is furnished from the Meteorological Office:—

GENERAL REMARKS.

March 3, 1914.

At the beginning of the week the centre of a large depression advanced over Ireland from the Atlantic. The system was unusually deep; at Dublin the barometer fell between 9 and 10 a.m. on Sunday as low as 950 millibars, while over the whole of the United Kingdom, except Shetland, the readings were below 982 millibars. The surrounding gradient was steep, and strong to high winds or gales occurred on all parts of the coast, from the eastward in Scotland, but from the southward, south-westward, and westward in most of the English and Irish districts. The disturbance moved rather slowly northward, and became less deeper, but did not disperse until the middle of the week. No other depressions of importance passed directly over these islands, but some large and deep systems arrived in the Icelandic region, and the general direction of the wind over this country was southerly or south-westerly, and its force occasionally strong along the western and north-western seaboard. Rain was experienced almost daily over a large area in the extreme west and north of the Kingdom, but in the east and south several days were dry, and some of them exceedingly fine and bright. A few stations in Scotland and the north of Ireland received more than 0.5 inch of rain on the 22nd, but the subsequent falls were, as a rule, moderate to very slight.

THE WEATHER IN WEST HERTS.

Week ending March 4, 1914.

The Fifth Unseasonably Warm Week in Succession.—Another warm week, and the fifth in succession. This was on the whole a much warmer week than the previous one, but on two nights the exposed thermometer registered respectively 9° and 12° of frost, the latter being the coldest night in February, but by no means unusually cold for the time of year. The ground is at the present time 1° warmer at 2 feet deep, and 3° warmer at 1 foot deep, than is seasonable. Some rain fell on two days, but to the total depth of less than a tenth of an inch. For the last few days there has been no measurable percolation of rain-water through either of the soil gauges. The sun shone on an average for four hours a day, which is rather more than an hour a day in excess of the average duration for the time of year. On each of the three sunniest days the sun was shining brightly for about eight hours a day. The first three days of the week were very calm, but since then the wind has been as a rule moderately high. The mean amount of moisture in the air at three o'clock in the afternoon fell short of a seasonable quantity for that hour by 7 per cent.

FEBRUARY.

Remarkably Warm, Very Wet, and Sunny.—In the last twenty-nine years there has been only one other February as warm, and that was in 1903. There did not occur a single unseasonably cold day, and there were only five cold nights. On the warmest day the highest reading in the thermometer screen was 57°, and on the coldest night the exposed thermometer registered 12° of frost. Both of these extreme readings are exceptionally high for the month. In fact, in the last twenty-nine years there have been only three other Februaries with as high a day temperature, and but two other Februaries when the lowest temperature on grass has been as high. Rain fell on sixteen days, and to the total depth of 3 inches, which is over an inch in excess of the February average for the previous fifty-eight years. There was little rain on the first five and last seven days of the month. Some snow fell on one day, preceded by rain and followed by a fall of soft hail, which for a short time nearly covered the ground. The sun shone on an average for 2½ hours a day, or for about ¼ hour a day longer than is usual in the last winter month. The wind was, as a rule, if anything, rather high for February, and in the windiest hour the mean velocity reached twenty-one miles—direction S.S.W. The average amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by 2 per cent.

THE WINTER OF 1913-14.

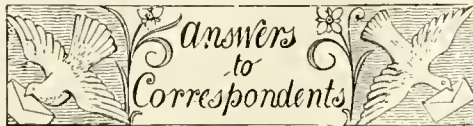
Very Warm and Remarkably Dry, with a Good Record of Sunshine.—This was the fifth unseasonably warm winter that we have had in succession, but was not so warm as either of the two previous winters. Taken as a whole, December was decidedly warm, January about average, and February remarkably warm. On the warmest day the temperature in the thermometer screen rose to 57°, which has been exceeded in only three of the preceding twenty-eight winters. On the coldest night the exposed thermometer registered 20° of frost, which is in no way remarkable. The total rainfall amounted to 4½ inches, or as much as 2½ inches in defect of the average for the season. In the last fifty-eight years there have been only nine other winters as dry as the past season. Both December and January proved remarkably dry, while February, on the other hand, was unusually wet. Snow fell on only seven days, and on no day was the ground completely covered by it. The sun shone on an average for one hour fifty-one minutes a day, which is nine minutes a day in excess of the average duration for the season.

OUR UNDERGROUND WATER SUPPLY.

Since the winter half of the present drainage year began in October the total rainfall has been 11½ inches, or 1½ inches in defect of the average for the same five months in the previous fifty-eight years, which is equivalent to a deficiency of rainfall on each acre in this district of 38,460 gallons. At the same time last year there was an excess of 7,010 gallons per acre. E. M., Berkhamsted, March 4, 1914.

Obituary.

HARRY COPAS.—The *American Florist* records the death of Mr. Harry Copas, member of the firm of Copas Bros., Elyria, U.S.A., at the age of 34 years, on February 2, after an illness of a year. Mr. Copas was a native of England and settled in America with his parents when a child.



APPLE SHOOTS DISEASED: R. Turner. The disease is Apple scab. Spray the trees with the Bordeaux mixture this spring, and next winter, when the trees are resting, drench them thoroughly with a solution of sulphate of copper—1 lb. in 25 gallons of water.

CORRECTION.—Messrs. W. Cutbush and Son's exhibit of forced shrubs, Carnations and Alpines at the R.H.S. meeting on the 24th ult. was awarded a Silver-gilt Flora Medal.

CYCLAMEN FAILING TO FLOWER: Stanwell. An excess of manure or growing the plant in too much warmth may partly account for the trouble. A minimum temperature of 55° is too high, except in the earlier stages of growth. The fault may be an inherited one, from lack of care at some time in seed selection. Non-flowering is more frequent in the giant-flowered forms, and it is usually accompanied by very vigorous leaf growth—a superabundance of leaves; the top of the corm, instead of developing the usual symmetrical crown of leaves, seems to break up and develop a crowded mass of foliage; this condition may arise from injury in the younger stages of the plant.

DEFORMED AZALEA LEAF: Novo-castro. The plant is attacked by a fungus—*Exobasidium rhododendri*—which causes the gall-like swellings on the leaves. If the galls are sought out and removed to the fire before they have developed any colour the same plants are free from attack in the following year, and this treatment is therefore the one that the cultivator should apply. The disease was described in the *Gardeners' Chronicle* so long ago as July 19, 1879, p. 119. See also the issue for August 9, 1879, p. 182.

FIG TREE DISEASED: G. Bates. The specimen submitted for examination was attacked by the Fig-tree canker, *Libertella ulcerata*. Cut out all diseased parts and cover the wounds with gas-tar. Entirely remove and burn the one diseased tree, as the complaint spreads rapidly.

KENTIA PALM ROOTS: C. C. G. The insects attacking the Palm roots are known as the Root-feeding Mealy-bug (*Ripersia terrestris*). Growing plants that are attacked with this insect should be removed from the pots and the exposed roots and soil sprayed with carbon bisulphide, using a glass spraying apparatus. It will be best to scald the pot and have it in readiness for replacing the plant immediately after spraying. It will be found that this treatment will not kill the eggs, so the process must be repeated. Shade the plants from sunshine for a week after treatment.

MUSHROOM BED: F. S. There is absolutely no cure when a Mushroom bed is invaded by another fungus. The only thing is to clear out all the old materials, disinfect the house, and start afresh.

NAMES OF PLANTS: H. J. Van Heyrt. *Senecio Petasitis*. — F. H. 1, *Dendrobium crystallinum*; 2, *Dendrobium Pierardi*; 3, *Eria acervata*; 4, *Pholidota imbricata*. — *Constant Reader*. *Selaginella Kraussiana*, commonly known in gardens as *Selaginella denticulata*. — Bourne. 1, *Epidendrum Stamfordianum*; 2, *Brassavola Perrinii*. (Insects next week.) — J. K. B. *Symphytum tuberosum*.

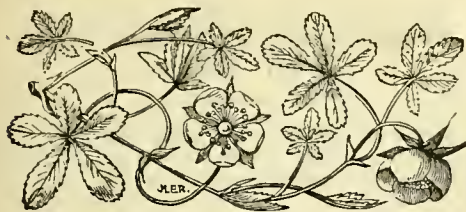
PEACH GROWTHS DISEASED: R. M. P. The trouble is due to silver-leaf. Silver-leaf disease is caused by the fungus *Stereum purpureum*, and there is reason for believing that infection may take place from the soil. Therefore, if you use the old compost it should be only after sterilisation. The infected soil may be spread in the vegetable quarters or on a herbaceous border, but not near trees.

PERPETUAL-FLOWERING CARNATION: T. J. R. The flower of the seedling Carnation which you consider to be finer than Rose pink Enchantress appears to be of good quality, so far as can be judged from a single specimen. Whether it is perfectly distinct from all varieties in cultivation we are not able to say; but it would certainly be desirable to cultivate it with a view to showing it next season before the Committee of the Perpetual-Flowering Carnation Society or the Floral Committee of the R.H.S.

TOMATO SEEDLINGS COLLAPSING: J. H. A. The Tomato seedlings are attacked by the Damping-Off fungus—*Pythium de Baryanum*. It is a common trouble with seedlings raised in heated houses, where the soil and atmosphere are usually charged with moisture. Thick sowings favour the disease. Care must be taken in ventilating the propagating frame. Pull out the worst of the seedlings and pour dry sand or sand and charcoal mixed amongst them. Stand the seedlings on a shelf near to the roof-glass, where the conditions are drier.

TROPICAL FRUITS CULTIVATED IN GREAT BRITAIN: M. Buysman, Java. The following is a list of tropical plants that may be included under the above term, and whilst it is in no sense a full and complete one, it will doubtless be of assistance to you. Many of these plants have fruited repeatedly in Great Britain, but few of them develop that full and rich flavour characteristic of the fruits grown under natural conditions:—*Mangifera indica* (the Mango), in variety; *Grias cauliflora* (Anchoy Pear); *Nephelium Lit-chi* (Litchi); *Cyphomandra betacea* (Tree Tomato); *Aberia caffra* (Kei Apple); *Sarcocephalus esculentus* (Negro Peach); *Eugenia malaccensis* (Malay Apple); *Eugenia gambos* (Rose Apple); *Eugenia jambolana* (Jambolana); *Psidium Guava* (Guava); *Psidium Cattleyanum* (Mountain or Purple Guava); *Anona squamosa* (Custard Apple); *Anona muricata* (Soursop); *Carica Papaya* (Papaw); *Carica candamarcensis* (Mountain Papaw); *Punica Granatum* (Pomegranate); several species of *Passiflora* with edible fruits, known as *Granadillas* or *Passion Fruits*, including *P. edulis*, *P. quadrangularis*, *P. macrocarpa*, and *P. laurifolia*; *Diospyros Kaki* (Kaki Plum or Persimmon) in several varieties; *Persea gratissima* (Avocado Pear); *Eriobotrya* (Photinia) japonica (Loquat); *Casimiroa edulis* (Mexican Apple); *Ficus carica* (Fig); *Vitis vinifera* (Grape); *Prunus persica* (Peach); numerous varieties of the Orange family, including the *Citrus nobilis* (Mandarin Orange); *C. Aurantium* (Sweet Orange); *C. Limonium* (the Lemon); *C. decumana* (Shaddock); Grape Fruit, a variety of *decumana*; *C. acida* (the Lime); *C. Medica* (the Citron); *C. Limetta* (Sweet Lime); *C. Tangerina* (Tangerine Orange), etc.; *Garcinia Xanthochymus*, (Mangosteen); *Theobroma Cacao* (Cocoa); *Coffea arabica* (Arabian Coffee); *Coffea liberica* (Liberian Coffee); and *Camellia theifera* and its var. *assamica*, which furnish the Tea of commerce.

Communications Received.—A Williams (Thanks for donation for R.G.O.F. box.—Eos.)—P. I. —A. J. C.—H. N. E.—C. E. T.—J. H. W. Norwich—H. C. Geneva—G. L.—F. J. C.—W. G. —I. B. B.—W. H. N.—F. T.—A. E. T. R.—G. J. Beverley—R. A. M.—J. O. Uppsal—F. W. P. Washington—D. M. Shanghai—B. and Sons—A. E. B. —G. O. S.—Gravesend Gardener—J. C.—A. O.—S. L. and Co.—J. S.—C.—M. and Co.—Mrs. B., Plymouth —M. B.—E. B.—T. W.—A. J.—H. T.—R. F. L. —E. P. B.—D. W.—B. W.—R. P. B.—W. H. W. —Hale—J. T.—A. Pitcher.—Proud Salopian and W. E. [We cannot consider your letters with a view to publication, as you have failed to comply with the essential condition—namely, that all writers must supply name and address whether writing over a *nom de guerre* or not.—Ebs.]



THE
Gardeners' Chronicle

No. 1,420.—SATURDAY, MARCH 14, 1914.

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**GARDENS FOR THE POOR
IN FRANCE, GERMANY, ENGLAND
AND AMERICA.**

MME. FÉLICIE HERVIEU, of Sedan, was in the habit of giving financial assistance to a family of ten, and yet they were always in want. The benefactress was struck by this fact, and at last said to the head of the family, "You must be saved from this plight. Instead of giving you continual temporary help I shall put 6 francs in the savings bank for you every month for one year, on the condition that you add 3 francs to it." It was difficult, but it was managed, and thus in a year's time 108 francs were saved. "Now you must employ the money advantageously," said the lady. "Rent a garden and work in it in your free time with your children." Averse from work and accustomed to help, the people seemed unable to find a garden, but Mme. Hervieu soon found one, and urged her protégés to work. At first unwilling, they soon took pleasure in it, and at the end of a few months found themselves able to obtain from their plot a large proportion of their food, as well as earn a fair sum of money by the sale of vegetables.

This was the beginning, about twenty years ago, of the present extensive charitable movement in France to institute gar-

dens for the poor. Mme. Hervieu's success induced a number of ladies in Sedan to lay by 60 francs each—instead of giving small alms in the streets—to enable them to supply garden plots for cultivation by the poor, and thus to fight against the professional begging so widely practised in the town. At first some 1,600 square yards were rented and divided between twenty-one families; seeds, manure and implements were placed at their disposal. This cost 531 francs during the first year—a sum which would have amounted to only 0.30 francs per head monthly if it had been given in coin, whereas in the form of garden plots it supplied 145 persons with a considerable part of their nourishment.

Mme. Hervieu then founded a society, "L'œuvre de la reconstitution de la famille," to facilitate the systematic diffusion of her ideas. By this society large families were allotted garden plots of from about 400-800 square yards each, according to the number of children, and also implements, manure and seeds. In 1895 a fresh venture was made by entrusting a similar plot of garden land to a set of lads from 15 to 16 years of age for their joint cultivation, on the condition that each lad should pay one franc from his profits monthly into the savings bank. In the first year the net proceeds amounted to 50 francs a head, and in 1899 a further step was taken in granting plots on similar conditions to school children of eleven to twelve years. Thus in 1903 there were in Sedan 260 organised gardens for the poor, occupying an area of some 55 acres, and cultivated by 1,500 workers. In the whole of France there were in 1906 11,547 such gardens in 224 towns, which were contributing to the support of no fewer than 40,000 persons.

Father Volpette, a Catholic priest in St. Etienne, who learnt of the successful efforts of the Sedan ladies, followed the example, rented a field of 3½ acres for 200 francs, and divided it into plots of 470 square yards, which he assigned to 30 needy families. Later he rented more land, and other plots were given him gratuitously. By the end of the year, with an outlay of 350 francs, he had about 12 acres at his disposal, which were divided among 98 families (608 persons in all). Fencing, draining, implements, manure and seeds cost 3,050 francs. In spite of drought, the proceeds of the outlay of 3,400 francs amounted to about 6,000 francs by the market sale of vegetables, including Potatos—that is to say, to over 60 francs per family. In the following years expenses came to about 1,500 francs per annum, while the profits, even in bad harvests, have amounted to from 6,000 to 7,500 francs, and of course much more in good years. Father Volpette made four conditions with his protégés:—Diligent, daily cultivation; Sundays and church holidays strictly excluded; no under-letting without an agreement; the avoidance of everything that could harm the good reputation of the allotment holders. I append an extract from Father Volpette's "Constitution":—

"Each combined group of gardens has its own board of directors. For this pur-

pose every five families choose a representative for three years. All the representatives of a group form its board of directors, who have to decide upon all matters of common interest to the garden owners. They also determine the extent of outlay to be made in favour of the separate families from the capital of the group, and can refuse seeds if the land is insufficiently prepared, and even decree the expulsion of families with the ratification of the General Council. The latter possesses the following powers:—Final decision as to admittance or expulsion; decision as to the amount to be spent on each group of gardens; alteration of the regulations and by-laws; deliberation over the common interests of the groups."

Father Volpette's enterprise is not only distinguished by its "Constitution," but also by facilities in the way of dwelling-houses. One day an old, disabled miner drawing a small pension began to erect a very primitive dwelling of only 24 cubic metres upon his allotment. It was a rather curious cottage, but it answered the purpose, and served to induce others more skilled in building to follow suit. In order to cheapen the building materials Father Volpette founded a brick-yard that was able to sell at 3 francs the thousand. The bricks are of the best quality, and are mostly made by allotment holders temporarily unemployed. There are at present about 800 Volpette gardens, from which nearly 4,500 persons draw profits. There exists also a Raiffeisen bank granting loans up to 500 francs, and defraying two-thirds of the cost of cottage-building for members able to furnish one-third from their own savings. In his *Arbeitergärten, Schülergärten*, Herr W. von Kalkstein mentions a remarkable experiment, without, however, naming the locality:—

"A French enterprise grants each garden contract for four years. The first year the allotment holder receives land, manure, seeds and plants free of charge, in the three following years the Association only bears the expense of the land rent, and from the fifth year onwards the garden-holder must pay a rent of 8 marks annually."

This excellent plan appears to have met with success all over France. Those disinclined for work learned to like regular activity, worked for themselves and finally became proud, in a good sense, of their independence. Their life in the gardens, where they can eat with their families, makes them lose their former predilection for the public house. In course of time they become thrifty, their manners improve, and in some instances they become prosperous. It is indeed not surprising that statesmen should have endeavoured to obtain for these small gardens the advantages of the excellent Small Dwellings Act of 1886, which makes provision (at 2 per cent.) for loans from public funds and interdicts distraint upon the holdings. An Act for this purpose came into force in April, 1908. *Leopold Klatscher.*

(To be continued.)

PRIMULA MALACOIDES.

As a plant for the amateur for greenhouse and window decoration during winter this beautiful *Primula*, which was introduced a few years ago from China by Mr. Forrest, stands unrivalled. The whole plant has a light and graceful habit, the inflorescences especially possessing a beautiful appearance, whilst the fragrant flowers vary from white-lilac to deep pink in shade. The plant is extremely easy of culture, and will grow out of doors on a rockery in a sheltered nook, flowering and ripening seeds freely, only needing protection from cold winds and extreme dampness.

flowered form was exhibited by Messrs. Bees, Limited, and the Floral Committee granted it an Award of Merit.

On January 13, 1914, Mr. James Box, Lindfield, Hayward's Heath, submitted to the Floral Committee of the R.H.S. the strong, vigorous growing form illustrated in fig. 82. The plant has stouter stems, a more robust habit, and flowers twice the size of those of the type, the colour being the deepest shade of pink yet seen in the species.

The origin of the giant form is unknown, but there is a possibility that it is an accidental cross with *Primula Forbesii*, as several plants of the latter species were growing in the same house, and in proximity with the seed-



[Photograph by R. A. Malby.]

FIG. 82.—GIANT-FLOWERED FORM OF PRIMULA MALACOIDES.

Seeds sown in pots or boxes during the spring germinate readily. The seedlings should be placed on a shelf until ready for pricking off. Watering must be done with extreme care, otherwise damping will occur. Afterwards prick off the seedlings into boxes until they are established and possess several leaves, when they may be potted, three in each 5 inch pot, or singly in $\frac{3}{4}$ inch pots. Grow them on a shelf in a greenhouse and gradually harden them for placing in a cold frame. Watering in summer must be done very carefully. The soil should consist of one part leaf-mould and two-thirds sandy loam; admit an abundance of air on all favourable occasions.

At the meeting of the Royal Horticultural Society on December 2, 1913, a beautiful double-

bearer. Furthermore, later batches have contained several more of this pronounced variety. At first sight it would appear to have *Primula Veitchii* blood in it, but this is impossible, as at the time the seed was saved no plants of *P. Veitchii*, or of any similar type, were in stock. The foliage greatly resembles *P. Veitchii*, but the colouring is that of *Primula Forbesii*; while it is quite distinct from the new hybrids raised by M. Lemoine, Ville de Nancy and La Lorraine. *E. S.* [The suggestion that the giant form of *Malacoides* is the result of a cross with *P. Forbesii* does not receive support from the results of numerous experiments which we have made. Although we have made the cross many times in both ways no fertile seed has been obtained.—Eds.]

POLLINATION EXPERIMENTS WITH FRUIT TREES.*

POLLINATION trials with fruit trees were commenced by Mr. W. O. Backhouse in 1911 at the John Innes Horticultural Institution, and are still in progress. The object of these experiments is to find the degree to which varieties are fertile with their own pollen, and, in the case of those which are self-sterile, to select good pollenisers for them.

PLUMS.—The varieties of Plums can be grouped into three classes according to their behaviour when self-pollinated:—(1) Self-fertile, (2) self-sterile, (3) partially self-sterile, setting about 1 per cent. of their flowers when self-pollinated.

From the point of view of the practical grower the last-named class should be treated as self-sterile, and planted beside other varieties.

The varieties which have been tested up to the present can be classed as follows:—

SELF-FERTILE.—Denniston's Superb, Early Mirabelle, Reine Claude Violette, Myrobalan, La Prune Géante, Monarch, Early Transparent, Reine Claude de Bavay, Prince Engelbert, Early Favourite, Gisborne's, Oullins Golden, Golden Transparent, Victoria, Czar, Pershore, Red and White Magnum Bonum, Kentish Bush, Warwickshire Drooper, Damson vars.

SELF-STERILE.—Histon Gage, Early Orleans, Late Orleans, Sultan, Kirke's Blue, Coe's Golden Drop, Coe's Violet, Wyedale, Grand Duke, Jefferson, Reine Claude d'Althann, Pond's Seedling, Washington, Early Green Gage, Old Green Gage, Curlew, Ickworth Impératrice, Late Transparent, Prune d'Agen.

PARTIALLY SELF-STERILE.—Rivers' Early Prolific, Stint, Mallard.

When the self-sterile varieties were cross-pollinated a few cases of inter-sterility were observed, although they appear to be rare amongst Plums. Thus it was found that Cox's Golden Drop would not set fruit with pollen from Coe's Violet.

If Coe's Violet is a bud sport from Coe's Golden Drop, as seems almost certainly to be the case, one would not expect them to be fertile with one another, seeing that they are parts of the same self-sterile individual.

Coe's Golden Drop and Jefferson are apparently quite inter-sterile, nor will the pollen of Jefferson set fruit on Coe's Violet.

The two Gages, Early Green Gage and Old Green Gage, only set about 5 per cent. of their blossoms when inter-pollinated, and Rivers' Early Prolific does not appear to set well with pollen from Early Favourite.

Apart from the above cases it was found that the self-sterile varieties which have so far been tested set freely when cross-pollinated.

Coe's Golden Drop set a full crop when crossed with any of the following varieties:—Rivers' Early Prolific, Reine Claude d'Althann, Wyedale, Early Mirabelle, Reine Claude Violette, Denniston's Superb, Monarch, Prune d'Agen.

Jefferson was quite fertile with Early Transparent, Monarch, Rivers' Early Prolific, and Reine Claude d'Althann.

Reine Claude d'Althann set freely with Coe's Violet, Coe's Golden Drop and Jefferson.

Washington set freely with Pond's Seedling and Late Transparent with Early Transparent.

It is not yet known which Plums will prove the best pollenisers for the Green Gages, but they will probably be found amongst such varieties as Monarch, Rivers' Early Prolific and Pond's Seedling.

CHERRIES.—As yet comparatively few varieties of Cherries have been tested at the John

* Summary of paper read by Mr. G. O. Sherrard at the annual meeting of the National Federation of Fruit Growers, February 25, 1914.

Innes Institution. Those that have been tried are as follows:—

SELF-FERTILE.—Morello, Late Duke.

SELF-STERILE.—Black Tartarian, Elton, Bigarrean Frogmore Early, Bigarrean Jaboulay, Bigarrean Napoleon, Black Heart, White Heart, Kentish, Guigne d'Annonay, Early Rivers, May Duke (set 8 fruit out of about 1,700 flowers self-pollinated).

In cross-pollinating the self-sterile varieties it was found that Elton and Bigarrean Frogmore Early set freely when inter-pollinated, but neither set a good crop with pollen from Late Duke. V. R. Gardner,† in America, observed that Bigarrean Napoleon and some American-raised Bigarrean varieties were almost sterile with May Duke pollen, so that possibly it is a general rule that the Bigarreans are not fertile with the Dukes. Further trials are being carried out to ascertain whether this is the case.

Black Heart is fertile with Morello pollen, and Guigne d'Annonay with pollen from Bigarrean Napoleon.

APPLES.—In Apples self-sterile and self-fertile varieties occur, and also a class which when self-pollinated yields seedless fruits. Nine varieties were studied.

SELF-FERTILE.—Baldwin, Washington, Stirling Castle.

SELF-STERILE.—Northern Greening, Lord Hindlip, Cox's Orange Pippin.

SETTING SEEDLESS FRUIT WHEN SELF-POLLINATED.—Lord Derby, Golden Spire, Duchess of Oldenburg.

The seedless Apples are usually smaller than the fruit of the same variety containing seed, but this is not always the case. In order to secure a uniform crop with these varieties it is advisable to treat them as if they were self-sterile and plant them with other sorts.

Cox's Orange Pippin does not appear to set equally well with different varieties; the best set was obtained with pollen from Duchess Favourite and Stirling Castle, while few fruit set with Lord Derby, and none with pollen from Bramley's Seedling. This variety (Cox's Orange Pippin) is undergoing further trial.

NURSERY NOTES.

PRIMULAS AT READING.

ALL Primroses are beautiful plants for the garden, where each has some special place and value, but, as in other families, one member is of greater importance than all its fellows, and in this genus it is *P. sinensis*, so that when gardeners speak of Primulas they refer to the cultivated forms of this species. The Chinese Primula is a remarkable flower in many respects. It is one of the best examples of a florist's flower, a term associated with those that have been so changed by cultivation and breeding as to bear little or no resemblance to their wild progenitors. The florist's Primula has been so far altered from the wild form that many doubt if its ancestral type is known, and will not accept Wilson's *P. sinensis* as its parent. How and when, then, was its career started, and by whom? By what means did we come to possess this invaluable plant, and what is the date of its introduction into Europe? All this remains a mystery beyond the fact that the flower has been cultivated in China for ages, and was introduced to Europe somewhere about the year 1821. But, clever as the Celestial may be, we have no evidence that he has raised anything approaching the beautiful forms that we possess, such as may be seen in Messrs. Sutton and Sons' nursery at Reading, where many glass-houses are filled with the manifold forms of the plant. The varieties enumerated in the seed catalogue of this famous firm number

no fewer than 50, and the Reading collection represents most of the finest sorts in cultivation. Those with compact, solid trusses and big blooms, of which Duchess may be cited as an example, were the chief fancy of the older florists; hence until recently progress was greatest in this direction. To distinguish them from those of the star type, they are known as *sinensis* varieties. But in recent times the star or Stellata Primulas have become as popular with growers as the older form, and they lend themselves even better to decorative uses. As cultivated in separate batches for seed purposes, row after row of the same variety gives a very formal effect, although collectively they make an impressive scene of floral beauty. These same Primulas, intermixed in the green-houses and conservatory at Hillside, Reading, the residence of Mr. Leonard Sutton, had quite a different effect, and some of the more attractive groups which we observed on a recent visit may be described.

The one that pleased us most was arranged on a central stage, which was filled with Silver Star and Ruby Star varieties, the former with eyeless flowers—that is, devoid of any trace of colour in the eye. Another very effective group was of Coral Pink and Crimson King, with spikes of the blue Salvia-like flowers of *Pycnostachys* arising at intervals. Stellata Coral Pink associated well with Giant White Star, and the latter also harmonised finely with Ruby Star. Pearl White and Coral Pink, both of the *sinensis* type, looked well together, the pale green foliage of the former enhancing the effect.

Primula malacoides, with its light and graceful trusses, makes a fine companion for any of the Chinese Primulas, and it was used most effectively at Hillside with White Queen and Pale Blue Stellata varieties. In another group were *P. malacoides*, white Hyacinths, and various large-flowered Primulas.

The plants grown for seed in the nursery number many thousands, and house after house is filled with them. Many of the sorts are old favourites, but Primulas are constantly changing, hence the visitor to Reading always finds something new. The old Giant White variety, sometimes known as Queen, has often a faint blush in the petals, but Messrs. Sutton's newer Giant Royal White is without this defect. The plants are distinct in foliage, for in the first the leaves are light green, whereas in the latter they are dark-coloured. It is noticed that white varieties with green stems generally develop a tinge of pink in the blossoms, so that the petals are never a dead white. There are other "Giants" in lavender, pink, crimson, salmon, and other shades. Giant Lavender is a most beautiful variety, but it is one of those unfixable sorts which cannot be relied upon to come perfectly true to seed. It is a hybrid raised from a white-flowered, dark-stemmed variety and the old Giant Red. Many of the "Giants," for example Giant Crimson, are poor seeders.

In Reading Scarlet we have the nearest approach to that colour, but there is none of a true scarlet shade in Primulas. The deepest of the blues is The Czar, whilst Reading Blue is a beautiful pale lavender colour. Lord Roberts is quite one of the best in the salmon shades, and occurs both in the "fern" and "palm" leaf forms of foliage. Plenty of heat enhances the colouring in this variety, although in many sorts it causes the blooms to become "washy." Giant Salmon Pink and Crimson King also throw brighter flowers in a very warm house, but in these cases the "pips" come smaller. The Fern-leaved form of Crimson King is not so robust as the type. Most of the staging in one house was filled with plants of the Duchess, which was raised from a dark-stemmed, white variety crossed with Crimson King. The Duchess is still the very finest in its class. It stands out

mainly by reason of its bright pink-coloured zone in the centre, contrary to what obtains usually, for in most others the more pronounced colouring is on the outside.

There are double forms of the Duchess, but in these the zone is partly hidden by the super imposed petals, which spoil the effect. Some of the other double sorts, however, are very pretty, especially Double Pink. There are also Duchess hybrids. One known as Lady Roberts is particularly beautiful, but it does not breed true, and is therefore not enumerated in the catalogue. It was raised from Duchess crossed with Crimson King. Brilliant Rose is one of the easiest of Primulas to cultivate, and for this reason is a favourite with amateurs, and the same may be said of Pearl, which is one of the best white varieties for general purposes.

One of the largest divisions, known as the "triple" house, because of the three-span roofs covering it, was filled entirely with Stellata varieties, the effect of which was superb. The pretty Dark Blue and Pale Blue Star varieties—counterparts of The Czar and Reading Blue—mark a great advance in this section. They associate finely with other shades. Pale Blue is especially pretty mixed with Coral Pink Star. Stellata Pink is a fine variety, but Messrs. Sutton have one better in Delicate Pink, the foliage of which is very pale—really bright green, palest among all the Star varieties. In contrast were some near by with stems almost a maroon colour—the variety Giant Carmine.

White Star has been improved, and a newer form with larger flowers and paler foliage is known as Giant White Star. White Queen is a very free bloomer; the foliage is neither very dark nor very pale, but intermediate. The original White Stellata form has dark-coloured leaves; it was noticed that many of the petals in this variety were marked, sometimes entirely, with lilac-pink. In the newer eyeless white variety even the yellow flush of the eye is absent. Parti-coloured varieties crop up now and then, and Messrs. Sutton have fixed one that has petals splashed with carmine. It is named Centenary, but there is no demand for it, the present taste being for those with self or clear colours. Stellata Lord Roberts is a very striking colour—rich carmine, but not so dark as Ruby, which has petals coloured crimson. There are some in this section with the characteristic "Duchess" eye, although not so pronounced as in the *sinensis* form, yet very beautiful. They are the offspring of a dark-stemmed White Star variety crossed with Ruby (Stellata). Ruby has yellow in the eye, but this has disappeared in the one known as Eyeless Ruby. Partial doubling has taken place in some of the star Primulas, and Messrs. Sutton have a race of these semi-double varieties.

The Cyclamens, which make such fine companions for the Primulas, were just past their best show, but sufficient remained to prove the excellent strain, which includes many choice named varieties.

PLANT NOTE.

NERTERA DEPRESSA.

This pretty berry-bearing plant was formerly grown largely for use in carpet-bedding. In more recent times it has been less frequently seen, though some excellent exhibits at the R.H.S. Hall last year clearly showed that the plant is still well cultivated. In former years I grew it largely, and found it expedient to increase the plant by division, usually in February, thereby enabling it to make growth and become established before flowering in April or May. The flowers are inconspicuous and sessile, and it is not a little remarkable that so fine a

† Bulletin 116, Oregon Experimental Station, U.S.A.

crop of brilliant scarlet berries should result. The plant grows freely in a mixture of sandy loam, peat and pounded brick rubble, and while not objecting to greenhouse treatment, is quite amenable to cultivation in a cold frame. Cultural items of importance include the withholding of overhead waterings and the giving of an abundance of air at flowering time. At other times an abundance of overhead moisture is beneficial. I grew the plant in cold frames, and it never received more than mat protection in the severest weather. *E. J., Hampton, Middlesex.*

TREES AND SHRUBS.

ARBUTUS MENZIESII AT BAYFORDBURY.

ALTHOUGH introduced by Douglas so long ago as 1827, this beautiful evergreen tree is still scarce in English gardens. The specimen illustrated stands in a sheltered position on the lawn at Bayfordbury, Hertford, the seat of H. Clinton-Baker, Esq., who kindly sent me the photograph, which was taken recently by Mr. Elsdén, of Hertford. The tree, which is now 29 feet high with a stem 2 feet 5 inches in circumference at 3 feet from the ground, was sent to the owner's grandfather about 30 years ago as a very small plant. In the autumn it produces masses of orange-red berries,* which form a striking contrast to the shining foliage and make the tree very ornamental. The reddish papery bark so characteristic of *Arbutus* is very noticeable in this species.

The Madrona, to give the tree its native name, attains its greatest size in California, where, under favourable conditions, it grows to a height of 100 feet. It is distributed through the Pacific coast region from Southern British Columbia through Washington and Oregon, to California. Its southernmost limit is in the Santa Lucia mountains. Here it becomes shrubby in habit. This species is quite hardy in England, except in a young state, when the shoots are sometimes frosted. Trees up to 50 feet high are known in England, the largest on record being one at Bassett Wood, near Southampton. I have not seen this tree, but according to Elwes and Henry,† it measured in 1907 50 feet in height with a stem clear for about 20 feet, and 3 feet 2 inches in girth. *Arbutus Unedo* also made a brilliant show at Bayfordbury last autumn, with its masses of "strawberries," but the birds made short work of them. *A. Bruce Jackson.*

FLORISTS' FLOWERS.

CHOICE COLLERETTE DAHLIAS FOR GARDEN DECORATION.

(See Coloured Plate.)

AFTER a few years, which may be termed a sort of probationary period, the Collerette Dahlia has asserted its right to a place in gardens, whether large or small. The fact of its suitability for small gardens should go a long way to popularise the type, for it is a common error to suppose that Dahlias are too large for gardens of moderate dimensions.

This, I feel sure, is entirely owing to a lack of acquaintance with many of the newer types and improved varieties of older sections. To those unfamiliar with the habit of the Collerette in the garden, and who intend giving it a trial, the selection of varieties is an important matter.

In 1912 the percentage of varieties possessing a really good garden habit was very high.

With an increasing demand for the type, it is probable that many were placed on the market in 1913 without having previously had a sufficient trial to justify their inclusion. It is

scarcely possible to judge the future habit of a plant from the first few blooms, or when it is crowded in the seedling beds.

As seedlings often commence flowering late in the season, one may be pardoned for over-estimating what appeared then a desirable variety. Now that numbers are increasing by leaps and bounds, it is necessary to sift the wheat from the chaff.

It is well known, too, how misleading a fine vase of cut blooms may be with respect to the garden value of the plant.

The blooms are very large and the foliage exceedingly robust; others of this type are *Ami Nonin*, *Ami Cachet*, *Crown Princess Charlotte*, *Diomède*, *Burgomaster Siefurth*, and *Souvenir de Chabanne*.

None of these large flowering varieties met with favour from the judges at last year's trial, but their much later time of blooming, even though given identical treatment with others, would always tell against them.

Souvenir de Chabanne, it may be mentioned, though it has the large, perfectly formed flowers



FIG. 83.—ARBUTUS MENZIESII AT BAYFORDBURY, HERTFORD.

An instance of this is seen in the variety *Albert Maumene*, which received an Award of Merit from the R.H.S. in 1912.

The individual blooms of this variety are beautiful, but as one rarely gets more than half a dozen expanded blooms at one time on very fine plants, it can readily be seen that, in comparison with many others, it would not receive a second glance when judged in the garden.

This particular variety belongs to a limited few, which may be considered distinct in that

and vigorous foliage, yet differs in habit somewhat from the others, having when at its best a handsome epergne-like appearance, and flower stalks quite 2 feet long.

It was greatly admired here last autumn, but was not at its best before the end of September. Owing to this drawback, these large bloomers cannot be recommended in a select list of varieties, handsome though their blooms are.

Especially is this the case now that one can have varieties which, under proper treatment,

* The fruiting specimen figured in *Bot. Mag.* t. 8,249 (1909) was obtained from the Bayfordbury tree.

† *Tree of Great Britain and Ireland*, III., 566 (1908).

NOTICES OF BOOKS.

THE CHEMISTRY OF THE GARDEN.*

This little book is to be recommended as an introduction to the practical study of the chemistry of the garden. It is designed for the use of teachers and students of gardening, and will prove useful to those who wish to find out for themselves how to identify the different chemical elements present in plant, soil and manure. In Chapter I. the various chemical tests by which the presence of carbon, nitrogen, phosphorus and sulphur in plant tissues is determined are described briefly but sufficiently, as also are the methods by which sugar, starch, cellulose, proteins and oils may be demonstrated. The second chapter, dealing with the soil, consists in the description of experiments which serve for the detection of phosphates, potash and lime. Chapter III. deals with manures, and in it are indicated the points to be observed in examining such artificial manures as nitrate of soda, sulphate of ammonia, superphosphate, basic slag, kainit and others. The final chapter is devoted to a brief account of the chemistry of sprays and washes.

AGRICULTURAL CHEMISTRY.†

THIS well-known students' text-book is a compendium of the whole subject of agricultural chemistry, comprising, as it does, a study of soils and manures, the plant and its products, animal feeding, milk and milk-production, etc. The previous edition no doubt suffered considerably from the author's inability, through residence abroad, to incorporate his alterations and additions with the main text, and also from the unfortunate circumstance that the revised edition was given to the public without mention of certain important advances in the study of animal nutrition, advances which have now been widely accepted as established. Nevertheless, Mr. Ingle's book has always been so thorough and clear that it has had, deservedly, a wide vogue amongst students of agriculture. It is pleasing, therefore, to find that the present edition, which has been fully revised and largely re-written, equals its predecessors in clearness, and is sufficiently comprehensive and up to date to make it unique amongst text-books of this kind.

The chapters on "The Chemical Constituents of Plants" and "The Plant" may be especially picked out for approbation; they are well written and provide a mass of correct information. It is impossible, however, to avoid deprecating the retention of loose expressions, such as "albuminoid" and "proteid" (except where they are used in a popular sense) in a book which is intended for those "who already possess a fair knowledge of general chemistry."

The sections particularly applicable to the requirements of the scientifically-trained horticulturist are full and to the point, those dealing with the processes operative in the soil being especially well worked out. Indeed most of the portion of the book dealing with soils and manures is admirably written, and the author's few faults are of omission rather than commission. It is a pity, for example, that in a book of this kind no mention is made of soil-surveys and soil-maps, for it is now realised that such surveys are of paramount importance to the agriculturist and horticulturist, both for the correlation of soil-types with agricultural practice and for the interpretation of soil-analyses. The latter, indeed, is treated in a manner more prevalent ten years ago than to-day, and might well be re-written.

The short sections on fungicides and insecticides are poor, and do not accord with the high standard of the remainder of the book, which can be given a cordial welcome in its new edition, and may be recommended. S. T. M. A.

* *A Course of Practical Work in the Chemistry of the Garden.* By D. R. Edwards-Ker. Pp. 40. (John Murray.) 1s. 6d.

† *A Manual of Agricultural Chemistry.* By Herbert Ingle. Third and revised edition. Pp. viii.-397. (London, 1913: Scott, Greenwood and Son. 7s. 6d.



The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKSON, Oakwood, Wylam-on-Tyne.

DENDROBIUM.—Most of the deciduous Dendrobiums have now their flowers in an advanced stage of development. Let the plants have the advantage of full exposure to the light until the flowers expand. They may then be placed in a somewhat drier and more shady place, such as will increase the durability of the flower. Any re-potting that may be necessary should be carried out as the plants pass out of flower, using a compost, etc., as previously recommended. Where large specimens of some of the evergreen Dendrobiums are grown, such species, for instance, as *D. thysiflorum*, *D. densiflorum*, *D. suavisimum* and *D. chrysetoxum*. They are exceedingly serviceable for house decoration when in flower. The plants here are often allowed to remain in the dwelling-room from the time they expand their flowers until they fade, which is a period of two or three weeks. Yet with proper care with regard to watering, by guarding against excessive root-waterings, no injury takes place. Plants of this section now producing their flower-scapes may be syringed overhead on all sunny days until the flowers commence to open. As with the deciduous species, so with these: re-potting should be carried out immediately after the flowering period, selecting for them a good lasting compost, so that frequent re-potting may not be necessary.

COELOGYNE CRISTATA.—The early-flowering plants of *Coelogyne cristata* have already bloomed. If the plants have grown into large specimens and the receptacles are full of roots it may be found that the pseudo-bulbs have become reduced in size and promise to give less satisfactory results than formerly. In cases of this description turn the plants out of their pots, remove the old potting compost, and cut away such portions of the back pseudo-bulbs as are not necessary, leaving two or three pseudo-bulbs behind each new growth, then pot up the leading portions into pots selected for their convenient size. The older pseudo-bulbs which have been cut off, if potted or laid on a bed of damp Sphagnum-moss in a shady position in a warm house, will produce new growths that may be potted up when they have formed roots. A suitable compost for *Coelogyne* is one consisting of fibrous loam two parts and peat one part, with a quantity of coarse sand and broken crocks added. The pot should be well drained, as only a shallow layer of potting compost is necessary. Following the re-potting operation, place the pots in a warm, moist house, shading them from too much light and spraying them overhead daily in sunny weather.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

GARDEN ROSES.—Pruning may be put in hand now, beginning with the climbing section. A sharp "Saynor" knife, which will make short, clean cuts, should be used in preference to secateurs or shears. Cut out all spindly, weak growths, and reserve the stout shoots of last year. These should be shortened to about one-third of their lengths and the remainder trained to the wired walls or to the pergola frames, as the case may be. From the laterals of these last season's rods the finest flowers will spring. Each rod will require a space of about 1 foot between it and the next. The Roses to be recommended for pergolas are Mme. Abel Carrière, Reine Olga de Wurtemberg, Gloire de Dijon, and Félicité et Perpétue; but for low walls and the stumps of trees, semi-climbers such as Grass an Teplitz, J. B. Clark, Rêve d'Or, W. Allen Richardson and Climbing Liberty are excellent. Beds of Tea, Hybrid Tea, and Pernetiana varieties should be cut much harder and closer

commence blooming early in July, and continue until cut down by frost. The ideal type, of which I should name the variety Henri Farman as a perfect example, grows about 3 feet to 4 feet tall, with moderate growth.

The flowers are of medium size, poised on stiff stems, and produced in the greatest profusion throughout the summer and autumn. The range of colouring is now very wide and comprises varieties of self-colour, others self with the exception of contrasting collar, while many are prettily striped, blotched, suffused, or tipped. A good, clear pink, however, is still needed.

Dora Fisher is a very pretty pink, reminding one of the well-known "Pink Pearl" of the Cactus section, but the form of flower is not perfect, and the habit leaves much to be desired. Dainty, another so-called pink, has not much to recommend it.

Tastes differ; many prefer the selfs, while others favour the combination of colouring.

Selfs are particularly suitable for associating with herbaceous plants, while all are charming for groups, beds or borders.

In the following list varieties have been chosen which give a wide range of colour.

1. Diadem, flowers star shape, of a lovely bright rose pink, with white collar, grows taller than most, reaching from 4 feet to 4½ feet. In the opinion of many this is the gem of the section.

2. Princess Louise, flowers rich crimson, with white collar.

3. Prince John, crimson edged lake, white collar. These two are very similar in habit, making perfect bushes about 3 feet to 3½ feet high.

4. Holyrood, ruby, with yellow disc and collar. A striking and popular variety, 3½ feet.

5. Henri Farman, claret, edged primrose straw collar. A particularly fine variety, 3½ feet.

6. Queen Bess, orange-scarlet, tipped golden yellow, collar yellow, streaked red. A showy variety, 3½ feet.

7. Negro, maroon. A very fine dark, with white collar, 3½ feet.

8. Goldstern, flowers star shape, yellow self, the best of its colour, 4 feet.

9. Countess Dougon, white ground, striped and suffused rosy carmine, collar white. This variety is rather variable in colour. A good type, very attractive, 4 feet.

10. May, a pure white, habit not perfect, but the best so far as I know, 4 feet.

11. Queen Mary, deep rose with white disc and tips, blush-white collar, 3 feet.

12. Regularity, purplish crimson, with purple and white collar, 3 feet.

13. Prince of Orange. This variety is unique in colouring, being well named, a true self, 4 feet.

14. Tuskar, a charming variety with rich, rosy-crimson petals tipped with rose and white, collar straw-coloured, 3 feet.

15. Inchmarnock, bright red with yellow collar.

16. Eddystone, crimson scarlet, tipped golden yellow, collar pale yellow, spotted crimson, 4½ feet.

17. Skerryvore (see Coloured Supplement), bright scarlet, tipped with yellow. Yellow collar, 4 feet.

18. Sunburgh, purplish-mauve suffused and striped with white. Pure white collar, 3 feet. Arthur J. Cobb, Duffryn Gardens, Cardiff.

PUBLICATIONS RECEIVED.—*Journal of Genetics*. February. Edited by W. Bateson and R. C. Punnett. (London: Cambridge University Press.) Price 10s. net.—*Bulletin of Miscellaneous Information, 1914*. Royal Botanic Gardens, Kew. Price 3d.—*Colour Schemes for the Flower Garden*. By Gertrude Jekyll. Third edition. (London: Country Life, Ltd.) Price 12s. 6d. net.

to the ground than those mentioned above, so as to secure shoots right down from the base for the following year's growth, shortening the stronger shoots down to five or six dormant buds. These will supply a profusion of Roses of excellent quality this season, and will be cut out next year and succeeded by the shoots secured as above from the base. With regard to pruning, it may be stated that there is such a diversity of habit in Roses that no one system can safely be applied to all: the pruner must use his own discretion. Polyantha Roses are invaluable for bedding, flowering continuously all through the summer. They must be brought back by pruning, otherwise they will lose their compactness. Hedges of *Rosa rugosa* should be cut down to the ground.

SHRUBS.—Shrubs for flowering or foliage planted in beds (such as *Ceanothus Gloire de Versailles*, Golden Elder, *Hydrangea paniculata*, and *Paulownia imperialis*) should now be cut down close to the ground. Some are in flower now, notably *Elaeagnus longipes* (a scented shrub), Flowering Almonds, and *Berberis Darwinii*.

BULBS.—Owing to the very mild winter slugs are likely to be troublesome. Their haunts may

LAWNS.—Keep the lawns rolled once a week, or more often after rain, so as to disperse the worm-casts in readiness for the scythe. A dressing of fine soil or sand and sulphate of ammonia will kill the ground-moss and Daisies. Trim the edges of the lawns and line out correctly all the paths which may have been trodden out of shape. Motor or hand-power mowers should be put into thorough working order, ready for the season.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

SEEDLINGS.—Gloxinias, Begonias, *Streptocarpus*, *Primula obconica* and other seedlings will now be showing the first rough leaf, and should be pricked off into shallow pans without delay. Choose clean and well-drained pans, placing the siftings over the crocks used for draining, and fill the pans with light, sandy soil. The pans should then be placed in a warm house, and given a soaking with tepid water. In a day or two the soil will be quite sufficiently warm. The seedlings must be very carefully handled. Each should be lifted by means of a cleft stick held in the left hand and planted in the hole prepared for its reception with a dibber held in the

and *Pancretiums*, top-dressing those in which the drainage is good and general condition healthy. If re-potting is necessary, remove carefully as much of the old soil as possible. All small bulbs will do best in pots by themselves, with a porous compost of turfy loam, to which may be added a little rotten manure, sand, and broken charcoal. The pots must be well drained, and the coarser material placed over the crocks. Four or five bulbs to each 10-inch pot will be a suitable number. Press the soil firmly into the pots and insert the bulbs so that they will be just covered with soil; then plunge the pots in bottom heat at a temperature of 65° to 70°.

CODIAEUMS (*Dracaenas*) which have rooted should be potted up, keeping them close for a few days, until the roots have taken a firm hold of the new soil. *Selaginellas*, *Zebrinas*, *Pileas*, and *Oplismenus Burmannii variegata* (*Panicum*) can now be propagated. *Eranthemum pulchellum*, *Plumbago rosea*, *Begonia Gloire de Lorraine*, *Coleus thyrsoideus*, *Justicias* and *Reinwardtias* should be placed in a moist warm house to produce growth suitable for cuttings.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

VINES.—Early vines with berries on the point of stoning should be grown in a mild, steady temperature. Let the borders receive periodical waterings with liquid manure, or apply dressings of artificial fertilisers. Attend to successional houses as formerly directed. If Muscat vines are not already started forcing should be commenced at once, as the earlier the fruit ripens, the better will the berries keep during the autumn and early winter. Examine grapes that are stored in the fruit room, with a view to replenishing the water if it is low in the bottles.

PINES.—If the fruiting Pines are in good condition most of them will now be producing suckers, and if these are not required for increasing the ordinary stock all except one sucker to one plant should be removed by screwing them out; but do not remove them from the stem. Let the roots be carefully attended to, both in respect to the water supply and the degree of bottom heat. It is not infrequent for Pine roots to be burned owing to excessive bottom heat. A temperature of 70° to 80° is safe enough, but it should not be allowed to go higher. The atmospheric temperature at night should be from 65° to 70°, with proportionate increases of heat during the day, even up to 85° or 90°, with plenty of ventilation on sunny days. The house may be closed in the afternoon when the temperature is 80°. Successional plants may still have the temperature as previously advised for them. Closely examine the heat of the bed in which succession plants are plunged, and if it becomes too hot lift the pots and place a piece of inverted brick or small saucer beneath each pot, allowing them to remain so until the excessive heat subsides. Spray the plants lightly overhead at closing time on all sunny days and apply root waterings whenever the soil appears to be dry. Prepare soil for plants that require shifting into fruiting-pots, making the compost of fibrous loam, broken up into moderately sized lumps, and put plenty of drainage material into each pot.

PEACHES AND NECTARINES.—The bright sunny days of spring may prove very trying to trees which are being forced. To prevent injury occurring from this cause let the fires be checked directly it is seen that the weather is becoming sunny; admit air early and frequently, and sprinkle the paths and other surfaces of the house with water. Syringe the trees thoroughly at closing time with water slightly higher than the temperature of the house. Examine all inside borders and apply a thorough soaking of water to all that are found to be dry. In the earliest houses give prompt attention to thinning, disbudding, and tying-in of the young growths. Disbudding is an operation which requires daily attention, and the operator should have a knowledge of the condition of the roots. Young



FIG. 84.—BULBS IN THE GRASS AT MADRESFIELD COURT. (See "The Flower Garden.")

be disturbed with effect by breaking up the surface of beds of choice Tulips, Hyacinths, Anemones and Hepaticas with a small Dutch hoe. Apply a dusting of fresh soot and lime after each rainfall just before night. Bulbs in grass are now in active growth, and in some cases *Scilla sibirica* and *Chionodoxas* are in full bloom. Grown on a slope, combined with Primroses, these flowers have a charming effect. On slopes where Primroses abound note should now be made of their position, so that in the autumn some of the Primroses may be cleared away and *Scillas* and *Chionodoxas* planted for next year. Daffodils of the early section are opening their first flowers.

THE HEATH GARDEN.—This is now looking very bright. Space should be given for bold masses of *Ericas carnea*, *albans*, *hybrida*, *Serlei*, *Allportii*, *Hammondii*, and other dwarf species. These look well planted on a slope, interspersed with a few single specimens of tree heaths, such as *E. codonodes*, *Veitchii*, and *australis*. If a background of common or double Gorse can be utilised, the effect is much improved. If the soil is free from lime, it is astonishing how well the *Ericas* succeed if a little leaf-mould and charred vegetation can be added to the staple.

right hand. The soil must then be pressed close around each plant; being already moist it will not need root waterings for some time, a light spraying overhead being sufficient to keep the seedlings fresh. They will do best if kept close to the roof-glass, but shaded from sunshine.

GLORIOSA SUPERBA.—The tubers of this stove climber will now be showing signs of growth, and should be shaken clear of old soil. Two or three tubers should be placed in a 10-inch pot (previously well drained), and covered until the pot is three-parts full with peat and fibrous loam in equal proportions, with the addition of some sharp sand and broken charcoal. Bottom heat is an advantage, but not a necessity. The pots should be placed so that the plants can climb up the rafters near the roof-glass.

GENERAL WORK.—The sun is now becoming more powerful, and blinds for shading should be got out and fixed over the houses of the most tender plants. Growth is active, and an increase of temperature may be allowed. In the stove the atmospheric temperature may be increased to 70° at night and to 80° with sun-heat during the day. The necessary humidity can be maintained in the atmosphere by frequent damping of the floors and stages. Overhaul *Eucharis*

vigorous-growing trees should be divested of all fore-right growths. Strong-growing side-shoots should be pinched; they will then produce lateral growths of lesser strength, and therefore better suited for fruit-bearing. In applying stimulants of any sort to the roots, let the quantity always be governed by the condition of the tree. In the case of inside borders that are well made and provided with proper drainage there is very little danger of over-watering taking place, for the trees require, during the period of growth, a very large quantity of water, and drought is the worst evil that can overtake a tree. Close the ventilators early in the afternoon, thus conserving the sun heat.

ORCHARD HOUSE.—Peach, Apricot and Plum trees ought all to be in full blossom. On warm, sunny days let the house be given free ventilation; even at night, when the weather is mild, the ventilators may be left partly open as a means of assisting the fertilisation of the flowers. Take care that none of the trees suffer from want of water, specially those growing in pots. When the fruit is seen to be fairly set let the trees be given a light syringing with clear water, and keep up a close watch for green fly and other insect pests.

UNHEATED HOUSES AND WALL CASES.—These structures, which are often used for culture of late fruits, should be kept thrown open as much as possible, with a view to retarding the flowering season to the last degree possible, so that there will be less risk of injury from the spring frost. If sharp frosts occur without much warning, and the buds of the trees are sufficiently advanced to be liable to injury, lower the frost-proof blind on to the roof of the house and protect the sides with similar material or with stout tiffany. Do not nurse or push the trees in the least degree until the fruit is set; but in the meantime afford them plenty of water and an abundance of air.

STRAWBERRIES.—Plants bearing fruits that are nearing the ripening stage should be kept somewhat drier at the roots, and the atmosphere should be kept rather less moist by allowing a constant circulation of air through the structure both by day and night. Otherwise the fruit might prove to be deficient in flavour. Successional plants may be placed in heat at intervals of about a fortnight, or as often as necessary to satisfy the demand for early fruits.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tyninghame, East Lothian.

CAULIFLOWERS.—Plants of Cauliflower that have been wintered in frames, and others pricked out at the base of south walls, may be transplanted in gardens known to be moderately free from severe frosts in spring. But in the northern counties of England and the north-eastern counties of Scotland, and other cold districts, transplantation may be deferred for a few weeks.

LATE CABBAGES.—Both Brussel Sprouts and late Cabbages may be treated as recommended for Cauliflowers, in cases where seeds were sown in the autumn. In my own case, however, I prefer to sow seeds of late Cabbages and Savoys at the present time, making another sowing of Savoys at a later date; the produce is smaller, more tender, and of greater use than that from plants raised in the autumn.

LETTUCES.—Seedlings raised under glass a few week's ago are now strong enough for transplantation into the open ground. If slugs are numerous make the surface soil perfectly smooth with the back of a spade and sprinkle it occasionally with hot lime. Take other measures to destroy the pests, as they are most destructive to young Lettuces.

CELERY.—Prick out the earliest Celery plants, which, being of moderate numbers, may be put into ordinary cutting-boxes filled with a compost of loam and leaf-mould in equal quantities and made very firm; or two parts of loam to one of leaf-mould, according to the

quality of the loam. The leaf-mould is necessary in order to get the roots to lift with plenty of soil adhering to them at the next plantation.

TOMATOS.—The earliest fruits of the autumn-raised plants should now be approaching maturity, and in order to develop a good flavour in the fruits the heat of the house should be well maintained, and the roots should be kept rather on the dry side. Plants raised in January ought now to be large enough for placing in the fruiting-pots. Plant them rather deeply and leave a few inches of space to be filled with compost later on. A 9-inch scarement in one of the structures here holds 60 plants, placed at 1 foot apart. The compost is brought slightly above the level of the ball of roots, and surface dressings of soil and manure are added as necessity arises. The depth of soil at no time exceeds 6 inches, yet very fair crops are the result. Where pits or deep frames are otherwise employed during the summer they may be utilised for cultivating Tomatos. Sow the seeds and raise the seedlings in as cool a temperature as they will bear without damage and be very careful in applying water, as excessive moisture is most harmful.

VEGETABLE MARROWS.—The preparations for Vegetable Marrow culture may be commenced.



FIG. 85.—BULBS IN THE GRASS AT MADRESFIELD COURT.

The plants may be raised in 4-inch pots, allowing one seed to each pot, or the seeds may be germinated in 3-inch pots, in which case the seedling, directly the seed-leaves are expanded, must be transplanted to a 5-inch pot. The plants can be grown either in a manure-heated frame or an intermediate pit. A check to growth or to the extension of the roots is particularly harmful to Marrow plants.

THE "FRENCH" GARDEN.

By PAUL AQUINAS.

HOT-BEDS.—The Lettuces grown in the beds reserved for forcing Turnips are ready for marketing. When the frames are cleared of the crop rake the soil loose and press it down again. Sow seeds of Turnip Milan Round or Half Long in eleven rows per light; make ten holes in each row, placing two or three seeds in each hole. Turnips may be forced easily provided growth is not checked at any period. The chief causes of failure are: (1) Extreme bottom heat, which is obviated by growing a crop of Lettuces before the insertion of the Turnip seeds; (2) cold weather and sudden changes of temperature. Careful ventilation and covering with mats at night will overcome these difficulties. Admit air in moderation as soon as the cotyledons are developed. The Lettuces growing in the Carrot beds are hearting, and should be examined at

least once each week with a view to transplanting such as are ready for shifting, and thus favour the development of the Carrots.

COLD FRAMES.—Ventilation may be afforded the crops in unheated frames and cloches in favourable weather, especially where Lettuce Passion is grown. Covering the frames at night must be done more carefully than hitherto; in case of unexpected frost the mats may be spread over the glass till the plants have entirely recovered, and air may be admitted immediately after the mats are removed. Cauliflowers may be planted in cold frames in the same manner as in the hot-beds. Such varieties as All the Year Round and Driancourt may be planted at the rate of fifteen plants for every frame, or on the two outside rows in the cloche beds. The heads will be valuable as a successional crop to those grown in the hot-beds. After this operation the winter quarters of the September-grown Cauliflowers will be at liberty. Three barrowloads of black soil may be placed in each frame for sowing a crop of Turnip in a similar manner to the batch inserted in the hot-beds or for transplanting Cos and Cabbage Lettuces raised from seed sown in cold frames early in January.

MELONS.—Successive sowings of Melons should be made every week until the second week of April, in order to have plenty of young and vigorous plants. Where such sowings are made on hot-beds, it is advisable to make a fresh bed every week, and transfer all seeds and seedlings on the last bed as the manure is fermenting. The old bed will be again available after the materials have been turned over and two or three barrowloads of fresh manure added to it.

NURSERY BEDS.—Make up a small bed to accommodate one frame for sowing the first batch of Red Celery—Standard Bearer or Leicester Red—for a supply from November onwards. This sowing should be followed by a second one in a fortnight to ensure a supply of sturdy seedlings for pricking off late in May. Tomatos may also be raised in this frame for cropping out-of-doors. The seeds of the Tomatos germinate quickly, therefore preparation should be made for pricking the seedlings out as soon as they are large enough to handle. Fill the frames with good loam instead of black soil, which would favour a sappy growth. Seeds of Cauliflower may be sown very thinly in a cold frame, as the plants will not be pricked out before they are finally planted. A sowing of Endive La Parisienne or La Rouennaise may be made in boxes placed on the Melon bed. This crop when grown in small batches is a remunerative one. The rearing of the seedlings at this time of the year in a temperature of 60° is a rather tedious process, and should only be undertaken where time can be spared for the work.

THE APIARY.

By CHLORIS.

PURCHASING.—At this time of the year much secondhand bee material is offered for sale. It is not wise to purchase hives, etc., unless it is known for certain that no diseased colonies have previously inhabited them. In any case where secondhand hives are bought it will be prudent to scorch out the interior with a plumber's lamp, wash the whole of the woodwork with a strong solution of carbolic, and then place the hive in the fresh air for a few days before painting it. Beekeepers should order their requisites for the coming season early, so that sections may be fitted up and frames prepared in readiness for the honey-flow. In fitting up section crates do not omit dividers, and those of metal are more satisfactory than those of wood, because these latter twist. It is impossible to obtain shapely sections unless dividers are used. Those who are not able to plane and saw wood true will find it a decided advantage to purchase hives in the flat and put them together themselves in their spare time, and to give them at least three coats of paint before the end of March, so that the smell of the new paint may have passed off before it is necessary to utilise them for swarms.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plans to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MARCH 16—

Surveyors' Inst. Exam.

TUESDAY, MARCH 17—

Broughty Ferry Hort. Assoc. meet.

WEDNESDAY, MARCH 18—

Stevenage and District Hort. Soc. Sh.

Roy. Met. Soc. meet. Lecture by Prof. A. C. Seward on "Climate as Tested by Fossil Plants."

THURSDAY, MARCH 19—

Linnean Soc. meet. Roy. Soc. of Arts meet. Paper by Mrs. Villiers-Stuart on "Indian Water Gardens."

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 41.9°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, March 11 (6 p.m.); Max. 47°; Min. 31°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, March 12, (10 a.m.); Bar. 29.3°. Temp. 52°. Weather—Dull.

PROVINCES.—Wednesday, March 11. Max. 48°, Cork; Min. 38°, Aberdeen.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—

Rose Trees, Rhododendrons, Perennials, Lilies, etc., at Stevens's Auction Rooms, King Street, Covent Garden, at 12.30.

MONDAY AND FRIDAY—

Hardy Bulbs and Herbaceous Plants, Roses, etc., at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.

TUESDAY—

Nursery Stock, at the Royal Gardens, Hampton Court, by Protheroe and Morris, at 12.

WEDNESDAY—

Herbaceous Plants and Hardy Bulbs, at 12; Trade Sale miscellaneous Bulbs, etc., at 12; Japanese Lilliums, at 2.45; Palms and Plants, at 5, at 67 and 68, Cheapside, E.C., by Protheroe and Morris. Fifth Annual Sale of Nursery Stock at Ninebam's Nursery, Addison Road, Caterham, by Protheroe and Morris, at 12.

THURSDAY—

Roses, at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 1.

FRIDAY—

Orchids, at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.45.

The Life of the Seed.

The seeds of the commonality of plants are docile things. Given but a modicum of attention and they practise straightway the magic of their growth. Yet, as we all know, there are recalcitrants among the commonwealth of plants—some refusing to germinate unless they receive special attention, others maintaining unimpaired their powers of development even though they be treated most neglectfully. But whether difficult or easy in their response to the cultivators' cozening, all the seeds of cultivated plants have this in common, that if not sown soon after they are ripe their vitality fades by slow degrees, until after a briefer or longer period of decline it is lost altogether. In sharp contrast with this brief temporal hold on life is the endurance of the seeds of various weeds. For the seeds of Charlock, of Foxglove, and certain other wild plants

time, as it were, stands still, and long years after chance has buried them in the ground these seeds may spring up again and minister to the wonder of the observant and the credulity of the casual looker on. The seedsman accepts the annual loss among his seed stores as incidental to his trade. After making the best provision he may for the storage of his seed he bows to the inevitable, discards his stocks of old seed of low germination capacity, and looks to each recurring harvest to make good the loss. He knows that deterioration goes on more rapidly if the seed be that of a bad harvest, and he is aware of the fact that this deterioration may be delayed—at the expense of rapidity of germination—if the seed be dried by artificial means. To the man of science it is evident that large problems lurk behind these phenomena, and numerous attempts have been made to discover the causes of deterioration and of longevity of seeds. Until the other day these attempts had met with but scant success; but now a new worker has appeared in the field, and his discoveries, announced at the meeting of the Royal Society on March 8, bid fair to clear up some of the mystery which attaches to the problem of the life of the seed.

Mr. Kidd, who has made this important contribution to our knowledge, has established the facts that if seeds be kept in an atmosphere containing from 20 to 30 per cent. of carbon dioxide their germination capacity may be held up indefinitely, and that they are none the worse for their enforced rest. When removed from the air charged with carbon dioxide and placed under ordinary conditions the seeds germinate at once. If this discovery be found to apply generally to the seeds of horticultural and agricultural plants it will prove of very considerable practical value. By Mr. Kidd's method, which would appear to be of very simple application on a commercial scale, the seedsman will be able to arrest the gradual deterioration of his seeds, and, if he chooses, hold over stocks from the harvests of good years to supplement those of leaner harvests. The planter will be able to obtain seeds of Para rubber (*Hevea brasiliensis*), which, unlike those which he is apt now to receive, may be guaranteed of high germination capacity. The traveller who includes in his kit a small cylinder of liquid carbon dioxide may succeed better than in the past in bringing home living seeds of the novelties which he has collected on his journeys. Indeed, should this simple method prove generally efficacious we may before long have seeds on the market as we have vintage wines guaranteed as the produce of a great year. To speculate thus is, however, to outrun the warrant given us by Mr. Kidd's brief abstract of his work. What is clear is that we possess in carbon dioxide, properly applied, a means of arresting the slow loss of vitality which seeds suffer when exposed to ordinary conditions. No less interesting is the further discovery that in one case at all events (*Brassica alba*) seeds which have been treated with car-

bon dioxide remain dormant even when put in conditions of air, moisture, and temperature which favour germination. Such seeds require special treatment before they may be awakened from the torpor in which they have been plunged. To induce them to germinate, the seed coat must be removed, or the intact seeds must be dried thoroughly and re-wetted.

This remarkable behaviour of the seeds of *Brassica alba* bears directly on the phenomenon of delayed germination manifested by the seeds of Charlock, Foxglove, and other wild plants; for it suggests that this delayed germination is due to a similar cause, namely, the "sealing" of the seed coat as a result of exposure to carbon dioxide. The effect of this treatment appears to be that the seed coat becomes less penetrable by oxygen, and so the seed, unquickenened by oxygen, remains dormant.

Mr. Kidd has shown by means of an ingenious experiment that seeds lying in the ground may be induced to remain dormant. Thus if a mass of green vegetable matter be buried deeply in the earth, and seeds be planted in soil over it, germination of the seeds is prevented by the carbon dioxide given off from the decaying plant remains.

We shall look forward with great interest to the publication of Mr. Kidd's researches, for we are confident that they supply a clue to the understanding of many obscure phenomena presented by the alternating states of rest and activity which occur among plants.

The Garden Strawberry.

Mr. C. W. Richardson, working at the John Innes Institute, has made an interesting and valuable contribution to our knowledge of the origin and genetical habits of the garden Strawberry.* As is almost invariably the case with origins, the origin of the modern garden Strawberry is obscure. There is no doubt, however, that the modern plant arose, as Mr. Richardson points out, from old forms of garden Strawberry, and that, in the production of the latter, *Fragaria vesca*, *F. vesca semperflorens* (the Alpine), and *Hautbois* (*F. elatior*) were involved.

The old form was crossed with other species—e.g., *F. virginiana*, introduced in 1629, and *F. chiloensis*, which was brought to England by Philip Miller in 1727. The hybrids from these crosses were crossed with *F. Ananassa* (*F. grandiflora*), introduced from an uncertain source into Holland, and thence to England in the eighteenth century.

It is incident to all attempts at the solution of origins that an element of mystery should attach to the plant suspected of playing a chief part in that origin.

This is the case with *F. Ananassa*, which is unknown in the wild state, is said to have come from Surinam, is said also to be a variety of *F. virginiana*, and may after all be a *chiloensis* cross. Whatever be its origin, *F. Ananassa* is undoubtedly, according to Mr. Richardson,

* *Journal of Genetics*, III., February 3, 1914.



COLLERETTE DAHLIA "SKERRYVORE"

(RAISED BY MESSRS. DOBBIE & CO.)

a progenitor of all our best garden varieties.

The author shows that of 1,000 plants obtained by self-fertilising eight garden varieties none resembles a vesca nor an Alpine, but many show traces of chiloensis and more of virginiana.

As was to be expected, Mr. Richardson finds conclusive evidence of segregation of characters. Thus runner and runnerless crossed with one another yield in the first generation runner-producing plants, and these self-fertilised give both types in the second generation; white crossed by red gives red in the first generation, and red and white in simple Mendelian proportions (3 : 1) in the second. Similarly the monophylla single-leaved form behaves as a simple recessive when crossed with the normal trifoliolate form.

The perpetual form—said to be derived from the Alpines—is dominant to the non-perpetual, but it is probable that the character is not a simple one.

Mr. Richardson has dealt also with the question of sex inheritance, a matter of great practical importance to the raiser of novelties, since the best fruit comes from plants which have the male and female organs well developed. The elucidation of the behaviour of the sex character in inheritance must of necessity be a somewhat laborious process. Mr. Richardson, so far as his experiments have gone, shows that crosses between pure female *F. virginiana* and pure male *chiloensis* give males, females and hermaphrodites in the first generation, whereas *F. virginiana* (female) by *F. grandiflora* (hermaphrodite) gave females and hermaphrodites only. We shall look forward with great interest to the next chapter in Mr. Richardson's experiments; for, as will be evident to anyone who reads this brief résumé, the working out of the details of the inheritance of the characters of such a plant as the Strawberry will result not only in an important gain to scientific knowledge, but in a smoothing of the plant-breeder's extraordinarily difficult path. As the result of that making smooth of the path the raiser of new varieties may not produce better varieties, but he will assuredly produce them more quickly and at the cost of fewer failures.

Coloured Plate.—The subject of the Coloured Plate is the new Collette Dahlia *Skerryvore* raised by Messrs. DOBBIE. In the Duffryn trials last season the plants grew about 4 feet high. (See p. 183.)

DEVELOPMENT OF THE R.H.S. GARDEN AT WISLEY.—In pursuance of the policy which they have for some time past had under consideration, and with the object of making the garden at Wisley of more general practical service to the Science and Art of Horticulture, the Council on Tuesday last appointed Professor KEEBLE, F.R.S., of University College, Reading, to the office of Director. The duties attaching to the position will include the general guidance and supervision of the trials, teaching, and research. In the further development of these several branches of horticulture the Director will have the continued assistance of Mr. F. CHITTENDEN, F.L.S., who will remain in charge of the Educational Section, and of Mr. S. T.

WRIGHT, the superintendent, who has for so many years carried out the important duties connected with the practical conduct of the garden. *W. Wilks, Secretary.*

NATIONAL CHRYSANTHEMUM SOCIETY.—On the nomination of Sir ALBERT ROLLIT, LL.D., President of the Society, His Excellency, M. INOUE, the Japanese Ambassador in London, has become a patron and Honorary Fellow of the National Chrysanthemum Society.

ROYAL METEOROLOGICAL SOCIETY.—A meeting of the Royal Meteorological Society will be held at the Institution of Civil Engineers, Great George-street, Westminster, on the 18th inst., at 7.30 p.m., when a lecture on "Climate as Tested by Fossil Plants" will be delivered by Professor A. C. SEWARD, F.R.S., Professor of Botany in the University of Cambridge. The paper will deal with vegetation in relation to climate: the plasticity of plants illustrated by their manner of response to different factors—e.g., temperature, light, moisture, etc. Cosmopolitan types and plants with restricted geographical range. The nature and value of the evidence afforded by fossil plants with regard to climatic conditions. The internal structure of fossil plants as an index of climate; the anatomical features of leaves and stems of extinct plants. Palaeozoic floras with



PROFESSOR KEEBLE, F.R.S., THE NEW DIRECTOR OF THE R.H.S. GARDEN, WISLEY.

special reference to the vegetation of the coal period. The distribution and composition of Jurassic floras in relation to climatic problems. Sources of error to be guarded against in attempting to use fossil plants as tests of climate.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The thirteenth annual social gathering and concert of the Liverpool Auxiliary of the Gardeners' Royal Benevolent Institution will take place on the 14th inst. at the Bear's Paw Hotel, Liverpool. The Hon. ARTHUR STANLEY, M.P., will occupy the chair.

SIR JOHN WOLFE-BARRY STUDENTSHIP IN ECONOMIC ENTOMOLOGY.—Mr. J. W. MUNRO, B.Sc., has been appointed to the Sir JOHN WOLFE-BARRY Studentship in Economic Entomology at the Imperial College of Science and Technology, London. Mr. MUNRO is the first Scotsman to hold a degree in Forestry. Although a graduate of Edinburgh University, Mr. MUNRO has been for long intimately connected with Aberdeen, where, after graduation, he was appointed assistant lecturer in Forestry at Aberdeen University. Among other distinctions obtained during his University career he was medallist in Forest Entomology. He has since studied under Professor ESCHERICH, of the Royal Forest Academy of Tharandt, Saxony.

PROFESSOR ENGLER.—A committee has been appointed in Berlin to make arrangements to celebrate the seventieth birthday of Professor A. ENGLER on March 25 next, by the presentation to him of his life-size marble bust and in other ways, as a sign of the appreciation by botanists of his varied and valued contributions by publication and otherwise to the advancement of systematic, geographical, and economic botany.

GALL-FORMING EELWORMS.—According to Mr. GEORGE MASSEE in the *Kew Bulletin* *Heterodera radicolica*, Mull., the gall-forming eelworm, is less known and does the greatest amount of damage in this country. The egg is large in size compared with the worm, colourless, elliptic-oblong, about $\frac{1}{256}$ th of an inch in length. The covering is very thin and translucent, so that at a certain stage the minute worm can be distinctly seen in its interior. Although so thin, the wall is very tough and resistant to extremes of heat and cold, chemical substances, etc., and the germ is with difficulty killed. The worm usually escapes from the egg in the gall, and is a tiny eel-like body, quite invisible to the naked eye. The young worms soon find their way into the soil, when they at once proceed to attack any rootlets that may be present. In this country Cucumbers and Tomatos suffer most severely from the ravages of eel-worms, but other plants are also attacked—Vines, Potatos, Roses, Phloxes, and Balsams, less frequently fruit trees. There is no known method by which the eggs of eelworms can be killed in the open ground, but the eelworms themselves can be killed by repeated dressings of sulphate of potash, 3 cwt. per acre, worked into the soil, though its efficacy soon passes away. Gas lime is better, but heating the soil with steam in Tomato and Cucumber houses is the most effective proceeding. It has been suggested that dressing the soil with rape meal destroys eelworms; the eggs, however, resist the treatment. Potassium permanganate solution, 1 in 200, kills eelworms if the soil is saturated at intervals of ten days, and does not injure growing plants; in this case, also, the eggs are unaffected. Carbon disulphide injected into the soil will kill any active eelworms present.

AMATEURISM IN THE PUBLIC PARKS.—We have pleasure in noting that the Bermondsey Borough Council has decided in future to make the superintendent of the public parks and open spaces directly responsible to the Council. The wisdom of conferring full responsibility on the men who possess the technical knowledge and training required in the management of the people's parks is becoming recognised; but there are still many boroughs where the chief responsibility is vested in surveyors or other amateur agents who would be glad to get rid of posts for which they have no special qualification. It is to be hoped that the example of Bermondsey will be followed in other towns.

NEW PLANT HOUSE FOR EDINBURGH BOTANIC GARDENS.—In the estimates which have been presented to Parliament for the ensuing financial year, the sum of £3,000 is allocated to be expended on a new plant house for the Royal Botanic Gardens, Edinburgh.

CONGRESS ON FUNGUS DISEASES OF PLANTS.—The International Phytopathological Conference summoned by the French Government in conjunction with the Italian Government to meet at the International Institute of Agriculture, was inaugurated by his Majesty the KING OF ITALY on February 24 last, and was brought to a conclusion on the 5th inst., in the presence of the fifty delegates who represented the 35 States who took part in the Conference. The final draft of the text of the proposed International Convention was discussed at the morning session, and was read for the last time in the afternoon. Adhering States pledge themselves in the first place to take whatever legislative and administrative measures are necessary

to prevent the distribution of all diseases of plants in their own countries, but specially to organise an effective service of supervision over nurseries, gardens, glasshouses, and other establishments which carry on a trade in living plants. The proposed Convention, however, excludes vines, grain, seeds, tubers, edible bulbs, rhizomes and roots, as well as fruit, fresh vegetables, field roots, and general agricultural produce. The measures which adhering States would pledge themselves to take include (a) the erection of one or more institutes for scientific studies and research; (b) the organisation of an effective service of supervision over nurseries, including the packing and despatch of plants; (c) the issue of phytopathological certificates. They would bind themselves only to admit plants accompanied by phytopathological certificates issued by or from a competent official authority, except in the case of plants which are imported for scientific research at an institute authorised by the Government. These certificates must be in conformity with a model given in the Appendix to the proposed Convention. They include a declaration by the consignor that the plants come from a nursery subject to phytopathological inspection, a certificate in accordance with the Phylloxera Convention of Berne, and a certificate from the official phytopathological service that the plants are in a satisfactory state of health, and are free from any of the diseases, or enemies of plants, scheduled by the Government of the country to which they are being sent. The compilation of this list is left to each importing country, but it was decided that this list must be as short as possible, and confined to those diseases which are epidemic in character, and destructive or at least injurious in their action, as well as being easy of propagation. Common diseases which are widely distributed are excluded. Adhering States would recognise the International Agricultural Institute of Berne as the official headquarters for all questions dealt with by the Convention. The Institute would collect all information of an administrative, scientific, and practical character concerning the diseases of plants submitted to the adhering States, and would issue a monthly bulletin giving the results. The Conference was particularly concerned to interfere as little as possible with trade, and to harmonise the interests of plant hygiene with those of commerce. A special article prohibits adhering States from giving better terms to those outside the Convention than is accorded to those inside it.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

ROSES AT CHRISTMAS (see p. 141).—As the R.M.S. Phenological Committee is receiving notes on this subject from all parts, there is an additional interest in the article from such an authority as *White Rose* (see p. 141). If you are willing to receive lists and someone would then tabulate results it might be of some value. Of the forty-seven varieties flowering in this exposed garden in December thirty-three were still "out" in Christmas week, some being fit to pick. More surprising was the number that survived the January frosts, a very few, again, being presentable enough to pick in February, and two or three were worn as "buttonholes" (Hugh Dickson and A. K. Williams). Even now, March 1, a few are lingering; last year one (Petit Constant) did so for the first time. Those out at Christmas were as follows (J., F. and M. stand for such as lingered into January, February and March):—A seedling *Polyantha*, *Homer* (J., F., M.), *China pink* (J., F.), *China dark red* (J., F.), *China Mme. J. Perrian* (J., F.), *President Roosevelt*, *Dupuy Jamain* (J., F., M.), *Aschenbroedel* (J.), *Comtesse du Cayla* (J., F.), *Long-*

worth Rambler (J.), *Bennett's Seedling*, *Marie Pavie* (J., F.), *Gloire de Dijon* (J., F.), *Minnehaha* (J., F., M.), *American Pillar* (J., F., M.), *Jessie* (J., F., M.), *Comtesse de Rambaud*, *A. K. Williams* (J., F.), *Viscountess Folkestone* (J., F.), *Ma Capucine*, *Aimée Vibert*, *La France* (J., F., M.), *Mme. A. Chatenay* (J.), *Mrs. Sherman Crawford*, *Irish Glory* (J.), *Petit Constant* (J., F.), *Gustave Régis* (J.), *Kaiserin Augusta Victoria* (J., F.), *Gruss an Teplitz* (J.), *Général Jacqueminot* (J., F.), *Bouquet d'Or* (J.), *Lady Ashdown* (J.), *Caroline Testout*, *Mme. Ravary* (J.), *Isabella Sprunt* (J.), *François Foucard* (J.) and *Hugh Dickson* (J., F., M.). Totals.—Christmas week, 36; January, 29; February, 18; March 7. *J. Edmund Clark, Purley, Surrey.*

TAX FOR TREES (see p. 173).—Hedgerow trees are a great hindrance to successful farming and gardening in this country. No one will assert that crops in general, particularly Corn and Potatos, give anything approaching an average yield when grown under trees. It is easy to see how far the roots extend into a field by observing the short straw of Corn and dwarf haulm of Potatos. The value of the trees as wind breaks cannot be very much on account of their great distance apart; but it must be admitted that the trees form one of the great features in the landscape of our islands. *C. Robinson, St. Hilary Gardens, Cowbridge.*

A NEW SOURCE OF OAK TIMBER.—A story not easy of credence has recently appeared in the Press of a wonderful discovery of old Oak trunks "in the bed of the River Moksha, a tributary of the Oka, which in turn joins its waters to those of the mighty Volga at Nishnei-Novgorod." This discovery is said to have been made by a Russian military officer who "noticed that the bed of the stream for long distances was paved with immense logs of Oak. Further investigations proved that this condition obtained for a distance of 500 miles, and upon one of the logs being brought to land and cut into planks the wood was found to be very sound, and naturally of a very dark colour, approaching that of Bog Oak." The sensational character of the discovery of the trunks and how they are brought to land will be best given in the words of the newspaper account referred to, which states before the Russian officer "made his great discovery he was aware that the peasants living on the course of the Moksha had for generations been using beautiful Black Oak timber for all sorts of domestic purposes, such as building their dwellings, making furniture, and even constructing outhouses and pig-styes. Inquiries as to the origin of this material elicited the surprising answer from the peasants that they 'got it out of the river.' The method of obtaining it was very simple—namely, a loop of chain or rope was dragged along the bottom, and invariably it immediately caught a log and brought it to the surface." Some of the logs are said to be of enormous size, measuring 60 feet in length to the first branches and 5 feet in diameter. Another peculiar point is that the logs are said not to lie in a single layer. "At points where those on the top have been removed the stream has washed away the sand, disclosing yet other layers below. This circumstance led to further investigation, and it has been ascertained that in places the logs lie at least ten deep in long stretches of the river." The article then proceeds to explain the "origin of this remarkable accumulation of valuable timber" as follows:—The River Moksha meanders through a level open plain from five to seven miles in width. This plain is composed of sandy alluvial soil, and the river banks are consequently very friable and easily worn away by the heavy floods, especially when the ice is breaking up in the spring. In consequence the river is constantly changing its bed as the loose soil of its banks wears away. At some remote period the whole plain was covered with a dense growth of magnificent Oaks, and as the river cut away the soil these fell into the stream and, becoming water-logged, sank to the bottom and remained there. The remains of the ancient beds of the river are found everywhere over the plain, some dry, the more recent filled with water in the form of long, narrow lakes. The bottom of these lakes, like that of the river

itself, is also filled with Oak logs. It is impossible to estimate the total quantity of timber, but careful calculations go to show that it must run into many millions. In the present bed of the Moksha, without taking into account what lies in the lakes and the old dry water-courses, there is sufficient to yield at least 20,000 logs annually for fifty years or more, and the stream is constantly exposing fresh deposits. The object of bringing all this to light is to establish a trade in timber of a character similar to Bog Oak, chiefly for cabinet work. *John R. Jackson.*

RUCKSACK.—I have read Dr. Stapf's valuable contribution to the philology of the word "rucksack" with much interest, and I quite admit the force of his arguments in favour of one of the possible solutions of the problem which I had rejected. It is, of course, not easy to attain to finality in the face of conflicting evidence, especially when, as in this instance, the evidence is so largely a matter of authority. Indeed Dr. Stapf, had he been so minded, might have quoted *Murray's Dictionary* against the weight of *Muret-Sanders' views* as cited by me. Furthermore the word "Rüchenbeutel," which I have heard used in Northern Germany, might be also adduced as supporting the derivation of rucksack from the dialect word "ruck" (back). Nevertheless, apart from the conflicting evidence of the lexicons, as well as of persons who are intimately acquainted with patois and the dialects of Alpine villages, it still seems to me that there are good reasons for adhering to the view that it is the other ruck (jerk, pull) which has contributed the first syllable to the word under discussion. It expresses in so accurate and picturesque a fashion the peculiar little ways of the load carried on a rough mountainside, whilst ruck (back) appears so unnecessary, and if I may say it, so dull a description that I find it hard to believe that the latter word represents the original significance, whatever meaning be read into it at the present day. It may be remembered that our own word knapsack refers to the victuals carried, and not to the position in which they are borne. Is it possible that to the notion that a rucksack is a "back-sack," a habit (which to me seems to be growing more common in the Alps) of dropping out the ruck altogether may be due? But however these things may be, it appears that neither meaning is unapplicable, though perhaps we may never discover evidence of a kind to settle once and for all which is really the primitive one. *J. B. Farmer.*

UNSTAMPED LETTERS.—You would be doing nurserymen and seedsmen a great favour if you would draw your readers' attention to the fact that when writing for a catalogue they should either use a postcard or stamp their letters with a penny stamp. Every post I receive applications for catalogues on which I have to pay 1d. extra through the applicant writing in the form of a letter and placing in an open envelope bearing only a 3d. stamp. In my own little way this is probably costing me 3s. to 4s. per day, and no doubt similar expense is borne by the trade generally. *H. N. Ellison.*

CURE FOR MILDEW ON ROSES.—For many years past Rose mildew has caused much trouble and disappointment in these gardens, more especially during the early autumn, when one expects a wealth of fragrant flowers. We have tried almost every specific which has been advertised, but not until the past year have we been successful. I was induced to try a preparation called serum, and this gave splendid results. Certain varieties which are very liable to attacks of mildew were, when very badly affected in early autumn, given two applications of this specific, and not a particle of mildew could be found afterwards. The foliage became healthy and the plant produced an abundance of flowers until quite late in the year. One very important point in its favour is that no deposit is seen afterwards on the flowers or foliage. I have used the specific on other plants with the same good results. *Edwin Beckett, Aldenham House Gardens, Elstree.*

SOIL FOR CARNATIONS.—That the soil is not suitable for perpetual-flowering Carnations is the common excuse of the gardener who fails. Yet

I do not believe that there is any soil which could not be made suitable for this flower. Some years ago I was associated with a nursery in Holland, and we found that by burning the soil and using a good proportion of mud from the canals we could grow Carnations to perfection, yet previously it was considered almost impossible to cultivate the plant successfully in that country. But there is practically no definite rule to guide the gardener; he can simply get ideas from others, and must discover the details for himself. However, the following are a few points upon which most Carnation growers agree. Lime is essential. With very heavy soil it is best added as unslaked lime, with medium soil as old mortar rubble and with light soil in the form of pulverised chalk. It is safe to say that wood ashes or ashes from burnt garden refuse are beneficial to all soils. If the soil has a natural free drainage sand should not be added for the final potting, because the lighter the soil the quicker and weaker the growth—that is why firm potting is almost universally practised. The quantity of manure used should be influenced by the richness and texture of the loam, but, as is generally known, cow manure is best for light soil and horse manure for heavy soils. This should not be so old that it almost powders, but sufficiently old so that it can be chopped up with a spade. The same rule would apply to the loam. We believe that when this has been stacked over nine months it is of little value for Carnations, and the bulk of ours is only stacked six months. Peat is a thing Carnations abhor; the very nature of the plant proves this. The same applies to leaf-mould, and beyond mixing a little with the soil for the first and second pottings in the case of heavy loams it should not be used. The only artificial manure which should be added to the soil should be given in organic form, for chemical manures are too available, simply enriching the soil when sufficient food is to be had. We favour surface feeding when the plant is well established. This particularly applies to the use of bone meal, except instead of being too available when buried and the air is excluded the reverse takes place, and in a good organic food the phosphates are given in the form of finely-ground bone. Ground oyster shells are a luxury which do not enter into commercial horticulture, but they are very useful. We always use sea sand for mixing with our soil. *M. C. Allwood.*

BUTCHER'S BROOM.—The fruiting of this native plant is not so infrequent as Sir Daniel Morris supposes. In the neighbourhood of the New Forest and in the hedges near Hayling Island its bright berries are very conspicuous. Last month I gathered a number of them near the Guards' cemetery at Bayonne. It surprises some people to be told that this queer shrub belongs to the Lily order. *Herbert Maxwell, Monreith.*

CYANIDING TO DESTROY MEALY BUG.—My recent experience in cyaniding to destroy mealy bug in glasshouses may prove interesting to your readers. Early in January I used potassium cyanide, $\frac{1}{2}$ oz. per 1,000 cubic feet, in a large conservatory, but the effect on the bug was very slight. I wrapped the cyanide in tissue paper and dropped it into the jar of dilute acid, but found next morning that only part of the cyanide had dissolved. On February 3 I used sodium cyanide, 2 ozs. per 1,000 cubic feet, dropping the cyanide into trays of acid without any tissue paper, and left the house closed all night. After this dose I could not find any bugs alive. On this occasion I left in the conservatory as an experiment one each of the following plants, some of which were infested with mealy bug:—Asparagus Sprengeri, A. plumosus, Coelogyne cristata, Cyripedium insigne, Cyclamen, Cineraria, Primula obconica, Dracaena, Richardia (Arum Lily), Azalea, Aspidistra, Show Pelargonium, Dendrobium nobile, seven Palms, six Adiantums, and six other Ferns. None of the plants appeared to be damaged, except the Coelogyne, Show Pelargonium and Asparagus Sprengeri, which were slightly scorched. In order to destroy any bugs which might have hatched subsequently I fumigated again on February 13, using the same dose of sodium cyanide. On this occasion I fumigated in the morning, and only left the house closed for an

hour. Seeing that so little damage had been done by the second fumigation, I decided this time to leave the conservatory practically full of plants; but the results were disastrous. All the Coelogyne, Cyripediums, Dendrobiums, Primulas, Cyclamen, Palms and Asparagus were badly injured, and some of the plants of Adiantum and Nephrolepis scorched slightly. A strange feature is that in nearly every case the old foliage is damaged, and the young growths are unharmed. This applies particularly to Adiantums, Asparagus, Cyripediums and Cyclamen. Several of the Orchids were in bloom, also the Cyclamen and Primulas, but, with the exception of the last-named, the flowers were not damaged in any way. The plants had been left unwatered for two days before fumigating, and the conservatory was as dry as the presence of a large rainwater tank under the stage would allow. Notwithstanding all this damage to plants the bug was not entirely destroyed. I found a live insect on a Streptosolen five days after the fumigating. Is it possible to use too strong a dose so far as the effect on bug, etc., is concerned? I know that when poisoning a dog with prussic acid an excessive dose will cause sickness and the dog will recover. Perhaps some of your correspondents can throw light on this point, and also explain why old foliage should be damaged and young growths escape. One small Adiantum with young fronds has been fumigated twice and is still quite healthy, whereas similar Ferns only once fumigated are scorched. Since writing the above I have noticed to-day that some brown scale is still alive. *Ben Walmsley, Baddesley Grange, Northam, N. Devon.*

CELERY DISEASE.—Referring to Mr. W. H. Yates's observation on p. 175 as to Celery being badly injured by the leaf-mining insect last season, it will be interesting to know if this was general, and the cause of it. My experience was, that up to the beginning of September the larvae of *Acidia heraclei* was scarcely observable, but afterwards they became more troublesome than I have ever known them, and on the last day of that month we hand-picked about a bushel of infected leaves from 300 plants. According to Leaflet No. 35, issued by the Board of Agriculture and Fisheries, the fly attacks Thistles, *Cnicus arvensis*. This weed here last season, owing to pressure of work, became very abundant, it was late before it was cut, and it is possible that the late attack of the larvae of the Celery fly came from insects which had pupated on the Thistles. An interesting remark is made by Mr. Massee on p. 308 of *Diseases of Cultivated Plants*. There he states that *Cnicus arvensis* is commonly attacked by *Puccinia obtogens* (Tub.), and that as infection is readily effected by lashing healthy plants with infected ones it should be possible in this way to eradicate one of our worst weeds. *Cnicus arvensis* is very common in this country, and there are also a few plants of *C. lanceolatus* and *C. pratensis*. *John Edwards, Cefngarthmyl, Birriew.*

PAEONY-FLOWERED DAHLIAS.—In the discussion which followed the reading of my paper at the National Dahlia Society's Conference (see p. 164), I notice that Mr. J. B. Riding said he was rather surprised I did not say more about the Paeony-flowered varieties. I feel that in justice to one of the finest of all the sections of Dahlias, I ought to give some explanation of the omission which he points out, and which might be construed on my part as a lack of appreciation of that very type which was responsible for my conversion from indifference to enthusiasm for the whole tribe! When putting my observations on paper, I rather endeavoured to keep them off the lines of the usual critique on a collection of Dahlias, as so much has been written by able pens on all the well-known varieties, and hence it was that I passed them over with rather a cursory reference, to deal more fully with those that are at present new, or little known to the general public. As a matter of fact, the Paeonies and Decoratives (with the exception of a few beds of Singles) were assigned to a garden to themselves, and gave the most splendid and impressive display of any, and even those who found their favourites among other sections were none the less astonished at

the first sight of this garden full of huge blooms. *Reginald Cory.*

FORESTRY STATISTICS.—I am desired by the Council of the Royal English Arboricultural Society to ask for the assistance of your readers in the collection of forestry statistics. The Council feels that properly prepared statistics should prove of the utmost value, and they propose to collect data under three heads:—(1) The volume of timber that can be produced by various kinds of trees under different conditions of soil and treatment. This inquiry will involve the establishment and periodical measurement, on a set plan, of sample plots. (2) Volume tables which will show the average volume of trees of given heights and diameters. This inquiry will involve the measurement of felled trees on a set plan. (3) The financial return from woodlands, i.e., figures showing the expenditure on, and income from, the woods on estates. This will involve the analysis of estate accounts on a set plan. The Council recognises that it will be possible for very few persons to supply information on all three heads, but they desire me to express the hope that some of your readers will, if possible, help with one or more. *Edward Davidson, Secretary, Royal English Arboricultural Society.*

JOURNEYMAN GARDENERS' WAGES.—The writer of the review on Mrs. Martineau's book, *The Herbaceous Garden* (see p. 160, March 7), calls attention to the authoress' views upon gardeners and their wages. Mrs. Martineau is a practical horticulturist herself, and is naturally sympathetic; it is always to those who have made a personal study of gardening that the gardener must look for encouragement and help. The casual observer is in the habit of remarking, "What delightful work gardening must be!" Certainly, it is delightful when carried on under pleasant conditions, but it is only fair that those engaged in it should receive adequate remuneration for their services. Many owners spend large sums on the equipment of their gardens, and then seek to keep them up by employing men at a low wage. I know of an instance in which the journeymen in a garden struck because the labourers employed in some landscape work, though their hours were shorter than those of the gardeners, were receiving higher wages. Surely a skilled gardener, who is supposed to use his brains as well as his hands, should receive at least as much as an unskilled labourer. *Roamer.*

—*Contented Journeyman* tells us that we must not forget that gardens are hobbies, and not profit-making concerns; but several years ago I was employed in a garden—the owner of which was certainly not dependent upon it for his living—where three-quarters of the produce was grown for sale. The utmost pains were taken to grow such produce as would command the best prices, and quantities of fruit, vegetables, and flowers were sold in local shops and in Covent Garden market. I fail to see how such gardens can be described as "hobbies." *Discontented.*

—*C. H.* states on page 62 that it is not only journeymen who are paid low wages, and that they are sometimes paid more than responsible gardeners. I admit that some ignorant gardeners get higher wages than experienced men. I have myself met some ignorant men in the position of head gardeners, and I should think it is quite time that *C. H.* tried to get something better. With the experience which he has got he ought to be earning 35s. per week, with cottage; he could then allow some of the ignorant to apply for his situation. *H. H.*

—I cannot agree with the statement of some of your correspondents that there is an upward tendency in gardeners' wages, but any increase there may have been is certainly more than balanced by the rise in the cost of living. Some weeks ago I noticed an advertisement for a head gardener for the Royal Botanic Gardens, Regent's Park, "salary £120 and house." An applicant for such a situation must possess the highest qualifications, and keep up a certain amount of appearance; yet the wage offered is probably not much more than that of an omnibus conductor! *J. Harrison.*

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 10.—The meeting held on Tuesday last in the Vincent Square Hall was remarkably successful. The building was filled to its utmost capacity with exhibits, and both the annexes were requisitioned to accommodate groups. The great demand for space was largely due to the special bulb competitions, on which a deputation of the Dutch Bulb Growers' Association adjudicated. The Narcissus Committee met for the first time this season, and this also had its effect on the show, for several growers staged large collections. Two new varieties of Narcissus received Awards of Merit from this Committee.

The Floral Committee recommended an Award of Merit to a hybrid Rhododendron, and awarded twenty-seven medals to collections, including the Gold Medal for an exhibit of Alpines.

The Orchid Committee granted one First-class Certificate and two Awards of Merit to novelties.

The only exhibit before the Fruit and Vegetable Committee was a collection of vegetables staged by Messrs. SUTTON AND SONS. At the three o'clock meeting of Fellows an address on "Adaptive Degradations: The Cause of Many Cases of Evolution Among Plants," was delivered by Rev. Prof. Geo. Henslow.

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. C. T. Drury, G. Reuthe, W. J. Bean, W. Cuthbertson, John Green, C. E. Shea, F. Page Roberts, Chas. E. Pearson, E. J. Jenkins, W. P. Thomson, Arthur Turner, H. J. Jones, C. Dixon, John Dickson, W. H. Page, C. Blick, Wm. Howe, J. F. McLeod, Thos. Stevenson, A. A. Dorrien Smith, W. A. Bilney, C. R. Fielder, J. W. Barr, F. W. Harvey, Jas. Hudson, R. C. Reginald Nevill, and R. Hooper Pearson.

Messrs. J. CARTER AND CO., Raynes Park, made one of their delightful spring gardens which have become an established feature of the spring shows. The simple, yet dignified, conception of cool, green lawn with borders of flowering plants and low buttressed wall with wrought-iron gates of exquisite design and workmanship, was a charming effort. The centre stand supporting the cinerary urn described last week attracted the interest of numerous visitors. On adjoining tables Messrs. Carter exhibited an immense collection of superb Hyacinths in pans, the chief varieties being Schotel, Moreno, Lord Derby, King Menelik, Lord Balfour, and Queen of the Pinks. (Silver-gilt Flora Medal.)

Col. the Hon. MARK LOCKWOOD, M.P., C.V.O., Bishop's Hall, Romford (gr. Mr. G. Craddock), staged some 200 Hyacinths in 6-inch flower-pots, instancing first-class cultivation. Adjoining this meritorious exhibit was a collection of "miniature" Hyacinths in 3-inch pots. (Silver Flora Medal.)

Messrs. SUTTON AND SONS, Reading, arranged charming colour schemes of pot Hyacinths. Such combinations as cream and pale blue, pink and white, yellow and dark blue, pale blue and pink, rich red and apricot, and shades of mauve. (Silver-gilt Flora Medal.)

Messrs. DOBBIE AND CO., Edinburgh, exhibited in colour blocks wonderfully fine Crocuses of good size. Of the many excellent varieties, Caroline Chisholm (white), Pollux (purple), Mammoth Blue and Mammoth Yellow are merely a few of the great number shown. (Silver Flora Medal.)

Messrs. J. PIPER AND SON, Bishop's Road, Bayswater, grew upwards of 900 Hyacinths in anticipation of the bulb show, and as sufficient floor space could not be allotted to them, displayed great ingenuity in planting the bulbs on a framework against the wall under the gallery, where the large collection attracted much attention, but it may be hoped that it will not again be necessary to adopt the method of exhibiting. (Silver Flora Medal.)

Mr. A. DAWKINS, King's Road, Chelsea, contributed a collection of forced Darwin Tulips.

Messrs. H. J. JONES, LTD., Hither Green, Lewisham, showed bunches of zonal-leaved Pelargoniums, the varieties including two novelties—

John Beckford, a large, purplish-coloured flower blotched with scarlet, and Mrs. F. W. Parsons, of the shade known as cherry-red.

Messrs. H. CANNELL AND SONS, Swanley, were awarded a Bronze Banksian Medal for bunches of zonal-leaved Pelargoniums.

Messrs. JAMES VEITCH AND SONS, LTD., King's Road, Chelsea, staged miscellaneous greenhouse flowering plants. (Silver Flora Medal.)

Messrs. W. CUTHBUSH AND SON, Highgate, were awarded a Silver Flora Medal for Carnations, Alpines, and greenhouse flowering plants.

Messrs. H. B. MAY AND SONS, The Nurseries, Edmonton, showed Pansies, Polyanthus, varieties of Clematis, and a seedling *Richardia* named *alocasaefolia*, with broader dwarf leaves and more expanded spathes than the type. (Silver Flora Medal.)

Mr. L. R. RUSSELL, Richmond, Surrey, had many beautiful plants of Clematis, of the large-

Fox, Esq., Penjerrick, Falmouth, were awarded a Bronze Banksian Medal.

Mr. A. H. COLE, Swanley, put up a small group of Primulas and Cyclamens.

Mr. GEO. PRINCE, Oxford, again showed Roses, having similar varieties to those displayed by him at the last meeting.

Carnations were shown by Mr. H. BURNETT, Guernsey (Silver Flora Medal); Mr. C. ENGELMANN (Silver Flora Medal); the Misses S. C. PRICE and A. B. FYFE; Mr. J. C. JENNER, Lynwood Nurseries, Rayleigh; Messrs. ALLWOOD BROS., Wivelsfield, Haywards Heath; W. WELLS AND CO., LTD., Merstham, Surrey; and Messrs. YOUNG AND CO., Hatherley (Silver Banksian Medal).

HARDY FLOWERS.

Sir EVERARD HAMBRO, K.C.V.O., Hayes Place, Hayes, Kent (gr. Mr. J. Grandfield), was



FIG. 86.—SAXIFRAGA FALDONSIDE; COLOUR OF FLOWER GOLDEN-YELLOW. SHOWN BY SIR EVERARD HAMBRO AT THE R.H.S. MEETING ON THE 10TH INST.

flowered type, and the scarlet *Clianthus puniceus*, for which a Silver Flora Medal was awarded.

Messrs. J. PEED AND SON, West Norwood, staged a large group of forced shrubs, of such kinds as Azaleas, Weigela "Conquête," double flowered Cherries, Rhododendron Pink Pearl and *Prunus triloba* with Maples for relief and a background of Palms. (Silver Flora Medal.)

Messrs. WILLS AND SEGAR, florists, South Kensington, contributed a collection of greenhouse flowering plants for which a Silver Banksian Medal was awarded.

Messrs. STUART LOW AND CO., Bush Hill, Enfield, were awarded a Silver Banksian Medal for Carnations and a pretty group of *Acacia armata* arranged with *Daphne Mezereum* and White Ericas.

Messrs. R. GILL AND SONS, Falmouth, were awarded a Silver Banksian Medal for Rhododendrons and Violets.

Trusses of Rhododendrons shown by ROBERT

awarded a Gold Medal for Alpines. This magnificent exhibit was arranged on a wide table next to the wall, the background being of Azaleas, Dentzias, *Andromeda floribunda*, and dwarf Conifers, with Tulips and the tall-growing *Primula cashmeriana* as foils at intervals. Most of the Alpines were growing in large pans, and were principally fine forms of encrusted Saxifragas and species of Primulas. The gem of the collection was a fine clump of the beautiful golden *Saxifraga faldonside* (see fig. 86), the finest variety in its section. There were very large pans of *S. Burseriana*, *S. B. Gloria*, *S. scardica obtusa*, *S. apiculata*, *S. Paulinae*, a fine yellow Saxifrage but not so imposing as *faldonside*; *S. marginata*, and, in smaller receptacles, *S. Boydii*, *S. Burseriana crenata*, with crimped or wavy margin to the white petals; and many others. Of the Primulas we noticed the beautiful *J. H. Wilson* variety with lavender-violet coloured flowers; *P. frondosa*, *P. spectabilis*, the rosy-coloured petals being very deeply cut; *P.*

Winteri (magnificent specimens), *P. viscosa*, *P. megaseaefolia*, bearing large umbels of soft lilac-coloured flowers, and *P. rosea*. There were also beautiful specimens of *Soldanella alpina*, *Sedum dasyphyllum*, the pretty glaucous stems and leaves being tinged with rose, and a host of other interesting subjects, every plant being an object-lesson in good culture.

Messrs. T. S. WARE, LTD., Feltham, arranged a large rockery exhibit in the corner by the east annexe, for which a Silver Flora Medal was awarded. At the back was a row of Conifers, and against these the yellow *Dendromicum rigidum* showed up well, the plants being finely flowered. A border of Christmas Roses and Primroses next to these led on to the stone work, in which were growing large patches of *Viola gracilis*, *Pulmonaria rubra*, *P. azurea*, *Anemone blanda*, and other dwarf-growing flowers.

Messrs. JOHN WATERER, SONS AND CRISP, Twyford, Berkshire, arranged a rockery with stones of old weathered limestone planted with rare and choice Alpines. A new *Viola*, *V. Thuringia*, with purplish flowers shaded with mauve and yellow eye; *Hepatica angulosa*, *Ophrys aranifera*, the Spider Orchid; *Primula marginata*, with petals a delicate shade of lavender; *Iris persica*, *Viola gracilis*, *Mazus reptans*, *Omphalodes cappadocica* and *Tulipa Clusiana* were all finely flowered. (Silver Banksian Medal.)

Mr. G. REUTHE, Keston, Kent, showed *Rhododendrons*, *Camellias*, and *Alpines*. A large truss of *Rhododendron argenteum* was a conspicuous feature, and prominence was afforded the new yellow-flowered *R. Keiskii*. (Silver Flora Medal.)

Mr. CLARENCE ELLIOTT, Six Hills Nursery, Stevenage, planted a rockery with broad sweeps of *Saxifraga apiculata*, *S. oppositifolia alba*, *S. o. splendens*, the finest patch of colouring of all; *S. Boydii alba*, *S. Elizabethae*, *Anemone blanda Ingramii*, *Muscari azureum* and other *Alpines*. (Silver Banksian Medal.)

Messrs. BLACKMORE AND LANGDON, Twerton, Hill, Bath, showed a good strain of coloured Primroses, and varieties of Violets. (Silver Banksian Medal.)

A pretty exhibit of hardy flowers was shown by Messrs. GEO. JACKMAN AND SON, Woking, for which a Bronze Flora Medal was awarded. The plants were grouped against a background of flowering trees, such as *Prunus Pissardii*, *Spiraea arguta* and *Almonds*. *Amygdalus Davidiana alba* has rose-tinted buds, but the flower when expanded is pure white.

Messrs. BAKERS, Wolverhampton, made a feature of *Primula denticulata*, and its white variety in an exhibit of *Alpines* arranged in boxes.

Messrs. REAMSBOTTOM AND Co., Geashill, Ireland, showed *St. Brigid Anemones* in a variety of colours.

Hardy flowers were also shown by Mr. G. W. MILLER, Wisbech; Mr. MAURICE PRICHARD, Christchurch, Hampshire; Mr. H. HEMSLEY, Crawley; Messrs. R. TUCKER AND SONS, Oxford; Messrs. WHITELEGG AND PAGE, Chislehurst (Silver Banksian Medal); the Misses HOPKINS, Shepperton; Messrs. R. WALLACE AND Co., Colchester (Silver Banksian Medal); T. H. GAUNT, Farsley, near Leeds; BURTON HARDY PLANT NURSERY; GUILDFORD HARDY PLANT NURSERY; THOMSON AND CHARMAN, Bushey, Hertfordshire; and Messrs. G. and A. CLARK, LTD., Dover.

AWARD OF MERIT.

To *Rhododendron* × *Liliani*.—This was the finest of a beautiful strain of arboreum × *Shilsoniani* hybrids. The colour is a brilliant blood-red shaded with carmine. The carmine in it is distinct, and brightens and increases as the flowers age to such an extent that the old trusses shown appeared at first sight to belong to a different variety. The handsome trusses consist of about 18 compactly-arranged flowers, each of which at its best is 3½ inches in diameter. The foliage is also bold and handsome, whilst in habit and freedom of flowering this variety is described as the best of the batch of seedlings from which only cut trusses were shown. Shown by R. Fox, Esq., Falmouth.

CULTURAL COMMENDATION.

This award was made to F. D. GODMAN, Esq., for three fine pans of the beautiful Chilean

Crocus, *Tecophilaea cyanocrocus*, which was figured in *Gardeners' Chronicle* so long ago as February 17, 1872, p. 219.

OTHER NOVELTIES.

Rhododendron × *Barclayi*. — The most interesting of the beautiful *Rhododendrons* shown by R. Fox, Esq., was not found in the arboreum hybrids but in this Sikkim hybrid, derived from *Scarlet Aucklandii* crossed with *Thomsonii*. The foliage is very distinct and handsome, and the plants now flowering for the first time have been watched for many years with the greatest interest by *Rhododendron* enthusiasts. The flowers are larger than those of *Liliani* above, deep blood-red, very telling, both in form and colour, but

very beautiful *Laelio-Cattleya Glaucus* Westonbirt variety (*L.-C. Rubens* × *L. purpurata*) from the same cross, for which Sir George Holford received a First-class Certificate on August 13, 1912.

Messrs. JAS. VEITCH AND SONS, Royal Exotic Nursery, King's Road, Chelsea, were awarded a Silver Flora Medal for a fine group of *Dendrobium Wardianum*, *Lycaste Skinneri*, and *Odontoglossums*, all finely flowered, the *D. Wardianum* having the tall pseudo-bulbs well furnished with blooms. The plants were grown and flowered at Chelsea from imported pieces. A grand dark form of *L.-C. Gottiana* was also shown.

Messrs. CHARLESWORTH AND Co., Haywards



[Photograph by R. A. Malby.]

FIG. 87.—NARCISSUS NORTHERN QUEEN.
(See page 192.)

not held so closely in the truss as in the arboreum hybrids.

Orchid Committee.

Present: Sir Harry J. Veitch (in the chair), and Messrs. Jas. O'Brien (Hon. Sec.), Gurney Wilson, F. M. Ogilvie, R. A. Rolfe, R. G. Thwaites, F. J. Hanbury, T. Armstrong, A. McBean, W. Cobb, J. Charlesworth, J. Cypher, W. H. Hatcher, H. G. Alexander, G. Hunter, A. Dye, E. H. Davidson, S. W. Flory, C. Cookson, W. Bolton, and De B. Crawshaw.

Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt, Tetbury (gr. Mr. H. G. Alexander), sent the finest Orchid of the show, and the finest *Sophranitis* cross in the brilliantly-coloured *Sophranitis* × *Cattleya Wellesleyae*, which gained a First-Class Certificate (see Awards); also the

Heath, were awarded a Silver Flora Medal for an excellent group of hybrid *Odontoglossums*, with several very fine white forms of *O. crispum*, *Odontiodas*, *Laelio-Cattleyas* and *Brasso-Cattleyas*. The front of the group had compact plants of the graceful white *Angraecum citratum* with scarlet *Sophranitis grandiflora*, *Coelogyne sparsa* and yellow *Oncidium concolor*. Specially noteworthy were a fine plant of the singular *Lycaste gigantea* with twelve flowers; a good *Cypripedium Rothschildianum*, *Miltonia Bleuana* varieties, and *Dendrobium atroviolaceum*.

Messrs. SANDER AND SONS, St. Albans, were given a Silver Flora Medal for a varied and interesting group, the novelties in which were *Cymbidium amabile* (*Lowii-Mastersii* × *insigne Sanderi*), a pretty hybrid with the usual

characteristics which follow most of the *C. insigne* crosses, *Brasso-Cattleya Sylvia* (*B.-C. Digbyano-Trianae* (*Sedenii*) × *C. Trianae*), a pretty white flower, merged into *C. Trianae*, but with a fringed lip, and *Laelio-Cattleya Dulce* (*C. Mendelii* × *L. anceps Sanderiana*) (see Awards). Some pretty *Odontoglossums*, good *Cymbidium* *Gottianum*, *Cattleya Olaf* var. *venusta*, *Masdevallia Schröderiana*, *Cirrhopetalum picturatum* well-flowered *Odontoglossums* set up with *Renanthera* *Imshoottiana* were also noted.

Messrs. STUART LOW AND CO., Bush Hill Park, and Jarvisbrook, Sussex, were awarded a Silver Banksian Medal for an effective group of *Dendrobiums*, *Cypripediums*, *Odontoglossums*, etc., with scarlet *Sophranitis grandiflora* in front. At one corner stood a fine specimen of the noble dwarf form of *Dendrobium Jamesianum* known as *D. Donnesiae*, with thirteen large, white flowers with yellow centres. A very fine *Laelio-Cattleya Myra*, a rich red *Odontioda Charlesworthii*, some well-flowered *Brasso-Cattleyas*, and *Odontoglossum Jasper* of specially good quality were included.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, were awarded a Silver Banksian Medal for a good group specially rich in hybrid *Odontoglossums*, some between *O. eximium* and *O. illustrissimum*, and some home-raised blotched *O. crispum* being excellent. Among hybrid *Dendrobiums* *D. Chessingtonense* was the best deep yellow. *D. nobile Virginale* was well shown; *Laelio-Cattleya Myra*, varying in tints of yellow and rose, and *L.-C. Myrosa* (*Myra* × *luminosa*), a fine improvement on *L.-C. Myra*, with yellowish sepals and petals tinged and veined with purple, the violet-purple lip having a yellow patch on each side. Forms of *Miltonia Hyeana*, *Odontiodas* and *Cypripediums*, with a plant of the beautiful little *Maxillaria sanguinea* were also noted.

Messrs. J. CYPHER AND SONS, Cheltenham, secured a Silver Banksian Medal for a well-arranged group of good *Cypripedium* *Calanthe* *Bryan*, and *William Murray*, *Lycaste Skinneri* and the best white form; *Brasso-Cattleyas*, *Laelio-Cattleyas*, *Dendrobium Wardianum* album, the pretty *Laelio-Cattleya Lady Miller* in several forms, varying in tints of copper-red; a finely-flowered *Sarcochilus Fitzgeraldii*, *Angraecum citratum* and *Ada aurantiaca* were included.

Messrs. FLORY AND BLACK, Orchid Nursery, Slough, were awarded a Bronze Banksian Medal for a small group of remarkably good hybrids, including the new *Laelio-Cattleya Verona* (*L. anceps* × *C. Hardyana*) with soft rose-coloured flowers with orange disc to the lip; some good blotched *Odontoglossum crispum*; the very distinct *Cattleya Trianae Exquisite*, a finely-shaped flower with broad, purple feather on the petals—an improvement on the variety *Backhouseana*—some new hybrid *Cypripediums*, and two plants of the pretty white *Disa sagittalis*.

Messrs. W. B. HARTLAND AND CO., Cork, were awarded a Bronze Banksian Medal for a group of *Cypripediums*, *Cymbidium* and *Odontoglossums*, *Cypripedium aureum Surprise*, and other forms of *C. aureum* and *C. Euryades* were effectively displayed with *Cymbidium Lady Colman*, *C. insigne*, and a hybrid between *C. Tracyanum* and *C. giganteum*.

The Earl of CRAVEN, Combe Abbey, Coventry (gr. Mr. H. Chandler) sent *Laelio-Cattleya Corneliensis* (*L.-C. Haroldiana* × *C. Schröderae*), a softly-tinted cream-white flower tinged with yellow, the front of the lip rose-purple.

R. G. THWAITES, Esq., Chessington, Streatham (gr. Mr. Harrington) showed a very fine *Cattleya Octave Doin*; several of his rich yellow and maroon *Dendrobium Chessingtonense*, *D. Austini*, a distinct *Cattleya Empress Frederick*, and two new hybrid *Odontoglossums*.

PANTIA RALLI, Esq., Ashted Park, Surrey, showed *Odontioda Hemptinneana* (*Od. eximium* × *C. Noezliana*), *O. Keighleyensis* Ashted Park variety, and another deep-red *Odontioda* named *Illustris*, of unknown parentage. Also *Miltonia St. Andre* Ashted Park variety; *Odontoglossum crispum Mrs. T. Zarif* and *O. c. Ashted Park* variety.

E. R. ASHTON, Esq., Broadlands, Tunbridge Wells, showed *Laelio-Cattleya Marion* (*L. C. Clive* × *L. tenebrosa*), a very richly-coloured

flower of medium size, and *Cattleya Trianae* Broadlands variety, large and of good shape.

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day) sent *Brasso-Laelio-Cattleya Joan* (*B. L. Mrs. Gratrix* × *C. Octave Doin*) of a pleasing yellow colour, and *Sophr-Laelio-Cattleya Marathon Goodson's* variety.

W. C. CLARK, Esq., Boscombe, Bournemouth, showed *Laelio-Cattleya luminosa Clark's* variety, with buff sepals and petals tinged with rose, lip rose-purple in front.

F. M. OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth) showed in fine form *Lycaste Skinneri alba magnifica*, *Cattleya Empress Frederick alba* and others.

Messrs. E. H. DAVIDSON AND CO., Orchid Dene, Twyford, showed a selection of handsome *Orchids*, including their very fine form of *Cattleya Trianae*, *C. Empress Frederick*, the richly-coloured *Sophr-Laelio-Cattleya Elissa*, *Brasso-Laelia Helen* with unusually large flowers, two *Brasso-Cattleya Digbyano-Mendelii*, one being a grand white form with a small rose-coloured line on the lip; the new scarlet *Habenaria Roebeleinii*, *Laelio-Cattleya Feronia superba*, some brightly-coloured *Odontiodas* and *Sophranitis*.

Messrs. J. AND A. McBEAN, Cooksbridge, staged a small group in which the bright-red *Odontiodas* were conspicuous, the best being *O. Lambeauana Ceres*, *O. Diana* varieties *Doris* and *Pluto*. At the back were hybrid *Cymbidium* and *Odontoglossums*, and among others noted were the new *Laelio-Cattleya Euripides* (*Myra* × *Goldcrest*), a pretty flower of a uniformly clear yellow colour, and the handsome *Cattleya Trianae F. McBean*.

Messrs. HASSALL AND CO., Southgate, staged an effective group, at the back of which were *Odontoglossum Thompsonianum*, *Renanthera Imshoottiana*, and a good example of *Angraecum sesquipedale*, with *Odontoglossums*. The white *Brasso-Cattleya Menda* raised at Southgate, and other hybrids, were also noted.

Monsieur MERTENS, Ghent, showed some hybrid *Odontoglossums* and *Cattleya Trianae* alba.

AWARDS.

FIRST-CLASS CERTIFICATE.

Sophr-Cattleya Wellesleyae Westonbirt var. (S. grandiflora × *C. labiata*) from Lieut.-Col. Sir GEO. L. HOLFORD. One of the finest of *Sophranitis grandiflora* crosses yet shown, and unique in the brilliant tint of its richly-coloured flowers. The inflorescence bore three flowers of fine shape, deep scarlet, with a bright cerise-red glow varying in tint in different aspects. The base of the lip is yellow, with red lines. The cross was first shown by Francis Wellesley, Esq., and is sometimes called *S.-C. Mrs. Francis Wellesley*. It is a charming hybrid, and extremely rare.

AWARD OF MERIT.

Laelio-Cattleya Dulce (C. Mendelii × *L. anceps Sanderiana*) from Messrs. SANDER AND SONS. Flowers of good size, nearest to *C. Mendelii* in size and shape. Inflorescence 1ft. high, three flowered. Sepals and petals silvery-white, tinted with lavender colour; front of lip violet-purple.

Dendrobium Bassattii (Rolfeae × *Melanodiscus Salteri*), from Mrs. T. B. HAYWOOD, Woodhatch, Reigate. A pretty rose-coloured flower nearest to *D. Rolfeae*, but larger; lip white, with rose-tinted tip and some purple lines at the base.

Narcissus and Tulip Committee.

Present: E. A. Bowles, Esq., in the chair, the Rev. Joseph Jacob, Messrs. W. F. N. Copeland, Arthur R. Goodwin, A. M. Wilson, Herbert Smith, Christopher Bourne, Charles T. Digby, R. W. Wallace, J. T. Bennett-Poë, F. Herbert Chapman, W. A. Watts, W. W. Fowler, W. Poupert, Walter T. Ware, G. W. Leak, C. L. Adams, and Chas. H. Curtis (hon. sec.).

Messrs. CARTWRIGHT AND GOODWIN, Kidderminster, staged a comprehensive collection of the various types, amongst which such brightly-cupped *Barrii* varieties as *Firebrand*, *Fire Spaniel*, and *Southern Star* arrested attention. But the gem of the exhibit was *Northern Queen* (see fig. 87, p. 191), a *Leedsii* variety with a perianth of *Cassandra* type and a small, pale yellow crown—a very chaste and fascinating flower. *Swashbuckler*, a bicolor

Incomparabilis, has a nearly white perianth and a very large, open cup; *Aquarius*, a *Leedsii* with a very large perianth and a crimpet crown, which is delicately tipped with orange; and *Onslaught*, a bicolor *Trumpet*, in which the yellow of the trumpet merges into the white of the perianth, are desirable novelties. Amongst the smaller flowered section, a cross between *Golden Spur* and *cyclamineus* was interesting in that it showed but little of the *Trumpet* parentage; the flowers are almost purely of *cyclamineus* form, but twice as large, and with a slightly wider mouth. (*Silver-gilt Banksian Medal*.)

Messrs. BARR AND SONS, Covent Garden, London, showed many seedling *Trumpet* varieties under numbers, several of them of such merit that they are deserving of names. Of these, 1,983, rich yellow in colour and widely expanded cup; 2,646, a similar, but rather larger flower; 1,068, a very long trumpet of pale primrose colour and a lighter perianth; and 407, rich yellow and of good substance, are the very best. Of the named sorts, *Sunrise*, a distinct *Barrii*, perianth white with a broad primrose-coloured bar along the centre of each segment and a fluted fiery-orange crown; *Sparkler*, a *Leedsii* which has a rich yellow perianth and a fiery orange rim to the crown; and *Fire-dome*, a similar flower differing in the paler colouring and wider crown, were pleasing. Amongst the small section *N. cyclamineus*, *minimus* and *Bulbocodium conspicuus* were also shown in good condition. (*Silver-gilt Banksian Medal*.)

Messrs. JAMES CARTER AND CO., Raynes Park, arranged a large collection of *Narcissi* and *Tulips* growing in bowls of fibre. Of the former *Barbara*, *Sir Francis Drake* and *Vanilla* were uncommonly successful, and the bowls of *Tulip Prince of Austria* were very gorgeous. (*Silver Flora Medal*.)

Messrs. J. R. PEARSON AND SONS, Lowdham, Notts, specialised with the *Giant Leedsii* varieties, and of these *Lowdham Beauty* and *Louise L. Linton*, both of perfect form and widely expanded crowns; *Capella*, with so large a cup as to give a first impression of being a *Trumpet* variety, were uncommonly fine. *Florence Pearson*, a *Trumpet* variety, which may be described as a greatly-improved *Madame de Graaff*, will have a great future. (*Silver Flora Medal*.)

Messrs. W. T. WARE, LTD., Inglescombe Nurseries, Bath, arranged a large number of the richly-coloured *Queen of the West* (*Trumpet*) on each side of a few very choice novelties. *White City*, a *Leedsii*, in which the perianth is large and stout and the crown small, curled and slightly incurved; *Lolah*, a slightly pendulous *Trumpet* variety with a nearly white perianth and sulphur-yellow trumpet; and *Macebearer*, an orange-tipped *Incomparabilis*, were of great merit. (*Silver Flora Medal*.)

Mr. C. BOURNE, Simpson, Bletchley, had a predominance of the chalice-cupped *Narcissi* in his display, and of these *Bernardine*, a very round *Leedsii* bloom; *Lady Moore* and *Cossack*, two bright-rimmed *Barrii* varieties, were of much more than average merit. (*Silver Flora Medal*.)

Messrs. R. H. BATH, LTD., Wisbech, made an attractive display of *Tulips*, *Crocuses*, and a few *Narcissi* growing in pans of fibre. In the centre was a vase of *Hercules*, a new *Trumpet* *Daffodil* of great size and rich yellow colour. (*Silver Banksian Medal*.)

Messrs. HERBERT CHAPMAN, LTD., Rotherside Gardens, Rye, showed novelties and standard varieties in the annexe. T. G. Sharpe, a slightly pendulous *Trumpet* of good substance and pale yellow colouring; *Scabbard*, a bright-eyed *Barrii*, which has the attributes of a naturalising variety; *Albatross*, a chaste *Leedsii* of good form; *Bracken*, a twin-flowered *Incomparabilis*, and *Shrove*, an appropriately-named *Barrii* which has an unusually flat crown, are all very good. *N. triandrus* hybrids, *N. minicycla* were shown in quantity.

Miss C. MICHELL, Oakfield, Cricklewood; Messrs. W. B. HARTLAND AND SONS, Ardcairn, Ballintemple, Co. Cork; Messrs. CARTER PAGE AND CO., London Wall, London; Messrs. BARRIE AND BROWN, King William Street, London Bridge, London; and Messrs. ROBT. SYDENHAM, LTD., Birmingham, showed *Narcissi* and *Tulips* in pans of fibre.

AWARDS OF MERIT.

Olympia.—An Award of Merit was given to this well-known large yellow Trumpet Daffodil, in recognition of its great value for cultivation in pots.

W. P. Milner.—A very old Trumpet Daffodil with pendulous flowers of sulphur-yellow colouring. The flowers are of small size, and are freely produced; this variety is of value for planting in rock gardens, which attribute influenced the award.

Fruit and Vegetable Committee.

Present: J. Cheal, Esq. (in the chair), Messrs. John Harrison, W. Bates, F. Perkins, A. R. Allan, J. G. Weston, Horace J. Wright, P. C. M. Veitch, A. Grubb, A. Bullock, W. E. Humphreys, G. W. Wythes, F. G. Treseder, C. G. A. Nix, H. H. Williams, and George Reynolds.

Messrs. SUTTON AND SONS, Reading, were awarded a Silver Knightian Medal for vegetables. This attractive exhibit contained choice heads of Early White and Snow White Cauliflowers; Early Purple and Early Purple Sprouting Broccoli; Harbinger and April Cabbages, Golden Ball Lettuce, Seakale, Mushrooms, Cucumbers, and Climbing French Beans.

Competitive Bulb Classes.

Although the entries for this annual show were not so numerous as usual, this falling off was atoned for by the superlative excellence of many of the exhibits, some of which were as near to perfection as we ever expect to see. The object of the show is "to discover the varieties best suited for gentle forcing," and as the varieties shown were almost identically the same as at recent exhibitions, there does not appear to be any new sorts of greater value for forcing purposes than what may be termed the standard varieties.

The Gold Medal of the General Bulb Growers' Association was awarded to the Duke of PORTLAND.

AMATEURS' CLASSES.

Eighteen Hyacinths, distinct.—The competition in this large class must have been very gratifying to the Council, for it is no light undertaking to present such a collection in show condition. 1st, the Duke of PORTLAND, Welbeck Abbey, Worksop (gr. Mr. J. Gibson), who had a magnificent collection which was characterised by splendid stout spikes of large, closely-disposed flowers rising from broad, short, healthy foliage. In this exhibit the varieties Koh-i-noor, Hofgarten Kurnet and La Victorie, were superb; 2nd, Lord HILLINGDON, Wildernesse, Sevenoaks (gr. Mr. J. Skelton), who also had an admirable exhibit, in which the varieties King Menelik, Electra and Jacques were especially fine; 3rd, Colonel the Hon. MARK LOCKWOOD, Bishop Hall, Romford (gr. Mr. W. Craddock).

Twelve Hyacinths, distinct.—The competition in this class was very good indeed, and there could not have been many points separating the leading exhibitors. 1st, the Marquis of SALISBURY, Hatfield (gr. Mr. H. Prime), who staged splendid spikes of Correggio, Electra Schotel, and City of Haarlem; 2nd, R. G. MORRISON, Esq., The Hollies, Victoria Park, Liverpool; 3rd, Miss NATHAN, Little Heath House, Potters Bar (gr. Mr. W. Newton).

Six Hyacinths, distinct.—The exhibits here were not of equal merit to those in the larger classes, but an occasional spike was magnificent. 1st, Miss A. LEVITA, Norton Priory, Chichester (gr. Mr. H. Edwards); 2nd, Mr. L. THOMSON, Ailsa Craig, Formby, Liverpool; 3rd, Lady TATE, Park Hill, Streatham Common (gr. Mr. H. Howe).

Four pans of Hyacinths, 10 roots of one variety in each.—This was the outstanding feature of the show, and it is safe to say that never before have such examples of cultural skill with these bulbs been seen. The competition was so keen that the judges felt constrained to award equal 1st prizes to the Duke of PORTLAND and the Marquis of SALISBURY, who both showed pans of City of Haarlem, La Victoire and Correggio. The blue variety in the first-named collection was King of the Blues, whilst the Marquis of SALISBURY presented the paler, Schotel; 2nd, Colonel LOCKWOOD, who staged splendid plants, but little inferior.

BULBS IN MOSS FIBRE.

The following classes were for bulbs grown in vases of moss fibre, and the varieties had to be selected from published lists.

Six Single Hyacinths.—There was good competition in this class, where many of the spikes were of splendid size and form. 1st, Lady TATE; 2nd, Miss C. MICHELL, Oakfield, Cricklewood.

Six Vases of Tulips.—1st, LADY TATE, who sent floriferous vases of such varieties as Kaiser-skroon, Le Réve and Van der Neer.

Six Vases of Narcissi.—All the exhibits were very graceful and attractive, well illustrating the value of this method of culture. 1st, Lady TATE; 2nd, Mrs. GUY BARING.

FOR TRADE GROWERS.

Messrs. R. and G. CUTHBERT, Southgate, were the only exhibitors in the class for the Gold Medal of the General Bulb Growers' Association of Haarlem, and they were awarded the trophy for a monster display of Hyacinths, which filled the end of the hall. There were over 60 pans, each containing 9 plants, as well as a large number of single pots, and all the flower spikes were of first-rate quality. Where all were so good it was a difficult matter to select any for especial mention; but the pans of Jacques, City of Haarlem, Lord Derby, Queen of the Blues, and Lord Balfour, were of exceptional merit.

SILVER CHALLENGE CUP FOR ROCK GARDENS.

A Silver Challenge Cup has been presented to the Society by the proprietors of the *Daily Graphic* and offered by the Council in open competition at the Chelsea Show on May 19, 20, 21, 1914, for the best rock garden judged not from the point of view of size, but for (1) the natural artistic grouping of the stones; (2) evidence of design in construction; and (3) suitability to the growth of Alpine plants. The rarity or otherwise of the plants themselves to carry but little weight in this competition. Special judges will be appointed representing as far as possible an artist, an owner of a rock garden, and a gentleman accustomed to the planting of rockwork. The winner will hold the cup for one year subject to a sufficient insurance against loss, and a written guarantee to return it in good condition; or failing this, to refund to the R.H.S. the sum of £55. On return of the Cup in good condition the holder will be presented with a small commemorative Cup. The same exhibitor may only win the Cup once in three years, but should the winner of the previous year be again considered first, the Council will bestow a special award.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

FEBRUARY 26.—*Committee present*: Rev. J. Crombleholme (in the chair), Messrs. J. Bamber, J. Cypher, A. G. Ellwood, J. Evans, A. Hammer, J. Howes, J. Lupton, D. McLeod, C. Parker, W. Shackleton, A. Warburton, Z. A. Ward, A. A. McBean, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum eximium var. "Iduna," shown by W. B. LEE, Esq.

Cattleya Trionae "Orchid Dene" var., from Messrs. E. H. DAVIDSON AND CO.

AWARDS OF MERIT.

Odontoglossum × *Rufus*, *O. Distinction*, *O. crispum* var. *Meteor*, *Odontioda Brewii* var. "niger rubra," all from R. ASHWORTH, Esq.

Odontoglossum Fuscans, *Laelio-Cattleya Lucasiana* and *Cypripedium Lord Trevor* var. "Pyramus," shown by WM. THOMPSON, Esq.

Cypripedium Thisbe (Mrs. Mostyn × *leeanum* *Clinkaberryanum*), from W. R. LEE, Esq.

Odontoglossum Edith d'Abrew, shown by R. LE DOUS, Esq.

Odontioda Diana "Leeman's" var., shown by J. LEEMAN, Esq.

Odontoglossum Twyford Gem (*Rossii rubescens* × *formosum*), shown by Messrs. E. H. DAVIDSON AND CO.

Dendrobium cybele album (*nobile virginale* × *Findleyanum album*), shown by Messrs. A. J. KEELING AND SONS.

SCOTTISH HORTICULTURAL.

MARCH 3.—The monthly meeting of this Association was held in the Goold Hall, 5, St. Andrew Square, Edinburgh, on the 3rd inst. Mr. Fife, one of the vice-presidents, was in the chair, and there was an attendance of 90 members.

A paper, entitled "A Talk About Potatoes," was read by Mr. GEO. M. TAYLOR, Edinburgh. He said that a disease-proof Potato was something very desirable in the interests of every grower of this important crop, and he discussed the possibilities of such a Potato being evolved by the practical plant breeder. He traced the evolution of the Potato from the year 1846 to the present time, and endeavoured to show that careless cultivation in the way of seed selection was primarily responsible for the frequent attacks of *Phytophthora infestans*. Careful selection of tubers for seed, said Mr. TAYLOR, was a vital necessity if disease was to be successfully combated, and rubbish left over after the ware had been sold for food was useless for planting, and was a sure method of weakening the constitution of the plant, rendering it unfit to ward off the attacks of blight. The problem of fighting diseases in the Potato was one that required the attention of the plant pathologist, and the manuring methods as applied to this crop required considerable investigation. The scientist alone could not hope to arrive at a satisfactory solution without the aid of the practical seed grower and breeder. Our seed was obtained from many countries, and the need for new methods was pressing if the crop was to remain a paying one in these islands. The Scottish Board of Agriculture had lately approached a distinguished scientist to make some experiments in the breeding of Potatoes immune from disease. He asked the Board to declare to practical men what it required. He, for one, was willing to submit a race of hybrids to the Board for severe trial, and he believed they would resist disease. The application of Mendelian laws to Potato breeding was now an accomplished fact, and much progress had been made on these lines. If immunity from disease was proved to be a recessive character (and everything seemed to indicate that it was), a disease-proof Potato was a matter of certainty. The fact remained, however, that careful seed selection was a necessity if resistance to disease was to remain a permanent character of the Potato.

The exhibits were:—*Clematis indivisa*, exhibited by Mr. WM. SMALE, Blackford Park, Edinburgh; *Galanthus Elwesii*, *Helleborus orientalis* vars. *purpurascens major*, "No Plus Ultra" and "Dr. Moore," exhibited by Mr. C. COMFORT, Davidson's Mains.

At the meeting to be held on April 7, Mr. CHARLES W. B. WRIGHT, Edinburgh and East of Scotland College of Agriculture, will give a lecture on "Methods of Controlling Disease by Spraying" (with lantern illustrations).

GARDENING APPOINTMENTS.

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

Mr. G. Marcham, for the past 2 years and 4 months Gardener to J. F. SYMONS JEUNE, Esq., Runnymede House, Old Windsor, Berkshire, as Gardener to Madame FREEMAN PRINCESS DE BOURBON, Ashleigh, Virginia Water, Surrey.

Mr. W. H. Jones, formerly for 3½ years Gardener to J. T. Hereford, Esq., and for the past 6 months with Messrs. THE KING'S ACRE NURSERIES, LTD., as gardener to Captain HEYGATE, Esq., The Wells, Bromyard, Herefordshire.

Mr. W. W. Penniford, for the past 7 years Foreman at Franklyn's, Haywards Heath, Sussex, as Gardener to A. J. NORRIS, Esq., Court House, Bantstead, Surrey.

MARKETS.

COVENT GARDEN, March 11.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.1

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices, including Arums, Azalea, Carnations, Daffodils, Gardenias, Lilies, and Tulips.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage and ferns, including Adiantum, Agrostis, Asparagus, and Carnation foliage.

French Flowers.

Table listing French flowers such as Anemones, Lilacs, and Mimosa.

Guernsey and Scilly Flowers.

Table listing flowers from Guernsey and Scilly, including Anemone fulgens and Daffodils.

REMARKS.—There is very little that is fresh to record, and prices show but little alteration from those of last week. There is an abundant supply of good Daffodils; the best blooms are Victoria and Emperor. Both double and single Tulips are also good and plentiful. Darwin's Tulips are already on sale. Roses are more numerous than last week, and include fine blooms of Richmond,

Countess of Derby, Lady Hillingdon, Rose Queen, Sunburst and Yellow Souvenir. General Jacqueminot, Sunrise, and other novelties are seen on Messrs. Beckwith's stands. There is a good supply of Princess of Wales Violets, and the bunches are arriving in a good condition. There is a better demand for home-grown Violets, as those from the Continent reach the market in an unsaleable condition. This week the salesmen have offered a few bunches of blue Spanish Irises. Flowers from Guernsey and Scilly continue to arrive in large quantities, and are very difficult to clear even at low prices.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various potted plants and their prices, including Aralia, Asparagus, Azalea, Cacti, and various ferns.

REMARKS.—Flowering plants are beginning to make a bright show. There is still a good supply of Azaleas, Cyclamens and Ericas persoluta and Willmorel. The salesmen are gradually filling up their stands with Genistas, Cinerarias, Marguerites, White Spiraeas, Hyacinths and Mignonette. Ferns are not at their best condition; indeed, the quality is very poor. Flowering plants are required most, and trade is better for these subjects. There are also a few good plants of pink, white and blue Hydrangeas, each carrying from three to six small trusses. These plants should find a ready sale.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices, including Apples, Lemons, Nuts, Oranges, Peaches, and Pears.

REMARKS.—The best Nova Scotian Apples are Wine Sap, Albemarle Pippin, and Oregon Newtown. About 24,000 packages of fruit have arrived from the Cape this week, consisting principally of Plums, Pears, and Grapes. Gros Colmar Grapes from English and Continental growers continue a good supply. The quantities of forced Strawberries are increasing daily. The first consignment of the new crop of Brazil nuts has arrived. Some fine samples of Asparagus are obtainable. Cucumbers are very plentiful, and there is a large supply of Broccoli from home and abroad. Forced Beans are an increasing quantity, but forced Peas are scarce. Madeira Beans are a good supply. Seakale is scarcer. Mushrooms are marketed in fair quantities. Forced Mint is more plentiful. Good samples of Tomatoes are arriving from the Canary Islands. Broad Beans from France are packed in pad baskets, each containing about

12 lbs. The market is well supplied with outdoor vegetables of all kinds. E. H. R., Covent Garden, March 11, 1914.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices, including Artichokes, Asparagus, Beans, Cabbages, Carrots, Cauliflowers, Celery, Cucumbers, Endive, Garlic, Horseradish, Lettuce, Leeks, and Potatoes.

Table listing various potato varieties and their prices, including Bedford, Blacklands, British Queen, Dunbar, and Evergood.

REMARKS.—Trade is no better than last week and prices are about the same. Stocks in London are not quite so large, but consignments are quite equal to the demand. E. J. Newborn, Covent Garden and St. Pancras, March 11, 1914.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending March 7, is furnished from the Meteorological Office:—

GENERAL REMARKS.

Pressure, Wind and Weather.—With the barometer highest in an anticyclonic system between Spain and the Azores, and depression centres travelling in a general easterly direction on a track to the northward of Scotland, the type of distribution was westerly. The disturbances of the early days of the week were deep enough to cause frequent strong winds over the United Kingdom, but gale force was not reached, except very locally, until late on the 5th. The depression that lay off the North of Scotland at 6 p.m. on that date was deep, and during the night it developed further intensify. By the morning of the 6th the barometer at its centre had fallen to about 965 millibars, and as it subsequently moved east-south-eastward the wind over these islands increased to a gale from between west and north-west very generally. The force of a strong to whole gale was experienced over a large area, the greatest violence occurring in the North and North-east of England. At the close of the week, when the depression had reached the Baltic, a small secondary system was passing eastward over England. Rain fell daily in Ireland, the South-west of England, and the greater part of Scotland, and the total fall for the week in those regions was considerably in excess of the average. Many places over the northern half of the Kingdom experienced a little sleet or snow from time to time. Thunder occurred at Foyens on the 1st, and at some other stations in the north there was lightning singly.

THE WEATHER IN WEST HERTS.

Week ending March 11, 1914. The Wettest Day for Eighteen Months, and the highest Wind for Over Four Years.—This was the sixth unseasonably warm week that we have had in succession, notwithstanding the last two days and nights having been rather cold for the time of year. On the warmest day the highest temperature in the thermometer screen was 56°, and on the coldest night the exposed thermometer registered 12° of frost. The ground is at the present time 2° warmer than is seasonable, both at 1 foot and 2 feet deep. Rain fell on four days, and to the total depth of nearly 2 inches—making this the wettest week since September, 1912. Rain or snow fell almost continuously from 11.30 p.m. on the 7th to 9 p.m. on the 9th, or for 4½ hours—the total measurement being 1½ inches, or nearly as

much as the average quantity for the whole month. On the one very wet day (8th inst.) the fall of rain amounted to rather more than one inch—making this the wettest day since Michaelmas Day, 1912, or for nearly eighteen months. During the past week nearly eight gallons of rainwater has come through both the percolation gauges—which are each a yard square and nearly a yard deep. The sun shone on an average for nearly two hours a day, which is 1½ hours a day short of the average daily duration for the same period in March. On five days no sunshine at all was recorded. The winds were, as a rule, high during the early part of the week, but light airs have alone prevailed for the past five days. In the windiest hour on the 6th inst. the mean velocity amounted to twenty-six miles—direction W.N.W. We have to go back to December, 1909, or for over four years, in order to find any wind as high. The average amount of moisture in the air at 4 p.m. exceeded a seasonable quantity for that hour by 6 per cent. *E. M., Berkhamsted, March 11, 1914.*

LAW NOTE.

QUESTION OF AGREEMENT.

IN the King's Bench Division, Court IV., on the 23rd ult., an action was opened in which the plaintiff was Mr. Archibald Forshaw Dutton, proprietor of the Nurseries, Iver, Buckinghamshire, and the defendant Colonel Frederick Charles Wood Rideout, proprietor of the Clury Nurseries, Langley. Mr. Dutton alleged wrongful termination of an agreement, under which he had been practical adviser to the defendant at the Clury Nurseries, and claimed an account and payment of all sums found to be due to him under such agreement, damages for wrongful dismissal, or, in the alternative, that the agreement be declared to be still subsisting, and himself (the plaintiff) entitled to perform his obligations thereunder, and that an account, as before mentioned, be taken, and all sums found to be due to him under the agreement be paid. Colonel Rideout denied the wrongful termination of the agreement, and counterclaimed, alleging that he had suffered damages by reason of loss in the working of his nurseries, caused in whole or in part by the plaintiff's misconduct and breach of agreement.

The evidence of the plaintiff was that in August, 1911, an agreement was made between himself and defendant under which the plaintiff was to be employed as practical adviser in connection with the management of the Clury Nurseries at Langley for a period of seven years and fifty-two days, subject to the defendant's right to terminate the agreement should the defendant sell the nurseries from such date as should be mutually agreed upon, the plaintiff being entitled to a proportion of the net profits up to such determination. The remuneration of the plaintiff was to be computed as follows:—At the end of the first year and fifty-two days he was to have a sum equal to the net profits (if any) in excess of £300. At the end of the second and every subsequent year a sum equal to the net profits (if any) for the year in question in excess of £350 up to a total of £450, after which sum any excess would be equally divided between the defendant and the plaintiff; and should the defendant, at the consent and on the advice of the plaintiff, incur further capital expenditure on account of the nurseries, then the net profit due to the defendant should be increased by 10 per cent. on this capital expenditure, certain deductions, particularly referred to, having been made. The accounts of the business were to be made out annually, as on September 30, and audited by a competent firm of auditors. The plaintiff entered on his duties at Clury Nurseries on or about August 10, 1911, and continued to perform them until June 20, 1913, when the defendant, by a letter of his solicitors, Messrs. R. H. Barrett and Son, terminated the agreement as from the following day, although the nurseries had not been sold.

Several salesmen and growers gave evidence relating to the stocks of blooms at the Clury Nurseries. Mr. Curry, a Covent Garden salesman, said he had purchased blooms from these nurseries both before and after August 10, 1911. Before this date the blooms were very poor, but had afterwards improved. Later still, after June 20, 1913, the quality had gone back again.

On the question of some beds of Carnations in which numbers of the blooms had died, Mr. Carl Engelmann, of Saffron Walden, stated that

if they had died in patches it was most likely due to "stem rot," and not, as had been suggested, to the use of improper or too great quantities of manure. The manure used was the proper kind, and was used by 75 per cent. of growers.

Mr. Frederick Burnett, who had been employed at Clury Nurseries from February 20, 1911, to April 25, 1913, stated that Mr. Dutton's visits had been very regular—he had been to the nursery twice a week and very often on Sundays. Between February, 1911, and August, 1911, the condition of the nursery was wretched. After Mr. Dutton came there was a great improvement; the methods of planting out were placed on a new basis, and the production of the nurseries in the way of bloom was much increased. In the opinion of the witness the cause of the dying of the Carnations was stem rot, as the roots were found by him to be alive.

The defence offered was that the plaintiff did not visit the nurseries regularly once each week; that from April 29 to June 30, 1913, the plaintiff did not once visit the nurseries on a working day; that he had endeavoured to induce the defendant's foreman and stoker to leave and enter his (the plaintiff's) service. It was also stated that in a competition for Carnation blooms at the Perpetual-Flowering Carnation Society's Show, held in the Royal Botanic Gardens, Regent's Park, on December 5, 1911, the plaintiff showed in his own name 28 Mikado blooms which were grown at defendant's nurseries and obtained a first prize for them, and that he had also obtained various other awards for defendant's blooms. It was further contended that the accounts taken for the year ending September 30, 1912, and properly audited, showed a loss of £400 on the nurseries, and that the next year a profit of only £8 was made.

The reply of the plaintiff was that during the period between April 29 and June 13, 1913, he visited the nurseries on several Sundays, and on weekdays communicated with the foreman by telephone and ascertained that a personal visit was unnecessary. From April 25 to 28 plaintiff was at Ghent, and from May 24 to June 8 he was on his holidays, with defendant's full knowledge, and without any objection being raised. A denial was given to the statement that he had tried to induce the defendant's foreman and stoker to leave and enter his own service. All he had said was that if they should be obliged to leave he would endeavour to find situations for them. The blooms referred to as having been shown by plaintiff were sold to him by defendant in December, 1911. The plaintiff had honestly advised defendant not to exhibit at shows, as it had been arranged that the wholesale cut-bloom trade should be specially catered for. As to the three beds of Carnations, he considered that the plants had been killed by stem rot, and through no fault of his own. With reference to the profit, he said that if the stock had been properly and fairly valued the results of the trading would have appeared in a much more favourable light.

Colonel Rideout gave evidence, and said that he was a retired colonel of the Indian Army, and not himself an expert in horticulture. The Clury Nurseries were started in 1909, and Mr. Dutton came in 1911. After Mr. Dutton's arrival the foreman, Wharton, was put under him; but defendant was not at all satisfied with the number of times Dutton came, and told Wharton to keep a record of his visits. The record was kept, and showed that Dutton came very seldom.

The accountant, Mr. Ernest Hohler, C.A., stated that he had perused the agreement in question, and had examined the books of the Clury Nursery. He had not checked the stock. He found that in the year ending September, 1912, there was a loss of £403, and in the next year a loss of £14 18s. 10d. The difference between the Colonel's balance-sheet, showing £8 profit, and his own finding of a loss of £14 18s. 10d., was due to his having allowed depreciation on additions made to the green-houses the previous year.

The Lord Justice put the following questions to the jury:—(1) Did the plaintiff duly perform the duties of the agreement into which he had entered? (2) If not, did he so neglect his duties or so misconduct himself as to entitle the defendant to terminate the agreement?

The jury conferred for nearly an hour, after which they returned the answer: To No. 1, "Yes, except in the attendance." To No. 2, "No." Replying to a further question based on this, they put the plaintiff's damages at £100. Judgment was therefore entered for the plaintiff, £100 damages on the claim.

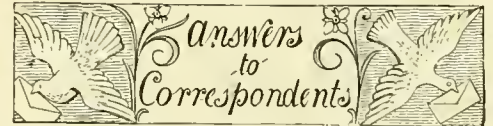
TRADE NOTE.

JOHN WATERER, SONS AND CRISP, LTD.

IN connection with the amalgamation of the Wargrave Plant Farm, Ltd., with the firm of John Waterer and Sons, we are informed that Mr. Bernard Crisp, son of Sir Frank Crisp, Bart., promoter of the Wargrave Plant Farm, will be a director in the new company, together with Mr. Gomer Waterer and Mr. John Waterer.

The Twyford Nurseries will be chiefly devoted to the culture of rock plants, herbaceous plants, Roses and bulbs.

At the Bagshot Nurseries choice shrubs, Chinese plants, American plants and Rhododendrons are largely cultivated, 60 acres alone being devoted to Rhododendrons. The two nurseries extend to 200 acres. The Bagshot Nurseries have been established over 100 years.



ANTS AND WOODLICE: Destroyer. Nests of Ants are sometimes made in places where boiling water can be poured over them, which is sufficient to destroy these pests. If this is not effective inject a little bisulphide of carbon or vaporize into their burrows, and the fumes will kill the ants. The "Ballinrain Ant Destroyer," which is prepared by Messrs. Alex. Cross and Son, Glasgow, is another effective and poisonous preparation. Traps may be made to catch woodlice by hollowing out pieces of Potato, Turnip, etc., and placing them hollow-side down. If the baits are examined every morning it will be found that they contain woodlice, which must be killed, and the baits replaced. Another method of killing woodlice is by placing baits which may be poisoned with Paris green or white arsenic. There are also other effective poisons on the market: Steiner's "Vermin Paste" is recommended by Mr. H. W. Ward, who has used it in his nursery at Rayleigh. The paste should be mixed with Barley-meal or middlings, and set on pieces of glass, wood, or tin, and then placed in the haunts of the woodlice. This means has been found sufficient to eradicate the pest in a week or ten days.

APPLE SHOOTS: A. T. H. The malformations are due to the attacks of the woolly aphid or American blight. As it is too late now to spray with the ordinary alkali wash we would recommend treating the affected parts with this specific by means of a brush, keeping the fluid clear of the buds.

BOWLING GREENS: Conscious of Ignorance. A green surrounded by wooden troughs must also have a grass bank. It is recommended that raised borders or banks be formed as a margin to bowling greens, and to prevent disputes these banks should be 18 inches above the green level, with an angle from the green of not more than 120 degrees. With regard to your query as to whether championship matches may take place on a green in perfect order, correct in size, surrounded by wood troughs, but without grass banks round same, there is, so far as we are aware, no written law to the effect, yet it is implied that if there is no bank there must be a board fixed equivalent to the bank in match games,

the meaning being to prevent reckless driving. Bowls are out of play when they go into the ditch unless they are "touchers," also if they go over the lines and lie in adjacent rinks. In laying the turves place them tightly together, as a green laid thus will be sooner fit for play than one laid with spaces left between the sods.

CANKER IN APPLE TREES: *W. B.* Canker (*Nectria ditissima*) is a wound parasite, entering into the living tissue by means of ruptures in the bark of the tree caused by the woolly aphis, by "gummosis," etc. It generally attacks trees that are in bad health, neglected, or that have been planted in badly-drained or unsuitable soil. All badly-diseased branches should be cut off and burnt. When the attack is only slight, cut out the affected parts and coat the wound with tar. It is not wise to allow badly cankered trees to remain as a source of infection for others; they should be rooted out and burned.

CARNATION DISEASED: *P. I.* A fungus is present in the specimens. Spray both diseased and healthy plants with a rose-red solution of permanganate of potash.—*Hale.* Carnation rust is present. Remove diseased leaves, and spray or sponge the plants with a rose-red solution of permanganate of potash.

CORRECTION.—In Mr. Correvon's notes on spring-flowering Cyclamen (p. 142), the word *winter* in line 13 was erroneously printed *white*.

CUCUMBERS DISEASED: *Gravesend Gardener.* Spraying with the Bordeaux mixture has not been very effective against Cucumber Spot Mould or Blotch (*Cercospora melonis*), but if commenced at an early stage it may do some good. Carbolic acid has been used by some with success. Mix a pint bottle of No. 5 Calvert's carbolic acid with five quarts of water, and water the path with this fluid just before shutting up the house in the evening. Mr. H. W. Ward relates that a similar mixture of carbolic acid and water was placed about in saucers in Cucumber and Tomato houses, and in all cases the plants remained healthy. Carbolic acid is a virulent caustic poison, and great care should be exercised in handling it or making use of it for this purpose.

DAFFODILS: *J. T.* The bulbs are badly attacked by eelworm. Sterilise the soil in which they grew by heating it.

FIG: *Brown Turkey.* The small Figs received have black spots upon them, which may be due to too much moisture being present in the air when the temperature of the house was rather lower than it ought to be. At this season of the year forced Figs require vigilant care. They like plenty of atmospheric moisture; indeed if they do not get this the leaves very soon become attacked by red spider, but whilst they like moisture, they like heat equally as well, and at the same time a circulating atmosphere. The difficulty is in adjusting the amount of moisture and heat in the hot-water pipes with a mild circulation of air admitted from the back of the house. Of course it may be that the Figs are attacked by the well-known fungous disease, *Cercospora Bolleana*, but your specimens are not sufficiently developed to show this pest. If you have further trouble with them we would recommend you to send some more specimens with the spots in a further state of decay.

GOOSEBERRY SHOOTS: *A. W.* American Gooseberry mildew is not present on the shoots, which have been injured by aphides.

GRUBS OF KITCHEN GARDEN: *C. H.* The specimen sent is a fully-grown larva of the common cockchafer, *Melolontha vulgaris*.

GRUBS: *C. A. B.* The grubs submitted for identification are commonly known as "leather jackets." They are the larvae of a species of Tipula, and feed upon the roots of various plants.

HYACINTH: *T.* The bulb has produced many side-growths because the central growth received a check of so severe a nature that the bulb has been unable to produce a flower-spike. Whether this check happened last season before the bulb was taken from the nursery plantation we cannot say, but the probabilities are that such was the case. There does not appear to be any specific disease present in the tissues.

INSECTS: *Bourne.* You are correct in your surmise with regard to the large tunnel in the Holly branch. It is undoubtedly the work of the larva of a moth—possibly *Cossus ligniperda*, though in the absence of the insect it is impossible to be definite on this point. The eggs are those of the vapourer moth, *Orgyia antiqua*. The egg masses, which are invariably attached to the cocoon, should be collected systematically and destroyed. If the caterpillars are found to be troublesome you should spray with arsenate of lead.

MORELLO CHERRIES: *N. L.* Cherries have always given more trouble than most other fruits by reason of their proneness to fall prematurely from the tree, but the habit is more characteristic of Sweet Cherries than Morellos. In both cases the bloom is produced with extraordinary profusion, and the drain upon the tree at a particular time during the setting of the flowers, swelling of the fruit, or formation of seed may be such that the tree suddenly casts the crop owing to temporary exhaustion. To prevent this misfortune gardeners sometimes thin out the flower-buds before they expand, which may be done very liberally whilst still leaving many more upon the tree than are required for the crop. In your case the fruits appear to get through the trying process of stoning without difficulty, but fall from the tree after they have commenced to develop colour. We think that the cause will be found in lack of sufficient moisture at the roots. Let steps be taken to keep the roots abundantly supplied with water and manure water whilst the fruit is swelling and colouring next season, and note the result.

NAMES OF PLANTS: *A. M. L.* 1, *Cedrus atlantica* var. *glauca*; 2, *Retinospora squarrosa*; 3, *Cryptomeria elegans*; 4, *Ruscus aculeatus* (Butcher's Broom).—*F. C. Steele.* 1, The green-leaved female variety of *Aucuba japonica*; 2, *Juniperus chinensis*; 3, *Taxus baccata*; 4, *Viburnum Tinus*; 5, *Pyrus sp.*, send when in flower; 6, *Berberis Darwinii*.—*R. L. F.* 1, *Crassula coccinea*; 2, *Cupressus Lawsoniana*; 3, *Viburnum Tinus* (*Laurustinus*); 4, *Olearia Haastii*; 5, *Prunus Laurocerasus* (*Portugal Laurel*); 6, *Taxus baccata* (*Yew*).—*Borden Hall.* 1, *Polygonum affine*; 2, *Alyssum*, sp. probably *montanum*; 3, *Sedum altissimum*.—*G. D. A.* 1, *Hacquetia Epipactis*; 2, *Adonis amurensis*; 3, *Narcissus mimimus*; 4 and 5, *Aubrietia deltoidea* vars.; 6, *Erica carnea alba*; 7, *E. carnea*; 8, *Lithospermum prostratum*.—*M. O. L.* *Centradenia rosea*.—*F. W. N.* 1, *Cypripedium Lawrenceanum*; 2, *Cypripedium Boxallii*; 3, *Dendrobium speciosum*; 4, *Cypripedium Savageanum* (*Harrisianum* × *Spicerianum*); 5, *Cypripedium Harrisianum* (*barbatum* × *villosum*); 6, *Cypripedium Germinyanum* (*hirsutissimum* × *villosum*); 7, *Cypripedium Iago* (*Davyanum* × *villosum*); 8, *Jacobinia* (*Sericographis*) *Ghiesbreghtiana*; 9, *Iris japonica* (*fimbriata*); 10, *Onychium japonicum*; 11, *Aspidium decompositum*.—*E. S. H.* *Epidendrum O'Brienianum*, scarlet variety.—*T. C., G. T.* 1, *Nuttallia cerasiformis*; 2, *Pseudotsuga Douglasii*; 3 and 4, *Picea hondoensis*; 5, *Sequoia sempervirens*; 6, *Picea nigra*.

NARCISSUS DISEASED: *J. S.* The injury has been caused by *Fusarium bulbigenum*, and the soil in which the bulbs grew will in all probability be infected with the fungus.

PLANTS FOR A ROCKERY FACING NORTH-EAST: *Alpine.* The following plants would be suitable for your purpose:—*Adonis amurensis*, *Anemone alpina*, *A. apennina*, *A. blanda*, *A. sylvestris*, *A. Hepatica*, *Aquilegia glandulosa*, *A. coerulea*, *Arenaria balearica*, *Aubrietia* in variety, *Campanula carpatica*, *C.*

Portenschlagiana, *C. pusilla*, *C. pulla*, and others, *Cerastium Bilbersteinii*, *Chrysogonum virginianum*, *Bulbinella Hookeri*, *Cornus canadensis*, *Cortusa Matthioli*, *Cyclamen neapolitanum*, *C. coum*, *C. ibericum*, *Dodecatheon Meadia*, *Epigaea repens*, *Epimedium pinnatum*, *E. rubrum*, *Euphorbia epithymoides*, *Funkia ovata* vars., *Galax aphylla*, *Gentiana asclepiadea*, *G. septemfida*, *Geum montanum*, *Haberlea rhodopensis*, *Hacquetia* (*Dondia*) *Epipactis*, *Helleborus orientalis*, *H. niger*, *Lindelofia spectabilis*, *Lithospermum purpureo-coeruleum*, *L. prostratum*, *Maianthemum convallaria*, *Meconopsis aculeata*, *M. sinuata latifolia*, *M. cambria* and its double var., *M. Wallichii*, *Mertensia primuloides*, *M. echioides*, *Myosotis* in variety, *Omphalodes verna* and var. *alba*, *Primula Bulleyana*, *P. Beesiana*, *P. rosea*, *P. japonica* and many others, *Pulmonaria rubra*, *P. saccharata*, *Ranondia pyrenaica*, *R. serbica Nathaliae*, *Ranunculus amplexicaulis*, *R. platanifolius*, *Rodgersia pinnata*, *Romanzoffia sitchensis*, *Saxifraga hypnoides*, *S. caespitosa*, and all others of the mossy section, *Thalictrum aquilegifolium*, *Tiarella cordifolia*, *Trillium grandiflorum*, *T. erectum* and others, *Erythronium Dens-canis*, *E. giganteum*, *E. Hendersonii* and others, *Vancouveria hexandra*, *Veronica Teucrium prostrata*, *Vinca minor* in variety, *Viola gracilis*, and *Waldsteinia trifolia*.

PRIMULA MALACOIDES: *A Dorset Gardener.* The note on p. 180 will furnish the information you ask.

TODEA SUPERBA: *O. D. K.* This plant is seldom propagated in this country; strong stems are usually imported from New Zealand for supplying offsets. It is seldom that the old stems produce any offshoots, and the only other method of increase is to raise the plants from spores, which are, as a rule, produced in abundance on strong, healthy specimens. The spores should be sown as soon as they ripen or become brown, and should be afforded the same conditions with regard to shade and atmospheric moisture as the parent plant. The spores are best sown on a piece of soft sandstone or in a small pot of carefully sterilised compost consisting for the most part of peat and sand. In either case the pot or sandstone should be stood in a saucer of water, in order to keep the compost moist, thus obviating overhead watering. On no account should the soil be watered from above, as the minute spores would be washed into the soil, and they would then fail to germinate. After sowing the spores fill the saucers with water, and add water whenever necessary. The spores germinate and produce dark green, kidney-shaped prothalli, and when this stage is reached they may be watered overhead. Later on the young plants may be pricked off into small pots and afforded exactly the same treatment as the parents. At no period should this plant be exposed to the sun; it should be carefully shaded at all times.

TOMATOS: *C. A. B.* Send specimens of the affected seedlings for examination.

TREE SURGERY: *A. C. M.* Remove all, or as much as possible, of the decayed wood, then wash the surface with a strong solution of carbolic acid, and after this has become quite dry smear the surface with coal tar. This antiseptic treatment is intended to destroy parasitic fungi and arrest the decaying process. The hole should then be filled up and made watertight. If it be small the best "stopping" is formed of a piece of Oak made to fit, but large holes should be filled with cement. In either case a final coating of tar should be given. Except when the hole is very large, a new layer of bark will grow over the cavity when treated in the way described.

Communications Received.—*H. Lloyd* (thanks for 1s. for R.G.O.F. box)—*S. M.—W. T.—A. E. T. R.—A. S.—R. F.—R. F. L.—S. and M.—W. G. O.—W. W. and Son—S. A.—E. W. C.—J. A. J.—H. S. T.—L. G.—E. G. A.—L. G., Bruxelles—D. M. G.—A. W.—H. J. G.—A. D.—A. C.—H. B.—L. R. C., Hallsham—T. O.—I. R. H., America—O. G., Experience—W. F.—T. S. H. D.—E. M.—J. S.—W. B.—T. N.—J. H. P., Nottingham—J. J.—Enchantress—G. H. C.—E. H. K.—W. T. W.—C. E. M.—B. S.—E. S.—E. H.—C. H.—J. H. P.—W. C., Taplow.*

THE
Gardeners' Chronicle

No. 1,421.—SATURDAY, MARCH 21, 1914.

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THE DATE PALM.*

MR. POPENOE has written a fascinating book on the Date Palm—"The Dadel, a Tree Unknown to Us" of John Ogilby, the seventeenth century traveller.

The book is fascinating because it brings the superstitions of remote antiquity into friendly communion with the latest word of the strenuous scientific commercialism which is to Europeans such an impressive feature of modern American life. Mr. Popenoe demonstrates that the hard-bitten man of affairs, bent on making the Date one of the chief fruit crops of the United States, may in proper time and place take a kindly cognisance of the curious legends and bizarre practices which have grown up in the countless centuries during which the Date Palm has been in cultivation. It is so easy to treat in diffuse, sentimental and patronising digressions of the historical aspect of such a subject as the "Dadel": it is extraordinarily difficult to write a clear, businesslike, practical and continuous narrative which contains, without detriment to its directness, as much of the past as of the present phase of Date cultivation. This difficulty Mr. Popenoe has overcome, and it is evident that he has overcome it because he is at once a practical man and an artist. Mr. Popenoe is a firm believer in the commercial promise of Date cultivation in the United States. He holds that in California and Arizona the cultivation of the Date has already proved a success, and is of opinion that the near future will see an extension of commercial Date-growing into California and Texas, as well as in Mexico.

With that American thoroughness which is the envy and admiration of the easier-going Englishman, Mr. Popenoe has pursued his investigations not only at home but in the chief Date-growing countries of the world. His journeys have extended from the North African littoral and deserts through Turkey and Persia into India. He observed in the last-named country that "there has been during the last half-century a small but continuous effort to establish the Date Palm on a large scale"; and he holds out some hope that in some localities these efforts may meet ultimately with success. Mr. Popenoe's enthusiasm for Phoenix dactylifera is almost equal to that of Mohammed, who proclaimed that "there is among the trees one tree which is blessed as is the Muslim among men; it is the Palm. Honour your uncle, the Palm: I call him your uncle because he was created from the earth left over after the

the Date Palm. Apart from this need for water the tree is not exacting. It grows and is fruitful in light and heavy soils, responds well to manuring with dung and humus, and in the adult stage withstands winter frosts; though it must be protected from wind. It is found advisable, however, to protect the ripening fruit (see Fig. 89).

Propagation may be effected by seed or by offsets (see Fig. 88); but, as the author insists, the latter mode of propagation is by far the better, and this for two reasons. First, the offset from a female Palm is of course female, whereas, of seedlings, about half are male and half are female, and hence large numbers of useless male plants must be grown until they declare their sex at flowering time, when those not required as pollen-bearers must be discarded. Second, as is the case with all long cultivated plants, Date Palms are extremely variable, and hence the offspring



FIG. 88.—CULTIVATION OF DATE PALMS: SETTING OUT OFFSHOOTS.

(Quarantine regulations in the United States require that they be planted in nursery rows, and kept there for one year.)

creation of Adam. . . . The Palm resembles man by its erect position and its height, by its separation into two sexes and by its necessity for the pollination of the female. If its head is cut off it dies. . . . Is it not the same with man! If its leaves are cut off it cannot grow others in the same place; no more can man if he lose his members. It is covered with a fibre analogous to the hair of man." To those only familiar with the Date Palm in pictures or pots the most striking point of Mr. Popenoe's account of its "cultural requirements" is the need of the Date Palm for large and continuous supplies of water. It grows and fruits best (see figs. 90 and 91) when well and even constantly irrigated. Thus in Persia the immense plantations around Busreh are irrigated naturally and copiously every twelve hours throughout the year. Indeed, the author maintains that irrigation is the principal item in the cultivation of

of a choice kind are anything but true to the characters of the parents. The work of breeding pedigree races, which has been undertaken in America, will without doubt meet ultimately with success; but in the meantime offsets from fine forms should be used, because, as is the case generally with asexually produced plants, they are true to character.

That the Date Palm fails to set seed unless the female is pollinated was known centuries before the present era, and bas-reliefs on Assyrian monuments illustrate the operation of pollination. Mohammed never showed his astute genius better than in retrieving the great error into which he fell when he forbade the artificial pollination of the Date Palm on the ground that it is an unnatural practice. The obedient followers of the prophet abstained and the harvest was barren. As Mr. Popenoe puts it, "an indignation meeting was held," and as a result the Prophet announced, "You

* *Date Growing in the Old World and the New.* By Paul P. Popenoe. Published by the West India Gardens, Altadena, California. 2 dollars 16 cents.

are weak in spiritual knowledge, but are worldly-wise; therefore in future I will confine myself to the government of your spiritual welfare, and let you manage the affairs of this world to suit yourselves"—a pronunciamento bound to be acceptable to a race of people with commercial instincts.

To secure crops, artificial pollination must be, and is, practised both in the Orient and in Occidental countries—wind pollination is too uncertain and insufficient. The male inflorescence with its spathe is detached as soon as it is mature, the spathe is slit open and the sprigs of male flowers are removed and placed in a basket for twenty-four hours. The cultivator climbs a tree on which the female flowers have burst their spathe and inserts several clusters of males among the females, and ties them in their place. If kept dry the pollen lasts a long time, and it is interesting to observe that it is cus-

into the methods devised for ripening the fruit artificially, although these are matters which to our readers in sub-tropical countries are of considerable interest; but we may conclude our review by recommending horticulturists generally to read this entertaining and beautifully illustrated work, for we are assured that whether they grow Dates or not it will bring them both pleasure and profit.

GARDENS FOR THE POOR IN FRANCE, GERMANY, ENGLAND AND AMERICA.

(Concluded from page 179.)

SMALL gardening for the poor is on a different basis in Germany. In consequence, doubtless, of the brilliant success attending the French private movement, it has come to pass in a number of German towns during the last three or

imitated in Königsberg, where the Poor Relief Board prepared an acre or so of municipal land for agriculture and kitchen-gardening, and in May, 1910, divided it into allotments, each of from 80 to 600 square yards. The first experiment was made with 25 married or unmarried recipients of poor relief, a preference being given to widows with children and those who though infirm were not incapable of garden work. The under-letting of allotments is prohibited. Larger tracts of land are to be prepared for the same purpose. Frankfort and Strassburg have also recently come to follow the good example of Posen. Not long ago the town council of Dresden decided to devote provisionally 4,800 square yards, together with the necessary seeds, to the same purpose. A rapid advance in this new small gardening movement will doubtless soon be made in consequence of the following decision of the Third International Congress for Workmen's Gardens (Brussels, autumn, 1910)*:—

"Taking into consideration the fact that the poor relief burdens weighing upon municipalities and charitable institutions are not infrequently to be traced to drink, consumption and the consequent corporeal and moral distress, and that family gardens form one of the most efficient weapons against this distress, the congress expresses the request that municipalities and poor relief boards shall promote such gardens and assign them to large families, instead of giving cash assistance. The State and municipalities should be bound to lease to garden societies at moderate rates a part of their land suitable for cultivation."

The same congress also requested the speedy enactment of laws that, like those in France, should render family gardens not subject to mortgage or distraint.

A novel kind of experiment in plot-gardening for unemployed workmen is being successfully carried on in a wretchedly poor part of the East End of London. In 1906 the West Ham Unemployed Aid Society obtained permission to use gratuitously three acres of the Gas Light and Coke Company's vacant land in Canning Town for the purpose of granting garden plots to temporarily unemployed workmen. In 1907 two acres were added. Two years later the Mansfield House Settlement took the concern over, and were given the free use of the whole of the Company's vacant land—30 acres. This area is at present divided into 340 plots. The holders have to buy their own seeds, or else they have to repay the price out of the sale of produce. Only vegetables are grown, the vicinity of the gasworks having proved detrimental to flowers. The average annual yield amounts to about £5 per plot. In 1912 the management of the Settlement asked for a voluntary yearly contribution of 2s., and most of the holders cheerfully responded. Up to then nothing had ever been paid in the way of rent. This kind of gardening gives some work to the unemployed, and enables them to earn at least part of their living.

* The first two were held in 1903 and 1906.



FIG. 89.—PROTECTING THE RIPENING DATES.

tomary in some districts to keep pollen from year to year. Trials made at the Mecca Experiment Station have shown that pollen may be kept for seven years and retain its power of fertilisation. Equally interesting is the statement that fertilisation may be effected by the pollen of other species of Phoenix, e.g., *P. canariensis*, and with other genera of Palms such as *Washingtonia filifera* and the Mediterranean dwarf Palm, *Chamerops humilis*. Growers are advised to establish three or four males for each hundred females. An old statement by Schweinfurth (in 1901) that the qualities of the fruit are influenced by the pollen used for fertilisation is said to be borne out by recent experiments made by Bruce Drummond in California. This statement is by no means in disaccord with modern views on fertilisation, and might well be tested in fruits other than the Date. We need not follow the author in his estimates of the profit of Date-growing, nor

four years that the municipal authorities themselves have assigned land for market gardening, instead of cash, to those entitled to relief. This was first done in April, 1909, at Posen. In the suburb Gurtsein there were first rented about 1,800 square yards, which were assigned to seven large families for cultivation. A few loads of manure were given them free, and the seeds they bought themselves. The crops not only supplied the said families with all their vegetables during the summer and autumn, but also yielded a small store for the winter. They drew much more money from the garden than would have been given them in cash, and the town fared equally well, for with a total expenditure of 17 marks (rent) from 70 to 100 marks had been saved in cash assistance. The new arrangement is of even greater value as regards health and education. Naturally in Posen there has been a considerable extension of the successful experiment. It was

This principle of putting waste land to philanthropic use might be called a "Columbus egg" in its simplicity, inexpensiveness and usefulness. No wonder it is beginning to be acted upon on a larger scale in England and America. Recently I received the fifteenth annual report of the Philadelphia Vacant Lots Association. From it I gather that "the land is prepared, and fertilisers with seeds are supplied annually, at a cost of \$5 to the Association for each plot." No rent is charged, but every holder is required to contribute, for what is supplied to him, \$1 the first season, \$2 the second, and so on, so that a family which

funds, it has to be content at present. It obtains the loan of this land from the owners, letting it in 500 plots to needy men or women of the working classes. It is noteworthy that every sovereign spent by the V.L.C.S. means five times this amount in vegetables for the plot holders. "Recognising the value of the aid they receive, and aware of the fact that the society is not adequately supported by the public," most of the holders lately volunteered to contribute to the management and seed fund. Some offered to pay as much as 15s. a year, stating that they "would much prefer doing so to receiving continuous gra-

THE BULB GARDEN.

JAPANESE LILIES.

THE rapid rise in popularity of Japanese bulbs of *Lilium longiflorum grandiflorum* is one of the most noteworthy features of present-day gardening. It is the more remarkable in that until about thirty years ago but little attention was paid in Japan itself to the cultivation of *L. longiflorum*. The flower was left to waste its sweetness on the desert air—or rather to grow wild among the bushes of Oshima, the island which lies about 200 miles south of the town of Kagoshima.

It was only about twenty-five years ago that bulbs of *Lilium longiflorum* were brought from Oshima to Yokohama, where they were grown,



FIG. 90.—DATE PALM IN FRUIT.
(A recent frost had destroyed some of the leaves.)



FIG. 91.—HARVESTING DATES :
Taking the crop of an unusually tall Palm at Elche, Spain.

continues to cultivate a garden pays in the fifth season the full five dollars.

Encouraged by the good results obtained in the States, the late Mr. Joseph Fels, the well-known land reformer, called into life a Vacant Land Cultivation Society for London, in 1908, which, according to its fourth annual report, is doing splendid work—materially as well as educationally. An official return of the L.C.C. puts the metropolitan acreage of unused vacant land at 14,000. Part of it would be too expensive to prepare for plot gardening, but there is ample that would need comparatively small outlay. The society could, if it had the money, very well manage ten times as much as the 60 acres with which, owing to lack of

tuitous aid." Recently a branch society was founded in Birmingham. The report rightly expresses a desire for "substantial recognition" of its work from public bodies to enable it to effect a large extension of its acreage. I hope that not only public bodies but some public-spirited persons of means among my readers will do something substantial for the meritorious work of the V.L.C.S., or for establishing similar agencies in other large towns. There are few ways in which money may be spent to better and more lasting good purpose; for to this discriminating form of help the Pauline aphorism certainly applies: "Faith, Hope and Charity, these three; but the greatest of these is Charity." *Leopold Katscher.*

and obtained high prices. In those early days the bulbs fetched about ten times their present price. The imported bulbs flourished in Japan and, after the manner of introduced plants generally, began to show a certain amount of variation. It was discovered, however, that the Lily is a capricious plant and soon tires of any one soil, and if not given the change for which it craves degenerates year by year. In spite of this discovery not a few growers in Japan continue to grow the bulbs in the same ground, and hence arise the complaints so often heard in England as to the quality of the bulbs imported into this country. In consequence of the deterioration of the bulbs the reduction of prices pressed heavily on the local growers and on the exporters. In these difficult times not a few Japanese growers endeavour to speed up or cheapen production of bulbs of *L. longiflorum* by planting in shallow soil, with the result that

though the size of the bulbs may have been increased the quality was undoubtedly reduced.

The custom of some dealers of collecting indiscriminately bulbs grown by large numbers of small men contributed also to a lowering of quality, especially in the winter-flowering variety of longiflorum. The form known as *L. l. formosanum* is held by some to be a separate variety obtained from Formosa; but, in point of fact, this form, put on the market about nine years ago, is obtained from Oshima, the home of *L. longiflorum*.

The reason for the greater vigour of the formosanums is that they are grown in their native habitat, and, when proper care is taken in selection, their growth and time of flowering are perfectly uniform.

The giganteum variety which is amenable to pot cultivation is distinct from that known as formosum giganteum. Now that I have grown the latter for many years in its native home thoroughly satisfactory bulbs are obtainable. It has the further great advantage that it can be shipped two months earlier than the ordinary giganteum, and so is ready earlier for winter forcing. *Sei Miyake*.

CYCLAMEN PSEUD-IBERICUM.

Cyclamen pseud-ibericum (see fig. 92) is the finest of all the hardy members of the genus. The species was described in 1901 by Hildebrand from plants growing in the nursery of Messrs. Van Tubergen, of Haarlem, but its origin was not given. The leaves, like those of *C. ibericum*, are marbled with a zone of white; but instead of being entire, the cartilaginous margin is crenulate, while the under sides are a ruddy-purple colour. The rich rose-coloured flowers with the faintest tinge of purple are borne well above the foliage on stems 4 inches to 5 inches long. The segments are 1 inch long and more than half-an-inch wide; each has a dark-purple blotch at the base, whilst the edge of the ring is white. The first flowers are produced early in February, and the plant continues in bloom through the month of March. *Cyclamen pseud-ibericum* is quite as hardy and as easy to grow as *C. coum* and *C. ibericum*, but is a great advance on either in the size of its flowers, which suggests that it is a hybrid rather than a true species. *W. I.*

THE ROSARY.

PLANTING, PRUNING AND MANURING.

PLANTING may still be carried on with every prospect of a successful display. It is well to plant some Roses rather late each spring, as they will thus provide blossom a little later than the general crop. Retarded plants should be procured if possible.

Upon heavy land it is best not to dig or trench too much in advance of planting. If, however, the land does not require trenching, it is a good plan to throw it up in ridges. In a very short time it will become level and be in good condition for planting. Very short manure mixed with the soil as it is levelled will assist in keeping it in condition, and will be beneficial to the plants. Roses should be pruned back hard immediately after planting. It is essential to water them at this time of year, not only as soon as they are planted, but once or twice afterwards at intervals of a few days.

Mulching in spring is a mistake, as it tends to keep the roots cold. Leave the surface soil rather rough, and see that it does not become too consolidated.

Old pot Roses which have been discarded from the forcing house, if healthy at the root, may be planted out early next month, and will then make useful plants for cut-flower purposes. Instead of pruning such plants bend them over, so as to induce basal growths. Such plants will develop well if carefully planted and given a little bone flour at the beginning.

Hedges of Rambler Roses should be planted

wherever opportunity offers, or in line down the kitchen garden. They furnish most useful sprays for table decoration, and the plants quickly establish themselves. The Multiflora tribe may be kept pruned quite low if necessary, and will blossom to the ground: the long growths should be tied out in a fan shape. The Wichuraianas not only provide handsome trails of blossom, but are worth growing for the decorative value of their foliage. It is becoming the fashion now to use Rose foliage only when decorating a table with Roses. This is right, and it is a good thing that the National Rose Society stipulates that only Rose foliage shall be used by competitors in their decorative classes.

The mildness of the winter has shown the wonderful beauty of the Wichuraiana foliage. Edmund Proust has been perfectly evergreen, and so also has American Pillar. We shall soon be using this latter Rose instead of Ivy for many of our outdoor effects.

As to pruning, much doubt still exists in the minds of amateurs as to methods.

Unquestionably the correct practice is to prune plants hard the first season, whether bush,

prune hard in the spring. If this cannot be done, then prune severely, and peg down the young growths when they are firm enough. Some of the more pliant shoots produced early last summer may be retained full length and tied over in April.

Wild Roses and all the briars are left practically unpruned; so are also the little Scotch Roses.

In all pruning one should endeavour to picture what the plant will be like in June and July. If growths are too numerous, reduce their number rather than their length, so that all foliage may have an opportunity to obtain air and sunshine.

If manure was dug in last autumn established Roses may be dressed with some bone flour now. Good, well-rotted manure may still be applied, but let it be lightly forked under the soil at once. If the beds or borders allow of it, first lightly fork up the surface, and then lay on the manure, covering this with some fibrous soil. Roses produce roots very near the surface, so that careless forking may do a great deal of harm. They are sometimes benefited by scooping away the soil around each plant and filling



FIG. 92.—CYCLAMEN PSEUD-IBERICUM.

[Photograph by W. Irving.]

standard, or climbing plants—i.e., within 4 or 5 inches of the base in the majority of cases. Vigorous growers, such as Juliet and Hugh Dickson, and also climbers, should be pruned to within about 12 inches of the ground. The Wichuraiana group forms an exception. These plants possess such a natural tendency to throw up basal growths that one may safely retain nearly the full length of two or three growths per plant. Weeping Roses of this group should not be pruned the first year until after the flowering time; then cut away some of the growths quite to their base.

Prune established Roses according to their vigour. Those making very strong shoots may be cut back less than the varieties of less vigour. Old wood should be freely discarded after the second year. This is best done in autumn in the case of the hybrid perpetuals. Free-growing Roses of the type of Margaret Dickson, Clio, Ulrich Brunner, and Hugh Dickson may have their ripened one-year-old wood retained for some 2 feet in length; they are thus more likely to blossom freely than if severely pruned. Frau Karl Druschki is sometimes a difficult Rose to manage. A good plan is to lift the plants in autumn and replant at once; then

up the cavity with cow manure, which may be covered with some of the soil.

If there are any old bush Roses which are not required, they may be cut down to the ground and the new growths that will spring from the base may be budded with good, popular kinds.

Several of our modern Roses make such strong, upright growths that they could be readily converted into standards by retaining one such growth some 5 or 6 feet long and cutting away all other shoots. Juliet is such an one. Coronation, the beautiful new H.P. of Messrs. Hugh Dickson, is another. In Belfast several standards of this Rose have been produced in the manner indicated. Some of the lovely Penzance briars treated like this would make interesting objects.

All exhibitors should plant out a few dwarf briar stocks annually, so as to be able to bud some of the varieties that yield their best upon "maiden" or yearling plants. Roses such as A. K. Williams, Alfred Colomb, Horace Vernet, and Marquise Litta, are never so good from a cut-back plant as from a maiden. Most of our eminent amateur exhibitors have several hundred stocks every year.

The present is a good time to plant out such stocks. Plant them upon good, rich, deeply-dug land, in rows 2½ to 3 feet apart, and the stocks about 8 inches apart in the rows. Many of the Teas and Hybrid Teas yield superior blooms from half-standard or standard briars the first year after budding, so that if any briars have been planted they should be reserved for such Roses. *Experience.*

appeared there had been described. There is certainly a rich reward in store in the shape of a harvest of bloom when flowers are scarce for those who follow in Mr. Bowles' footsteps and start a cold frame or two for the early-flowering Crocuses.

Early Irises, Daffodils, Primulas, Anemones and Tulips have each a chapter to themselves, but the subject is so broadly handled that frequent digressions occur. These deal with other flowers in bloom at the same time, with the structure of moraines, with collecting in the Alps, and even with the pigments that the artist must choose and combine if he is to depict the true colours of the flowers that are described.

The style in which the book is written is decidedly conversational; but if this occasionally has its drawbacks, it allows of a free introduction of amusing incidents and horticultural anecdotes. The tale of the wiles of the old man who for years provided a firm of druggists with an abnormally cheap supply of Hemlock is certainly worth recording, and it is interesting to find that there is no truth in the story of the theft of *Caltha polypetala* from the Vatican Gardens. It was always alleged that one member of a party engaged the attention of the gardener by inquiring as to the whereabouts of the stables in which the famous Papal bulls were kept, while another hooked fragments of the giant Kingcup out of the pond with the handle of an umbrella and secreted them in its folds.

Of misprints there appear to be very few, but the difficulty of the last sentence on page 119 is increased by the fact that "derivatives" occurs instead of "derivations."

The illustrations are numerous and of two kinds. There is a set of twenty-four excellent reproductions of photographs of views in Mr. Bowles' garden, and in addition there are sixteen coloured plates of various flowers, mostly reproduced from the volumes of the "Present Day Gardening Series." The latter seem to vary greatly in faithfulness to the originals. Some are successful, but *Iris susiana* has become

quite red, and *Iris longipetala* has taken on a shade of pink which it does not wear in nature. The plates of Tulips seem to show that it is still difficult by this mechanical photographic process to get both the reds and pinks of the flowers and the varying shades of green in the stems and leaves. It is a pity that the plates seem to have been scattered at random throughout the book instead of being inserted, as far as possible, where they would face the text that they illustrate.

In this description of his garden in spring Mr. Bowles has given us a book which is at once entertaining and instructive; and, if only our gardens contained half the treasures to which we are here introduced, they would gain greatly in interest and beauty. *W. R. D.*

NOTICES OF BOOKS.

MY GARDEN IN SPRING.*

ANYONE who knows Mr. Bowles and the catholicity of his taste in gardening will find that this account of his garden in spring is exactly the kind of book that he would have expected it to be, for it deals with nearly every class of spring-flowering plant that can be grown in English gardens.

The author is one of those lucky gardeners who are also men of leisure, and who are consequently able to rush off to Mr. Farrer's garden at Ingleborough when a *Galanthus Elwesii* has "poculiformed itself," and to Bitton when a note from Canon Ellacombe announces the arrival in his garden of a double-flowered form of *Anemone blanda*. Few gardeners, and least of all Canon Ellacombe, could refrain from being generous to a fellow enthusiast who had made a special journey to see his latest new treasure, and so it comes about that many interesting and rare plants find their way to Mr. Bowles' garden while they are yet unknown to the majority of gardeners.

Another result of Mr. Bowles' happy position is that he has the time to be his own gardener, and has thereby gained that first-hand knowledge of plants without which any writer on horticultural subjects is only too apt to be neither interesting nor informing.

The outstanding feature that will strike the reader is Mr. Bowles' passion for, and extraordinary knowledge of, the rare and freakish forms of well-known garden plants. He confesses that it gives him "more pleasure to have got together the three distinct forms—grey-leaved, golden and major—of *Sedum spathulatum*, and to make them share a flat-topped rock with at least six other species of *Sedum*, than to have the same space monopolised by *Sedum pilosum*, new, rare and lovely though it be." This pursuit of unusual forms has even led him to establish what he calls a lunatic asylum, to which he relegates the more eccentric. Here, for instance, we are introduced to a pigmy form of *Elder* which started life as a *Witch's Broom*, and to "the first crazy occupant," a *Hazel* so twisted that "it never produces a bit of straight wood."

Another instance of the results of the long-continued search for various forms is that, in spite of his complaint that his garden is not very well suited to *Snowdrops*, Mr. Bowles has got together so many different species and forms of this flower that the descriptions of them—with sundry excursions—occupy some twenty pages.

A whole chapter is devoted to a description of a separate garden of plants with silvery leaves or with the variegated foliage for which Mr. Bowles frankly confesses his admiration. A few purple-leaved trees and shrubs, such as the purple-leaved *Peach*, are introduced to heighten the effect of the pale foliage of the majority.

The chapter on spring-flowering *Crocuses* occupies some thirty pages, but the impression left by a recent visit to the frames and seedling beds makes it seem probable that several chapters of this length could easily have been written if all the beautiful seedlings that have

ORCHID NOTES AND CLEANINGS.

DISA SAGITTALIS.

A SMALL batch of this pretty little *Disa* is flowering with Messrs. Flory and Black, Orchid Nursery, Slough, where it proves to be very free-growing and produces its flowers in profusion, although the other small-flowered *Disas* have a reputation for being difficult to cultivate. It is hoped to obtain a new race by crossing it with some of the showier hybrids, which are also about to flower. The stems rise from a tuft of leaves, are clad with close-fitting whitish bracts, and bear on the upper part six or eight white flowers slightly marked with rose-purple, and of very singular structure. The plants, which bear five to eight spikes each, are grown in the *Odontoglossum* house with the other *Disas*, which seem to like the position, home-raised seedling *Disa grandiflora* having flowered there in fair quantity.

HYBRID ORCHIDS.

(Continued from page 87.)

The names and parentage are those given by the owners of the plants.

Hybrid.	Parentage.	Exhibitor.
Brasso-Cattleya Sylvia	B.-C. Digbyano-Trianae x C. Trianae	Sander and Sons.
Cattleya Cappel	Trianae x Schröderae	Armstrong and Brown.
Cattleya Domitian	Harrisoniana x Schröderae	Armstrong and Brown.
Cymbidium amabile	Lowio-Mastersii x insigne	Sander and Sons.
Cymbidium Cooperi	insigne x Schröderi	Sander and Sons.
Cymbidium Dryad	insigne x Parishii Sanderæ	Sir Geo. L. Holford.
Cymbidium Iona	insigne x giganteum	Armstrong and Brown.
Cypripedium Florida*	Fowlerianum x glaucophyllum	Armstrong and Brown.
Cypripedium Marcus	Dicksonianum x Leeaunum	Flory and Black.
Cypripedium Marina	areum x Lord Wolmer	Flory and Black.
Cypripedium Master Andrew	chrysoxum x insigne Harefield Hall	F. J. O. Montagu, Esq.
Cypripedium Mogul	Mrs. Wm. Mostyn x chrysoxum	Sir Geo. L. Holford.
Cypripedium Pyranus	Hera Euryades x Mrs. Wm. Mostyn	Baron Bruno Schröder.
Cypripedium Rosemary	Hera x aureum Oedippe	F. J. O. Montagu, Esq.
Cypripedium Trincolo	insigne Harefield Hall x Victor Hugo	Flory and Black.
Epi-Laelia Medusæ	E. ciliare x L. cinnabarina	Lord Rothschild.
Laelio-Cattleya Allumette	luminosa x La France	W. H. St. Quintin, Esq.
Laelio-Cattleya Amyas	L. Jongheana x L.-C. Warnhamensis	Flory and Black.
Laelio-Cattleya Ariel	C. Dowiana aurea x L. Cowanii	Sir Geo. L. Holford.
Laelio-Cattleya Anreule	L.-C. luminosa x C. Iris	Sir Geo. L. Holford.
Laelio-Cattleya Caligula	C. Percivaliana x L. anceps Schröderiana	Armstrong and Brown.
Laelio-Cattleya Corneliensis	L.-C. Haroldiana x C. Schröderæ	Earl Craven.
Laelio-Cattleya Dulce	C. Mendelii x L. anceps Sanderiana	Sander and Sons.
Laelio-Cattleya Enripides	Myra x Goldcrest	J. and A. McBean.
Laelio-Cattleya Julia	Aphrodite x Hippolyta Phoebe	Armstrong and Brown.
Laelio-Cattleya Marion	L.-C. Clive x L. tenebrosa	E. B. Ashton, Esq.
Laelio-Cattleya Myrosa	Myra x luminosa	Armstrong and Brown.
Laelio-Cattleya Verona	L. anceps x C. Hardyana	Flory and Black.
Odontioda Bella	C. Noezliana x O. bellatulum	De B. Crawshaw, Esq.
Odontioda Diana var. Gladys	C. Noezliana x O. amabile	J. and A. McBean.
Odontocidium Southgateense	Odm. Edwardii x Oneidium macranthum	Hassall and Co.
Odontonia Lucilla	Odm. cirrhosum x Miltonia spectabilis Moreliana	Charlesworth and Co.
Odontoglossum aurosum	cirrhosum x excellens	Mr. Harry Dixon.
Odontoglossum Boadicea	triumphans x ardentissimum	De B. Crawshaw, Esq.
Odontoglossum chryseum	Pescatorei x excellens	Sander and Sons.
Odontoglossum Cyrus	Rolfæe x eximium	Sander and Sons.
Odontoglossum Danarius	Rolfæe x Waltoniense	De B. Crawshaw, Esq.
Odontoglossum Desdemona	Hallii x gandavense	Sander and Sons.
Odontoglossum Heate	harvenctense x Crawshayanum	De B. Crawshaw, Esq.
Odontoglossum Laredo	Edwardii x Lawrenceanum	De B. Crawshaw, Esq.
Odontoglossum Nox	Edwardii x Waltoniense	De B. Crawshaw, Esq.
Odontoglossum Philomene	Rolfæe x pereultum	Sander and Sons.
Odontoglossum Rio Tinto	gandavense x Sceptum	Sander and Sons.
Odontoglossum St. Bavon	Lambeaunum x gandavense	Sander and Sons.
Odontoglossum Verulam	Rolfæe x Wilkeanum †	Sander and Sons.
Phalaenopsis Ariadne	Aphrodite x Stuartiana	Sander and Sons.
Sopbro-Cattleya Wellesleyæ Westonbirt var.	S. grandiflora x C. labiata	Lt.-Col. Sir Geo. Holford.
Sopbro-Laelio-Cattleya Herbertii	S.-L. heatonensis x C. F. W. Wigan	H. S. Goodson, Esq.
Sopbro-Laelio-Cattleya Lysia	S. grandiflora x L.-C. Cranstoniæ	Stuart Low and Co.

* *My Garden in Spring.* By E. A. Bowles, with preface by Reginald Farrer. Pp. 315 and 39 illustrations. (T. C. and E. C. Jack.) 5s. net.

* *Gard. Chron.*, Feb. 28, p. 154.

† *Gard. Chron.*, Feb. 14, p. 115.

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

SUMMER-FLOWERING ONCIDIUMS.—The warm-growing *Oncidium*s are producing their flower spikes, and need a liberal treatment to assist them to develop their flowers. One of the most serviceable species both for exhibition and decorative purposes is *O. Marshallianum*. This plant often produces several dozen large flowers which are coloured yellow and brown, and this free-flowering characteristic is probably the cause of the plants deteriorating early. After two or three years in cultivation the plants become weaker, and the pseudo-bulbs smaller year by year. I draw attention to this fact so that everything may be done that will contribute to the plants' well-being, such as removing the flower spikes within a reasonable time after the flowers have expanded. The production of these huge spikes of bloom entails a great drain on the plants' energies, and if they remain for long after the flowers are open the pseudo-bulbs will shrivel, and plants affected in this way rarely regain their former vigour. Large specimens of the tufted-growing species such as *O. obryzatum*, *O. haematochilum*, and *O. flexuosum*, are all useful when well flowered. The best time to undertake re-potting is immediately after the plants have finished flowering, for then the roots are in an active condition. I find that the plants derive considerable advantage from leaves mixed with the potting compost. Many *Oncidium*s that I found were difficult to cultivate grew satisfactorily when the compost contained at least one-third its bulk of broken Oak and Beech leaves. The other materials should be peat and moss, with plenty of sand and broken crocks added to render the compost porous. The greatest care is necessary at this season of the year to keep the growths and flower-scapes free from thrips, green fly, and other insect pests. It is a good plan to spray the plants in the different houses with an insecticide on frequent occasions, whether insects are observed or not, for then there will be little danger from this trouble during the spring, summer and autumn months. Vapourings are best in winter, for if spraying was resorted to then the foliage would remain wet for too long. Even at other times spray only when the weather is fine and dry. Where yellow thrips have infested such close-growing plants as *Miltonias* and *Cypripedium*s, it is a difficult matter to eradicate the pests. A red, rusty appearance of the leaves and on the inside at the base of a new growth is a sure indication of the presence of thrips. In cases of very bad infestations the plants should be dipped into the insecticide, but do not wet the potting compost. Let the plants afterwards be placed on their sides to drain. This treatment should be practised weekly for a time, and, when satisfied that the pests are destroyed, spray with the insecticide as recommended above. It is much better to use any specific at a slightly weaker strength than advised by the manufacturer, for an overdose may prove very harmful to the plants.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

PREPARATIONS FOR PLANTING ANNUALS.—All borders of beds which were manured and dug roughly in the autumn should be well dressed with soot in fine, dry weather, and the soil broken with a fork to prepare a fine tilth in readiness for planting. This early preparation of the soil will allow for the ground to become settled again before planting time arrives, and no amount of trouble taken in this matter can be considered too much. The soot will make the soil untenable by slugs and other insect pests: no small boon when the young, tender plants are put out. Meanwhile push

forward with the work of pricking out into boxes or cold frames a suitable number of each kind of plant for furnishing the beds. Use good friable soil and transplant the seedlings before they become crowded in the seed-bed. The importance of thin sowing, transplanting early and growing the plants stocky cannot be too strongly emphasised, as once seedling annuals become crowded and drawn they are practically useless, for they can never be restored to a good condition. It is far better to sow one variety thinly in two boxes than to crowd the same number of seeds in one box. Moreover, the young plants when well apart in the seed-bed do not require such early transplanting. A select list of the best half-hardy annuals was given in the issue for January 24, p. 54.

DAHLIAS.—Continue to insert strong, healthy cuttings, taking them, whenever possible, with a portion of the old tuber at the base, or strong roots may be cut into portions with one or more eyes like Potatoes. For the first time we intend to include some of the Paeony-flowered varieties, and they will be planted in bold groups in the wild garden. A few plants with their bright, showy flowers on long stalks, should, if the colours are well-chosen, make a fine effect in autumn amidst the greenery of grass and trees. In such parts of the pleasure-grounds with such surroundings there cannot be too many gay colours.

BORDER CARNATIONS.—Where wild rabbits can gain access to these plants in the beds, it is necessary to take up the rooted layers in the late autumn and winter them in pots in cold frames. In view of re-planting them the ground should be prepared in a similar manner as recommended for annuals. If planted out as soon as the ground is ready the plants will grow away at once and bloom satisfactorily.

TREE CARNATIONS.—Cuttings that were rooted last autumn, if treated in the same manner as the border varieties, may be relied upon to bloom freely all through the summer, and to continue in flower until frosts occur. Old plants left out all the winter have furnished a few good flowers as late as the time of writing, but this is unusual.

PINKS AND PICOTEES.—These flowers require much the same treatment as the Carnations. Pink Mrs. Sinkins makes a pretty edging to paths other than with grass verges, and the blooms are sweetly perfumed. Mule and other Pinks, such as Napoleon III., *Dianthus neglectus*, and many of the single varieties, should be planted amongst the stones in the paved garden, between stepping-stones, etc.

CALCEOLARIA AND MARGUERITE.—These plants should be removed from the frames in which they were rooted, and planted out in cold frames in friable soil, thence direct to their permanent quarters. It is a mistake to pot bedding *Calceolarias*.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE,
Eastwell Park, Kent.

THE LOGANBERRY.—This bramble is of very vigorous habit. Therefore, when planting allow plenty of room for the canes to develop without overcrowding. The plant is not very particular as to the kind of soil or the position in which it is planted, for it will succeed almost anywhere, but it thrives best in a good, strong loam that has been well enriched with manure. If only a few plants are grown the shoots may be trained on a fence or a wire-trellis in the kitchen-garden, where the plants will occupy but little room, succeed well, and be easy to get at. If trained on poles the canes should be retained their full lengths, for the Loganberry is a prolific cropper and well-ripened shoots fruit to their ends. The berries are a little later in ripening than the main crop of Raspberries, and provide a welcome addition to culinary fruits. They are also excellent for bottling if gathered before they are over-ripe. The plants should be afforded similar treatment to the Raspberry, that is, the old fruiting canes should be cut to the ground as soon as the crop is picked. Thin the young canes early, loop those

that are left out of harm's way in the early part of the season, and after the old wood is cut out train them in their permanent places. If this work has been overlooked it should be done now, and weak or immature shoots cut back to ripe wood. Established plantations should be afforded a heavy dressing of manure annually. Young canes may be planted now with every prospect of success, but a light mulch should be spread over the roots to protect them from drying winds.

BLACKBERRIES.—The common Blackberry, when well cultivated, has the best flavoured berries of these fruits, which are exceedingly prolific, and the berries are valuable for cooking and preserves. They succeed well when trained on a fence or trellis as a screen, for which purpose they are well adapted. A few bushes may be allowed to grow almost wild on the outskirts of orchards or in corners of the outside garden, and they will fruit freely if there is an old tree stump or heap of stones over which they can ramble. The Parsley-leaved variety, *laciniatus*, is a very ornamental plant as well as valuable for its fruit, and is suitable for planting in the wild or woodland garden.

THE LOWBERRY.—The Lowberry, raised from the Loganberry and Blackberry, succeeds under the same treatment as the common Blackberry. The fruits are long, jet black, and of Blackberry flavour.

FILBERTS AND COBNUITS.—The pruning of Nuts is usually left until fairly late in the season, but the work should be finished now. In market plantations the bushes are trained in the form of a cup or basin, the centre being entirely open. Grown in this manner the bush is restricted to a small size, making it an easy matter to prune the shoots and pick the crop. There is still time to plant young trees, but on no account select rich or recently-manured ground, or growth will be gross and unfruitful. All nuts grow well in poor, stony soils, and may be planted on sloping banks or boundaries which are not always suitable for other fruits. Being accommodating in the matter of soil Filberts and Cobnuts are often planted in out-of-the-way corners and allowed to suffer from neglect, but, like most crops, they repay for a reasonable amount of attention. After the work of pruning is completed fork the ground over, burying all annual weeds and leaves. Choose plants with clean stems, and rigorously keep down suckers. Good varieties to plant are Kentish Cob, Early Prolific Filbert, and Merveille de Bollwyller. The purple-leaved variety, apart from the value of its nuts, is well worth planting in the shrubbery or wild garden for its ornamental foliage.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

FIGS.—A temperature of 60° to 65° at night, and 75° to 80° in the daytime, will not be too high for the early house, with a rise of a few degrees by sun heat. The Fig delights in an abundance of heat and moisture, but plenty of light and fresh air are also essential, therefore admit air early in the day during warm, sunny weather. Continue to give the necessary attention to the work of thinning, pinching and tying the young growths where the trees are trained on wires or trellis-work, also thin the young fruits where they are growing too thickly. Follow the instructions already given on the management of pot-trees, by feeding and syringing the plants daily, or as required. The swelling of the young fruits may be hastened by affording top-dressings of rich soil and artificial manures, a little at one time, just sufficient to keep the trees in a healthy condition. Applying a little and often is far preferable to affording heavy dressings at long intervals.

VINES.—When the berries have passed the stoning stage the temperature may be 5° higher at night, always admitting a little air through the top ventilators. Close the house early in the afternoon when the atmospheric temperature is 85°. Whenever this temperature is maintained promote plenty of atmospheric moisture in the

vinery. The temperature for Muscats in bloom should be 5° higher than that recommended for Black Hamburg. If the temperature is 75° at night and 10° higher during the day, this will be suitable. To prevent sudden changes in the temperature admit air by degrees, as nothing is more liable to cause rust on the berries than draughts of cold air between the flowering and the stoning periods. Disbud, stop and tie the growths in later houses as required. If the shoots are stopped at three joints beyond the bunch it will be close enough to the main rod. Syringe successional vines several times daily, and start the other vineries to follow these. If the work has not been done already, top-dress borders showing signs of exhaustion with fresh fibry turf, mixed with a sprinkling of quarter-inch bones, or bone-meal. Prepare a similar compost for pot vines needing larger receptacles.

EARLY CHERRIES.—After the fruits have set they will grow rapidly, and syringing should be practised twice daily during bright weather, and but once only—early in the afternoon—on dull days. This will not only keep the foliage in a healthy condition, but assist in checking insect pests. Fire heat should be used only when there is a danger of the temperature falling below 45° at night. Admit air early in the morning, and thus prevent a stagnant atmosphere. Unless by sun heat, the day temperature should not exceed 65°. As the trees develop, the spur growths should be stopped when they are four or five inches long, but do not pinch growths required for extension. Remove entirely all growths that would cause overcrowding. Fumigate the house promptly for the destruction of green or black fly directly these pests are detected. It is better not to syringe the trees with insecticides after the fruit has formed—quassia would probably cause the fruit to have a bitter taste when ripe.

MELONS.—Fertilise the strongest flowers only, as the finest blossoms invariably produce the most perfect fruits. Superfluous male flowers should be removed, and laterals pinched at one joint beyond the fruit. When a sufficient number of blossoms is set, water the roots with weak liquid-manure, and use more moisture in damping the house. Syringe the trees freely on sunny days at the time of closing the house, as this will in large measure prevent attacks of red spider and thrip. Should green-fly appear on the terminal growths, dust with tobacco powder when the foliage is damp; do not fumigate if it can be avoided. Make another sowing to furnish successional plants.

CUCUMBERS.—If the plants are to be grown in a frame, prepare the materials for the hot-bed. Make the bed, say, about 3 feet 6 inches deep in front, and 4 feet 6 inches at the back, and place the frame and lights in position as soon as it is made up. Allow a few days for the bed to settle, then arrange the soil in ridges, or as mounds in the centre of each light. The compost should consist of loam, leaf-mould, and well-decayed manure, with the addition of a little charcoal or lime rubble. When the materials are warmed thoroughly set the plants in position. Take care that the heat of the bed is not sufficient to burn the roots—75° to 80° will be safe.

PLANTS UNDER GLASS

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

RICHARDIA ELLIOTTIANA.—The strongest of these plants are ready for transference to their flowering pots, and the more robust specimens may be grown in pots 8 inches in diameter. The compost should consist of two-thirds loam, one-third leaf-mould and manure from a spent Mushroom-bed, adding a good dash of coarse sand. Make the soil moderately firm, and afterwards grow the plants in a moist house where the temperature is 60° to 65°. Syringe the foliage daily and fumigate the house directly aphid is detected. When the pots become filled with roots, feed the latter with weak liquid manure and soot-water. Flower the plants in a greenhouse temperature; pot on successional batches as required.

ROSES IN POTS.—Plants that are coming into flower should be removed to a greenhouse or the cooler end of the conservatory. Take care to prevent cold draughts from reaching the plants and shade them from bright sunshine. Blooms intended for room decoration should be cut in the bud stage and placed in water in a cool place, where the wood and foliage will harden and the flowers last fresh much longer than otherwise. It is also advisable to cut Roses in the bud twelve hours before packing them in boxes for transit, treating them in the meantime as just advised. Climbing Roses, both pot plants and those in the borders, are on the point of blooming in the earliest house, and they also should be shaded during the warmest part of the day. Train in straggling shoots, and remove fading flowers. Feed the roots at this stage with liquid manure and soot-water diluted with clear water. If artificial manures are employed select one that does not give off an offensive odour. Keep the atmosphere fairly moist, and maintain a night temperature of 55°, the day temperature to be in accordance with the weather.

ANTHURIUM.—Turn the plants out of their pots and carefully remove as much as possible of the old compost. A suitable potting compost consists of two parts broken peat from which the dust has been removed by shaking, Sphagnum-moss, charcoal and fibrous loam one part each. Fill the receptacles half-full of crocks. Next lay on some of the coarse material and then work the compost carefully about the roots, keeping the stems of the plant well above the rim of the pot. Leggy specimens should have moss tied around the stem. Roots will develop in the moss, when the plants may be re-potted. Anthuriums should be grown in a brisk heat and moist atmosphere; the roots need copious supplies of water throughout the growing season.

THE KITCHEN GARDEN.

By R. P. BROTHERS-SON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

CELERY TRENCHES.—It is a great relief to get a big task like the making of Celery trenches out of hand and in readiness for the reception of the crop at the proper moment. I take every opportunity when other work is not very pressing to get it done—usually at this time. The large number of heads we require makes it imperative to have large trenches in which 200 to 250 plants may be set. These hold four rows at 1 foot apart, the outer rows 6 inches from either side of the trench, or a trench of 4 feet wide may be made with interspaces for the ridges of 4 feet 6 inches. The excavation need not be more than 6 inches in depth, for by going below the rooting level of the plants plenty of soil for earthing-up is secured, and at the same time a simple way provided for keeping the trenches drained during the winter months. Manure is incorporated with the soil, although I am aware that it is the usual practice to place it in a thick layer at the bottom with a covering of soil. The value of my practice is seen in dry seasons; during the drought last summer once the manure became dry it was a difficult task to moisten it again by watering. I could only partially water the crop twice, and though the plants drooped they grew splendidly on the break-up of the drought and less than a dozen holed. I have only once grown another crop in the Celery trenches before the plants were ready for planting, but the result was so unsatisfactory I have never practised it again. But the ridges between the trenches may be cropped immediately with a variety of suitable vegetables, which will do splendidly in the great depth of rich soil.

THE IMPORTANCE OF THIN SEEDING.—I do not recommend thin seeding so much from a pecuniary standpoint, because in garden management this is scarcely worth considering; but it effects a great saving in labour, and, most important of all, a plant with plenty of space underneath and above ground makes more progress than one that is crowded and thus more or less starved from the beginning. As a rule all seeds are sown too thickly, one of the never-ending instructions one has to give being

to sow the seeds well apart and then to thin the seedlings so that each has plenty of room to develop. The evil of using too much seed is evidenced most clearly in leguminous crops, and in Peas especially. In Mr. Darbishire's book on plant breeding, he remarks that Pea "plants grown 9 inches apart set a vastly greater quantity of seed than plants grown 3 inches apart," which is incontrovertible. The largest and longest-bearing crop of Peas I have grown was from seeds set at 3 feet apart, and if the manager of a small garden could bring himself to grow Peas thus it would enable him to let loose for other crops a portion of ground less usefully occupied by Peas struggling for existence. And so with French Beans. I never sow these closer than 6 to 9 inches, and the seedlings are afterwards thinned. Scarlet Runners are treated in a like manner.

THE APIARY.

By CHLORIS.

PURCHASING REQUISITES.—Too often the purchasing of bee material is put off until it is actually needed; in some cases it is done because the beginner does not know how to anticipate his wants. Some appliance makers give special terms to those who order early, because, when the honey flow has begun, the work is so heavy that they cannot despatch the orders to time. The following hints may be helpful:—Each year a fair proportion of the combs should be removed in the brood chambers, because the cells gradually decrease in diameter, consequently a smaller race of bees is raised. This is caused by each bee raised in the cell leaving behind the cocoon in which it was reared. Buy brood foundation eight sheets to the pound. To purchase thinner foundation is false economy, because it may break down from the top bar during hot weather. The price is generally about 2s. 3d. per lb. Those who are working for extracted or run honey, as it is often termed, should fit up the shallow frame with full sheets of thin foundation with a drone base, not forgetting to wire it in, because the force with which its honey is removed in the extractor will be almost certain to break the comb from the frame. This is usually 2s. 4d. per lb. For comb honey purchase two bee-way sections, with a split top, which are generally 1s. 6d. for 50, and 2s. 9d. per 100, and larger quantities correspondingly cheaper. The foundation for these should be the extra thin; costing about 3s. per lb., remembering to use full sheets that are the full width, and falling short of the length by $\frac{1}{4}$ to $\frac{1}{2}$ inch to allow for stretching and to prevent buckling. To separate the sections use dividers made of metal. Those of the wooden type are useless. For hiving swarms and driving bees it is an advantage to have a good straw skep of ample size costing about 2s.

OVERHAULING THE HIVES.—The impatient bee-keeper must restrain himself for a little longer, for, beside losing valuable heat by opening the hives so early during inclement weather, he will lose brood, and incur the danger of the bees balling the queens and killing them. If there is doubt about the larder, lift a corner of the quilt for a moment, and supply the deficiency by placing a cake of soft candy, and let it be a large one, so as to cause no more anxiety for at least a month. Should the district be lacking in pollen-bearing flowers, then supply pea flour among shavings in a sheltered, sunny nook. I fear clean water will not be lacking in most districts, but should this be so, then supply it, for the bees will go to a contaminated source to get the large amount necessary to rear brood. Until the weather be more favourable be content to rake out through the entrance all dead bees. If Isle of Wight disease has carried off any colony do not omit to use a copious quantity of quicklime over the ground where the hive stood, and burn the frames, quilts, etc., used in the interior, then thoroughly cleanse the interior by using a blow lamp, such as painters and plumbers use, and follow this up by washing the whole hive thoroughly with a solution of Calvert's carbolic, and afterward leave open in the sunshine for the disinfection to be completed before using the hive again.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MARCH 23—
Birmingham and Midland Union of Horticultural Societies' Annual Meet and Concert, White Horse Hotel.

TUESDAY, MARCH 24—
Royal Hort. Soc. Coms. meet. (Lecture at 3 p.m. on "Pruning Shrubs.")

THURSDAY, MARCH 26—
Manchester and N. of Eng. Orchid Soc. meet. Roy. Botanic Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 42.7°.

ACTUAL TEMPERATURES:—
LONDON, Wednesday, March 18 (6 p.m.); Max. 47°; Min. 40°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, March 19 (10 a.m.); Bar. 29.3°. Temp. 42°. Weather—Dull.

PROVINCES.—Wednesday, March 18. Max. 44°, Yorkmouth; Min. 38°, Spalding.

SALES FOR THE ENSUING WEEK.

MONDAY—
Hardy Bulbs and Perennials, Roses and Fruit Trees. At 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.

MONDAY AND WEDNESDAY—
Roses, Shrubs, Hardy Perennials and Lilies. At Stevens's Rooms, King Street, Covent Garden.

TUESDAY—
Sale of The Wray Park Nurseries, 60, Holmesdale Road, Reigate, by Messrs. Pent and Holdsworth, at the White Hart Hotel, Reigate, at 7 p.m.

WEDNESDAY—
Perennials and Herbaceous Plants, Hardy Bulbs and Lilies, at 12; Pains and Plants, at 5. At Protheroe and Morris's rooms.

THURSDAY—
Roses. At Protheroe and Morris's rooms, at 1.

FRIDAY—
400 Unflowered Seedling Orchids. At Protheroe and Morris's rooms, at 12.45.
Hardy Bulbs and Herbaceous Plants. At Protheroe and Morris's rooms, at 12.

The Properties of Bacterised Peat.

Recent investigations have shown that peat when subjected to the action of bacteria becomes transformed into a manure of considerable value. The treatment required to bring about this result was devised by Prof. Bottomley, and consists in three stages. In the first stage the crude peat is acted on by certain bacteria, and as a result of that action large quantities of "humates" are liberated. In the second stage the humated peat is sterilised by heat, and in the third stage it is treated with a mixed culture of nitrogen-fixing bacteria (*Azotobacter chroococcum* and *Bacillus radicicola*). It is claimed that the sterilised humated peat encourages in a marked manner the activities of the nitrogen-fixing organisms, and that as a result the amount of soluble nitrogen-compounds is increased during the third stage of the process.

The foregoing facts are recorded with some detail in the *Gardeners' Chronicle* (October 25, 1913, pp. 290 and 295); the new observations made more recently and described by Prof. Bottomley in a lecture before the Royal Society of Arts on Wed-

nesday, March 11, are destined, if they are established, to prove of considerable importance both to science and practice.

Briefly, these new facts are that extremely small quantities of a watery extract of bacterised peat are potent stimulators of plant-growth. For example, it is stated, on the authority of Dr. Rosenheim, who carried out the experiments, that plants treated twice with the water extract of 0.18 gram (= $\frac{1}{55}$ oz.) respond very readily to the treatment and grow away from untreated "control" plants.

If the result of other more extended and similar experiments is to confirm the correctness of this observation we shall be face to face with a discovery of prime importance: for it is well nigh certain that this growth-accelerating effect of the extract cannot be brought about by the nitrogenous or other ordinary substances contained in that extract. The actual amounts of nitrogen—and of phosphorus—contained in $\frac{1}{55}$ oz. of the bacterised peat must be extremely small; far too small, as it would seem, to produce a marked increase in the rate of growth of plants potted in ordinary garden soil. To account for the phenomenon Dr. Rosenheim has suggested—albeit but tentatively—that bacterised peat contains substances similar to those discovered by animal physiologists in various foodstuffs. These substances—known as vitamins or accessory food substances—are held by physiologists to play a fundamental part in animal nutrition. Without their presence foodstuffs, no matter how rich they may be in the ordinary food materials—proteins, fats and the like—fail to nourish, and the animal, deprived of accessory food substances, languishes and dies.

These accessory food substances are derived by animals directly or indirectly from plants, and the well-known incidence of scurvy among sailors and others deprived for a long time of fresh vegetable food may be attributed, in the light of recent research, to the absence from the diet of accessory food substances. A further illustration of the vital importance of these substances is supplied in the disease known as beri-beri. It has been shown that this disease, which is widespread and increasing among Eastern peoples who live on rice, is due to the fact that as the result of the introduction of the modern steel roller the husk is removed during the preparation of the rice grain. It is in the husk that the vitamins are contained, and it is the lack of these accessory food substances that accounts for the disease of beri-beri. By adding the husk to the polished rice or by the addition of vitamins from other sources, e.g., from *Phaseolus mungo* L., the disease is prevented. Rickets, another malady which has long been ascribed to a disordered and poor nutrition, is now attributed more precisely to the deficiency of vitamins in the restricted and monotonous diet of the poor.

The observation that a watery extract of bacterised peat containing so little solid matter as 30 milligrams acts as a stimulator of plant growth has led Dr. Rosenheim to make the suggestion that no less

than in animal nutrition, so in plant nutrition, obscure accessory substances may play a part. The suggestion is one of great interest, but it must be received as it is given, with proper caution.

Coloured Supplement.—The subject of the Coloured Plate to be published with the issue for next week is a view in the Royal International Horticultural Exhibition of 1912, and it will be accompanied with a review of the *Horticultural Record*, the volume prepared by Mr. REGINALD CORY to commemorate the Exhibition.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the committees will take place in the Vincent Square Hall, Westminster, on Tuesday, the 24th inst. At the 3 o'clock meeting of the Fellows a lecture on "The Pruning of Shrubs" will be delivered by Mr. E. BECKETT.

NATIONAL SWEET PEA SOCIETY.—A special general meeting of the members of the National Sweet Pea Society will be held at the Hotel Windsor, Victoria Street, Westminster, on April 20, at 2.30 p.m., for consideration of proposed alteration of rules. Notice of amendments, alterations, or additions must be sent to the secretary, Mr. HENRY D. TIGWELL, as per Rule 26, on or before March 30.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting of the Surveyors' Institution will be held at 8 o'clock in the Lecture Hall of the Institution on the 30th inst., when a paper will be read by Mr. W. W. JENKINSON, entitled "London Before the Fire: as Referred to in 16th and 17th Century Literature."

PRIMULA HYBRIDA LA LORRAINE.—A note and illustration in *Revue de l'Horticulture Belge et Etrangère* (No. 4, February 28, 1914) are devoted to the new hybrid Primulas raised by M. LEMOINE by crossing *Primula Veitchii* and *P. cortusoides*, the latter being used as the male parent. One of the hybrid *La Lorraine* is a vigorous and floriferous plant, and bears large rose-carmine flowers with a yellow eye. Another plant from the same cross (*Primula Ville de Nancy*) is characterised by lacinate, bright purple-carmine flowers.

A NEW PEACH.—According to a brief statement in *American Fruits* (March, 1914), Mr. E. H. WILSON, collecting for the Arnold Arboretum, has brought from his last expedition a Peach the fruits of which are as good as those now in general cultivation; but which have the merit of possessing a stone no larger than and as smooth and as easily detached as a Cherry stone. Truly, Nature, in her capacious heart, has a warm corner for gourmets.

TREES ON FARMS.—The movement among some English farmers to get rid of hedges and trees on their farms has called forth a weighty warning from a correspondent in the *Times*. This correspondent points out that the present hedges serve to isolate and hence to check the spread of contagious diseases among live stock. He also observes that if ditches are to go as well as hedges the drainage of the fields will suffer. It is interesting to observe in this connection that American farmers are beginning to appreciate the uses of trees. Thus, thanks to the missionary enterprise of the Forestry Extension Service of the Michigan Agricultural College, about a million young trees are to be planted this year in Michigan, and on one farm alone some 10,000 are to be put in. At the same time, the question of hedges requires attention, and there can be no doubt but that some hedges of the impenetrable thicket type should be grubbed up and replaced by others less massive, dirty and greedy.



[Photographs by H. N. King.]

BALLS PARK, HERTFORDSHIRE, THE RESIDENCE OF SIR G. FAUDEL-PHILLIPS, BART.

AMALGAMATION OF TWO HORTICULTURAL SOCIETIES.—The Walton Rose Society and the Weybridge Horticultural Society have amalgamated under the title Weybridge, Walton-on-Thames and District Rose and Horticultural Society. The new society will hold an exhibition in the Old Palace Gardens, Weybridge, on Wednesday, July 8. The secretary is Mr. C. ROWLAND, Weybridge Park Gardens.

NEW FLAGSTAFF FOR KEW.—In place of the flagstaff at the Royal Botanic Gardens, Kew, which was lowered recently owing to the decay at its base, the Government of British Columbia has offered to present a new pole, which measures 225 feet and has grown on Vancouver Island. Like the old example, this is a spar of the Douglas Fir, and when erected will be the tallest flagstaff in one piece in the world. The original pole was presented to Kew by Mr. EDWARD STAMP, of the firm of Messrs. ANDERSON, ANDERSON AND CO., timber merchants, dealing with the produce of British Columbia. This spar came from Vancouver Island, was 159 feet high and 20 inches in diameter at the base. The total height of the tree was 180 feet, and its age was estimated at 250 years.

A PARK FOR HUCKNALL.—To commemorate the coming of age of his son, Lord TRICHFIELD, the Duke of PORTLAND has given three recreation grounds and a park to Hucknall, near Nottingham. The park, known as the Waddow Park, has an area of about eleven acres, and the gifts are valued at about £20,000.

EXPERIMENTAL SHIPMENT OF AVOCADO PEARS.—The Director of Agriculture took home on his visit to England in November two cases of Avocado Pears which were carefully packed by Mr. ARNEAUD DE BOISSIERE. Through the courtesy of Mr. SKINNER they were stored in the vegetable chamber (the temperature of which is kept at 45° F.) during the voyage and they arrived in perfect condition. On examination during the voyage it was found that one was bruised but not ripe; this was removed. They were exposed for sale in a London fruit shop, and the prices realised for the shipper were 12s. per dozen for three dozen and 10s. per dozen for two dozen. The fruits presented a most attractive appearance, contrasting strongly with another consignment from the Canary Islands. The following report was received from the manager of the fruit department:—"The Pears were very good, and I would assure you that future consignments will receive our best attention." This experiment shows that Avocado Pears can be successfully shipped and sold at remunerative prices if stored at a temperature of 45° F. *Trinidad and Tobago Bulletin.*

A CENSUS OF THE GENUS ACACIA IN AUSTRALIA.—Mr. E. E. PRESCOTT, Principal of the School of Horticulture, Burnley, Victoria, has issued in pamphlet form a useful census of the genus *Acacia* in Australia. In his introductory remarks the author protests rightly against the custom of confusing *Acacia* with *Mimosa*, pointing out that the South of France is responsible originally for this error. The two genera may be distinguished by the facts that *Mimosa* has eight stamens and *Acacia* from four to many, and that the seed pod of *Mimosa* separates into one-seeded joints, whereas in *Acacia* the pod is two valved. The census shows that over 500 different forms of *Acacia* are indigenous to Australia, and of these forms over 400 are distinct species; thus *Acacia* is the most numerously represented of all Australian plants. To the Australian horticulturist they are invaluable, though paradoxically enough the chief difficulty of their cultivation arises from their love of neglect. Occurring naturally in poor soil, and accustomed to hardship in respect to water supply, many *Acacias* fail to take kindly to the more generous conditions of the garden. This, as Mr. PRESCOTT points out, is specially the case with the beautiful Golden Wattle, *Acacia pycnantha*, the natural

habitat of which is on the thin soils of silurian hillsides. Another rebel against soft conditions is *Acacia myrtifolia*, a dwarf species with cream-coloured and wonderfully fragrant flowers. *A. Baileyana* is one of the most beautiful and hardiest of all *Acacias*. This species, the Cootamundra Wattle, grows 24 feet high, with a spread of branches 38 feet in diameter, and a trunk of 2 feet in diameter. It lends itself kindly to cultivation, and does not resent pruning provided that the operation be carried out at or immediately after the flowering period. Other interesting species are *A. elata*, one of the real trees of the genus and *A. Saligma*, the weeping Wattle of Western Australia, a rapid grower with rich golden racemes. *A. decurrens* var. *normalis*, known commonly as the King or Sydney Green Wattle, is one of the noblest forms, but does not thrive near towns nor in a smoky atmosphere. In concluding his introductory remarks Mr. PRESCOTT expresses the hope that they may stimulate the planting of these beautiful Australian shrubs and trees, and for our part we feel sure that the wish will be fulfilled, for we have rarely read an introduction so concise and so interesting as that written by Mr. PRESCOTT. His love for the Australian Wattle is contagious, and cannot fail to infect others among the plant-loving members of the Commonwealth.

HORTICULTURAL EXHIBITION AT VERNET-LES-BAINS.—The Pyrénées-Orientales Horticultural Society, in conjunction with the Horticultural Syndicate, is arranging for March 28 and 29 a horticultural exhibition, to take place at Vernet-les-Bains. It is well known that many English people are to be found at Vernet-les-Bains at this time of year; the place and the time are thus well chosen for showing to visitors the value of the horticultural produce of the district. A detailed programme of the exhibition will be sent on application to the Commissaire Général de l'Exposition d'Horticulture, Vernet-les-Bains, Pyr.-Or., France.

SILENE SWERTIAEFOLIA.—A note in *Die Gartenwelt* (March 7, 1914) draws attention to the merits of this species, which, like *S. chlorifolia*, is a native of Asia Minor. *S. swertiaefolia* grows to a height of about 1-1½ feet, and bears the largest flowers of the genus. It requires a sunny aspect, a well-drained soil, and likes lime. The flowers, borne on stout branches in groups of three, are pure white on the upper side, brownish on the under side and on the calyx. The flowers are long lasting, and close at night and in cloudy weather.

U.S.A. PROHIBITION OF PLANTS BY POST.—The Board of Agriculture and Fisheries desires to bring to the notice of nurserymen and exporters of plants and bulbs that the importation by parcel post into the United States of all growing or living plants, seeds, and other plant products for propagation (except field, vegetable, and flower seeds), except in the case of parcels addressed to the Department of Agriculture, Washington, is now prohibited.

THE FUTURE OF COVENT GARDEN.—Mr. MALLABY DEELEY, M.P., who recently purchased the Covent Garden Estate, presided on Wednesday last at the Annual Dinner of the Wholesale Fruit and Potato Trades' Benevolent Society. Replying to the toast of his health, he expressed the opinion that the market would not be transferred to another site, but that it would be developed and improved. He promised the salesmen as much fixity of tenure as could be given under the Charter, and said that they would be able to pass the goodwill of their tenancies to their successors.

PUBLICATIONS RECEIVED.—*The Horticultural Record.* By Reginald Cory. (London: J. & A. Churchill.) Price, £2 2s. net. *Gardening for Amateurs.* Part I. Edited by H. H. Thomas. (London: Cassell and Co., Ltd.) Price 7d. net.

BALLS PARK: HERTFORDSHIRE.

(See Fig. 93 and Supplementary Illustration.)

LIKE so many estates in the Home Counties, Balls Park has had its due share of changes in ownership. The square, red-brick house was built some time about 1640, when the estate was acquired, through marriage, by Sir William Lytton, of Knebworth. It owes its name to an earlier owner, Simon de Ball, a Member of Parliament in King Edward's reign. Chauncy's *History of Hertfordshire* describes the house as "a fair, stately fabric of brick in the middle of a warren, consisting of a square pile with a court in the middle thereof, every side equally fronted and exactly uniform, the ceilings within the house wrought with several and distinct patterns of fretwork, the steps in the great staircase paved with black and white marble, the inward court with free stone." Judging from the delightfully weathered brick, the exterior has remained unchanged, and the ceilings are still famous. In the middle of the seventeenth century Sir Wm. Lytton was deprived of his estate, and it came into the possession of Sir John Harrison, whose dame lived at Balls Park until her death in 1705, when she was succeeded by her son Edward. Then his daughter, the famous Lady Townshend, who "lived to be eighty, and gave the world and Horace Walpole considerable entertainment," became the owner. Various members of the Townshend family held the estate until it was acquired by Sir George Faudel-Phillips, Bart., who has effected considerable improvements. Previously the gardens were unimportant, and during the past century had been neglected, but the present owner's eldest son, Mr. B. S. Faudel-Phillips, has so improved them, with the assistance of the gardener, Mr. F. Fitch, that they now rank amongst the finest in the county. The earliest work of any note was the transforming of an uninteresting kitchen garden into a series of charming hardy flower borders of the style shown in the supplementary illustration. The principal borders are a pair, each more than 120 yards long and fully 20 feet wide. In these borders the colour schemes are the chief feature. Commencing with white and grey, pink merges into yellow and orange, and the full reds occupy the centre. Along the back vigorous Roses, on poles and chains, of similar shades to the border plants, form a charming framing. The herbaceous plants, which are disposed in bold masses, are principally Delphiniums, Phloxes, Heucheras, Geums, Paeonies, Kniphofias, Eremurus, and Lilliums. There is no conventional rock garden, but several of the borders, edged with raised stone, provide admirable places for very many Alpines. Whilst Balls Park is primarily a summer and autumn garden—for at these seasons the magnificent borders are aglow with colour—it is also attractive in late spring, when Darwin Tulips, in 120 varieties, furnish a blaze of colour. As soon as the Tulips have finished flowering, their place is taken by annual Larkspurs, Heliotrope, and Ageratum. Throughout the summer and autumn all the borders are kept filled to their utmost capacity, and for this purpose Mr. Fitch grows large numbers of annuals for filling the blanks left by earlier-flowering perennials, whilst various Lilliums, planted amongst the border subjects, add further beauty. The original walled-in garden, which goes by the name of Nan's Garden, has been transformed into a delightful Rose garden, where large triangular beds, each filled with one variety of a pink or a red Rose and *Lilium candidum*, are edged with a broad band of *Saxifraga cordifolia*.

THE SUNKEN GARDEN.

Of Balls Park it may be said with truth that its gardens are in a wood. The flower garden,

part of which may be seen in Fig. 93, was made in a clearing of the tall, clean-boled Elms, Beeches, and Poplars, and on the other side of the lawn a dense Yew hedge forms a fitting boundary to the sunken garden shown in the lower half of the supplementary illustration, and which also possesses a rich, leafy framing. Such features of the garden are essentially for summer enjoyment, and during that season few more enticing places could be found. In the style and arrangement the influence of the Dutch Garden at Hampton Court can be plainly seen, but the pattern has been departed from sufficiently to stamp the Balls Park effort with an individuality of its own. It is deeper, more rectangular in shape, and in place of the moss-covered little central fountain is a leaden Cupid. Out from this delightful garden, where the surrounding trees cast patterned shades, and along a broad stretch of greensward, is the "Cottage Garden," with its terraces capped by Yew hedges and containing a formal Rose garden, where none but the yellow-flowered varieties are grown. From this point of vantage an easy and pleasant inspection of the long, broad shrub-

delightful sight; at the time of planting the large-flowered varieties were selected with a view to this spring effect. Carnations are grown in large numbers and with exceptional success, as witness the large, well-flowered "Malmaisons" exhibited at the R.H.S. spring shows by Mr. Fitch. More than 1,200 plants of Souvenir de la Malmaison varieties are grown, chiefly Princess of Wales, Lady Coventry, King Oscar, and Blush Malmaison. Several houses are devoted to Perpetual Flowering Carnations, which also evidence skillful culture, and of these the principal varieties are the Enchantress varieties, R. F. Felton, and Beacon. Other glasshouses contain a variety of such plants as Poinsettias, Plumbago rosea, and exceptionally large specimens of *Adiantum tenerum* Farleyense. A. C. B.

NOTES FROM WISLEY.

PLANTS IN BLOOM.

ON the rockery *Saxifraga apiculata*, *S. Boydii* alba, *S. Burseriana* and *S. Burseriana*



[Photograph by H. N. King.]

FIG. 93.—BALLS PARK : GARDEN FRONT, SHOWING PART OF ONE OF THE LARGE RAISED FLOWER BEDS.

bery border, which marks the boundary of the gardens, may be made.

The temptation to give this border a wavy outline has been resisted, and spacious dignity is derived from the straight boundary and ample greensward. Good taste and much skill are displayed in the arrangement of this noble border, which contains many uncommon shrubs. In addition to the splendid effect from the borders and flower-beds must be noted the large number of Hydrangeas, Palms, Heliotropes, Plumbago capensis, and kindred plants which are set out in tubs at points of vantage during the summer months.

THE GLASSHOUSES.

When the flower borders were formed on the site of the kitchen garden, eight acres of ground in another part of the estate were requisitioned for the growing of vegetables, and here the different crops all bear the stamp of good culture. The glasshouses were retained conveniently near to the house, and at the present season three Peach houses in full bloom are a

major are all flowering freely. A large patch of *Erica mediterranea hybrida* is in full beauty on the banks of the largest pool and the purplish colour makes a contrast with the greyish tint of *E. Veitchii*, which is flowering on the opposite bank. *Primula Winteri*, protected from excessive moisture by overhanging rocks, has been in bloom for several weeks. Crocuses, Polyanthus and Cyclamen coum are flowering abundantly, while a fine colony of *Narcissus cyclamineus* is blooming in the wood adjacent to the rock garden. The Alpine house contains a good selection of plants in pots and pans, including *Primula megaseaefolia*, *P. Winteri*, *Anemone blanda*, *Saxifraga Burseriana* and its varieties *crenata* and *Gloria*; *S. oppositifolia*, *S. Boydii* alba, *Soldanella alpina*, *S. montana*, and *Saxifraga Grisebachii*. The last, although not yet in flower, is very beautiful with its numerous crimson-coloured bracts. A pan of the annual *Ionopsisidm* aculea makes a charming feature, while *Daphne Blagayana*, *Saxifraga apiculata* and *S. Faldonside* are all very attractive. Shrubs in flower include *Pieris japonica*,

which is laden with trusses of its white flowers, *Hamamelis arborea* (Witch Hazel) and *H. Zucariniana* are just past their best, but *Daphne Mezereum* and *Erica lusitanica* are both flowering profusely. The last-named is afforded some protection by neighbouring Bamboos and Conifers. The buds of *Pieris floribunda* are well advanced, and many of the flowers are already open. One of the most charming trees in flower is *Prunus Pissardii*. Plants in bloom on the moraine are *Saxifraga apiculata* alba, *S. Boydii* alba, *S. Burseriana Gloria*, and the small yellow *S. Paulinae*. C.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

HENRY J. CLAYTON MEMORIAL.—A wish has been expressed by some of the many friends and admirers of the late Mr. Clayton that a man so widely respected, and who was in every sense such a credit to our profession, should have his memory perpetuated by a "Memorial" in connection with the Royal Gardeners' Orphan Fund. It will be remembered by many that the suggestion for establishing this Fund by the Gardeners of Great Britain and Ireland, in commemoration of the Jubilee of Her Majesty Queen Victoria, originated in part with, and was most strenuously advocated by, Mr. Clayton, and it is generally felt that no other form of memorial would more greatly commend itself to the wishes of our late friend or to his family. From the establishment of the Fund in 1887 Mr. Clayton never ceased to advocate its claim to the support of the fraternity, as well as of the garden-loving public; and we know how keenly he rejoiced in its growth and prosperity, and to see the sum annually expended in relieving the necessities of destitute orphan children of his less fortunate brother gardeners grow steadily from £139 15s. in 1888 to £1,868 12s. 6d. in 1913. I hope that gardeners will support this movement with small contributions, which I will gladly acknowledge. T. Turton, Hon. Sec. and Treasurer, The Castle Gardens, Sherborne, Dorset.

APPLE W. CRUMP.—At last I have found an apple which for late keeping and really good flavour is worthy of extended growth. I allude to W. Crump, which was raised by its namesake at Madresfield Court. It is the result of a cross between Cox's Orange Pippin and Worcester Pearmain. In shape, size, and colour it is identical with Worcester Pearmain, but it has much more yellow colour in the skin, and the rich yellow flesh of Cox's Orange Pippin. On March 7 last I tasted a firm, solid fruit; the flavour was distinctly good, reminding me of Cox's Orange Pippin. E. M.

TRICUSPIDARIA LANCEOLATA SYN. CRINO-DENDRON HOOKERIANUM.—On p. 60 Mr. Jenkins writes of the difficulty in getting seeds of this plant to germinate. I may state that seeds have germinated readily this year, and around the parent plant in my garden hundreds of seedlings are springing up. Frank R. Durham, Fairhaven, Salcombe, South Devon.

HIPPEASTRUMS FROM SEED (see p. 158).—In Mr. Hart's note on the raising of seedling Hippeastrums he states that they take about three years to reach a flowering size, or at least only a few of the stronger ones flower when two years old. By growing them entirely in pots from the seedling stage we have no difficulty in flowering 90 per cent. of the bulbs in two years. The seeds are sown in boxes at 1 inch apart, and so soon as the seedlings have developed two leaves they are transferred into small sixty-sized pots, placed on shelves, and grown in a temperature of 65 to 70°. By the end of August the seedlings are ready for transplantation to 4½-inch pots, and are kept steadily growing all through the winter. At the end of the first year they are shifted into 6½-inch pots, and kept growing until the winter. They are then partially rested, but not kept dry enough to cause the foliage to drop. By the end of

February the majority of the bulbs are pushing up their flower spikes, and can then be brought into flower in a few weeks. This method of growing them certainly entails three times potting to Mr. Hart's one potting and one boxing, but one season's watering and attention is saved. Also, where large batches of seedlings are raised annually the sooner they are flowered and the poor ones weeded out the better. *C. Garratt, Highbury Gardens, Birmingham.*

FAILURE WITH FORCED BULBS (see p. 175).—We have experienced the same failure as Mr. Wilson with forced bulbs. Some varieties, such as Golden Spur and *Poeticus ornatus*, were a complete failure, but others, grown in the same conditions, were successful. Yellow and Red Duc Van Thol Tulips were also failures. Golden Spur Narcissus was rather strong in growth, but only 25 per cent. of the plants flowered. *Poeticus ornatus* started into growth and then stopped, but the bulbs rooted freely. The Tulips mentioned made weak growth and scarcely any roots. The bulbs were supposed to be of first quality, and were in a good condition when potted. *W. H., Cobham, Kent.*

AQUILEGIAS AND THEIR HYBRIDS.—One of the most beautiful and effective of all the Aquilegias is *A. coerulea hybrida*, most graceful in aspect. The original colours of this charming Columbine were blue and white; but, crossed with chrysantha, it has acquired distinctive, luminous yellow hues. *Aquilegia californica hybrida* shows an impressive blending of brightest orange and deep scarlet, though by reason of a somewhat pendulous tendency its lustrous beauty is much concealed. *A. canadensis*, the colours of which to some extent resemble those of *californica* (though yellow supervenes, as if for the sake of floral individuality), is also a very effective variety, which succeeds here admirably in garden loam. One of the finest members of this richly ornamental family is the Siberian *A. glandulosa*, which ever since its introduction into this country from the Alpine regions, has been a supreme favourite with all earnest cultivators of these fascinating flowers, so popular at present in Scottish gardens. *Aquilegia Skinneri*, which has yellow petals, with sepals of delicate green, is a native of Guatemala, in South America. It is not arduous of culture when grown in fibrous soil, but in my own garden, where nearly every variety of any consequence has been cultivated assiduously, I have found it short-lived. It is quite possible that it was assigned too shady a situation. *Aquilegia glandulosa*, to which I have already incidentally referred, is easily increased, like many other forms, by careful division at the roots as soon as it has developed its resources and attained its utmost strength. A derivative from this highly artistic inhabitant of the remote Altai Mountains—namely, *A. Wittmanniana*, though possessing very considerable attractiveness, is not equal in beauty, or even in facility of culture, to the peerless parent flower. The late Dr. Stuart, of Chirside, in Berwickshire, once said to me, with reference to his large and lustrous *Aquilegia* namesake (*A. Stuartii*), that it was somewhat difficult to grow adequately, "requiring very careful attention in its earlier stages, and a deep, fertile soil." I have been informed by its first introducers, the Messrs. Cocker, of Aberdeen, that it was the result of a cross between *A. coerulea* and *A. glandulosa*. One of the finest and least culturally exacting of all the Aquilegias is the "Golden Columbine," *A. chrysantha*. It should be found in every herbaceous garden where those glorious flowers are grown. *David R. Williamson.*

THE N.E.H.S.—The above society has held its third annual meeting and at last, more or less, equalised income and expenditure, there being a loss on the current year's working of only £22. This is excellent work, but the heavy initial expenses still remain as a drag on any forward movement, although some £105 was raised in 1913 towards reducing the expenses incurred in establishing the society. The subscription list shows a great increase, being £348 as against £277 in 1912, and £257 in 1911. But the problem that confronts all well-wishers of this northern society is this—will the Fellows and Members remain loyal, and will the increase continue now

that only an honorary and part-time secretary has taken the place of a paid and full-time secretary? Is the society this year holding out to Fellows distant from Leeds any benefits consistent with a guinea subscription? This remains to be seen. According to the belated list of arrangements there is little to offer to members distant from Leeds. Having watched the working of the society since its inception, I consider there have been three great hindrances to that progress, continuity and stability which is so necessary to a young organisation. First, the monthly shows were given up too soon. They were in 1911 the feature of the society, they kept the Fellows interested and the enthusiastic committeemen busily occupied. Secondly, the society was badly financed at its start, for no guarantee fund was formed at the time when such might have been easily raised. And, thirdly, the N.E.H.S. has been under a great disadvantage in that it started on its career handicapped with rules and regulations copied wholesale from the R.H.S. Natural growth to a gardener should be of more importance than artificial imitation. These three great mistakes, lack of continuity, bad finance and ignorance of natural laws have been protested against without success. Another mistake is now being made—lack of tact and courtesy towards men who have borne the burden and heat of the initial fighting. A stupid policy of isolation is also being persisted in, which will make the society few friends and many enemies. In the North of England there are several old gardening societies whose goodwill might have been obtained and retained had a programme as broad and as long as the North of England been wholeheartedly outlined and adhered to. As it is, I prophesy that unless a change takes place we shall soon see the N.E.H.S. dead and buried, sharing the fate of other societies which have found the smoke and apathy of Leeds too much for them. It may survive for a few years, appealing to a few garden lovers in the Leeds district; but as for carrying out the work implied in its Articles, it is already lacking in loyalty to them, it is deficient in enterprise, and therefore cannot expect to win the horticulturists of the North of England over to its side, and lead them and guide them in their difficulties and aspirations. *J. Bernard Hall.*

MILDEW ON ROSES.—All lovers of Roses I think dread the attacks of this disease, to which some of our best Roses are subject. I was interested in last week's note by Mr. Beckett on the use of serum. The gardens here lie rather low, and I find it necessary to keep a sharp watch for any signs of mildew attacks, both inside and out. I have used grey flowers of sulphur with excellent results on vines and other plants indoors, but this is not so easily applied to Roses outside. Last year I used Gishurst Compound, an old remedy, which contains a large portion of sulphur, dissolving two ounces in a gallon of water by letting it stand four or five hours, adding two gallons of clear water and syringing once a week, starting early in the season, and not waiting until the plants were attacked. I was very pleased with the result, and I am using it every day this year on inside Roses, and so far with good effects. *A. J. H., Kent.*

ARBUTUS MENZIESII (see p. 182).—I was greatly interested in the description of the tree of *Arbutus Menziesii* at B yfordbury, especially to note that the tree fruits so freely. It would be very interesting to learn if the seeds are fertile. The tree here is still vigorous, and each year is covered with its beautiful white blossom, but it never fruits. The height of the tree is, as stated on p. 182, about 50 feet. The girth has increased since Mr. Elwes measured it in 1907, and is now 3 feet 10 inches at 3 feet from the ground. I believe the species is a rather difficult subject to increase. There are growing here several large specimens of *Arbutus Unedo*, the tallest specimen being about 30 feet high. The variety *canariense* is, to my mind, superior to the type. The blooms are tinted with rose, and the fruits are more abundant, but rather smaller. It is a great pity that birds are so fond of the berries, as a bush of *Arbutus Unedo*, or *canariense*, in full fruit is a beautiful object. *Herbert Silcock, Bassett Wood Gardens, Southampton.*

JOURNEYMAN GARDENERS' WAGES.—Correspondence on this question seems to be wanting in definiteness, and in assumption is not always correct. How devoid of foundation is the taunt thrown at the head gardener that the interests of his subordinates are nothing to him! In the abstract it is self-evident that the younger men are indebted solely to the head gardener for training—unrequited on their part—and for advancement to the position of heads themselves. In the concrete, I may be allowed to state in a few words what I have been fortunate in getting done for them collectively in one place. The foreman's wage has been increased by 65 per cent., the others not so much, but at present I am in consultation about a further increase for them. The bothy—though it is now a better house than my own, and "bothy" is quite an inapplicable term—has been made to twice the dimensions and refurbished, and instead of the woman devoting only a small part of her time to the men's wants, she has for years been engaged exclusively attending to their comforts. The half-holiday every Saturday is now an old institution. Every garden in the locality has not seen an equal progress, but many gardens have, and the same conditions are evident elsewhere. On the other hand, in only a few cases have the head gardener's emoluments been increased, some remain stationary, and others have actually decreased. This no doubt is due to the applicant asking a small wage at time of engagement. Where, in addition to the wage, milk, vegetables, and light is given, the estimate of a correspondent that 8s. can be saved out of 18s. is well within the mark. Young men have told me that their monthly bill for food rarely exceeded 20s.; but that was some years ago, and no doubt a considerable addition must be made to meet not only the inflation of prices, but the more expensive habits of young men. If a comparison is made with the artisan who has a bare wage with deductions for lost time, I think the condition of the gardener will be seen to be not so unenviable as some make out. There are other points I would like to note. Premiums for one. Did it ever strike the present-day youngster that there was a reason for premiums? Consider for a moment. There are a number of institutions run for the instruction of women in gardening, the fees charged for which would open the eyes of young men, and they give their labour gratis. For French gardening I have known a premium of £100 to be asked and given with a student. It is the same in other callings. Many a gardener could tell of members of his family who have worked for nothing for years, or for a remuneration that scarcely kept them in clothes, with, in some cases, pretty stiff fees in addition. Why, therefore, should a head gardener who instructs his subordinates, either directly or indirectly, be blamed for asking an equivalent? I have never asked a premium myself, but am quite convinced that there is nothing wrong in the principle, else it is also wrong in other cases. I think it is clear from the tone of the correspondence that the further self-evident fact that the privilege of being employed in gardens is worth something has been overlooked. And not only employed, but having the means provided of gaining a thorough knowledge of all the practical parts of horticulture and an intimate acquaintance with the plants of the garden, their culture and uses, whether vegetables, fruits, or flowers. A young man may be so devoid of a desire to obtain knowledge that he merely picks up the scraps that come in his way; but surely it is patent that there is nothing connected with horticulture, practical and scientific, useful and ornamental, that he may not appropriate. If such be the case, and it is the case, then the young gardener obtains for nothing his training, others being obliged to pay for theirs—either by premium and their labour included, or by a remuneration so low that their guardians have to practically keep them till trained. It is, then, after having obtained his training, and he assumes the supervision of a garden with its numerous ramifying annexes, that the hardship of the gardener's vocation appears. There are employers who, without a doubt, cannot afford to give a high wage. But no one can truly conceive of this being a general condition of the employing classes, and the difference of a pound a week more or less to the gardener's wage would never

be felt by the great majority, and to him, and his wife, it would not only be wealth, but, far better, a translation from a life of worry to a life of comfort and peace. Clearly, the solution is in the hands of the young men themselves. I have been astonished over and over again when informed of the sum the applicant for a gardener's situation has asked, when I knew that he might have had more for the asking. It is true that the outlays of many gardeners are diminished by, in addition to a free house, coals, light, and vegetables, but the tendency for some years has been in the direction of reducing perquisites. A cow, or its equivalent in money, seems to be a thing of other days, and there are other little things which kept down expenses or added to the comfort of his family, e.g., medical advice and medicines, which have gone the way of the cow. The acknowledgment from the seedsman, which not all of us depended on, must have been keenly missed by many a gardener. *An Old Hand.*

—I quite agree with *Salisbury's* remarks as regards stopping wages for time off; but I do not think that in most cases the head gardener is to blame. For instance, I myself (as head) took

mained twenty-two years. This afforded me an opportunity of forming an opinion of many young men and boys. I am pleased to say several of them proved excellent men, and are now holding permanent positions. I am convinced that if the young men of the present day would take more interest in their work, instead of grumbling and watching the clock, it would prove to their credit and advantage. *T. Lockie, Diddington Hall Gardens, Huntingdon.*

ALPINE GARDEN.

EUPHORBIA BIGLANDULOSA.

FOR the past two years throughout the winter months this fine Spurge has been the brightest plant on the Glasnevin rockery. The telling colour is particularly welcome at this time of the year, the long shoots hanging over a large rock giving a fine effect. In strong specimens numerous sturdy shoots arise from the root-stock, some nearly half an inch in diameter. These shoots are densely clothed with glaucous



FIG. 94.—EUPHORBIA BIGLANDULOSA FLOWERING ON THE ROCKERY AT GLASNEVIN BOTANIC GARDEN.

a week-end off to go and see my friends, and the Saturday following a day's pay was deducted. I could not help thinking this very mean, especially considering the extra time one puts in during the year—often on Sundays—without extra remuneration. *J. G. S., Surrey.*

—Having been much interested in the letters of your correspondents on the above subject, I beg you will grant me space to report my experience of fifty years ago. At the age of 19 I was sent as journeyman to a noted garden near Ascot; wages, 12s. per week including bothy. This included Sunday duty and attending fires of an evening. The bothy was simply a back shed on the north side of a range of glasshouses, without ceiling or plaster of any kind, and during windy weather we had a great difficulty in keeping the tallow candle burning; but the climax was reached in the month of November, when, owing to shorter daylight, our wage was reduced to ten shillings per week. Being interested in my work, I soon found employment elsewhere, and was much better treated. This encouraged me to persevere and gradually improve my position, and at the age of thirty I was appointed as head, with a staff of fifteen men and boys under my charge. Here I re-

leaves, which have a very distinct spiral arrangement. The stems grow upright for 18 inches to 2 feet, and then bear the bright yellow heads of flowers. As in other Euphorbias, it is the bracts which are the attractive part of the inflorescence. The flowers are small, and appear later on between two curious yellow glands. Some of the stems lengthen to 2 or 3 feet, lose their erect position, and hang downwards. The plant may be increased by cuttings or raised from seeds.

Euphorbia biglandulosa (see fig. 94) is a native of Greece and Asia Minor, and will make a plant from 3 to 5 feet across, according to the richness and depth of soil. *C. F. Ball, Glasnevin, Dublin.*

ADVISER IN FORESTRY.—It is announced that Dr. D. B. OSMASTON, of the School of Forestry, Oxford, has been appointed adviser in forestry to a group of counties, of which Kent is one. Landowners or others who desire advice on the management of woodlands can avail themselves of his services free of charge, but they will be asked to contribute towards the forest officer's travelling expenses.

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

MARCH 10.—*Present*: Mr. E. A. Bowles, M.A. (in the chair), Dr. A. B. Rendle, Sir J. T. D. Llewelyn, Canon Fowler, Messrs. Shea, Hales, Fraser, Gordon, Holmes, Worsdell, Worsley, and Chittenden (hon. sec.), with Mr. Goodwin, visitor.

Narcissus hybrids.—Mr. GOODWIN showed a hybrid between *Narcissus cyclamineus* and *N. Golden Spur* flowering now from seed sown four years ago. Like most of the cyclamineus hybrids it has poor weak foliage, but the concolorous flowers had the broad perianth pieces reflexed and a long corona somewhat frilled and expanded at the mouth.

He also showed *N. Leedsii Minnie Hume* × *N. Jonquilla*. This had rush-like foliage as tall as that of *Minnie Hume*, and the yellowish flowers retained the Jonquil scent, though rather toned down. The hybrid is called *Fragrance*, and was raised by Mr. Copeland.

Mr. GOODWIN referred to the prevalence of the fungus *Fusarium bulbigenum* this year, and thought the only effective method of dealing with it was to lift all plants showing yellowing of foliage and to remove the remains of bulbs where blanks occurred.

Zizania sp.—Sir JOHN LLEWELYN referred to the species of *Zizania* cultivated in England, and said that *Zizania aquatica* always proved an annual, but the plant grown under the name *Z. latifolia* was a perennial. It did not flower, and there had therefore been no opportunity of verifying the name. A plant under that name was mentioned in Gray's *Flora of North America*, and was thought to be the same as *Z. miliacea*.

Pelargonium hybrids.—Mr. FRASER continued his remarks upon the scented *Pelargonium*, dealing with the forms belonging to *Pelargonium capitatum* and its hybrids.

Intermittent variegation.—Mr. HALES referred to the matter of intermittent variegation which had been brought to the attention of the Committee some time ago, and said that a plant of *Sedum telephium*, at Chelsea, after showing no signs of variegation for three years, had this year become markedly variegated again.

Small narcissus fly.—Mr. SHEA showed numerous specimens of the larvae of the small *Narcissus fly* *Emerus lunulatus* (*E. strigatus*). He said they were proving particularly troublesome in his garden, and that he was lifting all bulbs which failed or showed signs of weakness. A large number of the larvae was often found in one bulb, up to 80 in one case, and 32 in another. Plants growing in the sun appeared to be more liable to attack than those in shade, as is usually the case with bulbs attacked by the large *Narcissus fly*. He thought it probable that the larvae travelled from bulb to bulb in the soil.

[An illustration of the *Merodon narcissi*, a related syrphid fly, was published in *Gard. Chron.*, October 12, 1912, fig. 124.]

"Reversion" in Odontioda.—Mr. R. A. ROLFE showed a flower of the cross *Odontioda Bradshawiae* Cookson's var. × *Odontoglossum spectabile*, from the collection of Clive Cookson, Esq., Wylam-on-Tyne. The flower closely resembled the *Odontioda* in shape, but the scarlet colour was entirely suppressed. The flower was white with a few light brown spots round the yellow crest of the lip, and a little brown spotting at the base of the lateral sepals.

Fasciation in Robinia Pseudacacia.—Mr. BOWLES showed a branch of *Robinia* from a garden at Enfield Lock exhibiting this phenomenon.

Axile proliferation in Quince.—Mr. J. CHEAL sent a branch bearing a fruit-like swelling from the apex of which a strong, woody shoot had grown, bearing foliage and buds. The succulent flesh of the fruit had shrunken to small proportions by this date, but in October had been of the usual bright colour and consistence.

HORTICULTURAL CLUB.

THE SPRING BULB SHOW OF 1914.

MARCH 10.—The monthly dinner of the Horticultural Club was held at the Hotel Windsor, on the above date.

Sir Harry Veitch presided over a company of seventy, which included the following guests from Holland:—Mr. E. H. Krelage, President of the Dutch Bulb Growers' Association, Mr. Wentholt, secretary; and Messrs. John Hoog, Jan de Graaff, A. Byvoet, G. H. van Waveren, A. Guldmond, J. M. V. van Zanten, and others.

After dinner the Rev. J. Jacob urged the need for early bulb shows in London and in other large towns. His special hobby at the present was the miniature Hyacinth. There were few exhibited that day, and he could not help thinking that the miniature Hyacinths supplied by their Dutch friends were not very good for the purpose. The typical miniature Hyacinths with a spike like the Roman Hyacinth were Orange Boven, Fleur d'Or, Grand Maître, Gen. de Wet, William III. and Queen Wilhelmina. Three or four of these bulbs would make a nice little display, and if their Dutch friends feared their trade was leaving them, they had many varieties, and a little searching might bring to light just what was wanted. The William III. was a very dark blue and made a beautiful show. The same could be said of the Orange Boven. The Grand Maître had a middling shade of blue—a shade he was very fond of himself and one that had many admirers, although he was quite ready to admit that plenty of people preferred a paler form, while others would like a darker one, such as King of the Blues or King Alfred or Prince of Wales. Two varieties which rather pleased him were Koh-i-noor, a rich pink, and a white variety, which was extremely beautiful. He could not understand why the red Hyacinths were not so high in quality as the pinks and the blues. There was something washy about the red. It did not look quite happy and seemed to need a fillip of some sort. King of the Scarlets was a pretty one. As to the Tulips, he could only touch on one or two points. He was very glad to see Mr. Dawkins' exhibit of Darwin Tulips, and to think that he would in the future be one of the supporters of the Spring Bulb Show. The sensation of the year, so far as it had gone, in the Tulip world, did not seem to have been present that day. He referred to Sweet Lavender, which was their old friend William Copeland. Other beautiful varieties were Prince of Austria, Cherry Ripe and Brunehilde. He could not help feeling that there were still a great many early varieties of Darwin Tulips to come from Holland. Some varieties when in Holland two or three years ago were of a miserably dingy colour, yet Messrs. Carter and Messrs. Barr had done much to show them in better colour, and there might be other varieties that would respond with equal readiness. A great deal was to be done by forcing—some considered there was loss of character—but he understood that Sweet Lavender responded to a fairly moderate heat—somewhere about 70°.

As to Daffodils, he was especially pleased to see the exhibit of Messrs. Carters. He did not think they wanted only cut flowers. They were very beautiful; but they wanted to see bulbs growing in the actual soil. Nothing could give so good an impression as the bulb itself growing before their eyes. Another type of Daffodil was what he had called the New Poetaz. The old Poetaz kinds were put into commerce a good many years ago by Messrs. Van der Schoot. They were told by the Narcissus Committee that morning that these Poetaz were raised by Messrs. Van der Schoot somewhere in France. ("No.") He did not believe that was true. The tale must have gained credence because undoubtedly in the early stages when Poetaz were put into commerce the English people did not take to them at all, and the French did. Long before he saw Poetaz in an English catalogue he was able to buy them from Messrs. Vilmorin, in Paris. That was perhaps how the myth had arisen. Now they had another series with rather thicker stems and broader leaves, and probably more flowers. He was glad to see on Messrs. Barr's stand some very nice specimens. One of these was called Admiration, a charming specimen, which he could strongly recommend.

He had grown a certain number of this type himself, and he believed that in one he had called Orange Blossom they had a most excellent variety. Here he would suggest that for pot plants there should be a price limit, as it was absurd to expect people to give 10s. a bulb or more to grow in pots. He thought 10s. a dozen would be nearer the mark, and there were not many people who would pay 10s. a dozen to grow Daffodils in pots. They should be grown under glass, and shown on the ground. If they had good prizes for such a class it would be very instructive, and give them many wrinkles. He next suggested some good Daffodils for pots. What was wanted was early Daffodils with red eyes. They already had some very beautiful yellows in Golden Spur, Henry Irving, and others. Then there were Firebrand, Blackwell (one of the very best, so excellently shown by Messrs. Barr), Lucifer, an extraordinary flower, which would stage well, Robert Browning, Fairy Queen, Torch, Beethoven, and Queen of Spain. Speaking of Freesias, he said that when they had another bulb show some of these beautiful flowers would be seen there. As to Lachenalias, there were several beautiful varieties, and grown in 3½ in. pots, three good fat bulbs in a pot, they made most excellent little plants for putting on a small table.

Coming to Hyacinths there were Dorothea, May, Charles Dickens (double blue centre), Prince Bismarck (Christmas flowering), La Victoire, Queen of the Pinks (sport from King of Blues), Ivanhoe (dark sport from King of the Blues), Lord Balfour (bright and clear, and early), Cardinal Manning (earlier than La Victoire), Louis Pasteur, Prince Henry, Princess Juliana, Queen of the Netherlands, Purity, Parsifal, and Count Zeppelin. He wished to congratulate Messrs. Dobbie on their display of Circuses.

THE DUTCH POINT OF VIEW.

Mr. E. H. Krelage (President of the Dutch Bulb Growers' Association) thanked the company for the reception accorded to himself and his colleagues. The Bulb Show was the reason for their presence that night. It was an outcome of co-operation, and another outcome of it would be the Tulip trials to be held at Wisley this spring. The R.H.S. and the Council of the Dutch Bulb Growers' Society were trying to give that co-operation a permanent character, and on the proposal of the Dutch Society the Council of the R.H.S. had decided to enlarge the existing Daffodil and Tulip Committee, thus leading to the possibility of the addition of a number of Dutch specialists to the Committee. This would be another example of international judging of new garden plants. It was not the first time that it had been done, for new Roses had been judged by an International Committee in Paris for several years. This would now be done in London in the case of Tulips; and it was a matter of the greatest importance that similar arrangements should be made for all garden flowers. A certificate or award given by an International Committee would be of far greater value than any certificate from a National or Royal Society. For eight years in succession the Dutch Bulb Growers' Society had been allowed by the R.H.S. to offer prizes for forced Hyacinths at one of the March meetings in the Horticultural Hall. This competition had resulted in the important two-days' R.H.S. Bulb Shows, which had become one of the features of the horticultural year. His Society was very grateful to the R.H.S. for the opportunity thus opened up to awaken the interest of the amateur and the professional gardener in the Hyacinth. It would perhaps never completely regain the immense popularity it enjoyed in the 'sixties and 'seventies of last century, but, nevertheless, the times when Hyacinths were never to be seen in the Horticultural Hall were past, and year by year new names were among the prize-winners in the competitions, while the exhibitors had attained a remarkable standard of efficiency. The flowers shown by the Duke of Portland and the Marquis of Salisbury were as perfect as they possibly could be, and this was the more remarkable because Hyacinths did not force well this season. He thought, however, that the method of showing Hyacinths could still be improved. Messrs. Cuthbert's exhibit was a decorative display of the best kind, but the Hyacinths as a whole did not make such a charming

picture as did the Daffodils. The Daffodil might be a more graceful flower than the Hyacinth, and this gave it a better chance of artistic arrangement; but the Hyacinths would make a better impression if the flowers could be shown in a more convenient way, such as grouping them together, and not mixing them up with other exhibits. The colours of the Hyacinth were so distinct from those of any other flower that a combination was always a great risk, and as a rule did not give satisfaction. Hyacinths should be shown on the ground in groups of one variety, just as they might be used in the garden. They then made a far better impression than on tables, or even against the wall or roof of a building.

RAISING NEW HYACINTHS.

Mr. Krelage next gave a review of such new Hyacinths as were likely to become leading trade sorts in the near future. New Hyacinths were the results either of crossing or of sporting. Sports in Hyacinths were numerous, and some varieties had a remarkable tendency that way. The well-known single blue Charles Dickens had sported to the double blue, and the single red, form of the same name; while the double blue had again produced a double rosy sport which was known under the name of Lohengrin. The single white La Grandesse had produced a sport with double flowers. From the double blue Van Speyk a double pink originated, which was named Leo XIII. Raising seedling Hyacinths took a man's lifetime. The results of what he sowed in his youth he could only appreciate when his hair had become grey, and if he started at a more mature age it was often doubtful whether he would personally gain any financial profit. The Hyacinths which were now making their first appearance on the market must have been raised many years ago, and that they were satisfying the demand of the present day was a proof of the growers' perspicacity. This did not mean that Hyacinths as a rule had been raised by crossing special varieties. This may have been done occasionally; but as a rule the new Hyacinths had originated from varieties selected for seed bearing, which were expected to be fertilised by the wind or by insects with pollen from other choice varieties growing close by. The qualities of the existing trade varieties of the Hyacinth were so excellent in many respects that it was not easy to beat the older sorts. From time to time the older sorts, however, were disappearing from the market, because of disease or degeneration, and they must be replaced by new forms which possessed full vitality and could stand the modern methods of rapid propagation. One of the chief points in judging the merits of the Hyacinth in our days was the spike. If it was so strong that it did not want any tying the flower would have a better sale than when the stalk was weak. This explained why Gertrude was preferred to Moreno. Early forcing quality was another desideratum, and if a Hyacinth proved to be an easy Christmas bloomer it would everywhere have a splendid sale. In this connection he mentioned the first novelty he wished to refer to. Prince Bismarck was doubtless the best blue Hyacinth for Christmas forcing. The name indicated that it was not absolutely new; indeed, it was known for many years, and it was generally considered a rather poor thing, only good enough for the mixture. Only quite recently the remarkable early forcing qualities had been discovered. It had broad, large flower heads and large bells of a clear blue colour; the spike was rather short.

La Victoire, which was represented in several collections in the Hall, was not fit for so early forcing, but forced very easily in the middle of January. Brilliant had long, red flower heads, large elegant bells and strong spike. Queen of the Pinks was a sport from King of the Blues, and had exactly the same character and properties, except for the colour, which was a bright rosy pink. King of Violets, with lilac-violet bells, and Ivanhoe, black-blue, very much admired in the Hall, were two other sports from King of the Blues. King of the Blues being a rather late flowering variety, the new forms could not be expected to be fit for earliest forcing. Nevertheless, they were most promising acquisitions. Rose Lord Balfour was a sport which had not yet received an appropriate name. Lord Balfour was

well known by its fleshy, large bells and its particular colour. The rose-coloured sport might be compared with a very bright and clear Moreno as far as colour was concerned. It was an excellent early-forcing variety.

White Lady was the pure white form of the blue Lord Derby, a well-known large flowering variety with a strong spike. The sport was of a satiny white. It had been known for several years, and was now becoming very popular. Lady Borell was a sport from Lady Derby, and had a deeper and more vivid colour. Dr. Lieber was an improved Charles Dickens, which it resembled in many respects. It was an excellent, early-forcing variety. Cardinal Manning was bright scarlet, and a worthy companion to La Victoire, but was better suited for early forcing. A fine flower head on a spike of medium length. Marconi might be called Cardinal Wiseman Improved. It had the same character, but in larger dimensions. The flower head was immense, broad and bold, with bells of medium size. There were some fine specimens in the Bulb Show. Louis Pasteur, which was also in the Hall, suggested more or less the colour of a Lilac. It had a long, dense flower head, and a very fine spike. It was pretty early, and a good forcing variety. Prince Henry, rosy-white, large flower head, with fine bells, had a very good spike. Princess Juliana was waxy-white, with a broad, well-formed flower head. Queen of the Netherlands was an excellent pink in the same style as Prince Henry. The three latter varieties were very little known, but they were all highly promising. The newest additions to the list were Purity, with large flowers and fleshy bells of a creamy-white colour, Parsifal, with large lilac-blue flowers, and Count Zeppelin, a soft lilac sport from Grand Maître. Purity, Parsifal, and Count Zeppelin recently obtained the First-class Certificate of the Dutch Bulb Growers' Society.

Mr. Guldemond followed with a speech in which he said that thirty years ago Hyacinths were harvested—or, as it was termed in his country, lifted—between June 15 and June 28. They were then laid in rows on the ground and slightly covered with sand. After six or seven days they were brought into the warehouses, the work being usually finished about July 5. After being properly dried, the bulbs were cleaned, sorted, and made ready for export. It would be noticed that by this treatment the Hyacinth had a considerable rest between lifting and shipping. That rest was very necessary, as during that time the bud of the new flower matured. It had been known for many years that if the weather was warm and dry directly after lifting, the Hyacinth came into bloom earlier than in those years when the temperature was cooler, which showed that the flower inside the bulb matured quicker in the higher temperature. Until a few years ago they were absolutely dependent upon weather conditions. In very wet seasons some growers, in order to dry their bulbs, found it necessary to raise the temperature in their warehouses. That was done by means of big stoves. It was noticed that the bulbs stored nearest to the fire gave the best blooms and flowered earlier than those in a cooler place. That was a point of great importance to understand, for it had enabled them to meet the ever-increasing demand for early bulbs. Stoves were soon discarded in favour of the hot-water heating system, which gave a more even temperature and could be better controlled. Nearly all the leading firms and growers were working in this direction, and had obtained results never before thought of. As an example, one grower was able on December 23, 1910, to have about 2,000 Hyacinths in flower, nearly all of which were very good. Since 1911 the General Association of Dutch Bulb Growers had held their annual show of early-flowering bulbs, and the improved results from year to year were most interesting. Up to now it had been necessary to send these Hyacinths, which were required to be in bloom at or before Christmas, to France for one year's cultivation; but the time was not far distant when Dutch growers would be able to sell and guarantee Dutch prepared Hyacinths to flower at Christmas. Dutch growers, on the whole, were very modest people, and were content with a few pence profit; but although they wished their friends in France every prosperity, they

thought they should like the whole shilling! The Dutch Government, knowing the national importance of the bulb-growing industry, had founded a special school, where young men could be trained in the business.

The Rev. G. H. Engleheart said he was once much engaged in raising the Daffodil, and it gave him great pleasure to see so many of his children represented at the show.

Mr. Wentholt said the relationship between Englishmen and Dutchmen and bulbs was not a relationship of mere money, but of common love for the flowers.

Mr. A. Worsley said if they looked back thirty years they would see a tendency to cultivate a few sections of bulbs at the expense of all the others. They had to study the desire of amateurs for new things and for greater variety.

Mr. Jan de Graaff suggested that the R.H.S. should reserve the middle of the hall for the bulbs in order that they could be shown on the ground.

Among the other speakers were Messrs. Walter T. Ware, Van de Meer, John Hoog and A. Byvoet.

ROYAL DUBLIN.

TREES AND THEIR VARIETIES.

MARCH 6.—Professor A. HENRY, in a lecture entitled "Trees and their Varieties," at the Royal Dublin Society on the above date, began by referring to the difficulty of defining the word species, a task which Darwin had apparently not attempted. Nevertheless, species do occur, most of which in Nature are well defined, at any rate as regards their habitat. Of common trees, pairs of species in the same country can often be readily recognised, one adapted to a dry, the other to a moist situation. Examples of this occur in the two species of Elm, of Oak, and of Birch. The Austrian Pine differs mainly from the Corsican Pine in retaining its leaves a year longer, and is thus enabled by its dense and copious foliage to keep some moisture in the dry limestone rock on which it grows naturally in Servia. The lecturer described the nature of sports, each of which arises as a solitary and often inexplicable phenomenon, either as a rare seedling or as a single branch with some strange peculiarity on an otherwise normal individual. Numerous slides showed different kinds of sports in trees, weeping and erect forms, varieties with bizarre foliage (coloured, puckered, deeply-cut leaves), dwarfs, and trees with all the branches curved and twisted. Some of these varieties, as the simple-leaf Ash and the Irish Yew, can be explained as individuals that have retained the features of the young seedling, and have never taken on the adult form, which, as a rule, differs materially from that of early youth. A good specimen of the fine Irish Yew at Seaford, Co. Down, was contrasted with the wide-spreading common Yew at Crom Castle, Fermanagh, under whose shade two hundred people had sat together at dinner.

Professor HENRY next dealt with another class of trees, those which originated by hybridisation, and he showed how, amidst innumerable varieties of Hollies, the two classes of sports and hybrids can be clearly distinguished. Hybrids, especially those of the first generation, usually show exceptional vigour. In the United States, when two kinds of Maize, one producing 42 bushels and the other 17 bushels per acre, had been crossed, their progeny gave no less than 127 bushels. First-cross trees had hitherto only been obtained by accident, as when two allied species stood together in the forest or in the nursery, and had given risen to a chance hybrid seedling. To such haphazard seedlings, picked up by observant nurserymen, we owe many valuable trees, such as the Huntingdon Elm, the black Italian Poplar, the cricket bat Willow, and the common Lime. One of them, Populus robusta, found in a nursery at Metz, has actually attained in fourteen years on the poor soil at Glasnevin a height of 45 feet. Professor HENRY has during the last three years been making crosses of Ash, Alder, and Poplar, some of which are of remarkable vigour and beauty. The manner in which the different characters of each parent combined in the offspring was well exemplified in the case of the seedlings of the Huntingdon Elm, raised by Professor HENRY, which followed Mendelian laws.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending March 14, is furnished from the Meteorological Office:—

WEEKLY REMARKS. *March 17, 1914.*

Pressure, Wind, and Weather.—Throughout the week the distribution of atmospheric pressure was of a very unsettled type. At first anticyclones ruled over Southern Europe on the one side, and from Greenland to Spitzbergen on the other. Subsequently the southern anticyclone became more extensive, stretching from the middle belt of the Atlantic to Southern and Central Europe, a new high pressure forming over Scandinavia, and the Arctic one disappearing beyond the field of observation. These anticyclones hemmed in a great basin of low pressure, embracing the British Isles, the northern half of the Atlantic and surrounding regions. Within this basin there were numerous secondary depressions, many of which, moving along paths between east and north, visited this country. As a rule, they were of no great depth, the barometer descending to about 1,000 millibars, but on the 14th a deeper one arrived over the North of Ireland, with the barometer down to 975 millibars, the system later moving northward across Scotland. With so many disturbances, the winds varied a good deal in direction, south-westerly to north-westerly predominating, and only occasionally was there a strong breeze experienced locally, but the arrival of the more intense depression near the close of the period was marked by exceedingly stormy conditions over a great part of the Kingdom, a strong gale to storm force being felt in several southern districts, with gusts of hurricane violence, 77 miles per hour at Holyhead, and 78 miles at Scilly. Rain was of daily occurrence over a wide area, and snow or hail at times. Generally the daily falls were not large, there being few instances of more than an inch, but the aggregate totals for the week were far in excess of the normal in nearly all districts, more than five times the usual quantity in England E., and more than four times in England S.E. Thunderstorms, or thunder or lightning alone, visited various parts of England and Ireland on the 9th, 10th, and 14th.

THE WEATHER IN WEST HERTS.

Week ending March 18, 1914.

Eleven Days of Very Wet Weather.—Another warm week, and the seventh in succession. During the course of it there did not occur a single unseasonably cold day or night. On the first day (12th inst.) the temperature in the thermometer screen rose to 58°, making this the warmest day as yet of the present year. The ground is now 2° warmer at 2 feet deep, and 1° warmer at 1 foot deep, than is seasonable. Rain fell on each day of the week, and to the total depth of 1½ inches. In fact, rain has fallen on all but one of the last seven days, the total measurement being 3½ inches, which is 1½ inches more than the average rainfall for the whole month. Of that quantity 13½ gallons have come through the bare soil percolation gauge, and 12½ gallons through that on which short grass is growing, or nearly the whole of the rainfall. Both gauges are a yard square, and nearly a yard deep. The sun shone on an average for 3½ hours a day, which is a quarter of an hour a day short of the mean duration for the same period in March. On the sunniest day the sun was shining brightly for 8½ hours. The winds were as a rule rather high, and in the windiest hour, the hour ending 11 a.m. on the 16th, the mean velocity reached twenty-four miles—direction W.N.W. The average amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 2 per cent. An Early Rivers Peach growing on a south wall in my garden came first into blossom on the 17th inst., or five days earlier than its average date for the previous twenty-eight years, but three days later than last year. E. M., Rosebank, Berkhamsted, March 18, 1914.

GARDENING APPOINTMENTS.

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

- Mr. J. E. Jones, for 2½ years Gardener at Parnoor, Henley-on-Thames, as Gardener to Col. C. E. WALKER, Burnthwaite, Heaton, Bolton, Lancashire.
- Mr. Page, late of The Grange, Earls Barton, Northampton, as Gardener to Mrs. RENTON, Arthingworth Hall, Market Harborough.
- Mr. Ed. Hayton, for 11 years Gardener to Captain HARCOURT WOOD, as Gardener to W. H. AYROLD, Esq., Cliffe Hill, Lightcliffe, near Halifax.
- Mr. James Machar, for the past 2 years Gardener to Sir WILLIAM EDEN, Bart., of Windlestone, Ferryhill, Durham, as Gardener to Colonel ROWLAND BURDON, of The Castle, Castle Eden, Co. Durham. [Thanks for 2s. for R.G.O.F. box.—EDS.]
- Mr. Harry Winter, for the past 3 years Foreman at Gallowhill Hall, Morpeth, as Gardener to F. RICHMOND BROWN, Esq., Llanfair, Carnarvon, North Wales.
- Mr. F. Dalton, for the past 5½ years Gardener to the Earl of DUNRAVEN, K.P., at Kenry House, Kingston Hill, Surrey, as Gardener to the same gentleman at Adare Manor, Adare, Co. Limerick, Ireland. [Thanks for 1s. for R.G.O.F. box.—EDS.]

MARKETS.

COVENT GARDEN, March 18.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices. Includes items like Arums (Richardias), Azalea, Carnations, Daffodils, and various roses. Columns show item names and prices in s.d. and s.d. s.d.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage and ferns. Includes items like Adiantum Fern, Agrostis (Fairy Grass), Asparagus plumosus, and various ferns. Columns show item names and prices in s.d. and s.d. s.d.

French Flowers.

Table listing various French flowers. Includes items like Anemones, Mimosa (Acacia), Ranunculus, and various other flowers. Columns show item names and prices in s.d. and s.d. s.d.

Guernsey and Scilly Flowers.

Table listing various Guernsey and Scilly flowers. Includes items like Anemone fulgens, Daffodils (Guernsey), and Narcissus. Columns show item names and prices in s.d. and s.d. s.d.

REMARKS.—Business is very slack, due no doubt to the unfavourable weather. Flowers from Guernsey and Scilly are still arriving in large quantities; their prices so far are very low. Some of the subjects show signs of the end of the season, and although there will be cleared very cheaply, the value of better kinds should advance. There is an abundant supply of red Roses, such as Richmond and General Jacqueminot. A few good blooms of Liberty are on sale, but they are not very plentiful. Flowers of Mone, Abel Chateau have also commenced to arrive, and these, like Niphetos, are very fine just now. Other varieties available are Prince de Bulgarie, Lady Hillingdon, Sunrise, Sunburst, Caroline Testout, Bridesmaid, Madame Hoste, Lady Roberts, and Maryland. There is still a good

supply of Carnations, but the blooms are not of very good quality. There is a good supply of Liliun Harrisii, but L. speciosum rubrum and L. s. album are not plentiful. Lily-of-the-Valley continues to be very cheap. There is an abundant supply of double and single Tulips; also Darwin varieties. A few bunches of Spanish Iris sell well at high prices. Violets are arriving in a good condition. Foreign flowers in most cases suffer from the long journey, but Stocks and Star of Bethlehem are arriving in a good condition. Parma Violets are arriving in fair condition, but the single varieties do not pay for their carriage. Trade in the plant market is only moderate. Azaleas are finishing. Cinerarias, Genistas and White Spiraeas are required most. Ferns are becoming more plentiful, but only better weather will bring about a further improvement in the trade for these plants.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various plants in pots and their prices. Includes items like Aralia Sieboldii, Arancaria excelsa, Asparagus plumosus, and various other potted plants. Columns show item names and prices in a.d. and s.d. s.d.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices. Includes items like Apples (American, Californian), Lemons, Nectarines, and various other fruits. Columns show item names and prices in s.d. and s.d. s.d.

REMARKS.—Of Apples Californian Newtown Pippin and a few fruits from Wenatchee of the varieties Spitzenberg and Winesap are still available. There are also Winter Nels Pears from California. Gros Colmar Grapes from English and Continental growers are fairly plentiful for the season. The crop of Black Alicante finished this week. Forced Strawberries are obtainable in much larger quantities, both in punnets and in boxes. About 25,000 packages of fruits have arrived from Cape Colony per s.s. "Balmoral Castle," including White, Black, and Red Grapes, Melons, Pears and Plums. Shipments of Australasian Apples are now due. Fine samples of Continental-grown Asparagus are obtainable. Supplies of Peas, Beans and Potatoes from Guernsey show an increase, but there are fewer Beans from Madeira. Good Tomatoes are arriving from the Canary Islands. Of Senkale there is a good supply and Mushrooms are plentiful. Broccoli and Early Cabbages are arriving in large quantities from all sources. Rhubarb is plentiful, and there are good supplies of Cucumbers.—E. H. R., Covent Garden, March 18, 1914.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices. Includes items like Artichokes, Asparagus, Carrots, Cabbages, and various other vegetables. Columns show item names and prices in a.d. and s.d. s.d.

Potatoes

Table listing various potato varieties and their prices. Includes items like Bedford, Blacklands, British Queen, and various other potato varieties. Columns show item names and prices in s.d. and s.d. s.d.

REMARKS.—Trade is slightly better, and with stocks much lower prices should show a slight increase.—Edward J. Newborn, Covent Garden and St. Pancras, March 18, 1914.

TRADE NOTES.

MESSRS. H. B. MAY AND SONS.

Mr. T. A. BARNETT, who for many years has been in charge of the order department at Messrs. James Veitch and Sons, Ltd., The Royal Exotic Nursery, Chelsea, is joining the staff of Messrs. H. B. May and Sons, Ltd., of Upper Edmonton and Chingford, and will enter upon his new duties early in April.

MR. GEO. W. HAGON.

Mr. GEO. W. HAGON, recently in the employ of Messrs. Wm. Wood and Son, Ltd., has been appointed agent in the Midland Counties and North Wales for Messrs. H. Scott and Sons, Horticultural Sundriesmen, Woodside, London.

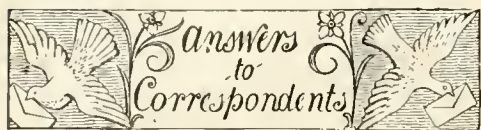
Obituary.

JOHN C. GOULD.—We deeply regret to record the death of Mr. John C. Gould, a director of Messrs. Charles Sharpe and Co., Ltd., Sleaford. Mr. Gould, who died on the 14th inst., was for sixty-four years connected with the firms of John Sharpe, John and Charles Sharpe, and Charles Sharpe and Co. He retired from active work in the management of the business in June, 1913. The funeral took place on Wednesday last at Quarrington, near Sleaford.

STEPHEN McHALE.—Horticulture announces the death from pneumonia of Mr. Stephen McHale, foreman for John Condon, florist, Brooklyn, N.Y., on February 18. He was a native of Castle Bar, County Mayo, Ireland, and was thirty-four years of age.

DR. W. W. BAILEY.—The death is recorded of Dr. W. W. Bailey, the distinguished American botanist, who was professor of botany at Brown University, Rhode Island, from 1881 to 1906. He was the author of numerous scientific works, including Botanical Collector's Handbook, Among Rhode Island Wild Flowers, Botanical Note-Book, New England Wild Flowers, and Botanicizing.

EUGENE VALLERAND.—This well-known French nurseryman, whose establishment was near Paris, died recently at Taverny (Seine et Oise), at the age of 78 years. He was a member of the National Horticultural Society of France, and an Officer of Mérite Agricole. Visitors to the Paris flower shows will remember that for many years his displays of tuberous-rooted Begonias formed a conspicuous feature of the exhibitions. The business will be carried on by his sons, Messrs. Gaston and Albert Vallerand.



CARNATIONS: *Carnation Soil.* There is no fungus present. The injury is probably caused by the soil, but what the latter contains cannot be determined now.

CUCUMBERS: *T. C.* Seeing that you have taken the precaution to cleanse the house thoroughly and limewash the walls, you might be successful this season, although it would be better to select a fresh house. Remove every particle of the old soil and scrub the wood-work, etc., with warm water with which a little carbolic acid has been mixed. Take the precaution to spray the plants at intervals with liver of sulphur, $\frac{1}{2}$ oz. to two gallons of water, and do not wait until the disease appears. Liver of sulphur has the effect of turning white paint black. Therefore, have due regard to this when syringing.

FLOWERING PLANTS FOR A LONDON GARDEN: *A. G. W. S.* The following is a list of plants, including Roses, that will do well in a London garden.—Roses (*Hybrid Teas*): Caroline Testout, Earl of Warwick, General McArthur, Grace Darling, Koenigin Carola, Lady Ashtown, Madame Abel Chatenay, Souvenir du Président Carnot. *Climbing H.T.'s*: Climbing Caroline Testout, Gruss an Teplitz, Longworth Rambler. *Hybrid Perpetuals*: Abel Carrière, Frau Karl Druschki, Hugh Dickson, Margaret Dickson, Prince Camille de Rohan, Général Jacqueminot, Mrs. John Laing, Ulrich Brunner. *Climbing*: Maharajah, Mrs. W. Paul, Zepherine Drouhin, Fellenberg, Aimée Vibert, Alister Stella Grey, Lamarque, Madame Alfred Carrère, Cramoisi Supérieure, A'béric Barbier, Dorothy Perkins, Lady Gay, Paul Transon, Hiawatha, Jersey Beauty, Dawson Rose, Crimson Rambler, Conrad Meyer, and Penzance Briars. Hardy herbaceous plants that may be expected to do well are: Agrimonia Eupatoria, Anchusa italica Opal and Dropmore varieties, Aquilegia chrysantha and its hybrids, Arabis albidia fl. pl., Artemisia tanacetifolia rubra, Asters (perennial), Alpine and border Auriculas, Betonica grandiflora rosea, Campanula alliariaefolia, C. caespitosa and its variety alba, C. carpatia and its varieties alba, Isobel and White Star; C. celtidifolia, C. gargarica compacta, C. glomerata, C. Hendersonii, C. isophylla, C. latifolia, C. linifolia, C. macrophylla, C. pelviformis, C. Portenschlagiana, C. Raineri, C. rotundifolia, C. Rapunculus, C. Stansfieldi, C. Tommasiniana, Centaurea montana, Centranthus rubra, Chrysanthemum maximum, C. uliginosum, Chrysogonum virginianum, Cimicifuga racemosa, C. simplex, Coreopsis lanceolata major, C. verticillata, Corydalis thalictrifolia, Delphiniums of garden sorts, Alpine and border Dianthus, Dictamnus fraxinella, Digitalis purpurea and alba, Doronicum Caucasicum, D. Clowesii, Epilobium angustifolium, E. a. album, E. obcordatum, Epimedium pinnatum, E. niveum, Erigeron aurantiaceum, E. Quakeress, E. speciosum, E. mucronatum, Erysimum Arkanasanum, E. helveticum, Funkia subcordata and varieties, Gaillardia hybrids, Galega officinalis varieties alba, bicolor, and Hartlandii; Geranium Endresse, G. ibericum platyphyllum, G. macrorrhizum, Geums Apricote, Mrs. Bradshaw, and Heldreichii lutea, Helenium autumnale, H. Hoopesii, Helianthus

multiflorus fl. pl., Hemerocallis aurantiaca major, H. Middendorffii and others, Heuchera gracellina and hybrids, Inula glandulosa, Isatis glauca, Kniphofia Aloides and varieties, Liliums in variety, Lupinus polyphyllus of sorts, Lychnis Chalcedonica, L. viscaria, Lythrum alatum, L. salicaria, L. s. roseum, Lysimachia clethroides, L. thyriflora, Monarda didyma, Nepeta Mussinii, Oenothera Youngii, O. Fraseri, Papaver orientalis, Alpine and border Phloxes of sorts, Polemonium coeruleum and varieties, Potentillas in many varieties, Primula denticulata, P. frondosa, P. cashmeriana, P. pulverulenta, P. japonica, P. denticulata, P. Beesiana, P. Bulleyana, P. capitata, P. Forrestii, P. Poissonii, Pyrethrums, Rudbeckia laciniata fl. pl., Salvia virgata, Saponaria officinalis, Solidago Shortii, S. Virgaurea, Thalictrum adiantifolium, T. atropurpureum, T. aquilegifolium, Trollius europaeus (Orange Globe and Fire Globe), Verbascum Chaixii, V. olympicum, and Violas. Suitable annuals include: Double and single Chinese Asters, Antirrhinums, Calliopsis, Celandula, Candytuft, Centaurea, single and double Clarkias, Convolvulus, Dianthus chinensis, Eschscholtzia, Godetia, Helianthus, Larkspurs, Lavatera trimestris, Lupinus, Marigolds, Mignonette, Poppies, Hesperis matronalis (Rocket), Stocks, Sweet Peas, Wallflowers, Zinnia elegans and Nigella Miss Jekyll.

GARDENIA LEAVES: *C. H.* We cannot tell you the cause of your Gardenia leaves turning yellow, for there is no disease present due to fungi. The injury is probably caused by unsuitable soil.

KENTIA FORSTERIANA.—*G. H. H. W.* Our market expert informs us that there is only a limited demand for large Palms, and that the value of your specimen would be approximately 25s. to 30s.

MINT DISEASED: *C. H. E.* The Mint is attacked by the Mint rust (*Puccinia menthae*) which often destroys entire beds of Mint. Dig up the infected plants, burn them, and be careful to remove all underground portions of diseased plants. Plants from infected beds even if they do not show signs of disease should not be used for making new beds, for they are likely to be infected with spores from diseased plants. The wild Mints are often badly diseased, and the disease may be introduced to cultivated Mint if hay or other litter containing diseased wild Mint in a dried condition is brought in contact with the cultivated Mint.

MOSS ON LAWNS: *Anxious.* First give the turf a raking with an iron rake to remove as much of the moss as possible. Let this be done thoroughly, working across as well as up and down the lawn. Next sweep the turf and then apply superphosphate at the rate of 2 oz. to the square yard. Green vitriol (ferrous sulphate) applied at the rate of $\frac{1}{2}$ cwt. to 2 cwt. per acre is also effective in destroying moss on lawns. It is necessary in some cases to repeat the dose. Other substances which are valuable for eradicating moss on lawns are copper 2 per cent. and nitrate of soda 10 per cent.; these should be mixed and sprayed on the turf at the rate of about 70 gallons per acre. The advantage of liming mossy land is well known. The dressing you suggest would benefit the grass.

NAMES OF FRUITS: *D. M. H.* Apple Annie Elizabeth.

NAMES OF PLANTS: *E. S.* Pinus sylvestris aurea.—*H. B.* 1, Gazania sp., probably splendens; 2, not recognised, send when in flower.—*C. E.* 1, Laelia-Cattleya Gottoiana; 2, Laelia cinnabarina.—*M. P.* Eulophia lurida.—*F. T.* 1, Asplenium lucidum; 2, A. marinum; 3, Adiantum hispidulum; 4, Selaginella uncinata.—*Ecclcs.* 1, Cypripedium villosum; 2, Cypripedium Boxallii atratum; 3, Cypripedium Haynaldianum; 4, Cypripedium Boxallii; 5, Laelia-Cattleya Warnhamensis (L. cinnabarina \times C. Trianae).

PEST OF CYCLAMEN: *E. P. D.* Black weevils are destroying your Cyclamen plants. Bisulphide of carbon or "Vaporite" may be em-

ployed for destroying the grubs that are below the surface of the soil, but there are various ways of trapping the beetles. As they feed chiefly by night, and have the habit, like most other weevils, of dropping to the ground on being suddenly disturbed, it is desirable to group the plants together during the day, standing them on a large, greased sheet of white paper or calico. After this has been done enter the house at night-time with a bright light, and tap the pots or shake the plants whilst holding them to one side, when the weevils will fall on the sticky surface, and may be caught easily. Another method is to trap them with pieces of some vegetable, such as Potato or Carrot.

QUINCE NOT FRUITING: *H. J. G.* You must exercise patience. The tree has only been planted two years, and it is not unusual for fruit trees to fail to fruit in such a short period after planting. We have had the same experience with a Pear tree planted three years ago. As your plant has bloomed freely it will perhaps satisfy your expectations this season, as we are hoping the Pear will ours.

ROSCOEIA: *Miss B. Shaw.* Your plant is probably Roscoea purpurea, which is half-hardy in this country. You have evidently been growing the specimen in too hot and moist conditions. The plant is deciduous, dying down each autumn with the early frosts. It is best planted out in a warm, sunny situation in April in a rich, open compost, such as you have previously used, placing the tuberous root-stock about 2 inches below the surface. The flowers are produced from July to September, and are of a rich purple colour. Lift the tuberous root-stocks in the first week of October, and store them in a box of dry sand in a cool, dry, frost-proof room until the following spring. Treated in this way, the plants will increase rapidly.

SEEDS OF DOGWOOD POISONOUS: *Alex. E. Beaton.* There does not appear to be any well-founded reason for believing that the berries or seeds of various kinds of Dogwoods, or Cornus species, are poisonous to birds. Various Cornuses are widely planted throughout the country, and one or two species grow wild, yet we have been unable to trace any reference to the fruits being poisonous to birds. As a rule birds are very careful to avoid fruits of a poisonous nature, and there is no reason why you should not proceed with the planting of Red Dogwood as undergrowth in woods and plantations.

SEEDS USED FOR ROSARIES: *W. T. Price.* The seeds of Sapindus Saponaria, a small tree belonging to Tropical America and the West Indies, are frequently used as beads and made into rosaries. They are hard, black, and take a good polish, and in addition to their use as beads, they are also employed for making buttons. The seeds of other plants are also used for beads, notably those of Toddalia sp., Calodendron capensis and Abrus precatorius. The seed of the last-named is bright red with a single black spot. The seeds are often called Crab's Eyes and Rosary Peas, and the plant is sometimes known as the Rosary Bush. The first-named is, however, the most important seed used for the purpose.

PRIMULAS: *E. H.* No fungus is present. The silvery appearance suggests injury caused by fumes.

TOMATOS DISEASED: *W. C., Taplow.* Yes, the disease attacking your plants is the sleeping disease. Soak the soil with a solution of sulphate of potash, 1 oz. in 2 gallons of water, repeating the operation after six days.

Communications Received.—*G. Sherwood*—*F. H.* (you omitted to furnish your name and address)—*T. M.—A. C.—A. T. H.—M. A. G.—A. W.—W. H. S.—H. J. P.—H. S.—J. M.—H. T.—C. T.—L. M., Ltd.—C. H. H.—W. M.—J. H.—H. N.—R. W. C.—A. G.—C. S. & Co.—T. H.—J. R. C.—F. J. B.—S. W.—R. F. L.—A. H.—E. G. A.—A. P., Darmstadt—H. A. C.—H. S. T.—L. K., Michigan—C. H. P.—A. J. C.—A. L. A.—C. G. G.—C. H.—J. C.—G. H. C.—J. H. P.—E. A. N.—A. R.—R. F.—I. B. B.—R. A. M.—J. H.—W. K.—E. S.—C. T. D.—P. S. K.—Bombay—C. C.—J. R. C.*



THE

Gardeners' Chronicle

No. 1,422.—SATURDAY, MARCH 28, 1914.

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"THE HORTICULTURAL RECORD."*

(See Coloured Supplement.)

THIS stately volume dedicated to his most gracious Majesty King George V. is a memorial of the great International Exhibition of 1912. In this record the Chelsea show lives again. As we turn its pages we see once more the long and busy avenue, the great tent, and feel the press of the throng making its way to the Rock Gardens or the Orchids. It accomplishes more than this. For not only does the Record rekindle our enthusiasm for the magnificent cultivation which was demonstrated at the Exhibition, it also brings within the compass of the mind the large part which the Exhibition was destined to play in influencing the art of gardening. Indeed, it is no exaggeration to say that the in-

fluences which spread from Chelsea are to-day making themselves felt and seen in most of the gardens in this country and in many of the gardens of foreign countries.

Without this generous enterprise on the part of Mr. Cory, in course of time—our memories growing old—we should have forgotten the skill and labour and devotion bestowed upon the Exhibition, and the show itself, like an insubstantial pageant faded, would have left not a rack behind. Now, instead of searching through the dusty archives of the past and reconstituting the show from a study of laconic official documents, the horticulturist of the future may himself see the Exhibition and share our own vivid enjoyment of that event.

Albeit that this work is justly entitled a Record, it is more than that. For Mr. Cory has summoned to his aid a distinguished band of horticulturists, who have traced the several histories of the chief groups of plants from 1866, the days of the former International Exhibition, to the present time. These essays, all of remarkably high merit, constitute the first 178 pages of the volume, and serve to focus attention on the salient features of the show.

It is but proper that the first of these historical résumés should be devoted to Garden Design and Rock Gardens; for it is not to be denied that the excellent garden exhibits at Chelsea have had far-reaching influence. It needs only to read the first page of this brilliant contribution to discover in its nervous, incisive, provoking prose and in its wealth of information the hand of Reginald Farrer. Therein he projects one of his apocalyptic visions on paper, and stricken dumb with its effulgence we have revealed to us the whole art and meaning of the rock garden.

The tumult and the shouting dies as we turn to the more peaceful pages and follow the serener guidance of Mr. H. R. Darlington, with whom it is Roses, Roses all the way. We trace the vicissitudes of this flower from 1866 to the present day, learn of the decadence of the Hybrid Chinas, the fall of the Bourbons, and the decline of the Hybrid Perpetuals. The census of Roses shown at the 1866 Exhibition is profoundly interesting, and this chapter in history will prove invaluable to all students and lovers of the flower. Mr. W. J. Bean, never so happy as when he is among trees and shrubs, treats of these garden subjects, and shows what a wealth of new plants the gardener of to-day has at his command, as compared with his predecessor of 1866. Since that date Fortune, Veitch, Maries, and Wilson have brought home trees and shrubs from the East and West, and have added enormously to the resources of the modern gardener.

Mr. William Watson's essay on tropical plants takes our minds back to the days when these nurslings of the hot-house were prime favourites in the garden. Mr. James O'Brien's paper on Orchids is all that we should expect from one whose knowledge of the garden history of these plants is unrivalled.

Mr. Cuthbertson treats of Sweet Peas, Mr. C. H. Curtis (Greenhouse plants), Mr. Charles T. Druery (Ferns), Mr. E. A. Bunyard (Fruit), and Mr. G. F. Tinley (Vegetables).

Part II. of the volume consists of a detailed record of the show, accounts of the various arrangements, and reports of the speeches delivered during the various functions held in the course of the exhibition. Next follow the report on Horticultural Education, prepared by Mr. Chittenden for the Science and Education Committee, and a full account of the Conference. The report on Legislation in connection with plant diseases occupies nearly 100 pages, and the letterpress concludes with a list of the Jury and an enumeration of the awards. No less remarkable than the text is the series of coloured plates appended to the volume.

To have obtained the photographs during the short time that the subjects were in their best condition was a feat of no ordinary magnitude, and that the results should have reached so high a standard is a tribute to the pains taken with them. There will doubtless be critics who will comment adversely on the lack of depth and brilliance in some of the colour pictures, but no one who has experience of the difficult art of reproduction in colour will be grudging of praise for the general results. We reproduce in the Supplement one of the plates, which gives a very good illustration of the Japanese garden designed by Messrs. J. Carter and Co., Raynes Park. Amongst the others some of the more striking and successful are "Phalaenopsis, Dendrobiums, and Cypripediums"; "Cypripedium Maudiae"; "Anthuriums from Italy"; "Begonia Victoria Louise"; "Hippeastrum Daphne"; "H. Holfordii"; "Schizanthus retusus"; "Roses, Carnations, and other Flowering Plants"; "A Rose Garden"; "Japanese Garden Ornaments"; "Water Garden with Wistarias and Clematis Lord Neville." Of all the pictures that which pleases us for its artistic effect most is the beautiful scene "Rock Garden with Bamboos." The black-and-white illustrations, 71 in number, are of a high standard of excellence, and conspicuous among them are *Drosera binata* and a group of Australian Pitcher Plants.

It may well be that the glory of the garden abideth not in words, and it may be also that that glory is reflected neither by coloured nor black-and-white photographs. Nevertheless, to those whose imaginations are aided by printed word and pictured scene this richly illustrated and finely-compiled book will appeal with insistent force. It shows the strength of British Horticulture, it brings gracious memories. For those who care for these things admiration will brighten any tints which may be dull and knowledge will correct such tones as are false.

The heavy task of editing the Record has fallen to Mr. R. Hooper Pearson. We congratulate the editor and contributors, and we wish Mr. Reginald Cory's enterprise the success which it so richly deserves. K.

* The Horticultural Record of the Royal International Horticultural Exhibition, 1912. By Reginald Cory. Pp. 500; plates, coloured 116, half-tone 71. Published by J. and A. Churchill. (London, 1914.) £2 2s. oct. net.

NEW OR NOTEWORTHY PLANTS.

SOME NEW SHRUBBY SPECIES OF AMERICAN HAWTHORNS.

THE Intricatae Group of North American Crataegi are widely distributed. Several species are found in Ontario, Canada, and a considerable number in New York State. Pennsylvania seems to be the headquarters of the group, where thirty-three species have been discovered. They are found sparingly through the southern states, and a number of species have been described south-westwards across the Mississippi in Missouri.

The group characters are well defined. The leaves are membranaceous, and generally cuneate at the base, and often distinguished by a concavity of surface; petioles short, glandular; flowers large, opening late, in few-

1½ inches long and 1¼ inches wide; petioles slender, wing-margined above. The 10-stamened, cream-white anthered flowers come into bloom about the last of May. The oblong obovate drooping clusters of fruit when fully ripe assume a light red to yellowish bronze colour, and ripen towards the middle of October. The type plant grows on Brandywine Creek, near Wilmington, Delaware. The species has been found distributed through Pennsylvania.

C. CORNELLII, Sargent.—This hawthorn is a low-growing shrub and seldom exceeds 4 to 5 feet in height. The branches are erect, forming a narrow head. The leaves are oval, acuminate at the apex, abruptly cuneate at the base, with 4 to 5 pairs of small acuminate lateral lobes, 2 inches long and 1½ inch wide; petioles slender, wing-margined at the apex. The corymbs, with 10-stamened flowers and cream-white anthers, blossom during the first

September. The fruits are borne on dense, large clusters, and when fully ripe drop with the slightest shake. This is a noticeable feature when collecting the fruits either for the herbarium or for sowing. The type plant grows on a roadside on the north side of Toronto, Ontario, Canada, and has not yet been reported outside of that region. It is named in compliment to the late Delos Whie Beadle, a well-known nurseryman, pomologist, and botanist, in Ontario, Canada, who did excellent work in studying the rich fields of Crataegi in different parts of Ontario.

C. FLAVIDA, Sargent.—This species is an intricately branched shrub 8 to 9 feet tall, with a wide, dense head. The leaves are oblong-obovate, acute at the apex, concave cuneate at the base, divided above the middle into three to four pairs of small acute lobes, 1½ inch long and 1¼ inch wide; petioles slender, narrowly wing-margined at the apex. The 5 to 8-stamened flowers, with



FIG. 95.—CRATAEGUS FOETIDA GROWING SPONTANEOUSLY IN SENECA PARK, ROCHESTER, U.S.A.

flowered glandular corymbs, with large conspicuous bracts and bractlets, and in the large majority of the species usually glabrous; stamens rarely more than ten, usually creamy-white, occasionally pink or rose; fruit ripening late, in varying shades of brownish red to yellowish red.

None of the species in the group attains the dimensions of small trees, and they are mostly of neat, compact habit. The showy flowers in spring, with handsome fruit displays in the fall, and the highly-coloured foliage that many of them assume, render them charming plants for garden and park decoration. Dr. C. S. Sargent, Director of the Arnold Arboretum, Harvard University, has a high appreciation of their decorative value.

The following described species are in the Intricatae Group:—

CRATAEGUS APPPOSITA, Sargent.—This species attains a height of 6 to 8 feet, with a thin branching habit, and slender spreading branches. The leaves are oblong to oval, acute or rarely rounded at the apex, cuneate at the base, slightly and irregularly lobed towards the apex,

week in June. The obovate fruits, rounded at the apex, red to orange-yellow, suspended on the short, stout pedicels, ripen about the end of September. The type plant grows on a moist hillside at Coopers Plains, Steuben Co., in Western New York. The species is named in compliment to G. D. Cornell, an industrious school teacher, who made a thorough study of the Crataegi in his home county. At the present this species has not been reported outside of this country.

C. DELOSII, Sargent.—A shrub 6 to 8 feet high with intricate branching stems, and branches generally spreading horizontally; leaves ovate, acuminate at the apex with short points, concave cuneate at the base, divided into five to six pairs of acuminate lobes, 2½ inches long and 2 inches wide; petioles stout, wing-margined occasionally to the middle. The 7 to 10-stamened flowers on large corymbs (unusually large for the Intricatae Group), with cream-white anthers, blossom during the first week of June. The short, oblong, slightly obovate reddish-orange fruits ripen about the end of

pale yellow anthers produced on lax corymbs, blossom about June 4. The subglobose to short-oblong fruits, dull reddish-orange, ripen at the end of September. The type plant grows in an open moist wood near London, Ontario, Canada.

C. FOETIDA, Ashe (C. Baxteri, Sargent) (See fig. 95).—This is usually an arborescent shrub from 12 to 14 feet high, very intricately branched with spreading and ascending branches, forming a handsome, irregularly round-topped head. Leaves oblong-ovate to oval, acute and sometimes almost rounded at the apex, concave-cuneate to truncate at the base, divided into short, broad, acute lateral lobes, and always characterised by a conspicuous concavity of surface, 2½ inches long and 2¼ inches wide; petioles slender, somewhat wing-margined at the apex. The 10-stamened flowers, with pale yellow anthers borne on compact corymbs, blossom from June 4 to 8. The subglobose fruits, somewhat flattened at the ends, orange-red when fully ripe, and occasionally with a bronze-reddish tinge, ripen about the middle of October. The type plant grows in Seneca Park, Rochester,

N.Y. It is widely and commonly distributed through Western New York, Pennsylvania, and Ontario, Canada. This is the largest growing species in the Intricatae Group with which the writer is acquainted. The foliage turns to a handsome yellowish-red colour about the end of October. It is an extremely valuable shrub for garden decoration.

C. NEMORALIS, Sargent.—A tall shrub with a somewhat erect branching habit, from 10 to 12 feet high. Leaves usually oval in outline, acute at the apex, gradually narrowed at the base, divided above the middle into coarsely serrate acute lobes, 2 inches long and $1\frac{3}{4}$ inch wide; petioles slender and slightly grooved. The 10 stamened flowers, with pale yellow anthers produced on slender corymbs, blossom at the end of May. The subglobose to globose red fruits ripen in October. The type plant grows at Rockford Park, Wilmington, Delaware. The species is said to be common in that region in rocky soil.

C. MINUTIFLORA, Sargent.—This species is a low intricately-branching shrub, 5 to 6 feet high, and inclined to spread into thickets. The leaves are usually suborbicular and usually broader than long, acute at the apex, rounded at the base, divided above the middle into three or four pairs of broad acute lobes, 2 inches long and $2\frac{1}{2}$ inches wide; petioles slender, slightly wing-margined at the apex. The 10-stamened, pale pink anthered flowers are borne on very compact corymbs, and blossom about June 4. The short oblong to subglobose fruits, dull orange-red in colour, supported on stout, erect pedicels, ripen about the middle of September. The type plant grows in an open pasture at Bracondale, a suburb of Toronto, Ontario, Canada. This species is distinctive in this group for its small flowers.

C. MODESTA, Sargent.—A low shrub that rarely exceeds 3 to 4 feet in height. The slender branches are numerous and intricate. Leaves ovate, acute at the apex, rounded at the base, divided into numerous short lobes, 2 inches long and $1\frac{1}{4}$ inch wide; petioles slender, somewhat winged above. The 10-stamened flowers, with pale yellow anthers, are borne on compact pubescent corymbs, and blossom during the first week in June. The subglobose fruits, flattened at the ends, orange-red in colour, on erect peduncles, ripen about the end of September. The type plant grows on the rocky benches of Twin Mountain, West Rutland, Vermont. It is distributed in Eastern and Western New York and Eastern Pennsylvania. This is one of the smallest growing species of the group known to the writer, and is marked by pubescent corymbs, a specific character found in very few species in the group.

C. PECKII, Sargent.—This species is a broad-headed shrub, 5 to 6 feet tall, with numerous intricate branches. The leaves are oblong-ovate, acuminate at the apex, rounded to concave-cuneate at the base, divided into three or four pairs of slight acute lobes, 3 inches long and $2\frac{1}{2}$ inches wide; petioles stout, slightly winged-margined above. The 10-stamened flowers, with purplish-pink anthers on slightly pubescent corymbs, blossom during the first week of June. The subglobose to ovate fruits, reddish-green in colour, borne in erect clusters, ripen about the middle of October. The type plant grows at Lansingburg, near Troy, on the Hudson River, New York. So far as is known at the present time, the species is confined to a very restricted area. It is named in compliment to Professor Charles H. Peck, the distinguished State Botanist of New York, who has given a great deal of study to the genus *Crataegus*. Professor Peck is well known throughout the scientific world for his investigation and discoveries in mycology.

C. VERECUNDA, Sargent.—This is commonly an erect, branching shrub 6 to 8 feet high, but it is sometimes found in shaded conditions 3 to 4

feet tall. The very dark purple spines, markedly curving downwards, are a distinguishing feature of the species. The leaves are oblong-obovate to oval, divided above the middle into a few short, broad, acute lobes, $2\frac{1}{2}$ inches long and 2 inches wide; petioles slender, wing-margined by the decurrent bases of the leaf blades. The 5 to 7-stamened flowers, with cream-white anthers borne on thin corymbs, blossom from June 4 to 8. The oblong-obovate crimson-orange fruits, borne on slender pedicels, ripen early in October. The leaves of this species unfaithfully turn to lemon-yellow, and fall before the end of October. The type plant grows in shaded rocky woods, in the gorge of the Genesee river in Seneca Park, Rochester, New York. It was at first suspected that this species was partial to shady woods, and that it did not exceed 3 to 4 feet high. A few years since I found it growing in colonies in an open pasture near Conesus Lake, forty miles south of Rochester, N.Y., 6 to 8 feet high, and in much more vigorous habit than the type plants. The flowers and fruits, however, plainly showed the species to be *C. verecunda*. The species has during recent years been found at widely different points in New York State. *John Dunbar, Rochester, N.Y., U.S.A.*

ORCHID NOTES AND CLEANINGS.

EPI-LAELIA MEDUSAE (L. CINNABARINA × E. CILIARE).

THIS remarkable and interesting hybrid flowered in the gardens of the Right Hon. Lord Rothschild, Tring Park (gr. Mr. A. Dye), and it forms a useful subject in which to trace out the results of the struggle which Nature makes to accommodate in the offspring the characters of two such diverse parents, and the compromise which results. A curious point is that the flowers of the hybrid are larger than either parent. The red tint of *Laelia cinnabarina* appears in a modified form, but its narrow, wavy-edge lip is broadened out to fill in the spaces between the long, bristle-like filaments of the lip of the *Epidendrum*. This reduces the fimbriation considerably, but the filaments are distinctly traceable in the membrane of the labellum of the hybrid. The long filiform front lobe of the lip of *E. ciliare* well maintains its character, but is shortened and changed by a membranous wing on each side distinctly acquired from the *L. cinnabarina*. In habit the plant is intermediate between the parents, but the scape is more like the *Epidendrum*, 9 inches to 1 foot, dark green, slightly compressed, and furnished at intervals with sheaths 1 inch long, three to five flowered; pedicel and ovary 3 inches, the lower third enclosed in a sheath; sepals 2 inches long by $\frac{1}{4}$ inch wide, keeled at the back, and re-curved at the tips; petals rather shorter and narrower, slightly wavy at the margin, curved forward, both sepals and petals red on yellow ground; lip adnate to the column, three-lobed, nearly 2 inches long, the side lobes fimbriated and re-curved, white tinged with yellow outwardly, mid lobe linear for half its length, then broadening into a narrow lanceolate blade tinged with reddish-yellow and slightly fringed in the lower half. It is not recorded which of the parents bore the seed-capsule, but it was most probably *Epidendrum ciliare*. It is interesting that two species so vastly different in structure in every part should produce an offspring which is a reproduction in part of each parent.

LAELIO-CATTELEYA GOTTOIANA VEITCH'S VARIETY.

THE fine and richly-coloured variety of this natural hybrid, which, as well as being a handsome flower, is one of the best parents in the hands of the hybridist, was shown by Messrs. Jas. Veitch and Sons at the R.H.S. meeting on the 10th inst., and proves that importations

still give remarkable varieties. *Laelio-Cattleya Gottoiana* was first shown at the meeting of the Royal Horticultural Society on June 23, 1891, when the plant received a First-Class Certificate. The parentage then suggested—*C. Warneri* × *L. tenebrosa*—has since been verified. Subsequently the plant was occasionally imported with *L. tenebrosa* and *C. Warneri*, but the forms were mostly of indifferent quality though good breeders. The form shown recently by Messrs. Veitch with large, vinous-purple flowers was imported with *L. tenebrosa*, and is probably the finest yet seen.

THE ROSARY.

ROSES UNDER GLASS.

WITH increasing heat, the growth of pot Roses will become more rapid, so that watering must be attended to with care. In the case of large specimens in pots, tap the pots; those that give a clear, bell-like sound should be copiously watered. The plants showing bud will need a stimulant; a safe mixture is liquid cow manure and soot. To well-established plants this may be given twice a week until colour is seen in the buds. Damp the surfaces in the house with a little manure water to feed the foliage, but do not overdo this treatment. A little bone flour worked into the surface of the soil has a very stimulating effect on pot Roses. Guano water is also of assistance; use about a teaspoonful to one gallon of water.

Backward plants should be tied into shape, so that every leaf obtains the benefit of light and air. Do not maintain too high a temperature. Roses do not like severe forcing, excepting, perhaps, the true Teas. These, when once started, should be kept going, increasing the temperature until it reaches about 55° at night.

A buoyant atmosphere must always be maintained in the Rose house. If dryness of atmosphere is allowed red spider soon becomes troublesome. Frequent syringing should be resorted to, the syringe being directed well beneath the foliage.

Fumigate as soon as traces of green fly are observed, not waiting until large numbers appear. Auto Shreds is a good insecticide and easily used. For mildew Campbell's Vaporiser is good.

When beginning to show colour, Roses develop best in a cool temperature, so that if a north house is available move such plants into it. Roses glory in sunshine when they are growing, but all Rose houses should be equipped with roller blinds to shield the plants from fierce heat, especially in April and May. Rambler Roses grown as pot or tub plants will need much water, and it is necessary to look over them two or three times a day. They succeed best when in comparatively small pots, but if so grown they require specially frequent waterings.

A bunch of *Mme. Edouard Herriot* shown at the R.H.S. meeting on February 24 created much interest, indicating the popularity of hard colours in forcing Roses. *Melody* is being extensively grown by some commercial florists, one grower alone devoting several houses to its culture. The new American Rose *Hadley* is said to be superior to all other red varieties. *Ophelia* will be a great favourite, especially as a forcing Rose.

Now is the time to insert Rose cuttings from growths that have just flowered. These root readily in a sandy compost, the pots being plunged in the propagating frame or in a dung-bed. Such plants furnish useful material for forcing. Always insert strong, healthy cuttings and give them ample room in the cutting-pots. If space allows, one cutting inserted in a thumb-pot is better than inserting several in a pot of larger size. *Experience.*

NOTES ON TULIPS.

TULIPA KAUFMANNIANA COCCINEA.

This scarlet form of the well-known Tulipa Kaufmanniana opens its flowers in the middle of March. It is perfectly hardy, but deserves, if ever a plant did, a sheltered, sunny corner. The huge flowers are of the most brilliant scarlet with a pure yellow base, and they open in the sun as does the type. The effect of a group of a few of these Tulips is simply amazing in its splendour.

The red colour seems to pervade the whole plant, for the very leaves are red when they first appear through the ground, though they soon lose this colour; while the fact that the first small leaves of the germinating seeds are also of a bright-reddish hue seems to indicate that this fine form will come true from seed.

TULIPA LOWNEI.

THE sight of a well-flowered pot of Tulips, labelled *T. Lownei*, in the Alpine house at Kew led me recently to look up this species in the herbarium, where Mr. Baker's type specimens of the species are preserved. It became at once apparent that the plant which has been in cultivation for some years as *Tulipa Lownei* is wrongly named. The type specimens are both two-flowered and the plant looks very like a dwarf *T. saxatilis*. I failed to find in the herbarium any wild specimens of this latter species, but it would hardly be surprising if, in its native mountain habitat in Crete, the plants were very much smaller than the cultivated specimens in our gardens. Moreover, side by side with the so-called *Lownei* there were also displayed in the Alpine house some excellent examples of *Tulipa pulchella*. A careful comparison of the two revealed the fact that the only difference lay in the colour of the flowers. The dull-red flower with a blue base of *pulchella* was replaced by a pink flower with a pale-yellow base. It is true that those labelled *T. pulchella* usually had only three leaves to the four of the pseudo-*Lownei*, but these numbers were not constant. *T. pulchella* is a native of the Cilician Taurus, and, as the so-called *Lownei* bulbs are obtained from Syria, it is probable that they merely represent a local colour form of that species, and they should more properly be called *T. pulchella* var. *rosea*. Whether the real *T. Lownei* from the top of Mount Hermon is identical with *T. saxatilis* from Crete it is at present impossible to say. W. R. Dykes. *Charterhouse, Godalming.*

VEGETABLES.

ASPARAGUS.

FOR the past few years we have adopted the practice of raising annually a batch of Asparagus plants by sowing the seeds in 60-size pots, raising the seedlings in a cold frame and thinning them when quite small to one in a pot. The plants are grown in an open situation during the summer, the pots being plunged in finely-sifted cinder ashes as a protection against frosts during winter. The plants are set out early in April in well-prepared beds. This may appear a troublesome method, but I am convinced that much better results are obtained than by adopting the usual practice of sowing the seed in the open. We have cut good heads in the first year after planting and splendid produce in the second season, and I would strongly advise anyone who has not tried this plan to give it a trial.

I do not wish to take credit for this method. On visiting a fellow-gardener some years ago I was much impressed with his Asparagus, and he kindly informed me of the plan I have described, which he had practised for many years with good results.

THE HERB BORDER.

A well-arranged, properly-kept herb border is by no means the least attractive or useful part of

the kitchen garden. Although it is not possible to cultivate all things classed as herbs in all establishments, there are nevertheless many kinds which are in constant demand, and these should be included. It is essential every few years to renovate, re-plant, or re-arrange them, and now is a capital time to undertake the work.

Almost any site or aspect except a north one will suit the majority of herbs, but for preference choose a west or east border. By adding a good supply of fresh material annually the same position will answer for many years. The ground should be well trenched and enriched with well-decayed manure, leaf-mould, and the materials from spent hot-beds. If the soil is of a wet, retentive nature lighten it by adding road-grit and finely sifted mortar rubble. Perennials, biennials and annuals should be placed together, and, when it is not necessary to re-plant, a good top-dressing of suitable material should be afforded. Mint grows best in decayed leaf-mould, and Thyme (especially Lemon Thyme) delights in an annual dressing of road-grit.

The propagation of most kinds of Herbs is very simple. All the perennials may be increased readily by division or from cuttings, whilst many are easily raised from seed, as are the annuals and biennials. Certain of the stronger-growing kinds will need annual pruning to keep them within bounds. Among the most useful herbs are Bush and Sweet Basil, Borage, Chervil, Chives, Fennel, Pot Marjoram, Sweet Marjoram, Mint, Parsley, Sage, Summer and Winter Savory, Sorrel, Tarragon, Thyme and Lemon Thyme. *Edwin Beckett.*

LILIUM PARRYI.

IN the *Gardeners' Chronicle*, January 24, 1914, p. 60, Messrs. Wallace, of Colchester, quote Purdy, the Californian collector, as writing of this Lily:—"I am at last making *L. Parryi* a success. It is . . . not boggy soil that the plants need. . . . I have one fine bed of young ones that was quite dry all summer." The italics are the present writer's.

It is something of a shock to find that after all these years the arch-priest of Californian bulb culture should only now be able to say that he is making a success of this Lily, and, in the absence of further information, the fact is calculated to deter others less fortunately placed than he from attempting the cultivation of one of the fairest of wild flowers.

But our countrymen need have no qualms on the subject, for if one goes the right way to work there is no insuperable difficulty in the cultivation of *Parry's* Lily, and no one not bereft of his senses would attempt to grow it in boggy or waterlogged ground.

By no stretch of the imagination can *L. Parryi* be as yet included in the comparatively short list of Lilies which will always fend for themselves in our climate without some assistance from the gardener, and go on from season to season till waning growth points to exhausted soil and overcrowded bulbs; but if the needs of this Lily—and they are perfectly well understood—are ministered to with a modicum of the sympathetic understanding hundreds of people bestow on "difficult" garden plants, there should be no fear of the result.

Assuming that the soil conditions are right the normal English summer is good enough for *L. Parryi*: it is the exceptional season that lays it by the heel, and if it is not intelligently cultivated a prolonged drought that will ordinarily have no more effect on, let us say, *L. candidum*, *croceum*, *monadelphum*, *pomponium*, *pyrenaicum*, and even *pardalinum*, than perhaps a slight stunting of growth, will send *L. Parryi* straight to the gardens of Paradise. An abnormally wet autumn such as we have to bear with from time to time will also have the same untoward result.

The two main points, therefore, the would-be grower has to bear in mind when dealing with this Lily are adequate provision against excessive dryness on the one hand and excessive moisture on the other. This is more easily said than done, for while it is simple enough to guard against an excess of wet by providing quick drainage under the bulbs, the very fact that such drainage carries off all natural moisture rapidly renders it the more necessary to arrange some plan for watering the subsoil in case of need. The gardener may not have occasion once in a decade to use such watering arrangements as his ingenuity may devise, but the day of reckoning will inevitably come sooner or later, and woe betide the bulbs if, for instance, a scorching drought of the 1911 variety catches him unprepared. Here and there, as, for instance, in the late Sir Henry Yorke's wood garden at Iver, or the so-called American gardens of Mr. Loney at Saltwood, one may find perfect natural conditions in a loose top soil, brought down by the floods of countless ages overlying a water-bearing stratum, but such ideal instances are all too few. Where they prevail no adventitious watering or drainage arrangements are necessary, and *L. Parryi* should be perennial; elsewhere some preparation must be made for it.

The soil conditions in which *L. Parryi* flourishes are those afforded by a deep, loose, gravelly or gritty loam, with a fair proportion of leaf-mould and crushed charcoal, in as sunny a spot as you please, and with some ground-shading shrub of gentle growth to serve the triple purpose of support for the stems, shelter for the young shoots against the cutting winds of March, and a screen to keep the earth cool in summer; if on the side of a slope so much the better, but if on the flat there must be no doubt about the drainage, even in such porous soil, and the bulbs should each be laid on a 5-inch inverted pot. It is better to err on the side of excessive drainage, for, as already indicated, the subterranean water supply with which the bed must of necessity be provided, if perchance Nature has not already seen to it in her own way, will enable the gardener to counteract any tendency to over-dryness.

The absence or presence of lime has undoubtedly a very important bearing on the cultivation of Lilies in general, and whatever may be the case where the wild plants are concerned, it seems almost certain that in this country the Western American Lilies with rhizomatous roots are better without it; *L. Parryi* certainly is. An absence of lime, however, especially in beds and borders of made ground, is often associated with an acid condition of the soil—fatal to all Lilies—and according to the chemists this may largely be neutralised by aeration; for that reason the top soil of the *L. Parryi* bed cannot be too open and crumbly. "A little peat" is not infrequently recommended for *L. Parryi* by horticultural scribes and the compilers of catalogues, but it is not necessary nor even desirable.

So far as the writer is aware nine-tenths of the bulbs of *L. Parryi* offered for sale in this country are imported from California, where they are collected in the wilds. It is for them a long journey and a dry one, which generally leaves its mark on the majority of the bulbs, and is at the bottom of many wearisome disappointments. The wise man will refuse to be hurried, and, realising that the planting of these soft and travel-stained bulbs must almost inevitably lead to failure, he will pot up the imported bulbs for the first season, keeping them in the convalescent home one finds in some corner of every garden, and when planting time comes round again putting out such as are sound and have developed strong roots. "Planting time" is, after all, a vague term, and in the case of *L. Parryi* implies a period of a week or two after the seeds have ripened. If there are no seeds let the bulbs be put into the ground about six weeks

after the passing of the flowers. They may be planted about 6 inches deep in a cylindrical hole about 4 inches in diameter—easily made with a length of iron stove pipe, fashioned and used like a huge cheese-taster—filled almost to ground level with fine lime-free sand. Before winter comes round care should be taken to see that the old, hollow dried stems are not used by a horde of slugs, millipedes, wire-

to it. As the years go by generation after generation of seedlings will be raised, and if the writer's limited experience is any criterion, each succeeding batch of seedlings will be just a trifle more robust than its forbears, and rather better able than they to battle with the vagaries of our climate without hoisting the white flag.

With a good supply of bulbs in the reserve bed one can afford to be comparatively reckless

effects of lime on their growth can only be properly observed in this matter.

Some day perhaps it may not be necessary to take any more trouble with *L. Parryi* than one does with the "common" Lilies of the garden, but for the present, unless one is blessed with a naturally perfect soil, it is not possible without special cultivation to give it an assured place in the category of perennial Lilies, nearly all



FIG. 96.—LILIU M PARRYI : SHOWING THE PURPLE MARKINGS THAT SOMETIMES OCCUR ON THE PALE YELLOW SEGMENTS.

worms, and other riff-raff of the soil, as a sort of tube railway lift down to the bulbs. Many a score of Lily bulbs is lost in this way.

Having once obtained a little seed from his potted bulbs the grower will soon find himself the happy possessor of a panful or two of seedlings, and in a couple of years or three he should have at hand a supply of home-raised bulbs, which will render him independent of the imported article with all the drawbacks attached

in planting bulbs of *L. Parryi* about the garden, as often as not in experimental fashion, for while the resulting wastage is usually heavy—always, indeed, much heavier than when the bulbs are planted in prepared beds, and the growth seldom so fine—one can make good most of the losses from one's stock of seedlings, with the comforting knowledge that the bulbs cost one nothing. It is by such trial plantings that one learns a good deal of the ways of diverse Lilies, and the

of them, curiously enough, limestone plants. The illustration (fig. 96) shows the purple markings often to be seen on the petals of *L. Parryi*, but these markings are not a constant characteristic in the case of home-raised seedlings, and as often as not are absent: on the other hand, one may frequently find flowers in which the markings are far more numerous than in the specimen from which the artist has drawn the figure. *A. Grove.*

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

ONCIDIUM.—There are numerous *Oncidium*s which may be grown successfully in a cool house under the same cultural conditions as *Odontoglossums*, and among them are some of the most useful and beautiful Orchids in cultivation. I refer in particular to those belonging to groups which embrace *O. macranthum* and *O. superbiens*. The plants are now producing their flower-scapes, which grow many feet in length. Therefore it is desirable to train the spikes so as to display the flowers to the best advantage. It is a good plan to place neat, painted sticks around the edges of the pots at equal distances and to twine the spikes around the outsides of them. There is a considerable advantage in training them. It is best to do this before the spikes grow too long, and the ends of the spikes should remain loose for, say, 6 inches or a foot, as they are very brittle and soon snap. As the flower-buds are produced guard against attacks of thrips, greenfly, and other insect pests. Small punctures in the petals are the first indication of attacks by thrips, but plants that have been sprayed at regular intervals, as advised previously, will be but little troubled in this respect. When the flower-buds can be separately discerned the plants should be placed in a very light position in a cool house, for under these conditions the colour of the flowers will be enhanced. Spray the plants overhead whenever the outside conditions are favourable, and keep the atmosphere moist.

ONCIDIODA COOKSONIAE (COCLIODA NOEZLIANA × ONCIDIUM MACRANTHUM).—This hybrid Orchid produces spikes similar in character to *O. macranthum*, and bears purple-scarlet flowers. The plant will grow well if afforded a similar treatment to *Odontoglossum*, but it requires to be shaded carefully during the summer. Protect the flower-scapes from slugs by binding a small piece of cotton-wool around the stalk at the base, and place Potatoes, hollowed out, as traps for slugs and woodlice.

MILTONIA VEXILLARIA.—The plants of this useful species are producing their flower-scapes. Cultivators differ as to the best season for repotting these plants; the time should be governed by the conditions under which plants are cultivated. In the neighbourhood of large towns and manufacturing districts the plants frequently suffer considerable damage in winter owing to the deleterious atmosphere injuring the foliage. In such places it is not advisable to disturb the plants in the autumn by repotting them. Some of the finest specimens I have ever seen were repotted just as the flower-scapes appeared in the spring. It is at this season that the new roots are produced, and by repotting at this period the roots get hold of the fresh compost immediately, and no ill-effects are experienced. Use ample materials for drainage, and employ compost consisting of equal parts fibrous peat, broken leaves and Sphagnum-moss chopped moderately finely, with sufficient sand to render the compost porous. Carefully shade all repotted plants from strong light, and promote a moist atmosphere until the plants get re-established.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOLE,
Eastwell Park, Kent.

OUTDOOR VINES.—Vines are not grown so extensively out-of-doors for fruiting as formerly, but they are planted for ornamental purposes, and there are many corners on sunny walls in the warmer parts of the country where suitable varieties would repay for a little more attention than is usually afforded them. Too often the vines are tangled masses of untrained growths; the bunches are neither reduced in numbers nor are the berries thinned, and as the season advances the plant becomes covered with

mildew. Under such treatment it is useless to expect a crop of Grapes. Established vines, if not already attended to, should be pruned at once and the bark washed with a strong solution of Gishurst Compound or other insecticide to destroy red spider and other insect pests. When the rods are cleansed train them evenly over the wall, allowing sufficient room for the young shoots to develop. Where it is intended to plant young vines this season the border should be prepared now, so that the soil may become settled before planting. A south or south-west wall is practically the only position suitable for outdoor vines, which thrive in any good garden soil; if the ground is not suitable the top portion should be removed and good loam substituted. Make provision for efficient drainage and do not use rank animal manures, which, when employed in large quantities, often favours the development of mildew, which is the chief trouble with this crop. Wood-ash, lime rubble, charcoal and a little crushed bones should be mixed with the loam and the soil made firm. Do not plant the vines for another month at the earliest, when the soil will be warmer and the roots will develop quickly. Royal Muscadine, Sweetwater and the Strawberry Grape are the best varieties for planting. Chasselas Vibert produces slightly larger berries, which ripen earlier than those of Royal Muscadine. This variety should be given a trial where outdoor Grapes are grown.

GRAFTING FRUIT TREES.—In most gardens there are inferior sorts of Apples, Pears or

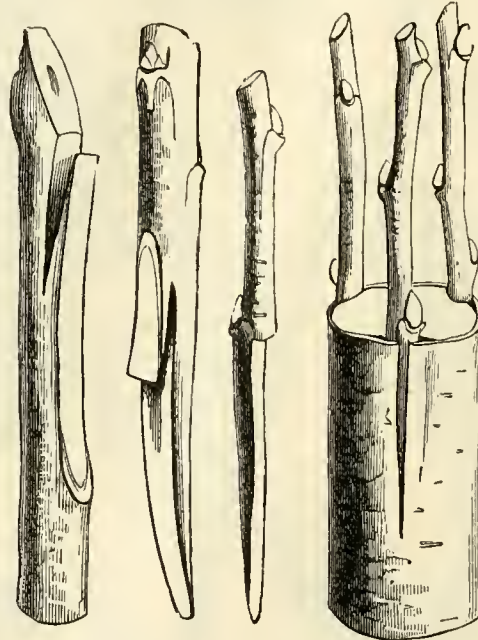


FIG. 97.—WHIP OR TONGUE GRAFTING.

FIG. 98.—CROWN OR RIND GRAFTING.

Plums, and healthy trees may be grafted with better varieties. In view of grafting them the trees should have been already headed down. The sap will soon be rising, and as soon as this is apparent the work should be taken in hand. Cut a little more off each branch so that the scions are inserted in fresh wood. There are several methods of grafting, all of which may be carried out with success under ordinary conditions.

CROWN OR RIND GRAFTING (see fig. 98).—With large or moderate-sized trees—as in the case of those headed down—crown grafting is the most convenient method. The scions having been cut off in the winter and inserted in the soil in a cool, shady border, should now be cut to about 6 or 8 inches, leaving three or four buds on the top part. The lower portion should be cut in a sloping direction and neatly fitted in an incision already made in the bark of the stock. Bind the union, but not too tightly, with matting and cover with grafting wax or clay.

WHIP OR TONGUE GRAFTING is suitable for very young stocks. Cut off the top of the

stock at a joint and slice off a portion about 3 inches long, as shown in fig. 97, with a reverse cut at the top to form the tongue. Cut the scion to fit the stock, making a notch to fit in the one in the stock. Although not shown in the illustration, a slight shoulder may be made to rest on the top of the stock. The scion should have three buds. When the stock and scion are unequal in size see that at least one side of each are in juxtaposition. As with crown grafting, tie with matting and cover the union completely with clay or wax to exclude the air. Watch the grafts closely in times of drying winds, and if cracks appear in the clay or wax damp the material and press it with the hand to make it smooth, filling up cracks with fresh clay or wax.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

SUMMER CHRYSANTHEMUMS.—In addition to raising a stock of these plants from cuttings, divide the old stools to furnish early-flowering specimens in neat bush form. When these Chrysanthemums are well rooted, whether in pots or planted out in frames with a little fermenting material, for furnishing bottom-heat, afford plenty of ventilation, so that they may be hardy for planting out at the end of April. Good varieties for the purpose are *Mme. Desgranges*, *Queen of the Earlies*, *Precocity*, *Horace Martin*, *Harvest Home*, *Nina Blick*, *Goacher's Crimson*, and all of the *Massie* family. Do not fail to plant in the reserve garden a good stock of Chrysanthemums and other flowering plants that may be drawn upon at any time of the year, to make good losses in the decorative quarters.

THE PLEASURE GROUNDS.—No other part of the gardens is expected to afford greater enjoyment or variety than the pleasure grounds, and those in charge should utilise every possible means to maintain them in the highest possible condition with a variety of beautiful flowers and foliage plants. One of the greatest helps in obtaining new ideas is to take frequent notes throughout the seasons, drafting them into a scheme to be put into practice at the proper time. A garden may be laid out by the most skilful architect and in the most elaborate manner possible, but unless the gardener exercises constant skill and attention in maintaining a high standard it soon becomes uninteresting, and fails to please. There is no such thing as finish or finality in a garden, and it requires unceasing energy and forethought to develop it and make the most of its capabilities; therefore every opportunity should be embraced for adding to its attractions. Things always proceed most smoothly when there is a good understanding between master and man, and the gardener must not expect to be an autocrat of the "Corney Grain" type, for occasionally the non-technical man can offer suggestions which even the professional gardener can put to good use.

BORDER PHLOXES.—Varieties of Phlox decussata provide some of the best flowering plants for arranging amongst shrubs as well as in the herbaceous border proper. Young plants always give the finest trusses of bloom, and now is a suitable time to dig up the old stools with a view to selecting suitable portions from the outside for re-planting. Each new set should have three or four crowns. Where it is possible to do so, it is an advantage to plant in fresh beds, as the Phlox is a gross feeder, and after a time exhausts the soil. In any case the ground should be trenched deeply, incorporating plenty of animal manure at the bottom, and a little bone meal on the top. *Coquelicot*, *Lord Rayleigh*, and *Tapis blanc* are three excellent varieties.

SWEET PEAS.—Plants that were raised three or four in each 4-inch pot should be gradually hardened, preparatory to planting them out in well-prepared trenches in ground that was manured heavily last autumn. Although the Sweet Pea needs plenty of manure, fresh dung should never be used except for mulching.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

PINES.—Pay unremitting attention to such details as watering the plants, the temperatures of both house and bed, and the admission of air to fruiting plants. Reduce the supply of water to plants the fruit of which is on the point of colouring. Ripe fruit that may not be required for immediate use can be kept back for two or three weeks by removing the plants to a dry, airy house, such as a late vinery or Peach house, keeping them dry. Beds in which successional plants are grown, if composed of tan, or other fermenting materials, will occasionally require turning and partly renewing to maintain the bottom-heat at 70° or 80°. If necessary do this at once, and replunge the plants, carefully watching the state of the bed; should this become too warm, lift the plants as advised in the issue for March 14. Suckers or successional plants should be potted before the roots become too matted, and care should be taken to see that the soil in which they are now growing is thoroughly moistened before doing the work. Pot firmly, in ten or twelve-inch pots, according to the strength of the plants.

PEACHES AND NECTARINES.—Those crops that have commenced the stoning process—a very critical stage—require increased attention in their general management, and particularly so with regard to the correct regulation of the temperatures, which should not be subjected to fluctuations. At night the temperature may with safety be kept at about 63° or 65°, with a rise of about 10° by day until the stoning process is completed. Examine the inside borders carefully, as from frequent syringings and sprinklings the surface becomes an unsafe guide as to the true condition of the soil, inasmuch as it may be nearly dust dry, whilst the surface may be in a state of saturation. Continue to disbud by degrees all trees in successional houses, and ultimately leave no more young growths—except in doubtful cases—than will be required to furnish the trees for next year's crop. Tie in the young growths as soon as this can be done, and thin by degrees the young fruit, leaving rather more than may be required for an average crop till they have stoned. All misplaced or deformed fruits should be promptly removed. The flower-buds on trees in late houses are well advanced, and the anthers are showing in many cases. At this stage syringing should cease, and on dull or damp days a little artificial heat may be employed early in the day, but only sufficient to warm the pipes. This will bring about a circulation of warm, dry air, and so assist the fruits to set. Should there be the least trace of green fly on the trees fumigation must be resorted to before the flowers expand.

MELONS.—Preserve for as long a time as possible all the matured leaves on the plants. It is a mistaken idea to remove these, as is so often done when dealing with Cucumbers; therefore carefully guard against this loss of foliage, especially those leaves that are next to the fruit, or the latter will fail to finish satisfactorily, and will be deficient in flavour. The timely pinching of all young growths will aid in the preservation of all requisite foliage for the maturation of the fruit. Water the soil thoroughly with diluted liquid manure warmed to the same temperature as that of the house, also keep the evaporating troughs filled with water, as this will assist in keeping insect pests in check.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

MISCELLANEOUS PLANTS.—Fuchsias rooted last autumn are growing well, and the points of the shoots should be pinched to make shapely plants. Secure the central growth to a stake and sling up the side shoots thereto. Remove all flowers and re-pot as required. Hippeastrums are flowering freely, and the roots should be watered frequently with weak liquid manure. As the plants pass out of flower remove them to a heated pit and plunge the pots in a little

bottom heat. Promote a moist atmosphere to encourage growth. Introduce fresh batches of the plants into heat to maintain a succession of flowers. Make the main sowing of *Primula obconica*, and sow *Cinerarias* for autumn flowering.

EUPHORBIA JACQUINIAEFLOREA AND E. PULCHERRIMA.—Examine these plants at frequent intervals to ascertain if they are keeping in a plump condition. Remove all flower heads from *E. Jacquinaeflora* and spray the plants lightly overhead, as this favours the development of short-jointed growths which can be inserted as cuttings in April.

FLOWERING PLANTS.—*Cinerarias*, *Calceolarias*, *Primulas*, *Genistas*, and bulbs coming into flower require plenty of light and air. Very little fire heat will be necessary, for the blooms will last longer in a cool atmosphere. At the same time frost at night must be guarded against. Guano, liquid manure, or soot-water may be used occasionally as a stimulant. The spikes of *Mignonette*, *Pelargoniums*, and bulbous plants should be staked neatly, and successional batches of plants introduced into mild heat. Plants of *Fuchsia*, *Heliotropium* (*Heliotrope*) and *Lippia citriodora* (Sweet-scented *Verbenas*) should now be growing freely. Keep a diligent watch for insect pests and syringe the plants on bright days. Continue to propagate *Heliotropes* and *Verbenas*. Stop the shoots of *Pelargoniums* where growth is irregular, and train the shoots to allow ample room for their blooming. *Deutzias* that have finished flowering should be treated with care to favour the development of healthy wood, cutting back the old growths as soon as the flowers are over. Use the syringe freely to keep the plants clean; re-pot any specimens that require increased root-room before they make much new growth.

GESNERA.—The plants need a similar treatment to the *Gloxinia* as regards compost and management during the early stages. Place from three to six corms in each 6-inch pot an inch below the soil. Grow the plants in a house having a moist atmosphere, and an atmospheric temperature of 65°. Water the roots very sparingly at the start. When growth is active a little weak manure-water may be afforded twice weekly. Fumigate the house at intervals, as the leaves are subject to infestations of red spider and mite. Pot successional batches to prolong the flowering.

THE "FRENCH" GARDEN.

By PAUL AQUINAS.

HOT-BEDS.—As this is the best time for the marketing of Lettuces provision should be made where there is no hot-bed for cloches, so as to have a constant supply until those grown on the cold-beds are ready for cutting about April 20. A good method is to set the Lettuces at the bottom row of each frame, where there is more moisture, whilst the shade from the board will keep aphids in check. When the bulk of Lettuces has been removed clean the Carrots and weed the rows. Afterwards spread fine, black soil to cover the collar of the roots, which will retain the bright red colour and enhance the market value of the crop. Afford ventilation, but gradually, on every possible occasion when the conditions are favourable. The Turnips are well through the soil, and only one plant should be left where every three or four seeds were sown in one spot. The manure fly often attacks the cotyledons and young leaves, but very fine ashes or road sweepings scattered on the leaves when they are wet will stop the damage. On mild, calm days leave one light open at the top, and the next at the bottom to promote a current of fresh air in the frames.

OPEN-AIR CROPS.—Plants of the batch of Caulitowers sown last October are in a prime condition for setting out. They are planted between the Cabbage Lettuces, allowing a distance of 2 feet between the rows and 18 inches between the plants in the rows. Cos Lettuces reared under the cloches through the winter are also ready for planting out; the variety *Paris Grey* requires a space of 18 inches by 12 inches in the row, but where *Paris White* is

grown, especially in heavily manured ground, 18 inches each way should be allowed.

HOT-BEDS FOR THE CROPS UNDER CLOCHES.

—Cos and Cabbage Lettuces must be kept thoroughly cleansed, and as the plants are advanced in growth great care must be taken to shade them during times of bright sunshine. Whitewash should not be used for another fortnight at least, but place mats in position between 11 a.m. and 2 p.m. The Cabbage Lettuces grown in these beds should be marketed as soon as they are ready, to prevent the Cos Lettuces from becoming drawn.

UNHEATED FRAMES.—The crop of Radishes should be marketed whenever the roots are ready and before they check the growth of the Lettuces. An occasional watering on bright days will greatly help their growth. Ventilation is now afforded more freely, and in the case of the variety "Passion" a little air may be allowed at night in suitable weather to harden the plants in view of their removal from the frames and lights in two or three weeks' time.

MELONS.—Early Melons should be potted into 60-sized pots, and plunged immediately after in a manure bed, unless they are to be grown in a greenhouse. Better results will be obtained after the middle of April if all seedlings and plants are grown, till they are put in their final quarters, on a hot-bed, where growth will be harder and healthier than in a greenhouse. As soon as the plants have developed three leaves stop them by cutting the stem across the base of the third leaf; remove the cotyledons close to the stem, and take out the small eyes at their base. The plants should be on the dry side when the work is done, which should take place early on a bright day to facilitate the cauterising of the cuts. Afford ventilation daily to crops in the nursery beds for at least half an hour to change the atmosphere. Seeds should be inserted in sufficient quantity to ensure having a number of good plants to choose from at planting time. Seeds of Cucumbers may be sown in the same manner as recommended for Melons. Only short and hardy varieties should be chosen for growing in frames.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

LEEKs AND CELERY.—If the ground on which the remaining portions of these crops are growing is wanted the plants may be lifted, the leeks to be laid-in at the base of a north wall and the Celery placed upright, closely together, and covered, in a cool, dry shed or outhouse.

PEAS.—It is time to make another sowing, choosing a second early sort. The furrow should be made slightly deeper than for the last batch. Tall growing varieties are the more profitable, but where suitable sticks are difficult to obtain, those of medium growth must be relied on. Peas sown in January are sufficiently advanced to have soil drawn up on each side of the row, and the sticks placed in position for supports. Even quite dwarf sorts crop all the better when staked. If the plants have been forwarded in boxes, planting should be no longer delayed. The soil having been allowed to become dry, shake the roots free, and line in the plants at about 4 inches apart, if the ground be dry, leaving a shallow depression to be filled with water and afterwards filled up. Protect with short spruce branches, and let the subsequent treatment be such as will promote a strong, vigorous growth.

TURNIPS.—Successional sowings of this crop may now be inserted, with a view to having an uninterrupted supply of medium-sized roots. *Snowball* is a reliable, well-flavoured variety for summer use.

SEED-SOWING.—Other seeds to be sown include Cauliflowers, *Magnum Bonum*, *King*, and *Erfurt*, which will turn in late in summer. Also more Brussels Sprouts, *Winningstadt* Cabbage, and Savoy.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR APRIL.

WEDNESDAY, APRIL 1—
Liverpool Hort. Assoc. Spring Sh. (2 days). B.G.A. Ex. Council meet.

THURSDAY, APRIL 2—
Linnean Soc. meet.

FRIDAY, APRIL 3—
Dundee Hort. Assoc. meet.

SATURDAY, APRIL 4—
Soc. Française d'Horticulture de Londres meet.

TUESDAY, APRIL 7—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. on "The Cultivation of Amaryllis.") Hort. Club dinner and meeting: lecture by Mr. P. Amanry Talbot on "The Flora of Nigeria."

MONDAY, APRIL 13—
United Hort. Ben and Prov. Soc. Ann. meet. Bank Holiday.

TUESDAY, APRIL 14—
Kingsbridge Daffodil Spring Fl. Sh.

WEDNESDAY, APRIL 15—
Roy. Hort. Soc. Coms. meet (Special Daffodil Show, 2 days.)

THURSDAY, APRIL 16—
Manchester and N. of Eng. Orchid Soc. meet. B.G.A. (Watford branch) meet.

FRIDAY, APRIL 17—
Huntingdon Daffodil and Spring Fl. Sh.

TUESDAY, APRIL 21—
Roy. Hort. Soc. Coms. meet (Nat. Auricula and Primula Soc. combined Show.) (Lecture at 3 p.m. on "The Probable Origin of Existing Flowering Plants.") Lincolnshire Daffodil Soc. Show.

WEDNESDAY, APRIL 22—
Herefordshire Spring Fl. Sh., Shire Hall, Hereford.

THURSDAY, APRIL 23—
Nat. Rose Soc. Spring Ex. at R.H.S. Hall, Westminster, Midland Dist. Soc. Sh. at Birmingham (2 days). Roy. Botanic Soc. meet.

WEDNESDAY, APRIL 29—
Nat. Auricula and Primula Soc. (Mid. sect.) Ex. at Birmingham Bot. Gdns. (2 days). Perpetual Fl. Carnation Soc. Spring Sh. at Bournemouth (2 days). Roy. Caledonian Hort. Soc. Spring Show (2 days).

THURSDAY, APRIL 30—
Manchester and N. of Eng. Orchid Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 45.2°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, March 25 (6 p.m.); Max. 50°; Min. 35°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, March 26 (10 a.m.); Bar. 28.7°. Temp. 49°. Weather—Dull.

PROVINCES, Wednesday, March 25. Max. 45°, Yarmouth; Min. 42°, Aberdeen.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—
Rose Trees, Shrubs, Perennials, Lilies, etc., at Stevens' Rooms, King Street, Covent Garden, at 12.30 p.m.

MONDAY AND FRIDAY—
Herbaceous Plants and Hardy Bulbs, at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.

TUESDAY—
Hollies and other Nursery stock, at Messrs. Paul's Nurseries, High Beech, Epping Forest, by Protheroe and Morris, at 12.

WEDNESDAY—
Perennials and Bulbs at 12, Trade Sale of miscellaneous Bulbs at 12, Japanese Lilliums at 2.45, Palms and Plants at 5, by Protheroe and Morris.

THURSDAY—
Roses, by Protheroe and Morris, at 1.

THURSDAY AND FRIDAY—
The entire collection of Orchids formed by Francis Welleley, Esq., by Protheroe and Morris, at 1.

THURSDAY AND FRIDAY—
Alpine, Rock and Herbaceous Plants, at the Nurseries, Baldoek Road, Letchworth, by Protheroe and Morris, at 12.

Every advance in soil science demonstrates the complexity of the problems which confront

those who seek to unravel the tangle of relations which subsist between the plant and the earth in which it lives.

Yet every advance is a hopeful promise that this tangle shall be unravelled, and that before long the grower shall be able to control and modify soil conditions with even greater certainty than he can at present.

It was but recently that the biological aspect of the soil came into prominence, and investigators are busy at the work of discovering the ways and habits of the micro flora and fauna of the underground. To-day it is the turn of the physical chemist—he who works on the border-line which lies between physics and chemistry. His recent discoveries have shown that in more subtle ways than was supposed the soil is the seat of changing and far-reaching chemical operations.

The nature of these discoveries is described well in a recent article in the *Agricultural News* (XIII., No. 308), which deals with the phenomenon of adsorption and with the work of American investigators on the part played by adsorption in the physico-chemical processes which recur in the soil. The phenomenon of adsorption may be illustrated by pouring a solution of a dye into a tube packed with finely-ground chalk. If the tube be long enough it is found that the dye is separated from the solvent and is held by the chalk, so that the clear solvent issues at the lower end of the tube.

With this in mind it may be imagined readily that if a solution of a mineral substance—for example, kaitit or sulphate of ammonia—be poured on the soil, some, or all, of the dissolved salt might be adsorbed by the soil particles, so that if any of the liquid drained away that liquid would contain little or none of the mineral in question. This is evidently a matter of first importance in relation to the economic employment of soluble artificial fertilisers. Recent discovery carries us far beyond this point.

for it has established the fact that the fine particles of such substances as charcoal may not only adsorb substances, but may exercise selective adsorption. For example, as is pointed out in the article referred to, certain substances can adsorb the constituents of a chemical compound at different rates. Thus if a solution of such a salt as potassium chloride be added to charcoal it is found that potassium in the form of potassium hydroxide accumulates in the solution, and that chlorine, combined with hydrogen to produce hydrochloric acid, is adsorbed.

Mr. E. G. Parker (*Journal of Agricultural Research*, Vol. I., No. 3) has shown that soils also possess this power of selective adsorption, but that in accordance with the contrariety of things they manifest it in exactly the opposite way to that in which charcoal exhibits adsorption. For instance, if potassium chloride be added to soil potash is adsorbed more rapidly than hydrochloric acid. Wherefore it follows that the potash is as it were glued on to the soil particles, and the

hydrochloric acid is free to react with other mineral bases—lime, magnesia, and the like—and with them it forms salts. Thus it follows that not only is the potash held, but other substances, which may also serve as plant foods, are brought into the soil solution.

As by dropping a pebble into water ever-widening waves of change are produced, so by dropping water containing salts among the microscopic pebbles of the soil wide waves of chemical change are set up.

That these facts are of prime importance to a discovery of the true philosophy of manuring is self-evident. One example of this importance must suffice. If more than one substance be dissolved in water the mere presence of one of the substances in solution may affect the rate at which the other is adsorbed. For example, it appears that if kaitit (crude potassium chloride) be mixed with nitrate of soda and dissolved in water the adsorption of potash is reduced, and hence less of the kaitit remains in the soil than would have been the case had it been added alone.

As our contemporary points out, it is premature to apply this new-born knowledge to the practical problems of the efficient use of artificials; nevertheless, it is clear that the further study of adsorption by soils is bound to lead to results of great importance to the practice of horticulture and agriculture.

SMALL HOLDINGS.—In the House of Commons on Tuesday last Mr. Runciman stated that 6,271 approved applicants were still waiting for small holdings. Applicants under the Small Holdings Act had been provided with 182,020 acres, of which 157,104 were in England and 24,916 in Wales.

LA SOCIÉTÉ POMOLOGIQUE DE FRANCE.—The annual Congress of this society will this year be held in Grenoble; the date proposed is September 7. Among the questions to be dealt with are the raiser's rights in new fruits, how to teach fruit culture, the culture of Apples and Pears in pots, and terms to be used in the description of fruit and plant novelties.

ROSE CONGRESS AT BIARRITZ.—The Société Française des Roséristes will hold its annual Congress at Biarritz on May 29 to June 1 next, under the auspices of the Société d'Acclimatation du Golfe de Gascogne. A programme of the five days' festivities has been prepared. Apart from the Congress meetings, there will be visits to San Sebastian, Hendaye, Fontarabia, Cambo, and other places.

WORSHIPFUL COMPANY OF GARDENERS.—Arrangements are being made for a visit of delegates of the Worshipful Company of Gardeners to France, extending from June 7 to June 13, in order to study horticulture and to visit Versailles, Bourg-la-Reine, Roseraie de l'Hay, Verrières-le-Buisson, Olivet, Blois, Romarantin and la Ferté-Imbault. It is expected that the headquarters will be successively at Paris, Orleans, and Angers. The visit will be a state one, and the members will take with them the Company's corporate insignia, and will be everywhere officially received. Special pains have been taken to secure important introductions through the Foreign Office, and the French Government is giving all possible facilities. An interesting programme is in course of preparation by the French Ministry of Agriculture.



JAPANESE GARDEN IN THE ROYAL INTERNATIONAL HORTICULTURAL EXHIBITION

(SEE "THE HORTICULTURAL RECORD," REVIEWED IN THE PRESENT ISSUE.)

BILLS OF VEGETABLE MORTALITY.—From statements in the French Press it appears that M. P. NOEL, Diector of the Laboratory of Agricultural Entomology (Seine-Inférieure), has endeavoured to express in terms of money the loss due to parasitic diseases of cultivated plants. M. NOEL computes that there are in France 350 different kinds of useful cultivated plants, of which 16 are fruit trees, 28 are vegetables, 33 forage plants and cereals, 14 forest trees, 34 ornamental trees and shrubs, 117 ornamental plants, and 85 medicinal plants. These 350 kinds of plants suffer from the attacks of 12,000 different kinds of insects—allowing that one and the same insect attacks more than one plant the number of insect pests may be reckoned at 6,000. The plants have to bear also the brunt of the attack of upwards of 4,000 fungi and other vegetable parasites. For the reason just given, that one and the same parasite attacks more than one kind of plant, M. NOEL assumes, for the purpose of his estimate, that the number of parasites which infest the 350 useful species or varieties of cultivated plants may be put at 2,000. Careful and extended analyses of the statistics of the Ministry of Agriculture and of Forestry, enquiries addressed to horticulturists and others, lead M. NOEL to estimate that the annual revenue derived annually from the cultivation of these plants is about 9 milliards of francs (£36,000,000 sterling). From other and extended enquiries he concludes that the depredations of the 8,000 insect pests and plant parasites cost the country each year no less than 3 milliards of francs (£12,000,000 sterling). In other words, the sum exacted from the cultivators by these pests amounts in two years to more than the price of the indemnity (5 milliards) paid by France to Germany at the conclusion of the war of 1870. Truly and in grim ironic sense, "peace hath her victories no less renowned than war."

"**THE BOTANICAL MAGAZINE.**"—The issue for March contains illustrations and descriptions of the following plants:—

ARISTOLOCHIA GIGANTEA, tab. 8,542.—*Aristolochia gigantea* must not be confused with *A. gigas*, which is synonymous with *A. grandiflora*. *A. gigantea* formed the subject of the Supplementary Illustration in the *Gardeners' Chronicle*, September 17, 1892. The flowers are more than 6 inches wide and the colour brownish-purple with pale-yellow reticulations. Contrary to most *Aristolochia* flowers the blooms of *A. gigantea* are fragrant.

RIBES LAURIFOLIUM, tab. 8,543.—We are indebted to Mr. E. H. WILSON for the introduction of this charming little shrub, which he found growing wild in Western Szechuan at an altitude of 5,000 feet. The blossoms appear in February and the sexes are on distinct plants; from these circumstances it is expected that fruits will develop only in exceptionally mild seasons. The garden value of *Ribes laurifolium* is more as an early blooming subject for the rockery and other places suitable for dwarf plants. Specimens planted on the rockery at Aldenham House, Hertfordshire, have been very beautiful this season.

SALVIA ULIGINOSA, tab. 8,544.—This beautiful, blue-flowered Sage has every appearance of making a good garden plant, especially as it flowers from September to November, and has so far proved to be hardy in this country. It is a tall grower; the loose, erect shoots attain to a height of 6 feet—just the kind of plant that is serviceable for the back of the hardy flower border. The flowers are a beautiful shade of opal blue.

KNIPHOFIA CARINATA, tab. 8,545.—Plants of this yellow-flowered *Kniphofia* raised at Kew in 1892 only blossomed in September, 1912, but they flowered again in the following year. This points to the species being a shy bloomer, although it may be that, like most seedlings, a long time is necessary before the adult stage is reached. The species is new to science, and should offer excellent material for the hybridist. The raceme is

about 6 inches long and densely packed with clear, yellow flowers.

COTONEASTER TURBINATA, tab. 8,546.—This species was received from China, the home of so many other *Cotoneasters*, by Mr. de VILMORIN, and the original flower fruited in that gentleman's garden in 1903. Specimens presented to Kew have reached a height of 6 feet, and everything points to the plant being hardy and vigorous. The flowers appear in July, which is later than in any other *Cotoneaster*, and this is an advantage, for then most flowering trees and shrubs are getting over. The inflorescence is a pyramidal corymb of white flowers, which are sometimes tinged with purple and sometimes with rose.

PLANTS IN FLOWER AT MADRESFIELD COURT.—The following shrubs are in bloom in the gardens of Lord Beauchamp, at Malvern, Worcestershire:—*Corylopsis spicata*; *Ceanothus dentatus*, with beautiful dark-blue flowers and trained on a south wall; *Forsythia viridissima*, *F. intermedia*, *Magnolia stellata*, *Berberis Darwinii* and *Ribes sanguineum*. Bulbs blooming in grass include:—*Muscari Heavenly Blue*, *Grape Hyacinths* (a lovely mass of blue), *Chionodoxas*, *Scillas*, *Hyacinths* and *Daffodils*. In the wild garden are *Violets*, *Primroses*, *Pulmonaria* (*Lungwort*), *Lent Lilies* and *Helleborus orientalis*; whilst on the rockery are *Saxifraga Bursleriana major*, *S. Boydii* and others, *Primula cashmeriana*, *Polyanthus*, and *Gentiana acaulis*.

PRIMULA OBCONICA AND SKIN IRRITATION.—The well-known skin irritation caused by handling *Primula obconica*, Haue, has been investigated recently by Professor Dr. E. ROST (*Arb. aus. den Kaiserlichen Gesundheitsamte*, xlvii., Heft i, 1914). This observer gives a careful account of the effects produced by the plant, confirms previous investigators in ascribing the poisonous effects to the glandular secretion of the hairs covering the plant, and shows that none of the forms of *P. obconica* in commerce is innocuous. This is certainly true of the ordinary *obconica* form, but, as pointed out by Professor BAYLEY BALFOUR in his paper read at the *Primula Conference* last year, it is not true of *P. sino-listeri* Balf. fil., which is one of the many microforms of the species *P. obconica*. Dr. ROST shows that the symptoms set up by *P. obconica* are due not to mechanical irritation but to the action of a poison—of unknown nature—on the skin. As a result of this action eczema and dermatitis are produced. The period of incubation—that is the time before the effects are produced—ranges from a few hours to so much as sixteen days. Dr. ROST is of opinion that complete immunity from the poison does not exist. Nevertheless, it is certain that many who work with this plant suffer no ill-effects from handling it. The symptoms are confined closely to the place of contact, and the eczematous region tends to form a concentric area. The itching which results from infection is disagreeably continuous, but is apt to be more pronounced during the morning and evening. Those who are particularly susceptible to the poison should avoid working among the plants with bare arms, since the more delicate the skin on which the poison exudes the more certain are the irritant effects. Care should be taken to protect the infected part from pressure, and Dr. ROST states that zinc powder applied locally alleviates the irritation. It will be evident from the foregoing that those who are markedly susceptible to the poison may secure complete immunity if they wear gloves whilst working among the plants, rinse the gloves afterwards in methylated spirits (in which the poison is soluble), and keep their arms covered.

MUNIFICENT PUBLIC GIFTS.—In addition to his gift of a public park to Hucknall, referred to on p. 205, the Duke of PORTLAND has presented to the town of Mansfield a six-acre

pleasure-ground, at present leased by the town council from the Duke. To Kirkby-in-Ashfield he has offered to present three recreation grounds, and to Mansfield Woodhouse over 13 acres known as Yeoman's Hill, to be kept as an open space for the benefit of the parish. The Duke has also sent cheques to assist the local authorities to fence off the land.

LONDON GARDENS.—Mrs. O'SULLIVAN is engaged in developing a movement known as "London Gardens," and the scheme is affiliated to the Royal Horticultural Society. The object is to encourage the cultivation of small gardens in London, as well as window and roof gardening. The promoters will deal with London only, and will make fortnightly exhibits at the Royal Horticultural Society's Hall, Westminster, in conjunction with the society's fortnightly meetings, when special prizes will be awarded.

WOMEN GARDENERS.—At the annual meeting of the Governors of the Horticultural College, Swanley, Kent, the President, Sir JOHN COCKBURN, in moving the adoption of the report, said the Horticultural College at Swanley was one of the pioneers of the higher education of women. Women there went through a practical training in gardening, and were fitted to take important posts which many old students held, both in this country and the Overseas Dominions. A Swanley student, Miss GERTRUDE WATKIN, had received the appointment from the Home Office of gardening instructor at the Borstal Institute for Girls at Aylesbury.

PARIS INTERNATIONAL HORTICULTURAL SHOW, 1915.—The committee appointed to carry out the details for the show next year has just been constituted by the society, and is divided into four sections. One will undertake the organisation of the Congress, receptions and outings; another will deal with the schedule of prizes, classes, etc.; a third will look after the advertising; and a fourth will deal with the question of subsidies, special prizes and patronage.

NURSERY NOTES.

PRIMULAS AT FOREST HILL.

It has been our pleasure on many occasions to visit Messrs. Jas. Carter and Co.'s Forest Hill Nursery at Primula time, and, although our visit this season was made rather late, the plants were the finest we have seen for a long time. Everyone is aware that the nursery culture of flowering plants differs in many respects from that practised by gardeners. The advantage is on the side of the gardener. The nurseryman has a different object in view, his concern being chiefly to raise seeds, which imposes the greatest strain on the energies of the plants. When, therefore, the plants are of the highest quality after setting a quantity of seeds, as is the case at Forest Hill, the utmost praise is due to the growers. Well-grown plants show the varieties at their true worth, and at Forest Hill house after house is filled with some of the most beautiful *Primulas* in cultivation. The cream of the collection is the beautiful variety named *Princess May*, which bears on stout stalks trusses of large, blush-rose coloured flowers, set off by the pale green, palm-shaped foliage. The greater part of one of the glass-houses is filled with plants of this variety. Some are growing in small (sixty-sized) pots; this method should commend itself to those who are required to furnish plants for table decoration, as the *Primulas* flower splendidly under these conditions, and make fine little decorative specimens. The flowers do not suffer in size, and the spike is in suitable proportion. *Holborn Coral* is a giant form of the *sinensis* type, taking its name from its coral-red colour. The flowers are large, the petals of good substance, and of a rich shade. In the same house

with the two last-named varieties is the new Stellata variety, Fairy Queen, which has ivory-white petals, with a zone of carmine and a gold centre. There is promise of an abundant seed crop of this variety, for the plant not only blooms freely, but also sets the seed-pods well. It is in every way a satisfactory plant for growing. Plants of this variety are also grown in small pots, the blooms being particularly large. White Stellata and Pink Stellata are two good types of the Star Primulas, and both are useful for supplying cut blooms. The varieties Vermilion, Pink, Salmon, Crimson, and Ruby are all good in their respective colours. Carmine Empress is one of the deepest-coloured varieties among the double-flowered kinds, and produces a very bushy truss. Mauve Pink is exceptionally free in blooming, sending up secondary trusses from the base. Holborn Crested is a distinct variety of great beauty. The large mauve-pink flowers bear a broad band of yellow around the eye; the cresting takes the form of

stellata novelties in white, pink, salmon, blue, crimson, lilac, and other colours, all of which are valuable for conservatory and greenhouse decoration. They have also some remarkably fine forms of *Primula obconica*; their variety Royal Purple impressed us as being one of the finest colour developments in this flower we have seen. The strain is known as Excelsior, and varieties of reddish-magenta, pale blue, lavender-blue, Hydrangea-blue, purple, white, crimson and other shades are all good.

Cinerarias and Gloxinias are also extremely well grown. There is about the whole of this well-managed nursery an air of alertness which always impresses visitors favourably.

SCOTLAND.

RESIGNATION OF MR. P. HARPER.—Much regret is felt in Aberdeen and elsewhere that Mr.



FIG. 99.—ROCKERY EXHIBITED BY MESSRS. PIPERS AT THE R.H.S. HALL ON TUESDAY LAST.
(See p. 225.)

fimbriated edges round the petals, the foliage being also crested. Elaine is a well-known white variety, and is to be found with both Fern-leaf and palm-leaf types of foliage. It is a favourite with growers, being one of the most freely-flowering of all Primulas. Snowflake is a semi-double variety; the petals are sometimes faintly suffused with rose-colour. Alba magnifica, which belongs to the *sinensis* type, is pure white, and so is the interesting variety known as Bouquet White, which has a whorl of leaf-like bracts surrounding the large pips.

Among novelties of promise, Rose-Magenta may be mentioned; the petals are of a very beautiful shade, harmonising well with both lighter and darker tones. Double Scarlet has brilliant flowers of the *sinensis* type, and is one of the finest varieties of this shade. Other good varieties are Princess of Wales, white, delicately tinted with salmon; Giant Salmon, Vivid (double carmine variety), and Crimson King. Messrs. Carter's possess a fine strain of

Peter Harper, keeper of the Duthie Park, Aberdeen, has been compelled through ill-health to tender his resignation.

DUMFRIES CORPORATION CUP.—The Dumfries Town Council has offered the large silver cup, which was at one time competed for at the show of the now defunct Dumfries and Galloway Horticultural Society, to the Dumfries and District Horticultural Society, which was founded last year.

AGRICULTURAL RESEARCH WORK BY CARNEGIE SCHOLARS.—The Carnegie Trustees have issued a report on the work of their bursars for research work since the establishment of the scholarships in 1908.

PLEASURE GROUND FOR ABERFELDY.—The Marquis of Breadalbane has offered the town of Aberfeldy the Den and Falls of Moness at a nominal rental of 1s. per annum, on several conditions easy of fulfilment, and the Town Council has accepted the gift. Miss Jessie Campbell, Aberfeldy, has offered £200 to repair the walks and bridges and to restore the mineral well.

EDINBURGH'S BOWLING GREENS.—Owing to local opposition, the provision of bowling greens at Piershill will not be proceeded with, but the Council is recommended to approach the Board of Works for ground for two greens at the Meadowbank entrance of Holyrood Park. Another bowling green is to be provided at Morningside.

SEED-TESTING STATION.—A seed-testing station has been established by the Scottish Board of Agriculture at 21, Duke Street, Edinburgh. The station is to be under the charge of Mr. T. Anderson, formerly of the botanical department of the Edinburgh and East of Scotland College of Agriculture, and also of the Armstrong College, Newcastle-on-Tyne. The station comprises a laboratory, two testing rooms and an office, and the system is to be the same as that followed in the Irish seed-testing station.

THE PROPOSED NATIONAL PARK AT LOCH LOMOND.—The proposal to establish a national park on the shores of Loch Lomond, at Balloch, Dumbartonshire, is assuming a practical shape. Sir John Stirling-Maxwell, of Pollok, and Mr. A. Wyllie, of Cordale, have secured an option for the purpose of the purchase of the Balloch Castle estate, and have deposited the sum of £500 each. The purchase price is £30,000 and the Town Council of Glasgow is asked to provide £10,000 towards the amount required, the intention being to raise the remainder by subscription.

ALLOTMENTS IN EDINBURGH.—The allotments already provided in different parts of Edinburgh have been so much taken advantage of that a further scheme for the St. Leonard's district is in contemplation to supply disappointed applicants for the last allocation of allotments in the district. It is proposed to form twenty-six additional allotments.

PROPOSED PUBLIC PARK FOR FALKIRK.—The estate of Bantaskin, Falkirk, is for sale, and there is a proposal that it should be purchased for the purposes of a golf course and recreation ground for the town of Falkirk. The Corporation having declined to furnish the necessary funds a movement is on foot to raise the money by public subscription.

THE "THOMSON" CHALLENGE CUP FOR GRAPES.—Mr. James Dixon, Rowallan, having won outright the "Massie" Challenge Trophy offered for Grapes at the autumn shows of the Royal Caledonian Horticultural Society, Messrs. William Thomson and Sons, of the Clovenfords Vineyards, have offered a Cup of the same value to be competed for in the class for six bunches and on the same conditions as before. The trophy is of the value of fifty guineas.

EDINBURGH PARKS AT THE LYONS EXHIBITION.—Among the numerous exhibits which are being sent by the Corporation of Edinburgh to the Exposition Internationale Urbaine de Lyon are views in colour of the parks and gardens of the city. *Corres.*

FOREIGN CORRESPONDENCE.

PRIMULA OBCONICA.

On attentively examining the reports which from time to time have found their way into the papers as to the poisonous nature of *Primula obconica*, two things appear to go like a red line through all these communications: (1) The suspicion of those who have suffered from those ill effects that some strains are more virulent than others, and (2) that the evil effects only appear in the more advanced stage of cultivation. May I now be allowed to make a few statements in support of these two points? Mrs. Heinrich received two pots of *Primula obconica* when this plant was yet comparatively rare. They were then in flower and of the original pale lilac tint. A few days afterwards an ominous irritation on fingers and wrists set in, and, having read before notices in the gardening papers, I at once said: "*Primula*

obconica! away with it." They went and all was well again. However, as the improved strains made their appearance, Mrs. Heinrich could not resist the temptation and last year ordered seed to try "whether it had not only been imagination after all, obconica is of such exceeding beauty that we cannot do without it." Very well! The seedlings thrived amazingly and no ill-effects were noticed. They commenced flowering beautifully, nothing happened. They were cut for vases and handled without any precaution having been taken, and we were already rejoicing that the stately plant need not be sent into exile again. But, lo! Fate strode along its evil path again. As the inflorescences began to lessen unsightly shrivelled blossoms spoiled the handsome trusses; to remove those Mrs. Heinrich reached across the stage in short sleeves. Next morning the mischief was done; the under-side of the wrists showed the well-known irritation. "Then it can only be the pollen to cause it and not the leaves, for I have now been handling the plants for over six months without any ill-effects," and to prove it she bravely rubbed the upper side of her wrists with the decayed blossoms, and, sure enough, the same night the irritation followed. As all plants with the original lilac tint had been sorted out into the front row, so that Mrs. Heinrich had mostly to reach across those, she has a feeling as if plants reverting to the original mauve or lilac tint were more virulent, for what she had used for cuttings were mostly of the rosy tints improved. The two presentation plants spoken of were also of the original tints; they were also in the advanced state of cultivation and commenced their action at once, while the seedlings, tended for six months without evil effect, did not prove virulent until they reached about the same condition as the presented plants.

All this may, of course, be supposition, but in so important a case I thought it well worth recording in order to direct observation into that channel. The case of hay-fever which is said to be caused by the pollen of, I believe, Corn (Rye), and which also only attacks predisposed persons, might offer an analogy as to the ill-effects such plant-pollen may produce on mankind. The microscope has not disclosed any appearances of a suspicious nature in the pollen grains of *Primula obconica*. *E. Heinrich, Planegg (Bavaria)*.

[There appears to be no doubt but that the irritation is caused by a poison excreted by the glandular hairs of the petioles, flower peduncles, etc. See note on p. 221.—Eds.]

CORONA DI NOVIA.

In the *Gardeners' Chronicle* of January 24 last, p. 64, C. B. asks if any reader can give him the name of a shrub growing freely here and known as Corona di Nova. I think that I can answer this question. Although the plant grows freely here it does not belong to this country, but to Europe, and it is the very well known *Spiraea*. There are many kinds, and nearly all do very well in this climate. *Horacio M. Peluffo, Buenos Aires*.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE HISTORY OF AQUILEGIA STUARTII.—In his notes upon "Aquilegias and Their Hybrids" (see p. 207), the Rev. David R. Williamson states that the introducers of *A. Stuartii*, Messrs. Cocker, of Aberdeen, informed him that it was the result of a cross between *A. coerulescens* and *A. glandulosa*. This is not correct. At the International Hybrid Conference held under the auspices of the Royal Horticultural Society in London in 1899, the late Dr. Charles Stuart contributed a paper upon "A Few Notes on Reproduction in Hardy Plants," and in the course of his remarks he dealt very fully with *A. Stuartii* and how he raised this exquisite hybrid Columbine. He stated that in May,

1880, having plants of *A. glandulosa* and also *A. Witmannii* in flower in pots at the same time, he fertilised a flower of the latter species with pollen from *A. glandulosa*. A ripe pod of seed was gathered in less than a month and sown at once. Seven plants lived, and were planted out on a sheltered border in the autumn. Their existence was forgotten, till, at the end of May of the following year, a friend who was staying with Dr. Stuart came upon the first open flower on one of the plants. The visitor asked where the plant had come from, as the flower was the finest he had seen of the Columbine family. Dr. Stuart could hardly tell until he referred to his notebook, but he was quite aware they were crossed seedlings. The seven plants all bore flowers identically the same, the top blooms measuring more than 4 inches across. The following season, that was in 1882, Dr. Stuart took flowers to a meeting of the Berwickshire Naturalists' Club, and they were submitted to the late Professor Balfour, of Edinburgh University, and the late Mr. John Sadler, then Curator of the Edinburgh Botanic Gardens; both gentlemen, in conjunction with many other competent judges, considered *A. Stuartii* a first-rate novelty, and it was there and then named by Professor Balfour. Dr. Stuart stated that he had grown *A. glandulosa* on and off for forty years; he found it a notoriously shy flowerer, and he used many years ago to consider it a triumph to get it to display its beauty at all. He claimed for *A. Stuartii* that it was an improved form of *A. glandulosa*, refined in colour, free blooming, very large and attractive in appearance, and it is perfectly hardy and flowers three weeks before other Columbines, always coming true from seed. I find it difficult to accept the Rev. David R. Williamson's statement about the difficulty of the cultivation of this hybrid Columbine, which he attributes to Dr. Stuart. I remember a pleasant week-end visit to Dr. Stuart's garden at Chirnside, in the fertile mense of Berwickshire, and I shall always picture in memory a three-year-old bed of *A. Stuartii*, with its thousands of beautiful blue-and-white blossoms. That bed was indeed a sight, the plants a perfect sea of flowers and clothed with fine, strong foliage. Dr. Stuart's method of culture was to dig a piece of ground 2 feet deep, adding an abundance of well-decayed manure to the subsoil. The bed was then raked smooth, newly ripened seed being sown thinly in rows, the plants allowed to remain where they were to flower. The seedlings were thinned out to 1 foot apart each way, and in time the foliage covered the entire bed. Every autumn the bed received a top-dressing of well-rotted manure, and the plants improved in vigour every season. I had tried this *Aquilegia* without success, but I had always purchased plants, and as a rule they were miserable specimens in pots. After my visit to Dr. Stuart I adopted his method, and I was rewarded with a grand lot of plants, which grew well for several years. Newly ripened seed sown at once where the plants are to flower seems to solve the supposed difficulty of the successful cultivation of this exquisite Columbine. *George M. Taylor, Mid-Lothian*.

FRUIT-EATING BIRDS.—Various kinds of fruit-eating birds have multiplied to a large extent during recent years, as the winters have been so mild that they have not been starved out. Particularly numerous are the tomtits, which did much damage to choice Apples and Pears last autumn. I write to suggest, both to growers and gardeners, that it is a good plan to plant plots of the common Sunflower near to the trees. Tits are very fond of the seeds, which draw the birds from the fruits. I think also that if cheap soup-plates or dishes were placed near the trees and kept filled with water they might prevent some damage to the fruit crops. *George Bunyard, Maidstone*.

CYANIDING FOR MEALY BUG.—Mr. Fulton (p. 151) says that 130 per cent. sodium cyanide is a meaningless quantity, but now that I have used it, I can assure him that it has proved full of meaning to all exposed bugs and other insect life in the houses in which it has been used. I have treated two vineries, one before cleaning and one after. All the bugs that could be seen were dead, but we found some alive under the bark, and a few have commenced to move on the

vines first treated, which shows the necessity of cyaniding several times at short intervals, as I am certain no strength of gas will destroy the bug or eggs which are in small holes or cracks. I am now going over the rods with a strong wash, and may stypitic any holes that can be seen. It is somewhat strange that some writers have found it necessary to use the cyanide for so many years as they say they have done, judging by the results they have obtained, as once houses and plants are free of bug it cannot come annually in the same way as fly, thrip, or spider. I was surprised to read that Mr. Colville's plants in an adjoining house had suffered, as I have had no trouble of that sort. Certainly this looks ominous for any attempt to cyanide the said houses. Mr. Colville has perhaps not tried the same formula as used by those who have found it harmless to all plants. *A. Shakelton, Forde Abbey Gardens, Chard*.

FEBRUARY RAINFALL (see p. 157).—The rainfall during the month of February, which *Southern Grower* states is known as "fill-dyke," differs peculiarly in different years. Mr. Cook, writing from Sandringham Gardens, on March 4, states "but 21.68 inches was registered during the whole of last year, and January and February this year are on a par with last year. In January 1.59 inch fell, and in February 1.29 inch, so we have no 'fill-dyke' February here; in fact, the springs and our water supply have never been so low." Compare this with our records at Swanmore, where last year the total rainfall was 38.51 inches, while in February this year 6.38 inches fell. In February, 1910, we registered 5.15 inches, in 1912 3.56, and a total for the latter year of 46.01, which was 16 inches more than the average for South Hants. In February this year we had but seven dry days. We have, therefore, much more rainfall than in *Southern Grower's* district. *E. M., Swanmore Park Estate, Bishops Waltham*.

—Seeing that *Southern Grower* records a rainfall in February of 4.02 inches in his district, and several others 3.0 inches or just over, I am anxious to know if our fall (5.24) is a record for this part of the country. Most of the rain fell during the second and third weeks. On each day of the 8th and 21st we registered 0.87 inch, and 0.75 on the 11th. The most rain fell on these three days. On seventeen out of the twenty-eight days in the month we registered rain, and this is remarkable, seeing that we seldom get the heaviest of the rain, as Woldingham is on the top of the Surrey Hills, 880 feet above sea level. As a rule the heaviest storms seem to occur in places of a lower elevation. *Thos. Newman, The Gardens, Wistler's Wood, Woldingham, Surrey*.

NARCISSUS FLY.—At the meeting of the R.H.S. Scientific Committee on February 24, reported in your issue of March 7, a *Narcissus* bulb was shown containing larvae of the small *Narcissus* fly (*Eumerus lunulatus*), and it was stated that this fly is apparently very destructive to *Narcissus* bulbs in certain seasons. It is very desirable that this point should be thoroughly investigated under proper scientific conditions. Until this is done we shall be in a state of harassing uncertainty, but meanwhile, *Daffodil* growers may be relieved to think, as I do, that this opinion will perhaps prove to be mistaken. I have had experience of this fly (or *Eumerus strigatus*) in varying conditions since 1907. The conclusion I have come to at present is that the larvae do not attack a healthy bulb, and are never the direct cause of the injury. I have, for instance, taken up this spring a dozen or more *Daffodil* bulbs which contained *Eumerus* larvae, and in every one of them there was also a *Merodon* grub. In other years I have had bulbs containing *Eumerus* larvae only, but there has always been reason to believe—and I recorded it at the time—that the actual damage to these bulbs had been caused by a *Merodon* grub which had migrated or pupated, or by some fungous pest, and that the *Eumerus* larvae were feeding, not on the living tissue, but on the excrement of the *Merodon*, or on the dead and rotting substance. In the case mentioned by the secretary of the Scientific Committee, of *Eumerus* larvae being found in the rhizomes of *Iris* (which were from my plants), the injury was directly

caused by the fungous-bacterial Iris disease, and it is practically certain that the larvae came from eggs deposited in the rhizomes after the tissues had already gone soft and rotten from the disease. In fact, I feel satisfied that these Eumerus larvae are scavengers. *A. J. Bliss.*

THE N.E.H.S. (see p. 207).—I agree with some of the things my friend the Rev. Bernard Hall says in his letter to you, but has he done a wise or a kindly thing in rushing into print at the present moment? I think the new arrangements might at least have been given a year's trial. Mr. Hall, in all his speeches which I heard while he was Secretary, went out of his way, I thought, to belaud the R.H.S.—its kindly interest, its sympathy, its valuable help (which I never saw), etc., etc. How does this tally with his "Thirdly" in his letter to you? *W. Cuthbertson.*

JOURNEYMAN GARDENERS' WAGES.—Some years ago, shortly after the B.G.A. was started, one of its promoters was staying for a time with me, and was holding forth in his usual manner about shortening the hours of labour and increasing the

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 24.—There was a large exhibition on the occasion of the fortnightly meeting held on Tuesday last in the Vincent Square Hall, Westminster. Forced flowering trees and shrubs occupied the greater part of the space under the north wall, and the visitor on entering the building was confronted by a charming scene of floral beauty. Other notable exhibits before the Floral Committee were groups of Ferns, Carnations, Roses, Clematis, Hippeastrums, Pelargoniums and hardy flowers. This Committee recommended three Awards of Merit to novelties.

The Orchid Committee awarded nine Medals to collections and recommended one First-class Certificate and two Awards of Merit.

The Narcissus Committee awarded five Medals to groups and four Awards of Merit to novelties.

The only exhibit of importance in the Fruit and Vegetable Section was a collection of vegetables shown by Messrs. SUTTON AND SONS, Reading.

those of *R. argenteum*, and have a similar showy pink stigma. They are, however, larger and more cylindrical, and in most of the blooms the stamens are either completely absent or curiously aborted. The plant is hardy, and the blooms of *R. argenteum* shown with it had been cut from out of doors, but the specimen which obtained the award had been flowered in a cold house to keep the bloom in the best condition. Shown by Miss MANGLES, Seale.

Soldanella pusilla alba (see fig. 100).—The pure white, solitary, nodding, and prettily fringed flowers of this dainty little Alpine were much admired. Except in colour, it exactly resembles the type, having the smallest of kidney or heart-shaped leaves in close rosettes and flower stems only 2 or 3 inches high. Shown by Messrs. T. S. WARE, Ltd., Feltham.

Trillium rivale.—This, the smallest of the American Wood Lilies, has a small, creeping rootstock, and bears its erect cup-shaped flowers on slender stems about 3 inches high. The blooms scarcely exceed an inch in diameter, and are white, richly and somewhat variably dotted over with rose. Ternate-stalked bracts are borne about 2 inches below the flower. Shown by Mr. JAMES BOX, Lindfield.

OTHER NOVELTIES.

Rhododendron violaceum, Forrest's No. 5,876.—This new Alpine Rhododendron, from the Lichiang Range of Western China, was represented by a pretty flowering specimen only 3-4 inches high, raised from seed sown in 1911. As a garden plant it was thought too close to *R. intricatum*, which in foliage it somewhat resembles, though the leaves are glossier, narrower and recurved at the margins. The flowers, however, are very different, exceeding an inch in diameter, expanding almost flat, and having the segments cut almost to the centre. The filaments of the stamens are spreading, and as long as the corolla.

Rhododendron Keiskii, a little-known Japanese Alpine Rhododendron, with flowers of a pale lemon yellow, borne freely on plants only a few inches high, raised from seed in 1911. These, with flowers of *R. oleifolium*, were shown by E. J. P. MAGOR, Esq., St. Tudy.

Primula redolens.—A new Chinese Primrose collected by Mr. F. Kingdon Ward for Messrs. Bees, Ltd. It belongs to the *subfruticosae* section, and in foliage much resembles its congener *P. Forrestii*, appearing indeed softer and more hairy. Umbels of 12 to 20 flowers are borne on stout 6 to 9 inch stalks. They vary from white to pale pink in colour, in one case being splashed with purple, and all possess a small yellow eye. Shown by Professor BAYLEY BALFOUR, Botanic Gardens, Edinburgh.

CULTURAL COMMENDATIONS.

The award of a Cultural Commendation was made to Mr. W. BAIN, gardener to Elizabeth Lady Lawrence, for The Knoll variety of *Lapageria rosea*. This fine variety has already received an Award of Merit, but remains very little known. In colour it is hardly so deep as in the Nash Court variety, but the flowers are of large size and substance and quite distinct by reason of the open bell-shape given to the perianth by the spreading, recurving tips of the broad inner segments.

A Cultural Commendation was also awarded to Mr. EMERTON, gardener to Earl Brownlow, Grantham, for *Brownea grandiceps*, a leguminous stove shrub, with handsome pinnate drooping foliage and large, dense, flat heads of bright carmine flowers. The plant had been in cultivation at Grantham for twenty-four years, and flowered in 1913 for the first time. The species was awarded a First-class Certificate by the R.H.S. Floral Committee in August, 1866.

GENERAL EXHIBITS.

Messrs. J. HILL AND SON, Edmonton, were awarded a Silver-gilt Flora Medal for a group of well-grown Ferns, the most striking feature being the tinted varieties, that were in their full beauty with the new season's fronds. The finer of these were *Adiantum scutum roseum*, *Lastrea erythroa*, *Brainea insignis*, and *Blechnum brasiliense*.

Messrs. JAMES VEITCH AND SONS, Chelsea, showed a magnificent group of forced shrubs in flower, for which a Silver-gilt Flora Medal was awarded. This splendid exhibit had in the



FIG. 100.—*SOLDANELLA PUSILLA ALBA*.
(See Awards by R.H.S. Floral Committee.)

rate of pay, and sadly wanted me to join the movement. This I refused to do on any account, and was told that, whether I did or not, they would get a following. I said I had no doubt about that, and the following would include all the aspiring young men who could be found any day in the week with their hands washed and their coats on and the handle of the door in their hand, waiting for the "bell to ring," and I wish you joy of them, for they will never be gardeners. Gardeners are born, not made, and the man who is born to become a gardener knows nothing of hours, and is like cream—bound to get to the top. *T. Smith.*

—*H. H.* states on p. 189 what he considers a suitable wage for a man of my experience. I have long been trying to obtain a post with better wages, but without success. The reason I took this place was that I was told that if I made a good garden of it my wages would be considerably increased; when, however, I broach the subject the reply is always, "I can't afford it." I have thought many a time of giving up gardening and working as an unskilled labourer—I believe I should be better off. It's only the love of the garden that keeps me to it; the flowers are a greater joy to me than anything else. *C. H.*

At the three o'clock meeting in the Lecture Room a paper on "The Pruning of Shrubs" was read by Mr. Edwin Beckett.

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. C. E. Shea, H. J. Jones, J. Dickson, G. Reuthe, C. R. Fielder, J. T. Bennett-Poë, C. Dixon, A. Turner, W. Bain, R. C. R. Nevill, W. H. Page, A. A. Dorrien Smith, J. W. Moorman, R. Hooper Pearson, T. Stevenson, J. Green, F. W. Harvey, J. F. McLeod, J. Jennings, W. Howe, C. Blick, B. Crisp, W. A. Bilney, W. B. Cranfield, G. Gordon, R. C. Notcutt, C. E. Pearson, F. Page Roberts, E. H. Jenkins, G. Paul, J. Hudson, C. T. Drury, and W. J. Bean.

AWARDS OF MERIT.

Rhododendron argenteum.—This is a massive-flowered seedling variety of *R. argenteum*, with noble foliage and handsome flowers. The leaves, about 12 inches long by 3 inches broad, are richly silvered below and are held horizontal on stout stalks. The truss of flowers shown was 9 inches across and carried twenty-four large bells of a pure creamy-white, with a small purple patch at the bottom of the bell. The flowers are close to

centre a large number of Wistarias set off by standard Laburnums, Prunus triloba and Exochorda grandiflora, and then a row of the white Viburnum Opulus leading on to masses of Cerasus Pseudo-cerasus, Pyrus floribunda, Prunus triloba and others of this kind. As a separate exhibit Messrs. Veitch showed greenhouse Rhododendrons, Azaleas, Boronia megastigma and varieties of Hippeastrums.

Messrs. W. CUTBUSH AND SON, Highgate, staged a large group of forced shrubs, the collection embracing Acacias, Wistarias, Viburnums, Genistas, Magnolias, Laburnums and Azaleas. This firm also showed Alpines and Carnations Scarlet Glow, Lady Ingestre, pink, Mrs. Lucy Mackinnon, scarlet, and others. (Silver Flora Medal.)

Messrs. JOHN PEED AND SON, West Norwood, were awarded a Bronze Banksian Medal for a bank of forced shrubs, principally Rhododendrons, relieved with ornamental-leaved Maples.

Mr. L. R. RUSSELL, Richmond, showed, as at the last meeting, varieties of large-flowered Clematises, for which a Silver Banksian Medal was awarded.

Messrs. WM. PAUL AND SON, LTD., Waltham Cross, showed pot plants of the fragrant Choisy ternata, for which a Silver Banksian Medal was awarded. The plants were carrying fine trusses of the pretty white blooms, and were suitable for arranging on the conservatory stages or for other decorative uses.

Messrs. R. GILL AND SONS, Tremough, Cornwall, again contributed a display of Rhododendrons, for which a Bronze Banksian Medal was awarded. Trusses of Rhododendron Nuttallii were the most conspicuous in the collection, the large cream-coloured bells having a yellow tinting in the interiors.

Messrs. H. J. JONES, LTD., Hither Green, Lewisham, showed bunches of zonal-leaved Pelargoniums. Pink Pearl (pink, with a white eye), Charles Bullen (salmon-pink), and Mrs. West, a variegated salmon and white flower, are three new varieties of merit. The variety Will, of crimson-scarlet colour, had pips measuring 3 inches across.

An exhibit of these flowers was also shown by Messrs. H. CANNELL AND SONS, Eynsford.

Mr. A. H. COLE, Swanley, Kent, exhibited Star Cinerarias of an early strain, and a crimson sport of Pelargonium Paul Crampel, the novelty being a good winter bloomer as well as a fine summer bedding variety. (Bronze Banksian Medal.)

Messrs. H. B. MAY AND SONS, Edmonton, were awarded a Silver Banksian Medal for Pansies, Violas, Cinerarias, Cyclamens and Clematis.

Mr. CHAS. TURNER, Slough, exhibited miscellaneous greenhouse flowering plants. Specimens of Clivia miniata were exceptionally good, and there were also finely-flowered Staphylea colchica, Azaleas, Acacias, with Roses and Ferns. (Bronze Banksian Medal.)

Messrs. WILLS AND SEGAR, South Kensington, showed flowering plants of Mignonette, Gerberas, Azaleas, Clivia and Cinerarias, for which a Bronze Banksian Medal was awarded.

A Silver Banksian Medal was awarded to Viscountess KNUTSFORD, Royston, for Hippeastrums (Amaryllis).

Mr. GEORGE PRINCE, Oxford, was awarded a Silver Flora Medal for Roses. The fine pillar variety Tausendschön was shown remarkably well, and there were good blooms of W. Shean, Liberty, Mrs. J. H. Welch, Mrs. W. J. Grant and Mme. Edouard Herriot.

Messrs. W. AND J. BROWN, Stamford, showed Roses. The new pillar variety, Mrs. Rosalie Wrinch, has large, single rose-coloured blooms. (Bronze Banksian Medal.)

The following were exhibitors of Carnations:—Mr. H. BURNETT, Guernsey (Silver Flora Medal); Messrs. STUART LOW AND CO., Enfield (Silver Banksian Medal); Mr. C. ENGELMANN, Saffron Walden (Bronze Flora Medal); Messrs. ALLWOOD BROS., Wivelsfield, Haywards Heath (Bronze Banksian Medal); Messrs. W. WELLS AND CO., LTD., Merstham; and Messrs. YOUNG AND CO., Cheltenham (Silver Banksian Medal).

Messrs. J. PIPER AND SON, Bayswater, contributed the largest of the numerous rock gardens staged on this occasion. As will be seen on reference to fig. 99, it was

a large and bold exhibit, well arranged and not over planted. The top was crowned with a mass of the fine rose-coloured Azalea Benegeri, with Bamboos and other shrubs as a background. At the lower part were excellent plants of Primula denticulata, Gentiana verna, Primula Juliae and other Alpines, whilst a depression at the other end was massed with Primula japonica. In nooks and crannies of the rocks were set fine plants of Shortia uniflora, Viola gracilis, Anemones and other species. (Silver-gilt Banksian Medal.)

Messrs. BARR AND SONS, King Street, Covent Garden, were awarded a Bronze Flora Medal for a rockery, which was planted with seasonable flowers, such as Muscari, Anemone blanda taurica, Narcissus Cyclamineus, Fritillarias and Anemone Pulsatilla.

Mr. MAURICE PRICHARD, Christchurch, Hampshire, had one of the best exhibits of Alpines arranged as a flat rock garden, on which Anchusa myosotidiflora, Primula rosea grandiflora and Primula cashmeriana Riverslea, a deep lavender-coloured form, were especially noticed. (Silver Banksian Medal.)

Messrs. JOHN WATERER, SONS AND CRISP, LTD., Twyford, showed Alpines on a rockery and flowering shrubs, including Rhododendron caucasicum, R. Handsworth Early Scarlet, Andromeda (Pieris) japonica and Prunus Pisartii. (Bronze Banksian Medal.)

Rock gardens were also exhibited by Messrs. J. CHEAL AND SONS, Crawley (Bronze Banksian Medal); Mr. A. HEMSLEY, Crawley; The Misses HOPKINS, Shepperton (Bronze Banksian Medal); Mr. CLARENCE ELLIOTT, Stevenage (Bronze Banksian Medal); and Messrs. WHITELEGG AND PAGE, Chislehurst (Bronze Flora Medal.)

Messrs. G. and A. CLARK, LTD., Dover, showed their fine Primulas Cloth of Gold and Avalanche in an exhibit of hardy flowers. (Bronze Banksian Medal.)

Mr. REGINALD PRICHARD, West Moors, Dorsetshire, exhibited Alpines in pots. Hardy flowers were also shown by Mr. G. W. MILLER, Wisbech; BURTON HARDY PLANT NURSERY; GUILDFORD HARDY PLANT NURSERY; Messrs. BAKERS, Wolverhampton (Bronze Banksian Medal); Mr. GEO. REUTHE, Keaton (Bronze Banksian Medal); Mr. JAMES BOX, Haywards Heath; Messrs. T. S. WARE, LTD., Feltham (Bronze Banksian Medal); and Messrs. THOMPSON AND CHARMAN, Bushey, Hertfordshire (Bronze Banksian Medal.)

Messrs. RAMSBOTTOM, Geashill, Ireland, again showed flowers of their first strain of St. Brigid Anemones.

Messrs. CARTER, PAGE AND CO., London Wall, exhibited Violas and Pansies, also spikes of the beautiful, light-blue coloured Nemophila insignis.

Orchid Committee.

Present: J. Gurney Fowler, Esq., in the chair, and Messrs. Jas. O'Brien (Hon. Sec.), Gurney Wilson, De B. Crawshaw, W. Bolton, R. Brooman White, S. W. Flory, W. H. White, E. H. Davidson, J. Cypher, J. Charlesworth, H. G. Alexander, J. E. Shill, A. McBean, W. Cobb, F. M. Ogilvie, R. G. Thwaites, W. H. Hatcher, Stuart Low, R. A. Rolfe, T. Armstrong, W. P. Bound, A. Dye, Sir Harry J. Veitch, and Sir Jeremiah Colman, Bart.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontioda Zenobia (see fig. 101) (*Ada Charlesworthii* × *Odontoglossum percultum*) from F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth). A very fine and distinct hybrid, and a worthy production in every way. The spike bore two flowers of circular outline, the segments being also broad and of fine substance, in colour deep reddish-claret with a violet tint; the broad lip expanded in front, deep rose with yellow crest.

AWARD OF MERIT.

Dendrobium superbum Huttonii. Southfield variety, from W. WATERS BUTLER, Esq., Southfield, Edgbaston (gr. Mr. Jones). A large form of the type originally introduced by Messrs. Jas. Veitch and Sons through their collector Hutton, and with more colour in the lip. Flowers white, the greater part of the lip dark violet.

Sophro-Laelio-Cattleya Niobe Orchid Dene variety (*L.-C. Gottoiana* × *S.-L. Felicia*) from

E. H. DAVIDSON AND Co., Orchid Dene, Twyford. A charming flower, of good size and shape, and one of the darkest of *Sophrontis* crosses. Sepals and petals bright rose-purple. Lip deep claret-red. The flower is of fine substance.

CULTURAL COMMENDATION.

To Mr. W. H. WHITE, Orchid grower to Elizabeth Lady Lawrence, Burford, for a grand specimen of *Platyclinis glutacea*, with about 100 sprays of white, fragrant flowers.

To Mr. COLLIER, gr. to Sir Jeremiah Colman, Bart., for *Odontioda Bradshawiae* with 119 flowers.

GENERAL EXHIBITS.

Messrs. SANDER AND SONS, St. Albans, staged a very fine group, for which a Silver-gilt Flora Medal was awarded. At the back were large numbers of Messrs. SANDER's original type of *Cymbidium insigne*, with tall spikes of white flowers with rose-purple markings, several *C. Gottianum*, and *C. Pauwelsii*, *C. Wiganianum* and some fine specimens of *C. eburneum*, one of which bore 30 flowers and buds. With them were good specimens of hybrid *Odontoglossums*, *Laelio-Cattleyas* and other hybrids. Rare species noted were *Coelogyne Lawrenceana*, *C. speciosa* Vanda Watsonii, *V. suavis*, *Megaclinium maximum*, *Cirrhopetalum Masterianum*, *Maxillaria Fletcherianum*, *M. lepidota*, various *Masdevallias* and *Dendrobiums*.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), was awarded a Silver Flora Medal for an interesting group containing several hybrids raised at Rosslyn, including two very fine forms of *Cymbidium Low-grinum* (*Lowianum* × *tigrinum*), the new *Brasso-Cattleya* William Pitt (*C. Octave Doin* × *B.-C. Marie*), a finely shaped light-rose coloured flower; *Laelio-Cattleya Avoca* (*L. Latona* × *C. Trianae* var.), and some hybrid *Odontoglossums*, and *Odontiodas*. *Cymbidium* Lady Colman and *C. eburneum-Lowianum* were well shown, together with a good selection of *Cypripediums*, *Miltonia Warszewiczii*, and a well-flowered plant of the rare *Eulophiella Elisabethae*.

Messrs. CHARLESWORTH AND Co., Hayward's Heath, were awarded a Silver Flora Medal for a group of finely-grown Orchids, among which were noted a showy set of hybrid *Odontoglossums*, several fine *O. crispum*, the most remarkable being the pretty *O. c. Queen Maud*, the wax-like segments being distinctly spotted with purple, as in *O. c. Lady Jane*. The *Odontiodas* included a very deep scarlet *O. Charlesworthii*, *O. Cooksoniae*, *O. Bradshawiae*, *O. Lutetia* and others. Good *Laelio-Cattleya* Haroldiana, *Brasso-Cattleyas*, and *Dendrobiums*, and their fine *Miltonia Charlesworthii*, were effectively displayed, the front of the group being of profusely-flowered *Sophrontis grandiflora* and *Oncidium concolor*.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, were awarded a Silver Flora Medal for a group, principally hybrids, the centre being of very handsomely blotched hybrid *Odontoglossums* flowering for the first time. *O. Royal Purple* (*illustris* × *Edwardii*) was a pretty flower of a rich violet-purple colour. The *Odontiodas* included a brilliant scarlet form of *O. Keighleyensis*, *O. Bradshawiae*, *O. Leeanum* and others. Various hybrid *Dendrobiums*, varieties of *D. nobile* and its pure white variety *virginale*, *Miltonia* St. Andre, *M. Bleuana*, good *Cypripediums*, *Cattleyas* and *Laelio-Cattleyas*, some of them showing their first flowers, were also noted.

Messrs. STUART LOW AND Co., Bush Hill Park, and Jarvisbrook, Sussex, were voted a Silver Flora Medal for a group in which the *Dendrobiums* were a pleasing feature. These included several of the *D. Jamesianum* class, *D. crepidatum*, *D. Wardianum*, *D. crassinode album*, *D. Brymerianum* and *D. fimbriatum* oculatorum, arranged with *Cymbidiums*, *Oncidium sarcoades*, *Phalaenopsis Aphrodite* and a fine variety of *P. intermedia* Portei; some well-flowered *Cattleya Schröderae*, *Laelia Jongheana*, *Odontoglossums* and *Brasso-Cattleyas*. Among the *Odontiodas* was a distinct hybrid between *O. Rolfeae* and *C. Noezliana*, with broad rich red flowers of the *O. Charlesworthii* class.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. Collier), was awarded a Silver Banksian Medal for a selection of very fine specimens of *Odontioda Bradshawiae* and *O.*

Vuyksteakeae, nine plants of which bore between them 750 brightly-coloured flowers; one specimen of *O. Bradshawiae* with 119 scarlet flowers and buds securing for the grower a Cultural Commendation. The new *Odontioda Colmanii* (*Odontioda Bradshawiae* × *Odontoglossum amabile*), flowering for the first time, was also shown. The flower adhered closely to *Odontoglossum*, being not unlike a richly-blotched *O. crispum*.

Messrs. J. CYPHER AND SONS, Cheltenham, staged an effectively arranged group of good *Dendrobiums*, *D. Thwaitesii* Veitch's variety being still the best deep yellow, with maroon eye. *D. nobile* Perfection, *D. rybens grandiflorum*, *D. Dalhou-nobile*, *D. Apollo grandiflorum* were among the best. With them were *Angraecum sesquipedale*, *A. citratum*, *Masdevallia Gargantua*, a very dark *M. Chimaera*, *Phalaenopsis Sanderiana*, *Sarcochilus Fitzgeraldii*, *Oncidium concolor*, *Epidendrum xanthimum* and a good selection of *Cypripediums*.

Messrs. FLORY AND BLACK, Orchid Nursery,

cluding the spotted *O. Pescatorei* Pitt's variety, *Cymbidium eburneo-Lowianum* and the pale-yellow variety concolor and a large form of the pure white *Cattleya Brenda*.

R. G. THWAITES, Esq., Chessington, Streatham, sent a selection of hybrids, among which were *Odontoglossum Newlingii* (*Ossulstonii* × *cirrhosum*), *O. Vuylcirra* (*Vuyksteakeae* × *cirrhosum*) and *Odontioda Sanderiae*.

PANTIA RALLI, Esq., Ashted Park, Surrey, showed *Odontoglossum Aureola* of unrecorded parentage, a fine pale canary-yellow flower with some red-brown blotches on the lip—closely resembling *O. Canary* shown by Mr. RALLI previously, and illustrated in *Gardeners' Chronicle*, fig. 23, p. 44.

E. R. ASHTON, Esq., Broadlands, Tunbridge Wells, showed *Miltonia vexillaria* Lyoth (*chelseiense* × *Memoria* G. D. Owen), a large rose-pink flower with distinct rosy-crimson mask on the lip.

W. WATERS BUTLER, Esq., Southfield, Edgbaston (gr. Mr. Jones), showed *Cattleya Tityus* Southfield variety (*Octave Doin* × *Enid*), a large

AWARDS OF MERIT.

Narcissus Syphax (for garden and cutting).—A yellow *Jonquilla* hybrid of typical shape and excellent appearance, which, however, possesses but slight perfume.

N. Tita (for garden and cutting).—An exceedingly beautiful *Incomparabilis* variety. The perianth segments are very long and firm, and the moderately-sized corona has a fiery orange-rim. This large and bold flower is well set upon stout stalks.

N. Sunrise (for cutting).—As shown, the flowers of this medium-sized *Barrii* variety do not hold themselves sufficiently erect to be an ideal *Narcissus* for vases, but they appeared to be not fully developed. The colour scheme is, however, charming, and the nearly white of the overlapping perianth segments shades into pale yellow around the orange corona, which has a very bright rim. The round flowers have plenty of substance, and should travel well. These three varieties were shown by Mr. ALEX. M. WILSON.

N. Eastern Maid (for show).—A very chaste and beautiful *Leedsii* variety. The large, full perianth segments are of pale yellow colour, and surround a symmetrical corona of a deeper shade of the same colour. Shown by Messrs. R. H. BATH, LTD.

GENERAL EXHIBITS.

Messrs. BARR AND SONS, Covent Garden, London, contributed a large collection of cut *Narcissi* in which unnamed seedling Trumpet varieties were the chief feature. Of these, N.X. 1,997, a bicolor with a long, yellow trumpet and broad, overlapping perianth segments, should prove to be a popular flower. In *Corallina*, a *Leedsii* variety, the shrimp-pink corona standing out from the pure white perianth segments is exceedingly attractive. *Golden Arrow* is a *Cyclamineus* hybrid of large size but typical form and rich yellow colour. Of the new *Barrii* varieties in this collection the chief place was taken by *Isis*, in which the broad, overlapping primrose-yellow segments provided a splendid foil to the brilliant corona. Many standard varieties of great merit were shown, and a large number of the Trumpet variety King Alfred occupied the central position in this superb collection of *Daffodils*, gathered out-of-doors in Messrs. BARR's Cornish garden. (*Silver-gilt Banksian Medal*.)

Mr. ALEX. M. WILSON, Showell, Bridgwater, Somerset, showed fewer but equally meritorious blooms. The chief attraction was centred in the three new sorts which were selected for the coveted Awards of Merit. Most of the remaining blooms were unnamed seedlings, principally *Leedsii* and *Tazetta* hybrids. Of the former, one with a very widely expanded corona held the eye, and the latter type included several with brilliantly coloured coronas, giving the impression of cluster-flowered *Poeticus*. Of the named sorts, *Vivandière*, a *Barrii* which has "paper-white" perianth segments and a vivid orange rim to the yellow corona, was startlingly beautiful. *Beryl*, a *Cyclamineus* hybrid, and *Averil*, a bicolor Trumpet possessing a very long, yellow tube, were also very praiseworthy. (*Silver-gilt Banksian Medal*.)

Messrs. CARTWRIGHT AND GOODWIN, Kidderminster, specialised in *Tazetta* hybrids and Trumpet *Daffodils*. Of the former, the best were *Elvira* and *Aspasia*, and chief amongst the Trumpets were *Fairy*, *Supremacy* and *Gold Wolf*, another rich yellow-coloured sort, but with a much shorter and broader trumpet. *Chryse* was the largest *Jonquilla* hybrid in the show, and *Ivorine*, a *Leedsii* bloom with a flattened, fluted corona, had a very uncommon appearance. (*Silver Flora Medal*.)

Messrs. R. H. BATH, Ltd., Wisbech, included in an attractive group of *Daffodils* *Princess Ena* and *Marie Hall*, two delightful and similar *Incomparabilis* varieties, *Flame*, a vivid-eyed *Barrii*, and *Golden Sunrise*, a rich yellow, widely expanded Trumpet bloom. These were flanked by a large number of *Scilla* and *Chionodoxa* blooms and many *Tulips* in bowls of fibre. The outstanding *Tulip* varieties were *William Copeland* and *Valentine* (*Darwins*), *Le Rêve*, *Rose of Holland*, and *Prince of Austria*. (*Silver Flora Medal*.)

Mr. CHRISTOPHER BOURNE, Simpson, Bletchley, also showed an attractive group of *Daffodils*



FIG. 101.—ODONTIODA ZENOBIA: SEPALS AND PETALS COLOURED REDDISH-CLARET WITH A VIOLET TINT. (R.H.S. First-class Certificate on Tuesday last.)

Slough, were awarded a Silver Banksian Medal for a group of showy hybrids, the central plant being the richly-coloured *Laelio-Cattleya Invincible Orama*, which secured an Award of Merit in 1912. Also the original coloured form of *Laelio-Cattleya Frederick Boyle*, and the newer blush-white type, *L.-C. Violetta* of fine colour, and several new *Laelio-Cattleyas* of attractive colour. At the back were a selection of *Odontoglossums*, one spotted form of *O. Pescatorei* being specially good. Others noted were *Lycaste Skinneri alba*, two specimens of the pretty *Disa sagittalis*, and some *Brasso-Laelio-Cattleyas*.

Messrs. HASSALL AND CO., Southgate, were awarded a Silver Banksian Medal for a group in which were some fine varieties of *Cattleya Schrödera* and *Odontoglossums*, arranged with the bright-red *Renanthera Inschootiana*, very finely-coloured *Laelio-Cattleya luminosa*, *Maxillaria Sanderiana* and *Lycaste Skinneri*.

Messrs. J. AND A. McBEAN, Cooksbridge, staged a small group in which were a very bright-red *Oncidioda Cooksoniae*, some finely-coloured *Odontiodas*, good *Odontoglossums*, in-

and finely-formed rose-coloured flower with broad ruby-red lip with a rich yellow disc, and *Dendrobium superbum Huttonii giganteum*. (See Awards.)

E. H. DAVIDSON AND Co., Orchid Dene, Twyford, showed the large, bright-red *Odontioda Bradshawiae* *Borlases* variety and *Sophro-Laelio-Cattleya Niobe* Orchid Dene variety. (See Awards.)

Sir JOHN EDWARDS MOSS, Roby Hall, Torquay, sent a flower of a *Laelio-Cattleya* curiously malformed, the upper sepal being very short and distinctly divided, and the lateral sepals rudimentary and twisted.

Narcissus and Tulip Committee.

Present: E. A. Bowles, Esq., in the chair; the Revs. C. T. Digby and Joseph Jacob, Messrs. J. T. Bennett-Poë, W. B. Cranfield, Herbert Smith, P. D. Williams, Alex. M. Wilson, W. W. Fowler, J. D. Pearson, Walter T. Ware, P. Rudolph Barr, G. Reuthe, F. Herbert Chapman, G. W. Leak, Charles Dawson, Wm. Poupert, Christopher Bourne, C. Lemesle Adams, and Chas. H. Curtis (hon. secretary).

MARKETS.

COVENT GARDEN, March 25.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

s. d. s. d.	s. d. s. d.
Arums (Richardias), per doz.	2 6 3 0
Azaleas, White, per doz. bunches	3 0 4 0
Camellias, per doz.	1 6 2 0
Carnations, per dozen blooms, best American varieties	1 6 2 6
— smaller, per doz. bunches	12 0 15 0
— Carola (crimson), extra large	4 0 5 0
— Malmison, per doz. blooms:	6 0 10 0
— pink	6 0 10 0
Daffodils, single, per doz. bunches	2 6 3 0
— Golden Spur	4 0 5 0
— Victoria	4 0 5 0
— Empress	4 0 5 0
— Sir Watkin	2 6 3 0
— Princes	2 6 3 0
— Henry Irving	2 0 2 6
— Double Von Sion	2 6 3 0
Eucharis, per doz.	2 6 3 0
Forget-Me-Not, per dozen bunches	3 0 5 0
Freesias, per dozen bunches	1 6 2 0
Gardenias, per box of 15 and 18 blooms	6 0 8 0
Iris, Spanish, per bunch	2 0 2 6
Lilium auratum, per bunch	— — — —
— longiflorum, per doz. long	2 6 3 0
— short	2 0 2 6
— lancifolium album, long	2 0 2 6
— short	2 6 2 0
— ruhrum, per doz. long	2 0 2 6
— short	1 0 1 3
Lily-of-the-Valley, per dozen bunches:	— — — —
— extra special	12 0 15 0
— special	9 0 10 0
— ordinary	8 0 9 0
Mignonette, per dozen bunches	5 0 6 0
Narcissus Poeticus, per doz. bun.	2 6 3 0

Cut Foliage, &c.: Average Wholesale Prices.

s. d. s. d.	s. d. s. d.
Adiantum Fern (Maidenhair), best, per doz. bunches	7 0 8 0
Agrostis (Fairy Grass), per doz. bunches	2 0 4 0
Asparagus plumosus, long trails, per half-dozen	1 6 2 0
— medium, doz. bunches	12 0 18 0
— Sprenger	6 0 12 0
Carnation foliage, doz. bunches	3 0 5 0

French Flowers.

s. d. s. d.	s. d. s. d.
Anemones, double pink, per doz.	1 0 1 3
— De Caen, per doz. bunches	1 6 2 6
— Blue, per dozen bunches	1 0 2 0
Lilac white, per bunch	2 6 3 6
— mauve, p. bnch.	6 0 6 0
Ranunculus, scarlet, per dozen	4 0 6 0

Guernsey and Scilly Flowers.

s. d. s. d.	s. d. s. d.
Anemone fulgens, per doz. bncha	2 0 2 0
Daffodils (Guernsey) per doz.	2 0 3 0

REMARKS.—Prices have a tendency to rise. Good English Daffodils and Tulips are scarcer, especially the white varieties, but Darwin Tulips are gradually increasing in quantity and the demand for them is better. Irises are becoming more plentiful, but their prices remain firm. Roses are now becoming prominent on the salesmen's stands. Some fine blooms of Mme. A. Chateau, Mrs. Sharman, Crawford, E. J. Hill, Liberty and Richmonds are marketed by Mr. E. Rechford, of Cheshunt.

Those of newer colours, such as Sunrise, are to be seen on Mr. Beckwith's stands. Supplies of Lily-of-the-Valley and Lillium Harrissi are sufficient for the demand, whilst L. lancifolium rubrum and album are more plentiful and the quality is better. Stephanotis is the latest subject arriving from Guernsey. Narcissus and Daffodils from Guernsey and Scilly are not so numerous as hitherto. Anemones, Freesias and Star of Bethlehem are all arriving in a good condition. The majority of flowers coming from the South consist of white Stocks, Star of Bethlehem and Anemones, the last in several varieties.

Plants in Pots, &c.: Average Wholesale Prices.

s. d. s. d.	s. d. s. d.
Aralia Sieboldii, dozen	6 0 7 0
Araucaria excelsa, per dozen	18 0 21 0
Asparagus plumosus nanus, per dozen	10 0 12 0
— Sprenger	6 0 8 0
Aspidistra, per doz., green	18 0 30 0
— variegated	30 0 60 0
Azalea, per doz.	24 0 30 0
Cacti, various, per tray of 15's	4 0 —
— tray of 12's	5 0 —
Cinerarias, 48's	10 0 12 0
Cocos Weddelliana, per dozen, 60's	6 0 12 0
— larger, each	2 6 10 6
Croton, per dozen	18 0 30 0
Daffodils, 48's, per dozen	6 0 8 0
Dracena, green, per dozen	10 0 12 0
Erica persoluta, per dozen 48's	18 0 24 0
— Willmorei, 48's	12 0 15 0
Ferns, in thumbs, per 100	8 0 12 0
— in small and large 60's	12 0 20 0
— in 48's, per dozen	5 0 6 0
— choicer sorts, per dozen	8 0 12 0

REMARKS.—Flowering plants are most in demand. A few good pink Rambler Roses are sent by growers. Spiraeas and Marguerites are more plentiful and of much better quality than the earlier consignments.

Fruit: Average Wholesale Prices.

s. d. s. d.	s. d. s. d.
Apples, American, barrels	32 6 40 0
— Californian Newtown Pippin, case	10 6 11 6
— Nova Scotian, barrel	24 0 36 0
— Oregon, Newtowns, case	14 6 16 6
— Wenatchee, case	12 6 13 0
Bananas, bunch:	— — — —
— Double Ex.	11 0 12 0
— Extra	9 6 11 0
— Extra-medium	10 0 —
— Giant	14 0 —
— Medium	6 6 7 6
— Red, per ton	£25 - £28
— Jamaica, p. ton	£13 —
Custard Apples, per doz.	6 0 10 0
Dates, dozen boxes	4 0 4 6
— per cwt. case	20 0 —
Figs, Kadrowi, cwt.	11 0 —
Grapes—English:	— — — —
— Gros Colmar, per lb.	1 6 3 0
— Almeria, per barrel	20 0 24 6
— Almeria, per dozen lbs.	7 6 8 6
— Belgium Colmar, per lb.	1 8 2 6
— Cape, box:	— — — —
— White Muscat	7 6 8 6
— Red Muscat	8 0 10 0
— Black Hermitage	6 0 6 6
— Raisin Blanc	6 0 7 0
— Gros Colmar	13 0 14 0

REMARKS.—Apples from Nova Scotia, California and Wenatchee are still obtainable in barrels and boxes. The best varieties are Albemarle and Newtown Pippins. Cape fruits to hand this week per s.s. "Armadale Castle" consisted of about 22,000 packages. The s.s. "Dunluce Castle" is also due with a consignment. The fruits consist of Black, Whites and Red Grapes, Plums, Pears, Peaches and Melons. English and Continental supplies of Black Grapes are decreasing, and forced Strawberries are a shorter supply. The market has received large consignments of excellent Asparagus from the Continent. Supplies of Peas are shorter, but Beans from Madeira and the Channel Islands are plentiful. There are good supplies of Seakale and Mushrooms. More Tomatoes are being received weekly from the Canary Islands, and a few home-grown Tomatoes are obtainable. Of Cucumbers there are large consignments daily. Forced Rhubarb is plentiful. English and Continental Onions are scarce and dear, but supplies of all ordinary vegetables are equal to the demand.—E. H. R., Covent Garden, March 25.

and Tulips. The former included Red Chief, a Barrii bloom which has a very broad orange rim, a good unnamed seedling of the same class, and Noble and Adria, two very fine Incomparabilis varieties. Amongst the many Dutch and Darwin Tulips was a goodly group of the valuable yellow T. retroflexa. (Silver Banksian Medal.)

Messrs. CARTER AND CO., Raynes Park, massed a very large number of Sir Francis Drake, a sterling Trumpet Daffodil, and many clumps of German Iris in a very effective manner.

Mr. JAMES BOX, Lindfield, Sussex, showed such good varieties of Narcissus as Lucifer, Southern Star, and Homespun.

Messrs. SUTTON AND SONS, Reading, arranged a collection of Narcissus growing in bowls of fibre, which were fine examples of this method of culture.

Messrs. ROBERT SYDENHAM, Birmingham, contributed forced Lily-of-the-Valley, Anemones, and a small collection of Daffodils, amongst which The Sisterhood, a Leedsii bloom in which the sulphur-yellow corona is crinkled and frilled, was a chaste and pleasing flower.

Mr. G. W. MILLER, Clarkson Nurseries, Wisbech, also exhibited a collection of Daffodils.

Fruit and Vegetable Committee.

Present: J. Cheal, Esq. (in the chair), Messrs. J. Jeffries, W. Bates, F. Perkins, E. Beckett, H. Markham, Horace Wright, A. Grubb, A. R. Allen, Geo. Kelf, A. W. Metcalfe, G. Reynolds, W. E. Humphreys, A. Bullock, P. C. M. Veitch, Wm. Poupard, and C. G. A. Nix.

Messrs. SUTTON AND SONS, Reading, were awarded a Silver Banksian Medal for an exhibit of vegetables, comprising excellent specimens of Blood-Red Beets, Golden Ball Lettuces, White-tipped Radishes, Pride of the Market Cucumbers, Endive, Chicory, and Corn Salad or Lamb's Lettuce.

Mr. A. HEMSLEY, Crawley, showed fruits of the new Apple, Crawley Beauty, in a fresh and plump condition.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending March 25, 1914.
The First Unseasonably Cold Week for Eight Weeks.—This was the first cold week for eight weeks. During the course of it there did not occur a single unseasonably warm day or night; on the other hand, on only one day was the cold in any way unusual, and that was on the 20th inst., when the highest temperature in the thermometer screen was 36°. On the coldest night the exposed thermometer registered 12° of frost. The ground is at the present time 1° colder than is seasonable, both at 1 foot and 2 feet deep. Rain fell on each day of the week, and to the total depth of ¾ inch. In fact, rain has fallen on all but one of the last eighteen days, and to the total depth of 4 inches—which is about double the average quantity for the whole month. Of that amount, 17½ gallons has come through the bare soil percolation gauge, and 16 gallons through that on which short grass is growing, or nearly the whole of the rainfall of that period. Snow fell on each of the first five days of the week. On the 20th inst. the ground was for a short time covered to the average depth of 1¼ inches, and on the morning of the 19th inst. the flakes of snow which fell were for a short time of unusual size. The sun shone on an average for 2½ hours a day, which is 1½ hours a day short of the mean duration for the same period in March. On one day (22nd) the sun was shining brightly for eight hours; in contrast to this, on four days the sun shone for less than an hour a day. Light airs principally from some westerly point as a rule prevailed. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by as much as 13 per cent.—E. M.

DEBATING SOCIETIES.

WARGRAVE GARDENERS.—At the last meeting of this society, three short papers were read by members, and each led to a capital discussion. The first was by Mr. T. Bachelor, of Shiplake Court Gardens, on "The Value and System of Stoking." Mr. R. Baker, of Park Place Gardens, read the second paper on "Figs—Outside and Under Glass." The methods of cultivation were described, and cultural directions were given. Mr. W. Clarke, of Bear Hill Gardens, followed with a third paper on "The Gesnera."

BURNLEY AND DISTRICT HORTICULTURAL.—A meeting of this society was held in the Mechanics' Institute on the 5th inst., Mr. Wilkinson Heap occupying the chair. The lecturer was Mr. M. Greenwood, of Rochdale, and his subject "Annals, Hardy and Half-hardy." Mr. Greenwood stated that annuals may be described as everyone's flowers, for even those without greenhouses or frames could grow them. He recommended that the ground for planting annuals should be cleared and dug in the autumn, and in February the land should be manured. The lecturer dealt specially with Sweet Peas, China Asters, Stocks, Marigolds and Chrysanthemums.

Vegetables: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Artichokes, Globe, per dozen	2 0-3 0	Lettuce <i>continued</i> :-	
— ground, ½ sieve	0 9-1 0	— Cos, French, per doz.	10 0-12 0
Asparagus, Paris green	2 6-3 0	Mint, per doz.	3 0-3 6
— Cavillon	1 6-1 9	Mushrooms, cultivated, per lb.	0 9-1 0
— Sprue	0 5-0 6	— Broilers	0 6-0 8
— English bundle	1 0-3 0	— Buttons	1 0-1 6
— Lauris	2 6-4 0	Mustard and Cress, per dozen punnets	0 10-1 0
Batavia, per doz.	3 0-3 6	Onions, picklers, per bushel	2 6-3 0
Beans, Guernsey, lb.	0 10-1 0	— Dutch, bags	12 0-13 0
— Madeira, per basket	2 0 3 0	— English, bags	14 6-15 0
— Niggers	3 0-4 0	— Spanish, cases	13 0-14 0
— Broad, French, per pad	4 0-6 0	— Spring, per doz.	3 0-3 6
Betroot, per bushel	3 6-4 0	Parsley, per dozen bunches	2 0-2 6
Cabbages, per tally	3 0-4 0	Parsnips, per bag	3 6-4 6
— French spring, per doz.	1 3-1 9	Peas, Guernsey, lb.	1 6-2 6
Carrots, (English), bags	3 6-5 0	— French peck	6 0-8 0
— (French), pad.	2 6-3 6	Radishes, per doz.	2 0-2 6
— New, bunch	1 0 —	Rhubarb, Leeds, forced, dozen bundles	1 3-1 4
Cauliflowers, per dozen	1 0-1 6	— Natural, per doz.	3 0-4 0
— per hamper	3 0-4 0	Sage, per dozen	1 6-2 0
— St. Malo	1 6-3 0	Savoys, per tally	3 6-6 0
Celeriac, French, per dozen	2 6-3 0	Seakale, per punnet	0 10-1 0
Celery, per doz.	10 0-15 0	Spinach, per bushel	2 6-3 0
Chicory, per lb.	0 4 —	Spring Greens, bag	1 3-1 9
Cucumbers, per doz	2 6-4 6	Sprouting Broccoli, per bag	1 3-1 9
Endive, French, per dozen	2 9-3 6	Stachys tuberosa, lb.	0 4 —
Garlic, per strike	3 0-4 0	Swedes, bag	1 9-2 0
Horseradish, 12 bundles	10 0-12 0	Tomatos, Canary, bundle	9 0-14 0
Leeks, per dozen	2 0 2 6	— English, per lb.	1 4-1 6
Lettuce, English, Cos, per score	1 6-2 0	Thyme, per dozen bunches	2 0-6 0
— English, round, per score	1 3-1 6	Turnips (English), per bag	3 0-3 6
— French, round, per doz.	1 3-1 9	— New, bunch	1 0-1 3
		Watercress, per doz.	0 4-0 0

Potatoes.

	s.d. s.d.		s.d. s.d.
Bedford, per cwt.	3 0-3 3	Langworthy (Dunbar), per cwt.	5 6 —
Blacklands	2 3-2 6	Kent	3 0-3 6
British Queen	3 0-3 3	King Edward	3 6-4 0
Dunbar—Up-to-date	5 0-5 6	Scotch—Up-to-date	3 3-3 6
Evergood	2 6-3 0	Up-to-date	3 0-3 6

REMARKS.—Trade is much better than a few weeks ago; stocks in hand are not quite so large, and there have been fewer consignments. Prices are about the same as those of last week.—*Edward J. Neuborn, Covent Garden and St. Pancras, March 25, 1914.*

GARDENING APPOINTMENTS.

Mr. J. Macdonald, Gardener to Colonel R. F. DUNDEON, C.B., Gardens, Kirkcudbrightshire, and formerly in the Gardens at Drumlanrig, as Gardener to Colonel POLLOX-MORRIS, D.S.O., The Craing, Kilmarnock.

Mr. E. Perkins, for 1 year and 10 months Foreman at Oldfield Brow Gardens, Altrincham, Cheshire, and previously at Garnons, Hereford, and Holdenby House, Northampton, as Gardener to Colonel HEYWOOD, Esq., Woodton Lodge, Ashbourne, Derbyshire.

Mr. H. Thrussell, for 4 years Foreman at Leyswood, Groombridge, Sussex, and previously Foreman at Althorp Park and Easton Neston, Northampton, as Gardener to J. S. SNELGROVE, Esq., Kingswood, Tumbidge Wells, Kent.

Mr. R. H. Butcher, for 3 years at Church Hill, Harbledon, Canterbury, as Gardener to F. A. HAWLEY, Esq., Bunce Court, Otterden, near Faversham.

Obituary.

WILLIAM BRAND.—The death of Mr. William Brand occurred under sad circumstances at St. Aubyn's, Saffron Walden, on Monday last, at the age of 71. On the previous Tuesday his niece, Mrs. Byford, retired for the night at 11 p.m., leaving deceased sitting in front of the fire. Ten minutes later she heard him call, and on going downstairs found that he had fallen into the fire. His right shoulder was very badly burned, and after lingering a few days he died from shock. He was reaching to put out the gas when he caught his foot under the fender and fell. At the inquest a verdict of "Accidental Death" was returned. The deceased was in business for many years at Saffron Walden with Mr. George Webb (now of Cambridge), and traded under the style of Messrs. Webb and Brand. He retired about two years ago, when the business was purchased by Messrs. James Vert and Sons. The firm specialises in Hollyhocks.

ANSWERS TO CORRESPONDENTS.

APPLE BARK INFESTED WITH GREEN GROWTH: *J. S. E.* Your best plan will be to use a wash containing caustic alkali, and it would be necessary to make the application at once, or there may be a risk of injuring the expanding buds. The following formula may be regarded as a safe one for winter use:—Caustic soda (70 per cent.), 1 lb.; potassium carbonate (80 per cent.); soft soap, 10 oz.; water, 10 gallons. If the buds are already expanding it will be safer to add 15 gallons of water instead of ten. Spray again next winter, in February, at full strength.

BLACK HAMBURGH VINE: *S. J. T.* It is possible to grow very good Black Hamburgh Grapes in your district (Essex) without any fire heat in an ordinary season, but the vines having started the temperature should not be allowed to become too low. A temperature of 45° at night, or even 40° for a short time, will do no harm, and this you can generally manage to secure by closing the house early in the afternoon. A maximum day temperature of 85° to 90° in the shade is safe up to the time of stoning, when it is best, if possible, for the temperature not to exceed 80°. Berries of Black Hamburgh variety do not colour well in high temperatures.

DRAININGS FROM A STABLE: *Billerican.* Supposing the waste matter from the stable is pure urine, one part in ten will not be too strong for an occasional dose to fruit trees, which need assistance, including vines. A smaller proportion should be used for flowering plants, unless they are pot-bound, when it may be used at a greater strength. But it should not be applied to fruit trees after the fruits commence to colour. Re-pot the Orange trees; they will flower in time if you get the wood ripened.

DRESSING VINE RODS: *Anxious.* You do not state what method you adopted in cleansing the vine rods. Some merely wash them, whilst others remove all the outer bark and run the risk of damaging the inner surface. If you operated in the latter manner, and, as you say, the growths were rather badly ripened, the mixture containing Stockholm tar and soft soap may have been too strong, notwithstanding that the eyes were not painted. Unripe vines should be allowed to start naturally, after which fire heat may be applied. We do not yet consider it quite a hopeless case; the unripeness of the buds is sufficient to account for some of them not starting. Do not employ a high temperature at night.

GARDENING BOOKS: WORKS ON MELONS, PEACHES, AND FUCHSIAS: *B.* We do not know of any book dealing exclusively with the Melon, but *My Garden* contains five pages of cultural details on the Melon, also a couple of pages on the culture of the Cucumber, and *The Book of the Peach* is devoted entirely to the culture of the Peach under glass and out-of-doors. Both books may be obtained from our publishing department at 2s. 10d. and 2s. 9d. respectively, including postage. There are several old florists' works on the Fuchsia, but they are all out of print.

INSECT INFESTING CUPBOARD: *E. H. L.* The depredator is the larva of one of the so-called "bacon beetles" (*Dermestes*). Bake the articles to destroy any grubs they may contain, and paint the inside of cupboards with a strong solution of carbolic acid, taking care that the liquid is thoroughly worked into all the crevices and joints.

KAINIT: *Constant Reader.* The sample of manure you send us is not very pure, but it may contain the usual amount of potash found in kainit. It would be necessary, however, to make a chemical analysis in order to ascertain exactly how much potash was present. There is a considerable amount of insoluble matter in the manure. Cousins' *Chemistry of the Garden* contains much valuable information on the use of artificial manures in the garden. The book may be obtained from our publishing department, price 1s. 1½d., post free.

NAMES OF PLANTS: *W. H. M.* *Garrya elliptica*. — *A. W.* 1, *Pinus excelsa*; 2, *Pinus radiata*; 3, this appears to be a weak shoot of *P. excelsa*; send when in cone; 4, *P. Laricio*. — *A. T. H.* 1, *Phillyrea media*; 2, *Elaeagnus umbellata*; 3, *Cupressus pisifera filifera*; 4, *Thuja (Biota) orientalis*; 5, *Juniperus drupacea*; 6, *J. chinensis albo-variegata*; 7, *J. chinensis*. — *W. H. S.* *Rhododendron (Azalea) indicum album*.—*Journeyman.* 1, *Erythronium Dens-canis*; 2, *Daphne Mezereum*.—*Torbay.* 1, *Erythronium Dens-canis*; 2, *Fritillaria citrina*.—*F. W. M.* 1, *Eupatorium trapezoides*; 2, *E. Wienmannianum*; 3, *Phyllanthus nivosus*; 4, *Senecio Kaempferi aureo-maculatus*.—*N. A. G.* 1, *Leucothoe Catesbaei*; 2, *Abies Pinsapo*; 3, *Atriplex Halimus*; 4, *Pieris floribunda*; 4, *Cassandra calyculata*; 6, *Cassandra angustifolia*; 7, *Rhododendron praecox*; 8, *Ribes sanguineum*; 9, *Rubus*; two No. 4 enclosed; No. 5 missing. — *A. C.* 1, *Gleichenia* sp.; 2, *Berberis Darwinii*; 3, *Cassia fulvida*; 4, *Cupressus pisifera squarrosa sulphurea*; 5, *Cupressus pisifera plumosa*; 6, *Cupressus Lawsoniana* var. *amabilis*; 7, *Thuja orientalis*; 8, *Lupinus arboreus*.—*F. O.* 1, *Masdevallia simula*; 2, *Pleurothallis Scapha*; 3, *Octomeria diaphana*; 4, *Maxillaria lepidota*; 5, *Eulephia scripta*.—*F. P. H.* 1, *Cypripedium Krishma* (tonsum × *insigne*); 2, *Cypripedium Mons. de Curte* (*Boxallii* × *insigne*); 3, hybrid of *Cypripedium aureum*; 4, *Dendrobium Ainsworthii* (*aureum* × *nobile*); 5, *Adiantum hispidulum*.—*R. Y.* 1, *Polystichum setosum*; 2, *Gymnogramme tartarea*; 3, *Polypodium Dryopteris*; 4, *Scelopendrium vulgare*.—*W. J. S.* *Atriplex Halimus*.

NON-POISONOUS WEED KILLER: *W. B.* If you wish to employ a non-poisonous weed killer use common salt.

OAK LEAVES WITH GRUBS: *J. H. P.* The brown blotches on the leaves are caused by the mining larvae of a small moth, possibly *Lithocolletis messaniella*.

PIGEON MANURE: *Reader.* See reply to *Single-handed* under Vines.

RHUBARB: *Sherwood.* The variety *Paragon*, though with stems less highly-coloured than in some Rhubarb, is one of the most productive and best in cultivation; the quality is excellent, whilst the plant seldom if ever runs to seed.

SOIL FOR EXAMINATION: *B. and Sons.* The sample of soil has been subjected to a critical examination, with the result that no trace of eggs of any kind of insect were found. Instruct your correspondent to collect examples of the "eggs" to which he refers and forward them carefully packed without earth.

TULIP: *J. McK.* The short flower-stalk is the direct outcome of an insufficient depth of plunging material and a too early exposure to light. Judging from the example before us, the plants have hardly been covered with soil, and this with early exposure to light and greenhouse warmth has brought about the result of which you complain. In the garden plants are set a few inches deep, and in forcing this principle should be followed. All bulbous-rooted plants should be first prepared for forcing by plunging the pots, and when the shoots have started they should be grown in darkness in the forcing department to obtain a maximum stem growth.

VIOLET PRINCESS OF WALES: *C. C. G.* The variegation in the blooms is apparently due to some mechanical injury. However, it may be worth while to cultivate the plant for another season to see if the variegation is constant. If so, you might submit specimens to the Floral Committee of the Royal Horticultural Society at one of the R.H.S. fortnightly meetings with a view to seeing whether or not the variegation is regarded as a desirable quality.

Communications Received.—*Mrs. J. H.*—*J. F. S.*—*E. L.*, Burford—*J. C.*—*E. W. R.*—*D. R.*, Shenstone—*Rhodod.*—*W. E. B.*—*Novo Castro*—*Beginner*—*W. D.*—*H. S. T.*—*A. R.*—*W. S.*—*J. de M.*—*C. E. P.*—*R. C.*—*H. N. S.*—*M. W.*—*M. R.*—*A. M.*—*R. G. W.*—*P. C.*—*G. B. B.*, Cheshunt—*W. C.*, Wilts.—*A. H.*—*W. L.*, Leeds—*O. T. D.*—*W. M.*—*W. B. H.*—*E. A. B.*—*G. H.*, Norfolk—*G. C.*—*Miss M. Smith*—*F. M.*—*T. D.*, Skinner—*E. Beckett*—*H. S.*—*J. W.*—*C. C.*—*F. S.*



THE

Gardeners' Chronicle

No. 1,423.—SATURDAY, APRIL 4, 1914.

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THE ROCK GARDEN AT WISLEY.

(See Figs. 102, 103, and Supplementary Illustration.)

A SHORT account of the Wisley Rock Garden may prove useful to any who are contemplating the construction on a large scale of a home for Alpines and other plants that are the better for one or other of the advantages derived from the variations of aspect, slope, and drainage provided by a rock garden.

Also, although the promising infant has not yet attained to the zenith of its fame and glory, beauty and strength, it is as well to record the actual facts of its parentage, birth, and education, while they are fresh in mind. It is possible to commence with the conventional biographical opening and say it was born of poor but honest parents, for its immediate predecessor, that which bore the title of the rock garden at Wisley, exemplified both adjectives. From that poverty sprang the desire for something better, and so the project was born.

The obviously suitable site on the sloping bank that descends from the hill top

to the picturesque old ponds was chosen. Tenders for designs were invited and the Sub-Committee appointed by the Council to examine and advise upon those plans may be likened to the infant's godparents, and their selection of that prepared by Messrs. Pulham and Mr. Edward White decided the general lines of its future and named this child. So a rock garden of terraced slopes with a central watercourse forming a pool or two in its winding descent, to be carried out in Crowborough stone, was commenced in January, 1911. The Crowborough stone was selected as the most suitable to be found within reasonable distance that would provide large masses of a warm, yellow-brown colouring calculated to harmonise with the sandy soil of the garden.

The effects produced by some of the largest unbroken blocks have proved the wisdom of this choice, and when more of the smaller ones are partially covered by neighbouring plants, and shrubby plants have grown into rounded mature specimens, the somewhat regular and rectangular cleavage of this stone will not be sufficiently exposed to be monotonous. The quarries are about forty miles distant from the garden, and the blocks were brought by train to Horsley, one of the nearest stations, four miles away, so the carting was a serious matter, considering that over five hundred and fifty tons of stone were required for the work. The area covered is, roughly speaking, a hundred and one yards by ninety, that is to say, nearly two acres, and though by its natural slope splendidly fitted for a rock garden, the absence of a sufficient water supply at the top, and the nature of the soil, added two great difficulties.

It was decided to build a large tank on the top of the hill and to pump water up to it from a well three hundred and fifty yards away, and seventy-five yards below it, and this having been done there is now an ample and most satisfactory water supply available for watering purposes and for filling the streams and ponds. The tank has a capacity of twelve thousand gallons, and the well promises an unfailling supply.

By the middle of August, 1911, the actual construction of the rocky portion was pronounced finished, and the preparation of special soils for various aspects and the needs of different classes of plants was commenced.

A series of moraine beds was planned close to the stream, so that underground pipes might be laid to convey water to each bed separately. These sunken pipes, with holes bored in them at intervals of three inches, are laid about eight inches below the surface. They have been found to work well and to keep the beds moist without wetting the leaves and collars of the plants, and many rare and interesting Alpines are thriving in them, such as Campanula Cenisia, Wahlenbergias, and Androsaces.

The total cost of the rock garden, including the water supply and purchase of plants, amounted to £1,350. More than two thousand plants have been bought, besides something like fifty-five

thousand which were raised in the gardens for the purpose of furnishing it, and about twelve hundred have been presented by Fellows of the Society, so that by means of propagation and division of many of the plants, the rock garden now holds about sixty-five thousand. Nevertheless, it is still far from full, a fact which has called forth a certain amount of criticism, but to those endowed with patience and a knowledge of large rock gardens it will be clear that this is by no means a misfortune.

Undue haste to see the spaces filled is apt to lead to the planting of showy, rapidly-spreading things that exhaust the fresh soil so much that when they are cleared away to make room for worthier plants, it is hard to get the newcomers to thrive, and nothing produces so natural and beautiful an effect in the end as allowing ample room for plants to spread out in their own way into large specimens, rather than the filling of a space with a large number of small ones.

Certain plants, especially those that do not mind the absence of lime, are thriving amazingly, but the fine sand, and in parts an underlying, sour, bluish clay, need much careful mixing with leaf-soil and mortar rubble to produce a suitable rooting medium for what in many gardens are the most easily grown plants.

The encrusted Saxifrages, and even many of the mossy section, look very unhappy in some crevices that appear well adapted for them, while Ramondias, Haberleas, Soldanellas, and many Primulas, including P. Winteri and P. Allionii, look the picture of health.

A little colony of good forms of Saxifraga Bursariana on a ledge was, when I was last at Wisley, as fine as any I have seen in the open air, but forms of S. Cotyledon and S. Aizoon, that will thrive in most places in spite of any amount of neglect, are yellow and sorry-looking although in good positions. On the other hand, Parochetus communis was one of the happiest-looking plants in almost any position last summer. Stores of suitable materials for the improvement of the soil whenever it is unsatisfactory have been provided, and it is hoped that when this has been done the beds and ledges that settle down too much, or become close and sour, and fit to grow nothing but Marchantia, may be rendered open and friable, and suitable for good plants.

A useful range of frames has been arranged above the tank, close by the Alpine House, where new and delicate plants may be nursed into vigour before they are planted out, and these frames are filled with sand, so that small pots may be sunk in it, and this has been found very successful in helping to establish and recuperate many a sickly or freshly collected rarity. The photographs reproduced herewith give a good idea of the general appearance of the Rock Garden last summer, and I trust also foreshadow what a year or two more of careful attention and further planting will produce in the way of a beautiful picture, as well as an interesting and rich collection of Alpine and Rock plants. E. A. Bowles.

ORCHID NOTES AND CLEANINGS.

THE BRACKENHURST COLLECTION.

BRACKENHURST, Pembury, with its charming residence and large garden and woodland, was purchased by Mr. J. Gurney Fowler partly because the locality was known to be highly favourable for the cultivation of Orchids. The place is situated on high ground a few miles out of Tonbridge, and there Mr. Gurney Fowler has prepared a model block of houses to which he has removed his Orchid collection, which had for many years been famous as the Glebelands collection.

Under the guidance of Mr. Fowler we were privileged to make an inspection of the new

Electric light is installed everywhere in the Orchid houses and buildings, and before next winter the Rose-covered walk from the house to the Orchid quarters, and some other parts of the garden, will also be supplied with electric light for use on evening visits. Important points leading to success in Orchid culture, such as the heating, ventilation, and the arrangement of ample storage for water, have in the Brackenhurst houses received due attention. There is great power in the boilers, and an ample supply of hot-water piping, kept as low as possible in the base of the houses and well provided with check-valves, so that every section can be regulated as required.

In the basement of the houses the natural earth provides the surface in all the parts pos-

admitting of a free circulation of air on all sides of the plants, and generally it is evident that well-studied accommodation has been provided with the best results.

The back wall of the corridor, against which is suspended a fine collection of Dendrobiums, which plants are now covering its entire length with a charming display of finely-coloured, fragrant blooms, gives the greatest display of the season. Dendrobiums, like other classes of Orchids, fluctuate in point of favour with Orchid-growers, but there is no doubt that for a show of spring flowers nothing can compete with them. The compact plants at Brackenhurst have the pseudo-bulbs densely set with flowers varying from white to rose, purple and yellow in all shades, and forming literally a wall of bloom. Varieties



FIG. 102.—WATERLILIES AND IRISES AT WISLEY.
(See p. 229.)

[Photograph by J. Russell & Sons.]

houses. The plants were in the most satisfactory condition and appeared to be enjoying the change they have got by their removal from Essex to Kent. The six houses, with orchard house for fruit trees in pots, are connected by a lean-to corridor, at the back of which is a north house for Cymbidiums, Masdevallias, cool Oncidiums, etc. Here, too, are the two large Robin Hood sectional boilers which heat the whole block, the bothies for the gardeners, fitted with bathrooms and every appliance useful for the comfort of the men, the large potting-shed and storage for potting materials, and at one end the office of Mr. J. Davis, the gardener, and which has telephonic communication with the house and the exchange.

sible, and the rocky sub-soil and porous nature of the top soil in this locality render this arrangement of great value to the plants.

The staging provides for the automatic distribution of moisture in the atmosphere, the evaporation from the arched brickwork on which the staging is arranged being regulated by the hot-water piping beneath, and by the general temperature of the house. The lower close staging on a level with the top of the arched brickwork has angle-iron frames, on which are placed ordinary porous red tiles to form a moisture-giving surface. This is not covered with shingle or any other material, as the tiles alone are found to answer all purposes. The open-woodwork upper staging is well elevated above the lower one,

of *Dendrobium nobile* are there, some of the old favourites, like the true *D. nobile nobilium* with its profusion of rich-coloured flowers, being still unrivalled. So also the pure white *D. nobile virginale* among whites, *D. rubens grandiflorum* and the varieties of *D. Apollo* still merit their place. Among yellow forms *D. Thwaitesiae* and *D. Chessingtonense* were in great beauty, and some new hybrids of them and of *D. signatum* were very distinct and pretty. Several had fine canary-yellow flowers with maroon blotch in the centre; *D. signatum* × *Alice Bound* produced a pretty form with primrose flowers, and the same crossed with *Ainsworthii*, gave a large-flowered kind with yellow flowers having no blotch on the lip. Several pretty forms resulting from fertili-

sation between *D. nobile Amesiae* and *D. n. virginale* were interesting. No white like *virginale* results; some are almost identical with *Amesiae*, and others have the violet blotch on the lip larger and darker than in *Amesiae*, although a colourless form was used in obtaining the plants. Some seedlings of *D. Cybele* × *nobile nobilius*, *D. Sibyl* and others, were also in bloom, and several *D. Hookerianum* and other showy *Dendrobiums* were making up their flowering growths.

In the corridor, suspended overhead, are a very fine lot of *Laelia anceps*, chiefly the best white forms; *L. Gouldiana*, and a number of the yellow *Cattleya citrina*. In the north house, in bloom, were *Cymbidium glebelandense* with two spikes of 4 to 5 feet, each with numerous flowers;

shaped flower with deep rose-red sepals and petals, with the yellow ground showing between the blotches, and with rose-tinted tips, the pandurate lip being rose-coloured in front, and with a purple band and some dark spotting around the yellow crest. The Brackenhurst variety of *Odontioda Madeline* (*Charlesworthii* × *crispum roseum*) was also in bloom, its richly-coloured petals having a thin yellow line inside the margin; and a promising *Odontioda* raised by Messrs. Charlesworth between *Odontioda Bohnhoffiae* and *O. Harryanum*, had nearly black buds and was being watched with interest. A good collection of hybrids of *Odontoglossum Rossii rubescens*, including the stock of the original *O. Smithii*, was also thriving here.

The next house contained a fine collection of

suspended some young plants of new *Laelio-Cattleyas*. The end division is the seeding house fitted with seed-raising case, in which were promising crosses in the first stage. The lens reveals the success likely to be attained, and the wisdom of the arrangement of the warm case in a uniformly warm, moist house. On an elevated staging were nice batches of *Sophronitis* crosses of promising parentages, both primary and secondary crosses of *Sophronitis grandiflora*. They are sturdy little plants and should soon develop into the flowering size. The next house had a wonderful collection of unflowered hybrids of *Cattleya*, *Laelia* and *Brassavola*, to flower within the next three years, at the end being a screen of *Vanda teres* with some *V. Miss Joaquim*, and two healthy plants of *V. Hookeriana*.



FIG. 103.—CASCADE IN THE WISLEY ROCK GARDEN.

(See p. 229.)

[Photograph by J. Russell & Sons.]

four plants of *C. J. Gurney Fowler*, of unknown parentage, each with several spikes of cream-white flowers, having a zone of red spots on the lip. The spikes are perfectly erect, and the flowers indicate *C. eburneum* on the one side. *C. Woodhamsianum* Fowler's variety (F.C.C., 1912), the finest *Cymbidium* of its class, was noticed, and some *Masdevallias* were also in bloom and bud.

In the main block, the first house contained a fine selection of the newer hybrid *Odontoglossums* and *Odontiodas*, some of the crosses not having yet been flowered.

Odontioda Brackenhurst (*Odontioda Charlesworthii* × *Odontoglossum eximium*), a great beauty flowering for the first time, is a finely-

Cypripediums, with *Miltonia vexillaria* suspended overhead. The famous *Cypripedium Leeatum* J. Gurney Fowler has been increased, and it is being tried in the warm and cool *Cypripedium* houses to see in which it thrives the better, for although a sturdy grower it does not make growths rapidly. A finely-coloured form of *C. Miss Louisa* Fowler showed that it is still a very worthy and distinct *Cypripedium*; other notabilities were a brightly-coloured *C. Dicksonianum*, *C. chrysotoxum*, *C. Memaria Jeringhamiae*; a showy set of varieties of *C. aureum* and others. The third range contained the warmer *Cypripediums*, including the crosses of *C. bellatulum*, *C. niveum*, etc., some of which were in bloom, and overhead were

The large *Cattleya* house contained at the end a display of bloom made by a very handsome *Laelio-Cattleya* George Woodhams; some other *Laelio-Cattleyas*; two fine white *Cattleya Susanne Hye de Crom*, several good *C. Trianae*, *C. Schröderae*, *Brasso-Cattleya Cliftonii*, with very large white flowers, already set for seed; *Mulophia Scripta*, and others. Famous plants noted were *Brasso-Cattleya Digbyano-Schröderae* Fowler's variety, with two buds; *Cattleya Schröderae* Glebelands variety, and others for which awards at the Royal Horticultural Society have been obtained. At the end are some *Sobralias* flowering well, and *Chysis bractescens*.

The large *Odontoglossum* house, which was such a success at Glebelands, was brought to

Brackenhurst and reconstructed. The famous collection of *Odontoglossums* and *Odontiodas*, always in fine condition despite their former residence in the Metropolitan area, are now exhibiting extraordinary vigour, even the smallest plants showing flower-spikes, some two from a bulb, efforts which are checked by pinching out most of the spikes this year to admit of the plants getting full benefit of the change.

The many choice varieties of the Glebelands collection are of absorbing interest. *Odontoglossum Aquitania*, said to be the best *Odontoglossum* yet seen, size, shape and colour considered, is in fine health; so also are *O. illustre Europa* (F.C.C., June 20, 1911), *O. Jasper Fowler's variety*, *O. crispum Saga*, *O. Arnoldianum*, *O. Halseyanum*, and other of Mr. Gurney Fowler's Certificated plants, all of which have been successfully grown, and some increased by division. With such a large number of rare plants, and a steadily

out-of-doors, a very different treatment to that usually given to *Ageratums*. It is usual to sow them in heat in February or early March, and grow on for bedding out in May, or they are propagated from cuttings taken from old plants wintered in pots in the greenhouse. This question of height may be largely due to locality and climate. In Kent and Essex I can quite believe annuals will generally be dwarfer than in the north; in fact, I know that many of them are. *Blue Perfection* was deeper in colour than *Little Dorrit*, and had larger flower heads. The colour is best described as lavender-blue. The plants bloomed continuously till frost came. This is doubtless caused by the fact that they set no seed. One of the most charming effects I ever saw on a large scale with two annuals was a huge bed of *Mignonette*—perhaps 200 feet long by 8 or 9 wide—recessed into the front of which, in great crescent-shaped masses, was a fine strain of *Ageratum*.



FIG. 104.—*CHRYSANTHEMUM INODORUM* "BRIDAL ROBE": FLOWERS WHITE.

increasing number of hybrids, Mr. Davis and his staff must be always busy; but the good accommodation provided insures the best results for their labours.

The study of Orchid hybrids, so elaborately and accurately recorded in his stud book by Mr. J. Gurney Fowler, gives that gentleman a vast amount of pleasure, and forms his chief recreation.

ANNUALS.—IV.

KEEPING to my idea of talking about annuals according to their heights, I have in view now species which grow about 1 foot high.

AGERATUMS.

The dwarf forms are selections from *A. mexicanum*, which, introduced into this country in 1822, grows from 18 inches to 2 feet in height. *Blue Perfection*, *Little Dorrit* and *Little Dorrit White* are stated in catalogues to grow from 6 to 9 inches. They grew 11 and 12 inches with me, and it must be remembered they were sown

ARCTOTIS.

I refer to *Arctotis* here because the plants do not run to more than about 10 or 12 inches in height, though the slender flower-stalks rise to twice that height. *A. breviscapa* is very showy. The blossoms are rich orange-yellow, Daisy-like in form, with dark centres. Each petal has a glossy black mark at the base, and the expanded flowers are 3 inches in diameter. *A. grandis* is much taller—28 inches to the top of the flower. Its colour is palest lilac on the outside, white inside, with pale blue centre.

BROWALLIA.

Browallia elata produced fine, compact plants 12 inches in height. The glossy, green foliage was well covered in fine weather with very pretty blue flowers, about $\frac{3}{4}$ inch in diameter, with white centres. One frequently sees this and its white counterpart treated as greenhouse annuals, and they are very effective as such. The *Browallias* belong to the Solanaceae (Nightshade) Order.

CAMPANULA LOREYI.

This is truly a beautiful annual *Campanula*. Its height is 12 inches. For a long period it was smothered in bloom, each blossom being about $1\frac{1}{2}$ inch in diameter. Two varieties were grown, one having mauve-blue, the other pure white flowers.

CENTRANTHUS.

Centranthus macrosiphon or the annual *Valerian* grows about 12 inches tall, and produces large heads of deep rose-coloured flowers. It is an easily-grown annual, and, if well thinned, its fine foliage is seen to advantage.

CHRYSANTHEMUM INODORUM BRIDAL ROBE.

(See fig. 104.)

This is a dwarf (12 inches) form of *inodorum* producing in great abundance pure white, double flowers. It is a recent introduction, and for bedding purposes will be found most valuable, as it grows easily and remains a very long time in bloom.

DELPHINIUM BLUE BUTTERFLY.

This is an introduction of Messrs. Carters. I doubt if it is a true annual, as I have often seen plants stand over winter; nevertheless, treated as an annual, it is most valuable, giving a clear note of effective blue in the border. The plant grows from 12 to 14 inches in height. It branches well, and continues to flower for nearly three months.

NEMESIA.

Previous to the introduction of *N. strumosa Suttonii* by Messrs. Sutton, one could not say that the *Nemesias* were popular, but now they are decidedly so, and they grow remarkably well in northern counties. Much work has been done in selecting and improving during the last few years, and now many of the flowers are over an inch in diameter, and of the most beautiful shades of colour—rich orange, rich crimson, every shade of rose, and many primrose, ivory and white forms give an added charm. The seed is delicate-looking but germinates easily, even out-of-doors, but for an early display plants must be raised under glass, and planted out 6 to 9 inches apart. Recently some small-flowered varieties have been introduced; two of them—*Myosotis blue* and pure white—are very effective as bedding plants.

NASTURTIUM.

In this section of annuals there fall many of the most popular and largely grown, e.g., *Nasturtiums*, but everyone knows them, and there is nothing new to say about them. All kinds of *Nasturtiums* have a great vogue in the United States, the merchants handling tons of seed of them. Specialisation has developed a race of variegated-leaved forms, but these have never become popular here.

MIGNONETTE.

Mignonette also comes into this section. I often hear it said that *Mignonette* does not succeed in certain gardens. The following plan ought to be tried. Fill a dozen or two dozen small pots with a good compost, plunge in a shaded greenhouse, sow three or four seeds in the centre of each pot. When the plants are large enough thin out to one, harden off, and plant out in May, a foot apart, without breaking the balls of soil, and a grand result will be obtained.

A few notes on *Mignonettes* may be useful.

Golden Gem, 12 inches, deep golden, small heads of bloom, compact habit.

Crimson Giant, 12 inches, rather small flower-heads, red anthers.

Golden Queen, 15 inches, erect habit, golden-brown effect caused by golden-brown stamens being very pronounced. This is a remarkably good *Mignonette*.

Golden Machet, 16 inches, rather small heads, flowers greenish-white, stamens yellow.

Dobbie's Giant, 15 inches, large heads, bold habit, foliage like *Spinach*, greenish-white flowers with brown stamens.

Large Flowering.—This is the common Mignonette generally sold in cheap packets, 15 inches, small heads, greenish-white flowers, brown stamens.

Miles' Spiral, 16 inches, rather straggly growths, white flowers, with brown stamens. *W. Cuthbertson.*

THE MARKET FRUIT GARDEN.

A MONTH ago the rainfall of February was described as the greatest but one for that month at my station in fifteen years. For March the comparison is the same in character. The total measurement was 5.07 inches, taken on 24 days, and the only March in the preceding fourteen years approaching that quantity was that month in 1905, which yielded 5.14 inches. The average for fourteen years up to 1913 is 2.25 inches, and for a longer period it would be less, because we have had more rain in March than usual in six out of the fourteen seasons. The average number of rain days is 14.50. This year the number was nearly double, without counting two days in which there was a sprinkle, not measurable because not amounting to one-hundredth of an inch. So we had only 5 days of twenty-four hours entirely free from rain. My district is reckoned to belong to the south-east by the meteorological authorities, and no other division of England except the south-west had quite so much rain, though all had more than average in the first three weeks of the month, and two or three more than double the average. The complete official details for March are not available at the time of writing.

ANOTHER FUNGUS DISEASE SEASON FEARED.

There is grave reason to fear that the extremely wet weather of February and March will lead to the development of bad attacks of fungus diseases, like those of 1913. I do not know whether silver leaf is encouraged by wet weather or not, but canker in Apples and brown rot in Plums, Cherries and Apples certainly are.

OTHER DISADVANTAGES.

Never before have my workmen lost so much time in two months as they have lost in February and March by the frequent wet days or half-days. They are paid "wet or dry," but there has not been anything profitable for them to do when rain was falling. Some of the orchards are becoming grassy, and not a stroke with the hoe has been practicable up to the present. When the weather becomes suitable for the work there will be so much to do that it will be impossible to get it done quickly enough without employing many extra hands, and the supply is not likely to be equal to the demand.

STAGES OF VEGETATION.

Remarkably mild though the temperature of the last two months has been vegetation is not at all extra forward, probably owing to the coldness of the water-logged soil. Last season was such an exceptionally forward one that it is not a good one for comparison. To take the case of the earliest-blooming fruit, the Almond. It was in full blossom in the south of England in the last week of January, 1913. This year it was full on March 26, which is about a medium date. Early Pears showed clusters of blossom-buds last year on March 15, but were only just beginning to emerge from their sheaths a fortnight later this season. This is not much later than usual. Plums fortunately are not nearly so forward as they were a year ago, when my Black Diamonds were in full blossom on March 21, and Monarchs on the 31st. In 1912 the dates were March 24 and 30. This season at the end of March there were no signs of blossom, the earliest buds having only just begun to burst. Looking back to the records of many past years, I notice that April 20 to 25 has been usually the time for early-blooming Plums to be in full blossom. Apparently there will be a remarkable approach to contemporaneous blossoming among the differ-

ent varieties this season, as Black Diamond, President and Rivers's Prolific are very nearly abreast in bud-bursting, while the buds of Czar and Pond's Seedling were on the point of bursting at the end of March, and Victoria was very little behind them. Monarch, on the other hand, though usually only second to Black Diamond in blossoming, is no forwarder than Victoria at present in my oldest orchard. Perhaps this is because the trees are unhealthy from repeated attacks of brown rot, to which Monarch seems to be particularly liable. Many varieties of Apples showed clusters of blossom-buds last year on March 22, when a few blossoms were expanded on Irish Peach. This season the fruit-buds were only just bursting at the end of the month. My earliest date for Apples in full blossom is April 14, in 1906 and 1913; but the date was only one day later in 1903. In half my past fourteen seasons here Irish Peach or Bismarck has been in full blossom before the end of April. It may be so this year. Gooseberries were about half out in leaf at the end of March, as compared with March 15 in 1912 and 1913, both early seasons. Red Currants are nearly as forward as they were last year and in 1912, showing blossom-buds at the end of March, and Black Currants are quite as forward—namely, about a quarter out in leaf. Raspberry leaf was about as forward at the end of the month as it was a year ago on March 15.

THE PROMISE OF BLOSSOM.

There is a good all-round promise of blossom on Apples, Pears, and Plums. It is too early at the time of writing to say how Gooseberries and Currants will show in this respect, but the bushes are in vigorous condition. Black Currants, which rejoice in rainy weather, are particularly flourishing, and have made much growth in the last twelve months. A full display of blossom, however, is no guarantee of abundance of fruit, as was seen last season with Pears, Plums, and some varieties of Apples. Cox's Orange is thickly studded with fruit-buds, in spite of the removal of a great number of cankered spurs from comparatively young trees. An older lot has nearly recovered from an attack of canker. All Plums except Monarch have a great show, and nearly all Pears. As Cobnuts had an off season last year, and no severe frost has occurred since the female blossoms came out, while catkins are superabundant, there is good reason to hope for at least a fair crop.

USEFUL RESEARCH WORK.

It is greatly to be desired that entomologists engaged in research work should direct their attention to aphid attack. Let them search for eggs or mother queens on Apple and Plum trees and ascertain whether there are at present any signs of a forthcoming infestation. In pruning many hundreds of trees of both fruits I have noticed only one shoot of an Apple covered with aphid eggs, and I have not seen a mother queen or any eggs on a Plum tree. Yet it is to be expected that, as usual, there will be bad attacks on both these fruits, and the question is, Whence do the attacks come? The theory is that eggs are deposited upon the trees in the autumn, hatch in the spring, and produce viviparous insects. But if no eggs can be found now, and attacks should occur hereafter, the theory will be discredited—at least in part. In my opinion the life-history of the aphid is not known, at least so far as the location of the pest during the winter is concerned. Why should we assume that the eggs are on the trees if we cannot find any? Take the similar case of an attack of the aphid on spring-sown Beans. There are no plants in the winter to harbour the eggs, yet the tops may be densely covered with aphides when the crop has grown to nearly its full height.

In the course of the last two or three days of March I searched with a lens among all the varieties of Plums in one orchard, inspecting the

crotches of branches and spurs and last year's shoots. Multitudes of red-spider eggs were found, but not a single aphid or aphid egg. Several trees of each variety were examined. Yet I have no doubt that there will be the usual attack of aphid as soon as the leaves begin to show, as there has been in every preceding season. Similarly some varieties of Apples, usually badly infested with aphid, have been examined. Swarms of red-spider eggs were found, with sucker-eggs here and there, but not one aphid egg. Where are the eggs that will produce the infestation confidently anticipated? That is the question upon which research is needed.

LIME WASHED OFF TREES.

Even the latest-sprayed of my Apple trees have now had nearly all the lime washed off them, although in the latter part of the time the proportion of lime used was 1½ cwt. to 100 gallons of water. There was no difficulty in getting wash as thick as this large proportion of lime made it through the nozzles, to be distributed by the spreaders, to which reference was made a month ago. Trees sprayed with lime-sulphur still show the purple tinge which that wash imparts to them.

TOO MUCH FORBEARANCE.

Experience has convinced me that too much forbearance is commonly shown to fruit trees which make a bad start in growth or health. Many commercial growers give a short shrift to such trees. They cut them back and regraft them with another variety if the trunks and branches are sound. They are wise in their action. Unsound trees, of course, should be grubbed up, to give place to fresh ones. Trees are so cheap now that there should not be any hesitation in removing those which are not good enough for top-grafting, and substituting others of a variety proved to flourish in the district. There is much loss in leaving unprofitable trees to grow worse and worse, instead of dealing with them at an early period of their deterioration. *A Southern Grower.*

CULTURAL NOTE.

WINTER-FLOWERING STOCKS.

WINTER-FLOWERING Stocks are well adapted for pot culture, and come in most usefully for conservatory and house decoration during winter and early spring. The plants last well in flower, and the blooms are very sweetly scented. By sowing seeds in July they will start flowering in January. It is well to make a second sowing in August, to prolong the season of flowering. When the seedlings are strong enough to handle, prick them off into boxes, and grow them in a light frame; shade them for the first day or two, and afterwards admit plenty of air. In about three weeks or a month they will be ready for potting single into 4½ inch pots in a mixture of three parts loam, one part manure from an old Mushroom bed, one part wood ashes and lime rubble, and a good sprinkling of bone meal, and some soot. After they are potted stand them in a frame and shade for a day or two till they recover from the check of potting. Afterwards only use the lights to keep off rain. About the beginning of October they should be removed to shelves in vineries or Peach houses, close to the roof-glass, where they can get plenty of air. As they begin to throw up the flowers a little artificial manure will help them, Clay's manure and soot water being the two best. The best varieties to grow are Beauty of Nice (mauve and salmon-pink), Riviera Market (white and rose), and All the Year Round. I have tried other varieties, but find the above-mentioned to be the best, and have had from 70 to 80 per cent. double flowers. *Alexander Reid, Cheswardine Hall Gardens, Market Drayton.*

[Our correspondent sent with the above note some very finely grown specimens.—EDS.]

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

DECIDUOUS CALANTHES.—Plants that were treated as advised on page 38 are producing new growths. Many of those laid in boxes have rooted into the Sphagnum-moss and leaf-mould, and, the roots being very easily injured, great care must be taken in re-potting them. It is well to remove the old compost adhering to the roots. The proper stage at which to pot is directly fresh roots develop from the bases of the growing stems, for there will be less danger of injuring the roots than when they are further advanced. Specimens that have been rested in their pots should be turned out of the receptacles, and the old potting compost removed. In this case also exercise extreme care not to damage any young roots which may be present. The old roots should be cut away, leaving only a sufficient length to enable the pseudo-bulbs to be secured in position after they are re-potted. Few cultivators agree on which is the best kind of compost to use; much depends on where the garden is situated and the conditions under which the plants are cultivated. If the conditions are favourable to the requirements of Calanthes, the potting compost is only a secondary consideration. I refer to such species and varieties as *C. vestita*, *C. Veitchii*, *C. Bryan*, *C. W. Murray*, and those of the Regnier group, for all these have a vigorous constitution. It will also generally be observed that these Calanthes are mostly satisfactory in places where few other Orchids are cultivated. In most localities a mixture of fibrous loam, peat and Sphagnum-moss, with dried cow-manure, charcoal, sand, etc., added, constitutes the most suitable rooting medium. In certain districts the use of loam to any large extent favours the development of "black spot" in the very early stages of growth, and in such places compost of a light, quick-drying nature is the most satisfactory. In this neighbourhood some of the best-grown plants are planted in a mixture of peat, Sphagnum-moss, and leaf-mould, with plenty of charcoal and sand added to render the compost porous. When liquid manure is afforded in the later stages of growth this compost answers well. But no hard and fast rule can be laid down, and cultivators should test the different methods, for only in this way will they determine the best system to adopt for their particular district. The pots should be cleaned and filled to one-half their depth with clean, broken crocks. The sizes of the pots will be determined by the sizes of plants. Make the compost firm, and allow sufficient space at the top for watering. Moisture should be afforded sparingly during the first few weeks following root disturbance. Grow the plants in plenty of light, but not so intense as to cause scorching. *C. atro-rubens*, *C. Clive*, *C. Norman*, *C. Oakwood Ruby*, *C. Chapmanii*, and *C. Angela*, the finest of all the dark varieties, all do best in a light compost, very similar to that used for *Odontoglossums*, using no loam whatever. Most of these varieties are scarce and not in general cultivation, but as they become more generally known their merits will be appreciated.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

PROTECTION.—It is always advisable to afford a little shelter from cold winds and strong sunshine to plants that have been raised under glass, for they are sure to be a little tender. The protection may consist of a few short sprays of Yew, Spruce, or other common evergreens stuck in the ground on the windward side of them.

GALTONIA CANDICANS.—This plant, often known in gardens as *Hvacinthus*, may be planted with safety now. We find it very suitable for mingling with groups of herbaceous

Paeonies in open spaces in shrubberies, where they produce a charming effect in the late summer when the Paeonies are over. The stately spikes show to advantage against the bronze foliage of the Paeonies and the greenery of the shrubs at the back.

GLADIOLI.—These bulbous plants may also be planted now, and it will be an advantage if the corms have been started in boxes, for this will hasten the flowering season. The varieties of *branchleyensis* are cheap, and if three or four hundred corms are associated with about one hundred plants of *Hydrangea paniculata* a gorgeous effect will be produced. Of named varieties *America*, *Faust*, *Baron J. Hulot*, *Hollandier*, *Priniceps*, *Pink Beauty*, with *Graaff's* and *Lemoine's* hybrids offer an excellent selection for planting in special beds in the bulb garden.

LILIUM.—Certain Lilies, such as *L. speciosum*, *L. tigrinum*, *L. auratum*, and *L. speciosum* var. *Melpomene*, may be planted as recommended for Gladioli, although some of the choicer varieties seem to do better when grown with a "foster" plant, such as *Iris* or *Sedge* grasses. Of late years mites have been very destructive to Lilies, and the pests have spread to our *Montbretias*.

PAMPAS GRASS.—Where it is desired to increase the stock of certain pure-white, plumed varieties the plants may be divided now. Each portion should consist of from one to six good crowns, and be replanted as advised for Bamboos. Seedlings may be raised under glass, but numbers of the plants will revert to the original dull-brown form. In dividing the old clumps plant any small pieces that become broken off in the reserve garden, when, after one season, they will make grand specimens.

GUNNERA MANICATA.—This fine ornamental-leaved plant is as easily cultivated as *Rhubarb*, but the crowns require a little protection during the winter. The protection may consist of a few Oak leaves held in position by evergreen branches. The plant is a gross feeder, requiring plenty of moisture and manure at the roots.

LAWNS.—The work of mowing lawns should be delayed no longer. We always employ scythes at the first cutting, for this levels up inequalities in the turf, and the hard sweeping that follows removes grit, stones, and other rubbish that would blunt or otherwise damage the lawn-mower. Where there are large, open areas of short grass to be kept, a mower driven by motor power will be found a great saving of labour. The makers have perfected these machines, which may be driven under perfect control, and travel fast in and around flower beds. Moreover, they do the work better, for they obviate treading on and disfiguring the verges of gravel paths.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

VINES.—Grapes that are beginning to colour require a free circulation of warm, dry air. Moisture should not, however, be withheld too suddenly, but by degrees, as the berries advance in the colouring process. The temperature in later houses, where the fruit is swelling, may be 75°, with a genial, moist atmosphere. Thin all bunches in succession vineries as soon as the berries are fit, the extent of the thinning depending, of course, entirely upon the state of the vines. Strong, healthy plants will swell their berries to double the size of others of the same kind growing under less favourable conditions, so that experience alone can teach the degree to which the bunches of fruit may be thinned. Attend to those vines that are in bloom as advised in a former issue, preventing sudden changes of temperature as much as possible. Disbud and stop at three buds beyond the bunch all growths on vines at a later stage. No time should be lost in starting late houses, syringing the rods both morning and afternoon, and closing the houses early to secure as much sun heat as possible, with a genial, moist atmosphere. Less trouble is usually experienced in the starting of late

vines than with early ones, but it is well to lower vigorous canes, so as to secure an equal or uniform bursting of the buds.

PEACHES AND NECTARINES.—Pot trees or specimens planted out in the borders with fruits in which the stoning process is completed, should be grown in a temperature of 75° or 80° by day, with an increase of 10° to 15° by sun heat. The night temperature may range from 65° to 70°. Maintain a moist atmosphere and afford a little top ventilation during nights when the weather is mild. The final thinning of the fruit may now be done, but in doubtful cases remove the superfluous crop by degrees. Keep all late houses well aired and as cool as possible. Syringing should be carried out with great care; an excess will destroy the tissues of the leaves and induce a sappy growth. The water should be ejected from the syringe with sufficient force to dislodge insect pests, but not so vigorously as to tear or damage the tender foliage.

THE ORCHARD HOUSE.—Now that most of the fruit is set syringe the trees gently on mild mornings and maintain a closer and moister atmosphere in the house in order to assist the young fruit to swell and the wood-buds to grow rapidly. Close the ventilators early in the afternoon and thus conserve the heat of the day for warding off the cold at night without using much fire heat. Syringe the plants freely on warm afternoons, but withhold syringing in cold, damp, or frosty weather, at which times a drier atmosphere is best. Carefully go over all the trees and pick off all decayed flowers and leaves. Disbud Peaches where necessary, removing only a few buds at first, as it is better to do this gradually than to remove a large quantity at one time, which may seriously affect the constitution of the tree. If green fly appears dust the plants with tobacco powder, but first spray the trees gently with clear water to make the powder adhere. If more convenient, light fumigations may be practised instead. Examine Apricots, Cherries and Plums for the presence of grubs and caterpillars, which will be found curled up amongst the young leaves and shoots. Constant supervision in this respect is necessary to keep these pests in check; the only means of doing so is to search for them by unfolding the leaves and destroying any grubs which are found. Afford the roots plenty of water at all times, for if they are allowed to become dry the fruits will be sure to drop.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOLE,
Eastwell Park, Kent.

PLANTING STRAWBERRIES.—Runners that were secured late last autumn and wintered in pots in cold frames or plunged in ashes should be planted in their permanent quarters as soon as the soil is in a suitable condition. The recent heavy rains have caused retentive soils to become very bad for working, but it is better to wait for a week or so than to trample the ground whilst it is wet. Strawberries repay for good cultivation, and, as the plants usually occupy the same site for two or three years, it is necessary to thoroughly trench and manure the ground previous to planting. When the soil has become settled, fork it over on a drying day, levelling the surface with a rake before making the drills for planting. A dressing of wood-ashes or old potting compost forked in the top spit will be beneficial in assisting the plants at the start. The materials should be worked around the roots when the planting is done. Strawberries succeed in a variety of soils if afforded good treatment, but for preference choose a cool, retentive loam for the main crop. Moderate numbers of plants of an early variety should be grown on a warm border, where they will fruit considerably in advance of those in the open quarters. Royal Sovereign is the most reliable variety for the purpose, but the newer King George is being recommended as a little earlier. The growth of Strawberries varies according to the quality of the ground, in rich soil a distance of 30 inches between the rows, and 24 to 30 inches between the plants should be allowed. When

planting from pots disentangle the roots carefully, spreading them out evenly, and keep the crown of the plant level with the surface. Make the soil firm about the roots, and run the flat hoe through the beds when the work of planting is finished. Young Strawberry plants put in now should not be allowed to crop this season, therefore all flower-spikes should be picked off as soon as they develop. If the ground is limited, small salad plants, such as Lettuces, Radishes and Onions, may be grown in the space between the rows for the first season. These supplementary crops will mature quickly, and will not harm the Strawberries. If drying winds prevail directly after the plants are put out spread a light mulch over the roots, but not heavy, rotted manure. For the latest crops a border on the cool side of a wall should be planted with Givon's Late Prolific, Latest of All, or Laxton's Latest.

ESTABLISHED BEDS.—If these were cleansed and mulched during frosty weather, as recommended in a previous calendar, very little need be done now. Assuming strawy litter is to be employed for keeping the fruits clean, let it be placed along the rows early, in order that it may be perfectly bleached and clean before the flower-spikes appear. There is a double advantage in placing the litter along the rows early in the season, for in times of frost, when the flowers are opening, the litter may be lightly shaken over the plants in the evening, and, unless the frost is exceptionally severe, will protect the blossom from injury. The plants should be uncovered from the litter next morning as soon as the temperature rises. Before putting the litter down give plants that have already borne heavy crops a light dressing of artificial manure, and also dust soot around the crowns. The soot will help to ward off slugs, which usually take a heavy toll of the fruits.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knutsley Hall, Lancashire.

CHRYSANTHEMUMS.—Pot the remainder of the plants rooted in January at once, using similar compost to that recommended on p. 109. Bush varieties may be placed two or three in each 4-inch pot. Press the soil moderately firm, stand the plants on an ash bottom close to the roof-glass, and keep the atmosphere close for a few days, shading the plants for a few hours about midday. Plants intended for furnishing large blooms should be potted into receptacles 5 inches and 6 inches in diameter before growth becomes stunted. Stand them close to the roof-glass. Stop the shoots of decorative varieties when about 4 inches to 5 inches long, and pinch the secondary shoots from those when they have grown about 5 inches. Syringe the foliage with quassia extract in preference to fumigating for the destruction of aphides. A batch of cuttings of outdoor varieties (Masseo and Goacher types) may be struck now to furnish bloom for the conservatory in the autumn. Grow two plants in each 7-inch pot and pinch the shoots twice. The plants will bloom after those in the borders and before the earliest of the indoor varieties.

MARGUERITES may be repotted and placed in a cold pit. Dip the plants occasionally in petroleum emulsion to keep the fly that lays the leaf-mining grub in check.

BEGONIA GLOIRE DE LORRAINE.—A batch of this plant should be placed in a moist, warm house to produce cuttings for flowering next winter. In a temperature of 70° suitable shoots for cuttings will soon develop at the base of the plants, and these may be taken off and inserted when 2 or 3 inches long. Strike the cuttings in pans or pots furnished with plenty of drainage and filled with a mixture of equal parts loam, leaf-mould and sand. Water the soil with a fine-rose can; subsequent sprayings overhead will afford sufficient moisture until roots form. Place the receptacles on a stage close to the roof-glass and keep the cuttings shaded at all times, but the atmosphere must be kept in circulation.

HYBRID BEGONIAS.—The varieties *Ideala*, *Bowden Beauty*, *Elatior*, *Winter Cheer*, *Gloire de Sceaux*, and others, may be propagated in

the same manner as the above. The plants are very subject to infestations of mite, which should be destroyed by frequent fumigations and dipping the plants in quassia extract.

BEGONIA REX.—This ornamental-leaved plant is best propagated from leaf-cuttings. Select well-developed, fully-matured leaves, make incisions across the main nerves, and lay the leaves flat on a sand bed or a layer of coconut fibre. In moist, shaded conditions plantlets soon form, and may be potted up as soon as they can be handled.

IMANTOPHYLLUM (CLIVIA).—The plants are becoming active again after being rested, and some are pushing up their flower-spikes, therefore water may be afforded from now onward. Applications of weak soot-water and liquid manure diluted with clear water may be afforded the roots twice weekly, also a little Thomson's manure. Where Palms and similar plants are grown in beds in a conservatory a row of *Clivias* makes a suitable border, and established specimens thrive for many years with very little attention.

DECORATIVE GRASSES.—*Eualia*, *Carex*, *Isolepis gracilis*, and other ornamental grasses and sedges may be overhauled forthwith. The plants may be increased by dividing the old stools carefully; retain all the foliage of *Carex* and *Eualias* until new growth commences. *Isolepis* may be grown in 60-sized pots, and the other kinds in 4½ to 5 inch pots. Use a compost consisting of equal parts loam and leaf-mould with sand added. Members of the *Carex* family are benefited by a little peat in the soil. *Cyperus alternifolius* and *C. natalensis* may be raised from seed sown now.

THE KITCHEN GARDEN.

By R. P. BROTHERTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

HOEING.—Seedling weeds will soon make their appearance everywhere in the kitchen garden, earlier or later according to the locality and the nature of the soil. The cultivator should hoe very carefully the whole cropping ground as soon as the first weeds appear. In the case of crops which are growing in rows and above ground the system pursued by market growers is much to be preferred to that usually adopted in gardens—that is, the workman pushes the Dutch hoe in front of him, following it in the adjacent interspace. The work is equally well performed, if not better, than by the method of short strokes and moving backward, while there is a great saving in time. Potatoes can be safely surface-hoed for some time to come in the old, accustomed way.

SEAKALE.—The roots that have been protected should be examined at frequent intervals, and the heads cut as they become fit. These are much superior in flavour to those forced. If there was a shortage of "thongs" to plant, it is possible to pick out enough of the cropped roots to make up the deficiency. These should be planted at once.

POTATOS.—The soil has been so wet that planting has been delayed in many localities. No time should be lost in planting the whole of the crop, even if the old-fashioned, if condemned, practice of planting with a dibber has to be resorted to. Much will depend on the condition of the soil for this method to succeed, and as soon as possible subsequently the ground between the rows should be forked deeply.

BROCCOLI.—The first week of April is generally a suitable time in which to sow seeds of this important vegetable. Some incline to delay sowing for a time, believing that later plants, though smaller and less vigorous, are more capable of withstanding the winter than larger plants. My experience shows that a long season of growth is required to produce strong plants, which need not be more susceptible to intense cold than smaller specimens. Moreover, they have the advantage in providing heads of a good size during winter, which immature plants fail to do. It might be a question, too, in very cold districts, whether to continue growing the old-fashioned and hardier varieties, or instead

substitute the newer kinds, which partake so largely in growth and quality of the Cauliflower. I have found birds so destructive to seedlings, even when nets were used, that I now sow in rough wooden frames, which afford perfect protection when netted. The seeds are sown broadcast and thin enough to dispense with weaklings; by this system the seedlings need not be transplanted till they are well advanced in size. The following varieties may be strongly recommended: *Michaelmas White*, *Autumn Protecting*, *Superb Early White*, which produces Cauliflower-like heads throughout the later winter months; *Snow White*, of the same type but later; *Perfection*; *Safeguard Protecting*, ready about this period; *Satisfaction*, *Late Queen* and *Methven's June*, the two last-named meeting the early Cauliflowers. *Purple* and *White Sprouting* should not be omitted.

THE APIARY.

By CHLORIS.

SEASONABLE WORK.—When the weather becomes reasonably warm in April, the spring overhauling of the apiary may be undertaken. Remember this is the most important examination of the year, therefore do not start the work unless there is plenty of time to complete it thoroughly. Take note of the amount of food each hive contains, so that no further disturbance of the brood-chamber may be necessary. The record should be written on paper, for it is not wise to trust to memory. Then the quality of brood will be a good index to the value of the queen, always recollecting that an indifferent queen is valueless, and should be replaced. Weak stocks cannot be expected to yield much surplus honey, therefore two or more weak colonies should be united, performing the work about 4 p.m. Keep a watchful eye for the larvae of the wax moth, which are easily detected because of the silken web by which the grubs travel from comb to comb. A weak or neglected colony falls an easy prey to the wax moth, therefore because of this, if for no other reason, it pays to keep colonies strong. Sometimes it will be found possible to strengthen colonies by robbing extra strong ones of a frame of brood, or even one of sealed honey where a colony has plenty of stored food. In the latter case the cells should be bruised, and this will act as an incentive for the bees to feed. The floor-boards need attention. They should be cleansed thoroughly by scraping, in order to remove all adhering debris. The rubbish which collects on the floor decays and makes the hives insanitary, besides forming the breeding-place loved by the wax moth. There can be no doubt that many of the troubles among bees arise from the neglect of bee-keepers to keep their hives healthy and clean.

PURCHASING SWARMS.—It is only when bees are in a healthy state that they swarm, therefore swarms are the most satisfactory to purchase. Too often the beginner procrastinates until too late—i.e., until he actually requires the bees and swarming is in full swing. Then he finds that others have been in the field long before him, for they are placing their orders now, and remember the rule is, first come, first served. I shall be very much surprised if this season does not prove a very busy one for those who sell swarms, because the losses in most apiaries have been very numerous of late years, and there is a great demand for honey.

FITTING UP SECTIONS IN RACKS.—As this task takes up much time when properly done, it will be wise to do a little of the work now. By performing this task early the sections can be made to fit more tightly in the rack, for later every little crevice will be filled with propolis, thus causing more work in a busy part of the season, beside producing indifferent results, for there will always be a stain left in the white wood where propolis has been scraped off. Do not omit to utilise tin dividers between each line of sections to secure a uniform surface to each section. Tin dividers are preferable, because they are not liable to twist, as wooden ones do, and the bees are less likely to attach the sections to the metal.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C. — Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are mis-directed.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

Local News.—Correspondents will greatly oblige by sending to the Editors 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.

TUESDAY, APRIL 7—

Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. on "The Cultivation of Amaryllis.") Hort. Club dinner and meeting; lecture by Mr. P. Amaury Talbot on "The Flora of Nigeria."

THURSDAY, APRIL, 9—

B.G.A. (London branch), meet. at Carr's Restaurant, Strand.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 46.1°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, April 1 (6 p.m.); Max. 66°; Min. 46°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, April 2 (10 a.m.); Bar. 29.5°. Temp. 56°. Weather—Fair.

PROVINCES, Wednesday, April 1. Max. 61°, Yarmouth; Min. 48°, Sheffield.

SALES FOR THE ENSUING WEEK.

MONDAY—

Hardy Bulbs, Herbaceous Plants and Roses. By Protheroe and Morris, at 67 and 68, Cheapside, at 12 noon.

MONDAY AND WEDNESDAY—

Rose Trees, Perennials, Lilies, etc. At Stevens's Rooms, 38, King Street, Covent Garden, 12.30.

WEDNESDAY—

Herbaceous Plants and Hardy Bulbs, at 12; Roses at 1.30; Palms and Plants at 5. By Protheroe and Morris.

Horticulture on the Riviera.

There are few green-grocers' shops in the country where at this time of year one may not see one or more of the flat reed baskets in which the produce of the Riviera coast is exported. The street flower-sellers, with cheap Roses up to the turn of the year, then with sprays of Acacia, Violets, and Anemones, draw from the Riviera to fill up the gap between the Chrysanthemums and the Daffodils; in fact, the cheap winter flower trade depends almost entirely upon French-grown produce. During a recent visit we had some opportunities of making acquaintance with this important industry, and found a little enquiry among those fine cultivators preferable to the indifferent golf, or even to the routine of pigeon-shooting, lawn tennis, and gambling that is so plentifully provided for the delectation of the English visitor. In the first place, it is a mistake to suppose that the Riviera industry in *primeurs* early vegetables and flowers, is in the hands of the peasant proprietors—the smallholders whom one usually associates with French gardening

and agriculture. The most important gardens are in the hands of men of education and capital, in many cases comparatively new comers, men who have taken up horticulture in the same way of business as a man in this country takes up bootmaking or law. There are, of course, in the district plenty of small proprietors who make a living out of the family acres they have inherited, but they are not the men who have developed the international trade in flowers and early vegetables, though they may do a little in that direction. The typical small farm will have a few acres of vines, interplanted as to some rows with Corn others with Beans, a few Olives, though they are being displaced by the vines, a few Orange, Peach, and Almond trees, and some carefully terraced beds for Globe Artichokes, early Peas, and the more easily grown vegetables and flowers. Further back in the hills most of the land will be uncultivated and occupied by Cork trees or Chestnuts, and in the valleys beyond the first group of hills the raising of silkworms becomes an important industry. In this easy climate the peasant's wants are few, and he is contented to farm easily for a comparatively small return in cash.

The intensive industry is carried on wherever a sufficient expanse of deep and level soil and an adequate water supply at a low elevation can be found. Sometimes there will be several square miles of such cultivation, as in the neighbourhood of Hyères, and in the broad inland valleys about Grasse and Draguignan, but wherever one of the mountain torrents from the Maures or the Esterel debouches on the coast there will be one or more enterprises of the kind, often working under the most favourable conditions as to shelter and aspect. The soil is generally a deep red loam, derived from the primitive rocks that border the coast line; it is full of stones and coarse sand, but is friable and easy to work. Chemically, it is very deficient in lime, and the climate keeps it short of humus. Natural manures are scarce, the cultivator keeps no live stock except the horses or oxen he uses for cultivation, there are few dairies or pigs in the district, so that farmyard manure is unprocurable, and the sea wrack that is thrown up on some of the shores possesses little manurial value, though it is occasionally used as a mulch. The cultivator has to depend chiefly on artificial fertilisers, among which cakes from the seed-crushing mills of Marseilles play a leading part. Many men have taken to the practice of growing a crop of Lupins whenever the land has to remain idle for a time, turning them in to renew the stock of nitrogen and humus.

The most important factor is water, and all the characteristic cropping depends on irrigation. The rainfall from the late autumn until May is abundant enough, but it is impossible to get summer crops or to establish such things as Broccoli, Endive, Violets, Stocks or Carnations for winter flowering without a plentiful supply of irrigation water, which may be

taken by a channel from one of the streams coming down from the hills or pumped up from a well. The practice of irrigation is well understood; the land is all graded into terraces, and the water is led from terrace to terrace along brick and cement culverts, which are cheaply and cleverly constructed by the local workmen. At the level of each terrace there is an outlet for the water closed by a tile sliding in grooves made in the wall of the culvert; when that terrace has to be watered the tile is lifted and slid into corresponding grooves across the culvert, thus diverting the flow of the water on to the terrace.

After water, elevation and aspect require consideration, and here there is a necessary conflict of interests between the high ground, where frosts are rare but water difficult to obtain, and the low ground, with deep soil and abundant water, but subject to frost. On the high ground a southern exposure is often obtainable, but the greater the slope the more expensive the terracing and the greater the consumption of water. Shelter is all-important. Some ideal situations are to be found close under the steep wooded hills which keep off the dreaded mistral, but there are no extensive areas of that kind, and as a rule men have to rely upon artificial wind-breaks. The gardens are often surrounded by tall belts of Cypress or Acacia, and the beds are all divided up by screens made from the ubiquitous reeds or the tall-growing native Heath. Thatches of the same Heath are erected about four feet from the ground over the beds of Violets and Anemones; Carnations are generally protected by reed mats, which are unrolled in the evening over a framework about two feet from the ground. Along every watercourse grow the reeds or cannae (*Arundo donax*) to a height of eighteen or twenty feet like rather stiff Bamboos, and they subserve a number of useful purposes—screens, blinds, mats, stakes, and other necessaries. The flat baskets which we see in all our markets, and in which all the flowers are despatched, are constructed from split reeds woven together by osiers, or nowadays more generally by wire, and it is wonderful what a tough and elastic basket can be thus cheaply constructed. To minimise the effects of frost it is not uncommon in still weather to light rubbish fires about dawn; the whole valley soon fills with smoke gently drifting seaward on the dying land breeze, to return again as the sun gathers strength and sets up a sea breeze.

The cheap vegetables grown are, in the winter, Broccoli and Endive, the broad-leaved having almost displaced the curled Endive; early Peas and Broad Beans are sown to come into flower in January in sheltered localities. Provence is also famous for its Globe Artichokes (the exhibits from Provence at the Chelsea International in 1912 will be remembered). Even in so backward a season as the present, small ones for making omelettes could be gathered in February. Nearly every garden possesses a considerable breadth of Globe Artichokes. As the season ad-



[Photograph by J. Russell and Sons.

ROCKERY IN THE ROYAL HORTICULTURAL SOCIETY'S GARDENS, WISLEY, SURREY.

vances Peas are sown in succession, and followed by French Beans, both haricots and flageolets, the most important crop of the year. Tomatoes are also planted out as soon as the danger of frost is past. Aubergines are less important, but Melons form a feature with many growers. A few men grow early Potatoes, but that crop does not constitute an important part of the farming.

Of the flowers the most important are the Violets, of which great acreages are to be seen about Hyères, magnificent clumps a foot across, and carrying a couple of hundred blooms. Nearly all are singles, La France, and some of the newer, large-flowered varieties like Admiral Avellan and Askania. Stocks are greatly in demand as cut flowers in France, and a good deal of space in the Riviera gardens is given up to the culture of a fine pyramidal variety, Quarantaine remontante, Giroflée de Nice, which comes to cut from Christmas onwards. They are followed by the Anemones and Ranunculus, but the greatest care and attention is given to Carnations. The Lyons varieties are most commonly grown, but the American perpetual-flowering are now gaining ground. They are not quite so full, and open a little better in seasons like the present, when there was much rain and cold. Sweet Peas are being tried, but the frosts in early January this year cut them to pieces just as they were flowering. All men grow a good many Marguerites (Anthemis), mostly white, with a few yellow; they can be cut all the year round, but chiefly in autumn, though as they can be grown on non-irrigated land they are not of much account. Roses are also very generally grown on non-irrigated land; they are pruned in the late summer, so as to flower when the autumn rains have started them into growth; in early spring they carry only occasional flowers of no market importance. Safrano, Marie van Houtte, Madame Abel Chatenay, and Richmond are the regular sorts. The Mimosa (Acacia), which in our markets is so closely associated with the Riviera, does not pay to grow; it has become the most frequent of hedgerow trees, until the traveller grows to detest its staring yellow colour and common aspect. About this time of year the hillsides on non-irrigated land under Olives are often beautiful with Freesia, Roman Hyacinths, and Paper-white Narcissus, which are being grown for the bulbs, not for flowers. The bulbs are sent from Holland for a year's ripening before sale. Lastly, one must not forget the Peaches, which are very generally planted along the irrigation terraces at such intervals as not to interfere with the crops below. Some of the Californian varieties are beginning to creep in because of their size and power of travelling. Marketing is mostly done through the agents of a few big firms who live in the district, and the usual thing is to fix a contract price for the whole of a man's production as it comes along. Some men try their luck with commission agents in Lyons, Paris, and other cities; others work up a private

trade with shops, hotels, and large houses. The railways give facilities for such a plan, as a box weighing 10 kilos. (22 lb.) is delivered at any station in France for 1s. 3d., and, of course, the tourist traffic maintains a very good train service, in addition to which the P.L.M. runs a special flower train to the northern markets.

Just as the owners of these properties are mostly settlers from other parts of France the workmen are equally strangers, and generally Italians from Piedmont. Of late the supply has been greatly reduced through the war in Tripoli, 4f. a day has to be paid for occasional men, 90f. a month to a man in regular employ, and the dearth of labour is only one of the changing factors that is rendering the Riviera flower-grower uneasy. Every year his monopoly is being threatened by other countries further south, particularly by Algeria, where men go who have been trained in his own school.

Even more insistent is the competition of the growers under glass; the rich people who pay the really big prices are taken by the finish, even by the comparative frailty of the forced Carnations, and do not trouble themselves about the superior lasting powers of the more naturally grown article. So glass-houses are going up on the Riviera just to get this last polish, and it will be interesting to see in a few years' time whether Mediterranean sunshine or northern coal wins the day. The South will certainly make a fight of it, for perhaps the most striking feature of this Provençal gardening is the high level of intelligence and education of the men engaged in it; it is a business for which men deliberately train themselves, first scientifically and then commercially, and in that respect it has a pull over the haphazard methods prevailing in this country.

Coloured Supplement.—The subject of the coloured plate to be published with the issue for next week is *Cypripedium Maudiae*.

THE KING AND THE "HORTICULTURAL RECORD."—HIS MAJESTY'S interest in horticulture, exhibited in such signal and gracious manner at the time of the opening of the International Exhibition, is again illustrated with equal graciousness by his acceptance—as announced in the following letter—of a copy of Mr. REGINALD CORY'S *Horticultural Record*, a work dedicated by special permission to HIS MAJESTY.

[COPY.]

"Buckingham Palace,

March 16, 1914.

"Dear Sir,—The King is delighted with the copy of the *Horticultural Record* which you have been kind enough to offer for his acceptance.

"His Majesty much admires the beautiful way in which the work has been prepared, in addition to its being an interesting history of the greatest International Horticultural Exhibition the world has yet seen.

"Yours very truly,

"(Signed) STAMFORDHAM.

Reginald Cory, Esq."

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the committees will be held on the 7th inst., in the Vincent Square Hall, Westminster. At the 3 o'clock meeting of Fellows a

lecture on "The Cultivation of *Amaryllis*" will be delivered by Mr. C. R. FIELDER.

HORTICULTURAL CLUB.—The next house dinner of the Club will take place, at 6.30 p.m., on Tuesday next, at the Hotel Windsor, Victoria Street, Westminster, when Mr. P. AMAURY TALBOT will give a lecture on "The Flora of Nigeria," with special reference to 250 new flowers, lately discovered in that country. The lecture will be illustrated with photographs taken in Nigeria under Mr. TALBOT'S personal direction.

HORTICULTURE AND THE DRAMA.—The representation of a scene in the Chelsea Flower Show at the Drury Lane Theatre is a noteworthy event, even in these days, when the whole nation takes a practical interest in gardening. It goes to show how greatly horticulture has entered into the social life of the metropolis. The leading characters in "Sealed Orders" visit the show: quite the well-dressed throng of men and women that one sees at the spring exhibitions, and the view is in the big tent, with the mound of *Cinerarias* grouped around the obelisk and beds of flowers studding the green-covered parterre immediately surrounding it. On either side are great groups of tall Rambler Roses, and the general effect is certainly good, albeit, of course, it is produced with the aid of artificial flowers. The show is referred to frequently in the course of the piece, and scenes on the Embankment show the great posters advertising the exhibition. Horticulturists who go to Drury Lane to see the flower show scene will undoubtedly enjoy their visit.

BOTANICAL GARDEN FOR MICHIGAN UNIVERSITY.—The University of Michigan, at Ann Arbor, has come into possession of what will eventually be the finest botanical garden owned by any university in the Middle West. The old botanical gardens on the East boulevard will be turned over to the department of landscape design, to be used by them as a park or object ground in landscape design. The greenhouse now in the old botanical gardens will be moved to the new grounds and enlarged to accommodate the experimental work carried on. Work on these new gardens and greenhouses will be started this summer. *Florists' Exchange*.

FORESTRY AND THE PANAMA CANAL.—The genius for applying science to practical affairs which is so conspicuous in the American has been illustrated in many ways during the building of the Panama canal. Everyone knows, for example, of the successful war of extermination waged by Surgeon-General GORGAS, sanitary officer of the Panama Canal Commission, against the mosquitoes, which transmit malaria and yellow fever from one human being to another. We now learn that the enormous earth-slides at the Culebra cut and elsewhere in the course of the canal are likewise to be combated by the application of scientific knowledge. The forester is to be called in to check the earth-slides, and the traveller is promised that when he passes through the canal he shall voyage between banks green with vegetation instead of, as in the Suez Canal, between desolate banks of sand.

EARLY FLOWER SHOW AT BIRMINGHAM.—The annual Orchid and early summer show of the Birmingham Botanical and Horticultural Society will be held at the Botanical Gardens, Edgbaston, on June 11 next. Honorary exhibits of flowers, fruits and vegetables will be welcomed. Particulars may be obtained from Mr. T. HUMPHREYS, Curator, Birmingham Botanical Gardens.

PREPARING TREES FOR THE PANAMA-PACIFIC EXHIBITION.—Accounts in the horticultural Press of America present a vivid picture of the enterprise which is being bestowed on the horticultural features of the forthcoming exhibition. The site, which

a year ago was a barren waste of sand dunes and salt marsh, has been prepared, according to the *National Nurseryman*, 'by pumping from the bay of San Francisco millions of cubic yards of sand. After the land had been made up 25 million cubic yards of soil were pumped from the bed of the Sacramento river, transported 70 miles to the exhibition and spread in a layer of from 6 to 8 inches over the spaces between the sites for buildings. Gardeners have been despatched to all parts of the world in order to select trees for the groupds. Size and age appear to present no drawbacks, and transplantation is being effected on the side-box system. This system consists in cutting with a 7 feet knife 7-feet deep cuts on the four sides of the tree to be moved. Fertilisers are forced into the cuts, and outside the latter boards are placed. Six months elapse, during which time the tree is nourished by its main, vertically-descending roots, and the side shoots are forming fibres. The tree having recovered from the preliminary operations the bottom roots are severed, a bottom board is placed beneath the tree, and so a box is made. Among the trees which, as it is said, have been transplanted successfully by these means and shipped and established in the grounds are 200 rare Palms. One avenue is lined with *Dracaena indivisa* 18 feet in height; in another yellow Phoenix and Washington robusta are used. *Eucalyptus* from Australia, rising to a height of 28 feet, stand on either side of the west avenue.

ROTHAMSTED EXPERIMENT STATION: LAWES AND GILBERT CENTENARY FUND.—We would draw attention to the fact that the Lawes and Gilbert Centenary Fund is not yet closed, there still being £950 to raise before the new laboratories can be built. As our readers will remember, the Centenary Fund was established for the purpose of collecting £6,000 whereby to qualify for a Development grant of £6,000, and thus obtain a sum sufficient to erect and equip a laboratory at Rothamsted to replace the old laboratory, which, after nearly sixty years of use, is now too small, and unsuitable for modern requirements. The fund has been generously supported, subscriptions, large and small, having come in from Great Britain and Ireland, from France, Belgium, Holland, Germany, Spain, Canada (where the Federal Government gave \$500), United States, India and Australia. The committee is particularly anxious to clear off this last sum and to begin building operations at an early date. Subscriptions should be sent to the secretary, Rothamsted Experimental Station, Harpenden, Herts.

THE BANANA INDUSTRY.—In a recent article on the Banana Trade Development, published in the *Financial Times*, it is stated that during the past few years a sum of £7,250,000 has been expended on the construction of fifty-seven steamers for the conveyance of Bananas between the West Indies and England, and that the imports of this fruit into Europe are estimated at 850,000 bunches per month, while the trade is rapidly expanding. Developments are impending which will not only still further add to the amount of tonnage employed in this trade, but will also in all probability lead to a more widely distributed organisation in this country, with a view to expediting the delivery of the fruit to the consumer, in order to prevent the glut which at present sometimes occurs. The business has been found to pay handsomely, and capitalists are prepared to invest large sums in it.

EVER-BEARING STRAWBERRIES.—An article by Mr. C. F. GARDENER (see *American Fruits*, March 14) on the above subject cites the varieties Progressive, Superb and Americus as possessing good ever-bearing qualities. Progressive bears most fruit, Superb the largest berries, and Americus, which is at its best during August,

has the great merit that its flower-stalk stands nearly upright. They are all hardy and bear stamens. A defect of some of the best varieties—and that is, no doubt, an effect of their quality of continuous fruiting—is that they are runnerless. Hence they may be propagated only by division; but in this way from 12 to 20 plants may be obtained from each specimen.

A TRAP FOR THRIPS.—Experiments carried out by Mr. F. M. HOWLETT in India and described in the *Journal of Economic Biology* (IX., 1, March, 1914), indicate that various aldehydes have a marked attraction for thrips. Mr. HOWLETT experimented with benzaldehyde, cinnamylaldehyde, and other aldehydes of similar composition, and found that watery solutions of these substances served to trap thrips in considerable numbers. The liquid was used at the rate of half a pint of water to two



FIG. 105.—PRIMULA WINTERI ON A ROCKERY.

cubic centimetres of the aldehyde, and was exposed in small bowls. Benzaldehyde is cheap, and although the method in its present form does not at first sight seem to be very practicable, it is well worth trying.

"THE ANNALS OF THE BOLUS HERBARIUM."—We have received the first number of the new periodical which has been established in the interests of South African botany. In his foreword Professor H. H. W. PEARSON, the editor, points out that there is at present no South African journal devoted to the subject of botany, and he states that the first object of the new journal will be "to treat of botanical work inspired directly or indirectly by Dr. BOLUS, and with investigations conducted in or in connection with the Bolus Herbarium." The opening number, which has for a frontispiece a portrait

of the distinguished South African botanist, Mr. HARRY BOLUS, contains an account by the editor of the flora of the Great Karasberg; an instalment of an article by F. and L. BOLUS, entitled "Key to the Flora of the Cape Peninsula"; and a short notice on national Botanical Gardens. Two parts of *The Annals* will probably appear each year, and four parts will constitute a volume. The subscription is 15s. per volume, and the numbers may be obtained from the Cambridge University Press.

PRIMULA WINTERI.

I ENCLOSE a photograph (see fig. 105) of *Primula Winteri* growing in Mrs. Lockett Agnew's garden at Hallingbury Place, Essex. The plant was received in April, 1912, and planted out on the rockery at the end of June the same year. The soil is a rather heavy loam, and was lightened with a little leaf-mould. The plant has withstood the cold of two winters, including frost ranging from 10° to 15°, the only protection afforded being a pane of glass for the purpose of warding off the rain. The situation in which the *Primula* is planted faces due north, receives little or no sunshine, and is exposed to all winds. As will be seen from the illustration, the plant made vigorous growth and developed three large crowns last year. Mrs. Lockett Agnew, who is an enthusiastic grower of Alpines, considers that there is no doubt of the hardiness of this species. The square of glass in winter helps to preserve the beautiful white farina with which the foliage and flowers are covered. W. A. Cook.

NOTES ON RHODODENDRONS.

ASSUMING that special societies are needed to guide and control the zeal and activities of cultivators of important genera of garden plants, it is surely time we had a *Rhododendron* Society. The genus is a most important one, and now that such a large number of Chinese species have been introduced into cultivation, we may expect further developments, especially from those who take an interest in raising hybrids. Certainly among the Chinese *Rhododendrons* there are characters which are new to the garden representatives of the genus; that is evident enough in the species which have flowered, and, judging by their foliage and habit, as well as by dried specimens, characters still more striking will be revealed by others as they flower. It is to be hoped that the work of identifying these new introductions will be entrusted to Kew or to some equally competent authority. A plant may be new to cultivation and yet well known in herbaria, and it is unfortunate when plants are exhibited, perhaps certificated, and recorded by the horticultural Press under names which subsequently prove to be wrong. There is an easy way to avoid this, and *Rhododendron* fanciers are urged to follow it.

Names are, and always will be, a source of confusion and annoyance, as, for example, in the case of *Rhododendron Cornubia*, shown by Messrs. R. Gill and Sons, Falmouth, in March, 1912, when it obtained an Award of Merit, and shown again a fortnight ago by Mr. R. Fox, Penjerrick, under the name of *R. Lilianii*, and again given an Award of Merit (see *Gardeners' Chronicle*, March 14, p. 191). Clearly the name *Cornubia*, a most appropriate one, must stand. This hybrid originated at Penjerrick, it is said, from *R. arboreum* crossed with hybrid *R. Shilsonii* (*barbatum* × *Thomsonii*), and Messrs. Gill obtained their plants from that source. It is doubtful to me if *R. arboreum* really was one of the parents, but whatever its origin the plant

is one of the very best of the crimson early-flowering Rhododendrons.

What glorious plants some of the Indian Rhododendrons are! Two of the handsomest were shown last week—namely, *R. grande* (argenteum) and *R. Nuttallii*—the former a tree in Sikkim with leaves a foot long, dark green above, silvery beneath, and enormous ball-like trusses of bell-shaped, waxy-looking flowers, each 2 inches long and wide, white with a blotch of crimson at the base. This species is hardy enough, but unfortunately it pushes into new growth and flowers too early to escape our late spring frosts. This is true of the majority of the Sikkim species; they do not object to mid-winter frosts, but they are hard hit by those of spring.

The other species, *R. Nuttallii*, shown in perfect condition by Messrs. Gill, astonished many who, seeing it for the first time—for it is rare in gardens—could scarcely believe that it had been in gardens over half a century, and that it can be grown in an ordinary greenhouse where Camellias and Indian Azaleas are at home. Being a native of Bhotan, at an elevation of 4,000 to 5,000 feet, it requires more warmth than the Sikkim species do. At Falmouth it is grown in a greenhouse from which frost is excluded. Like *R. Dalhousiae*, it often grows as an epiphyte on large forest trees, but they both thrive in the open border, and if the shoots are stopped with judgment they form fairly shapely bushes. *R. Nuttallii* has leaves 8 inches by 4 inches, and fleshy, bell-shaped, cream-yellow flowers 5 inches long and wide, fragrant, altogether charming. They are borne in clusters of five or six at the ends of the strong shoots.

A hybrid now flowering at Kew, but originally from the collection of the late Mr. J. H. Mangles, Haslemere, had for its parents *R. grande* and *R. niveum*, the latter having very compact, rather small heads of lilac-purple flowers. The hybrid, for which the name *R. grande niveum* is proposed, is intermediate in characters between the two parents, the flowers being about 1½ inch long, and their colour pale mauve, pleasing as to shape and hue, and quite worthy of its raiser, to whom Rhododendron fanciers are greatly indebted for much excellent pioneer work in the eighties as a breeder and cultivator of the best species of the genus.

R. sutchuenense is flowering now in several collections, proving that it will have to be placed among the species that flower too early in the year to be safe. It first flowered in Messrs. Veitch's nursery at Coombe Wood in 1910, the plants being quite small. It has large leaves, up to 10 inches by 2 inches, dark green above, glaucous beneath. The flower heads are large and compact, the flowers being as large as those of *R. grande*, but with only five corolla lobes. They are rose-pink, with small red spots on the upper part inside. W. W.

THE BULB GARDEN.

FOUR GOOD DOUBLE TULIPS FOR FORCING.

CERTAIN double varieties of Tulips are unsuitable for decorative purposes, owing to their weak stems. The following four varieties have strong, upright stalks and flowers of good colour and substance. They are valuable either for furnishing cut blooms or for decorative purposes in dwelling-rooms:—Murillo, height 14 inches, colour deep blush; Vuurbak, 12 inches, scarlet, shaded crimson, a brilliant variety; Rosalie, 10 inches semi-double; deep rose-coloured flowers; and La Candeur, 12 inches, pure white. These bulbs may be purchased cheaply, and the varieties are all suitable for growing in quantities. James Winchester, Windle Hall Gardens, St. Helens.

RIBES LAURIFOLIUM.

I VENTURE to predict that the evergreen Ribes, *R. laurifolium* (see fig. 106) is destined to take a prominent place in gardens, for it is probably one of the choicest treasures sent home from China by Mr. Wilson. It is a strikingly handsome plant all through the winter and early spring, and suitable for planting on boulders in the rock garden. Long before it is in flower the plant is interesting and beautiful, and it remains in flower for several weeks. The severest weather we have had here during the past three years has not injured the blossoms in the slightest degree. The colour of the petals is a

bership is constantly increasing, and I am glad to say that the amount of its subscriptions shows a similar growth. There is no society that does not make mistakes in the first years of its career, and it is useless when a society has achieved success to enter into recriminations as to who is responsible for past errors. Mr. Hall's remarks as to lack of tact and courtesy and a policy of isolation are quite contrary to fact, and as to the future I am hopeful that his pessimistic prophecies will not be fulfilled.—*J. C. Jackson, hon. secretary.*

—I fear my friend Mr. Cuthbertson has not understood that I was not criticising the R.H.S., but rather criticising the policy of those who drew up the by-laws of the N.E.H.S., in that they made a mistake in forgetting that regula-



FIG. 106.—RIBES LAURIFOLIUM: FLOWERS GREENISH-YELLOW.

very pale yellow passing to greenish white. *E. Beckett, Aldenham House Gardens, Elstree.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE N.E.H.S.—I have read the letter of the Rev. J. Bernard Hall in your issue of the 21st ult. (see p. 207), and at once write to contradict many of the statements contained therein. I do not consider it necessary to go into every point raised by Mr. Hall, and in the first place I should like to state on behalf of the Council, that never since the society was initiated has it been in a more healthy condition than it is at the present time. Both the Council and the various committees are composed of gentlemen who have a large and varied knowledge of horticulture in all its branches. The list of mem-

tions which were all right for London, and the headquarters of British horticulture, were not at all suitable for a young Northern society struggling to exist under quite different conditions, and severely handicapped and limited in many ways, e.g., the existence of strongly established societies, who, quite rightly, view the N.E.H.S. as simply a competitor. The word "co-operation," to my mind, has been overlooked, and the policy of co-operation never seriously attempted. A "North of England Association of Horticultural Societies," to my mind, implies the only policy that is likely to succeed. Leeds is the natural headquarters of such an Association, as witness the fact that commercial travellers and bootmakers make it their base. But to limit the operations to Leeds is not only suicidal, but also dead against the policy to which Article II. commits the Council, i.e., "the society is established to promote and encourage every branch of horticulture in the North of England." We have no sign that the

"new arrangements" are anything but further proof of the Leeds bias which has so seriously handicapped the Society so far. I regret having to publicly criticise the N.E.H.S., but I feel, and I am in good company, that someone must speak out since constitutional methods have failed. As regards the R.H.S. not helping the N.E.H.S., without mentioning much valuable help given after, and even before, the N.E.H.S. was inaugurated, I may point to the hard cash spent on, and the exceptional treatment accorded to, the Society at Harrogate (1911) and Newcastle (1911). I only want to stir up the N.E.H.S. to be "true to name" and loyal to Article II. *J. Bernard Hall, Farnham Vicarage, Yorkshire.*

AQUILEGIA STUARTII.—I am much obliged to Mr. George M. Taylor for the valuable information he gives me on page 223 of the *Gardeners' Chronicle* regarding the origin of this beautiful *Aquilegia*; which, when it was sent to me by its distinguished raiser, I did not find quite so easy to cultivate successfully as many other varieties. Dr. Stuart assured me that "it was not grown by everyone; requiring very careful attention in its earlier stages, and a deep, fertile soil." That *A. Witmannii* was one of its parents, and not *coerulea*, I have now no doubt. *David R. Williamson.*

MISTLETO ON THE COMMON HAZEL.—On one of the farms on the Madresfield estate by the side of a small stream there is a fine, healthy plant of the broad-leaved variety of Mistleto growing on the top of a common Hazel, *Corylus Avellana*. This appears to me a very uncommon host plant, and as none of my friends with whom I have corresponded has seen or heard of Mistleto growing on such a foster parent, I write to ask whether such an occurrence has been recorded before. *W. Crump, Madresfield Court Gardens, Malvern.*

NARCISSUS FLY—EUMERUS LUNULATUS (E. STRIGATUS).—I have read the note by Mr. A. J. Bliss in the *Gardeners' Chronicle* of the 28th March. Agreeing with him that it would be very desirable that the matter should be thoroughly investigated under scientific conditions, I think that, until this shall have been done, it would be well to reverse our usual judicial practice, and to consider the accused to be guilty until he has been proved innocent. Optimistic anticipations of scientific conclusions not yet arrived at are doubtless cheering, but they may be also dangerous should they deter some from taking in time precautions which, later, science may definitely show to have been necessary. And, looking at the alarming rapidity with which this fly increases this is the more important. Mr. Bliss is apparently satisfied that the grubs of the *Eumerus lunulatus* are merely "scavengers," feeding, not on the living tissue of the bulb, but on the excrement of the *Merodon* equestris, or on the dead and rotting substance of the bulb. For the following reasons I think it would be unsafe to accept this conclusion as proved. Taking, first, the association of the *Eumerus* grub with that of the *Merodon*, Mr. Bliss tells us that he has "taken up this spring a dozen or more Daffodil bulbs which contained *Eumerus* larvae, and in every one of them there was also a *Merodon* grub." Well, during the same period, I have taken up very considerably over 100 bulbs, and found in them (and they were carefully examined, and generally cut open) only two grubs of the *Merodon*, nor did the other bulbs show evidence of their previous occupation by that grub. Fortunately my garden has not appreciably suffered from the *Merodon*. For these reasons it would seem that a close association of the *Eumerus* with the *Merodon* is uncertain. Obviously the grub of the former feeds on something else than the excrement of the latter. Taking the second point, namely that the *Eumerus* grub may be feeding on the dead and rotting substance of the bulb, resulting from some fungus, or other disease, we have here, in the absence of scientific proof, more room for speculation; but as a foundation for my speculation I have to regard the fact that in an immense majority of cases I find that the bulbs attacked this spring by the *Eumerus* had been in the previous year absolutely strong and healthy. In a single row of last year's healthy

bulbs "one has been taken and the others left." Again, the bulbs attacked have been those in places fully exposed to the sunshine; those under the shade of trees have been left untouched, and many of these have been lifted for examination. The suggestion is that the *Eumerus lunulatus*, like the *Merodon*, is a "sunshine fly." And, again, where do these grubs, "scavenger" or otherwise, which are found in the bulbs, come from? The parent is a fly, about the size of an ordinary house fly, and, of course, lays its eggs. But where, in the case of the *Narcissus*? It can be understood that in the surface rhizome of the *Iris* the fly can easily deposit its eggs, but in the case of the *Narcissus*, with bulbs some inches below the surface of the soil, the *modus operandi* is not at all so clear. In no case, although very careful examination has been made, have grubs of the *Eumerus* been found in the adjacent soil. That the grubs travel I think is beyond doubt; but when, as was the case of a single bulb of var. *Glory of Noordwijk*, no fewer than 100 grubs were found (not one occurring in bulbs closely adjacent to it), where did these same grubs come from? Is it easier to imagine that from all surrounding parts this army of grubs made journeys, having for their object a "dead set" at this particular bulb, previously a perfectly healthy one, or that their presence showed that the eggs were deposited by one or more flies in the foliage of that particular plant during the previous season, as is the case with the *Merodon*, with which the *Eumerus* is closely allied? And pursuing the analogy, why then should not the larvae of the *Eumerus*, as does that of the *Merodon*, work down to the bulb and attack direct? Of course, nothing either way is as yet conclusive; but I would suggest that until scientific investigation has thrown more definite light upon the subject it would be the safer course to lift all doubtful bulbs for examination, and so help to get rid of the pest as far as possible. *Charles E. Shea.*

SUGGESTIONS FOR OBSERVATIONS ON THE ORDER OF BLOSSOMING OF DIFFERENT VARIETIES OF FRUITS AND EXPERIMENTS IN THEIR POLLINATION.—(1) Note the order of blossoming of different varieties of Apple, Pear, and more particularly of Cherry and Plum, also note length of time varieties are in flower; with the object of seeing which varieties are in flower about the same time for cross-pollination. (2) In order to test which varieties are self-fertile and which are self-sterile enclose trusses of unopened flowers in paper or muslin bags, and tie at the base; when the tree is in full flower open the bags; pollinate the blossoms with pollen of the same variety by dusting stigmas either with pollen of the anther held by forceps or by a camel's hair brush, and replace bags. Remember to sterilise the brush by dipping in methylated spirit and allowing to dry before using with another variety. Label bags with date, what has been done, and keep notes till fruit is mature or has fallen. (3) An interesting experiment is to place three bags over trusses of unopened flowers on a variety, and treat them as follows:—(a) Leave alone to see if any fruit sets with insects excluded; (b) pollinate with own pollen to see if fruit will set with its own pollen; (c) pollinate with pollen of another variety to see whether a better result is obtained with foreign pollen. Each trial should be labelled, the bags may be removed about ten days after pollination, when all the petals have fallen; make notes of what happens until the fruit is ripe. (4) To find the best pollenisers, especially for shy-bearing varieties; unopened blossoms to be bagged may be emasculated (by pulling or cutting out the anthers before they shed their pollen), or if the variety is self-sterile it may be left untouched. The bagged flowers when the tree is in full bloom are pollinated with pollen of another variety; in order to give the best chance the flowers may be thinned (say to 3 for Apples and Pears, 5 for Plums, and 10 for Cherries), the number of flowers pollinated should be stated on the label, and notes may be made fortnightly. (5) Notes may be made of the insects chiefly seen at the different fruit blossoms for comparison in different parts of the country. (6) Note may be made of any varieties that crop badly in order to test another year as to

whether the cause is lack of suitable cross-pollination. Observations and records of experiments should be sent to the secretary, National Fruit Growers' Federation, 2, Gray's Inn, London, W.C., at the end of July. The results will be tabulated and summarised, and a copy of the report will be sent to the contributor and to the *Gardeners' Chronicle* for publication. *C. H. Hooper.*

FEBRUARY RAINFALL (pp. 157, 223).—Mr. Thomas Newman will be surprised to hear that the rainfall in these gardens for February amounted to 7.62 inches, thus easily beating his record. Rain was recorded on twenty days of the month, the heaviest fall in twenty-four hours totalling 1.40 inch, which occurred on the 7th. Our altitude is 550 ft. above sea level. During March rain fell on every day, excepting two, up to the time of writing (27th). The record for March so far is 5.76 in. On our heavy clay soil such excessive rains throughout February and March year by year greatly retard outdoor gardening operations. This place is situated some 20 miles from Swanmore, and having compared the rainfall from time to time with that observed by Mr. Molyneux at Swanmore Park, we find that ours is invariably the heaviest. In fact, according to the meteorological returns, this appears to be the wettest spot in Hampshire. *Wilmot H. Yates, Rotherfield Park Gardens, Alton.*

—In January, 1913, at Bournemouth, we recorded 5.97 inches of rainfall, and in February 1.89 inches. The average for January is 2.57 inches, and February 2.35. The total for the year amounted to 33.78 inches, against 31 inches. In January this year we registered 0.49 inch, and in February 4.56 inches. In February, 1910, we had 4.32 inches, and in 1912 2.75 inches. The total for the year was 43.20 inches. In February this year we had 11 dry days. I find the greatest amount which fell in February in Bournemouth was in 1900 with 5.52 inches. I recorded in February this year .79 inch on the 8th, .40 inch on the 11th, .62 inch on the 14th, .45 inch on the 15th, .60 inch on the 18th, .59 inch on the 21st inst., and .56 inch on the 22nd at 9 a.m., so that most of this occurred on the previous day. Of seventeen days I registered the same amount of rain as that stated by Mr. Thos. Newman. It is generally understood that the greatest amount of rain falls on the top of hills, except in the case of mountains, but I generally record more rain at 41 feet above sea-level than at my own house 145 feet above. It greatly depends upon the surroundings. My garden is pretty open, at the lower station it is walled in, and there are trees all round, but not in the way of the rain gauge; that is to say, the angle allowed is all-sufficient in all the stations. The third gauge was on the cliffs at exactly the same elevation—41 feet—but very exposed, and the wind blew much of the rain away. Another gauge by another observer is also on the cliff edge within 20 or 30 feet. One year these agreed to within .01 (one-hundredth) for the year. They were both the lowest records in Bournemouth. One was within a few hundred yards of the highest recording gauge. These two gauges on the cliff are situated, one at 41 feet, the other quite 100 feet above sea-level. We have had 5.12 inches this month, against an average of 2.37 inches. *C. Dales, Meteorological Registrar, Bournemouth.*

GARDENING FOR THE BLIND.—Now that so much interest has been aroused on behalf of the blind through the opening of the new National Institute for the Blind by the King and Queen, it may interest your readers to know that the blind have a book on gardening published in Braille. It is entitled *Gardening Notes*, and is a reprint from monthly notes contributed by myself to the blind magazine, *Progress*. The notes aroused a lot of interest at the time, and they were afterwards published in book form, by request of blind readers. I receive numberless letters from blind readers—transcribed from Braille by the Editor—asking questions upon gardening matters, questions which show such intelligence that would put many sighted "gardeners" to shame. Amongst the questions asked were "What is the difference between a Pansy and Viola?" and "Which is the best way to

propagate *Rhododendrons*? One might wonder how should these matters interest blind persons? One blind man wrote to say: "For some years my gardening work has been to weed Onion beds, but through reading these notes I became ambitious, and after getting a half-inch board, sixteen feet long, and six inches wide, four stakes and a yard stick, made out of a broom shaft, with the aid of these I dug a piece of ground in September, using the board for a guide, with the stakes in the ground behind to prevent it working away, turning the board over after every length was dug. The piece of ground dug was 24 yards by 8 yards. On this I sowed my Cabbage seed (Flower of Spring), and in October I had an unlimited supply of plants. Again using my board I made thirteen trenches, in which I planted eleven score, and on the flat four score plants. At the beginning of the year I intend putting in other crops." When writing my notes on flowers I was urged by the Editor not to confine myself to flowers having scent, but to recommend some having colour, because the chief joy of a blind person is to give pleasure to others. If any of your readers should have any subject at any time likely to prove of interest to blind people, let him send it to the Secretary-General, National Institute for the Blind, 206, Great Portland Street, W. It would be appreciated, and would help to give a little light to the blind. One blind gentleman told me—so recently as last Christmas—how he cut out and made a flower bed on the turf, taking the design from the back of an old watch. When the bed was finished he was not more than two inches out. He planted it entirely himself, with green and golden Yews, graduating the heights to the edges of the bed. *F. C. Stainsby, Brocklesby Park Gardens, Lincolnshire.*

ARBUTUS MENZIESII.—It was interesting to read the notes on *Arbutus Menziesii* (syn. *A. procera*), at Bayfordbury (p. 182), and Bassett Wood, Southampton (p. 207). There is a tree growing here, planted by my employer, J. C. Hawkshaw, Esq., in February, 1880, which at that time was about 1 foot high, and now measures just over 30 feet in height, and 2 feet 6 inches at 3 feet from the ground. This tree appears to have much the same habit as the specimen figured on p. 182, with the exception that it has two large branches proceeding from the main stem within a few feet of the ground. It is not so upright in habit, owing to being overshadowed by a large Oak and a Yew, on the north and north-west side; these have driven the *Arbutus* much out of the perpendicular. It flowers very profusely most seasons, but I have failed to notice it bear fruit during the past twenty-two years. It is interesting to learn that the specimen at Bayfordbury produces masses of orange-red berries. The answer to the query put by my brother will be looked forward to with interest. The reddish papery bark is shed annually, often coming away in large strips; this makes the tree a striking object. *Arbutus Unedo* and *A. canariensis* I have raised from seed. Plants of the former species have now reached the flowering stage; seedlings of the latter were only raised in 1913, therefore are still small. These have, however, withstood 22° (F.) of frost without protection or the slightest injury. *Walter Silcock, Hollycombe Gardens, Liphook, Surrey.*

BIRDS AND THE FRUIT CROPS (see p. 223).—With regard to your correspondent's suggestion to place receptacles containing water near to the trees and bushes carrying crops of ripening fruit, as a means of preventing, to a certain extent, the destruction of the fruit by birds, I may state that we have planted alongside a stream of excellent water, from which birds can easily obtain all the water they require, a row of bush Apples, including the varieties Gladstone and Ribston Pippin, also an old standard tree of a Russet sort. I find, however, that I cannot keep the blackbirds and tits away from them; in fact without netting the trees I cannot keep a single fruit long enough for it to ripen. I have known blackbirds to tear holes in old fish netting in order to get at the fruits. Moorhens also cross the stream and eat the fallen Russets, of which they appear to be particularly fond. *Henry F. Maidment, Gardens, Bishopstrow House, Warminster.*

'JOURNEYMAN GARDENERS' WAGES.—

The correspondence on the question of journeyman gardeners' wages has not revealed any serious faults in the system prevailing generally. There will always be individual cases of hardship in all occupations, and although they ought not to be allowed to exist, so long as human nature remains what it is we shall never attain to ideal conditions. The chief grievances seem to be (1) bad accommodation in bothies; (2) low wages; (3) excessive hours. In regard to (1)—bad bothies—there is no excuse in any way whatever for their continuance, and I imagine the cases where they exist are very few. Every head gardener who has a spark of humanity in him ought to see that his men are comfortably housed. If he does not do so, the first step should be to remind him of it, and I cannot imagine it would be taken in vain. But, if it proves useless, there are other ways of bringing pressure on the powers that be; and there is a Gardeners' Association whose secretary keeps a black list of all places which for any reason do not come up to a respectable standard. Members can always obtain advice and assistance, including legal assistance if necessary, in anything connected with their employment on applying to the secretary. (2) Low wages.—While the profession is so overcrowded wages are certain to vary considerably, but there are signs of much improvement. Many factors are at work which will help in this matter. The recent arrangements for granting diplomas to professional gardeners through the Royal Horticultural Society will do much to lift the profession out of the ditch into which it was falling. Some will doubtless say that they do not believe in examinations. Neither do I count on much benefit from written examinations alone; but we must remember practical and oral examinations are now to be added to the theoretical ones, so that point will be complete, and will sift out some of the chaff. Eventually the best positions will be filled by those who have obtained the diploma, and they will have a good reason for asking a suitable salary. The general tendency is for wages to rise in all employments, and this is certain to have some effect on gardeners, because some of the young men will leave for more remunerative work. Other matters that will help are the increasing demand for men in public parks, moderate sized gardens, trade establishments, and county council work. The average wages paid to young gardeners are not really so low as they appear to be. If the bothy attendant is a capable person, and garden produce is allowed to the young men (as it should always be), the amount spent on board will be much less than a tradesman in lodgings has to spend. If the latter gets 6s. or 7s. per week more money he is no better off. There is a great difference in the way young men use their money, and many would often benefit themselves by studying this point. (3) Excessive hours.—Improvements are taking place in this aspect of the question, and the Saturday half-holiday is becoming general, but there is cause for some complaints. I have myself known head gardeners who have kept the young men working overtime, merely because they wanted to grow produce for shows, and have not given them a halfpenny for their assistance. Such treatment cannot be too strongly condemned. All overtime should be paid for. It may occasionally be necessary, and when a sudden pressure of work, such as Grape-thinning, comes, it is impossible to avoid it, but I am certain neither master nor man derives any benefit from it, and it can only be classed as a necessary evil. But there is no reason why a gardener should not be paid for it. Where is any other wage-earner to be found who works overtime without payment, and where is the justice in paying one and not another? It is even worse in establishments where produce is sold and the men are worked overtime without payment. Thirty years ago, if journeymen had written we should have had more complaints, and at that time there was ample excuse for them. This shows that things are improving. Although it has not been definitely stated in this correspondence, I consider the absence of any reasonable chance of promotion for many of our young men is one of the worst faults of our present system. It is absolutely impossible for all journeymen in this kingdom to obtain foremen's positions, and eventually head gardeners' situations. I may perhaps

be told that all are not fitted for promotion, but many are who have to leave for other occupations or go to other countries; this constant overcrowding causes a large number to apply for vacant posts, with the inevitable result of low wages and other adverse conditions. Those who wish to remain and succeed in the profession should use every means in their power to excel the gardeners of the past. I must confess a want of confidence in them on this point; there are too many other attractions in the present day, and study is often neglected. But in order to gain a useful knowledge of the science which underlies all garden work, books should be studied systematically, and this must be done after working hours throughout the year. I do not mean that all games and recreation should be given up, for they are useful to a certain extent, but they should not be pursued at the expense of the necessary studies. One hour at the books with determination to succeed, followed up regularly each night, will give excellent results, and will sometimes induce two hours to be given. This is strictly necessary in order to excel. It will never take the place of practical work, but the knowledge thus obtained will be helpful when difficulties occur in after years. School trained men will never equal those who have been apprenticed and trained in good private gardens, if the latter endeavour to add to their practical knowledge enough science to gain the diploma. —*W. H. Divers, V.M.H.*

—Low wages in a garden usually accompany shortage of staff, and consequently the work is hard and the hours long. Let *Contented Journeyman* work under a strict head gardener where these conditions prevail or put in three months at a nursery at the usual journeyman's wage (9s. a week). I doubt whether he would still be "contented" then. *Hard Graft.*

—The absorbing interest taken in his work is oftentimes the gardener's undoing, instead of his making, as implied by Mr. T. Smith (see p. 224). Compensations there are to the man who loves his work, but he must not be selfish, otherwise he is banned for neglecting his family! Hence the need for the betterment only achievable collectively. Ignoring cheap sneers at traits to which humanity is liable, it may interest Mr. Smith to learn that some beings exist who believe they are men and are content to remain manly rather than become mere prattlers. Even our critics are gregarious, but we must not be, except in those relations of life which meet the approval of Mr. Smith. *Wm. H. North, London Branch Secretary, B.G.A.*

—Mr. Smith is like many more who pretend to be antagonistic to the B.G.A., yet fail to give sound reasons for remaining outside the ranks. His remarks on the aspiring young men will no doubt receive the consideration they deserve. Perhaps Mr. Smith would not object to being paid for his overtime; for myself, I might have been much better off had I received only 3d. per hour for overtime, spent for love of my profession. At the present time there seems to be very little room at the top, and one of the reasons given is that there are so many interlopers; yet there are those who realise this but will not join any movement to alter it. All through this discussion a hopeless position seems apparent; but what has been the remedy in many other trades and professions? Those concerned have joined together in an earnest effort to bring about better conditions. I would like to point to the Teachers' Union, which is a similar organisation in many respects to the B.G.A. There is a tendency in all directions for amalgamation for the protection of interests, and why should not gardeners do the same? In the medical profession those at the top of the tree evidently do not refuse to join their powerful Union because there are others not so far advanced. *A Member.*

PUBLICATIONS RECEIVED.—*Lloyd's Beautiful Garden Flowers.* (London: "Lloyd's Weekly News.") Price 6d. net.—*The Carnation Year Book, 1914.* Published by the Perpetual Flowering Carnation Society. Secretary, T. A. Weston, St. John's Road, Orpington.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MARCH 24.—*Present*. Mr. E. A. Bowles, M.A., F.L.S., F.E.S. (in the chair). Drs. A. B. Rendle, F. Keeble, Professor G. S. Boulger, Canon W. W. Fowler, Messrs. J. Ramsbottom, W. Hales, R. Hooper Pearson, J. T. Bennett-Poë, A. Worsley, W. C. Worsdell, E. M. Holmes, and F. J. Chittenden (hon. sec.).

Malformed Fuchsia.—Mr. W. C. WORSDELL reported on the malformed flower of *Fuchsia* shown at the last meeting which had three partly foliaceous sepals, two of which had their stalked bases decurrent down the side of the ovary; one petal in form of a pitcher, with imperfect pollen sacs on one margin, and another petal one-sidedly developed and fused by one edge to the next, with a complete anther at the apex. Two of the stamens were excessively rudimentary, and two others were fused by the whole length of the filaments to the upper side of the half-formed anther-bearing petal.

Small Narcissus fly.—Mr. CHITTENDEN said that apropos of the suggestion that soaking *Narcissus* bulbs in water for a couple of days would destroy the larvae of *Eumerus strigatus*, he had kept some submerged in water for 72 hours and after removal from the water they soon became as active as before immersion.

Hippeastrum hybrid.—Mr. WORSLEY exhibited the flower of a hybrid *Hippeastrum* which had *H. calypratrum* as one of its parents. Like that plant it had ligular outgrowths near the bases of the perianth pieces, but smaller, and fringed with hair.

Aphides on Picea.—Mr. CHITTENDEN showed specimens of the *Lachnus* which has done so much damage to Spruces in some parts of England during the past few years. When the specimens were collected from *Picea pungens glauca* on March 16 the stem-mothers had already produced viviparous young, and had apparently been hatched about three weeks or a month. He had found a nicotine wash thoroughly applied the most effective agent in destroying the pest. Attacked trees soon show the needles brownish about the parts attacked by the greenfly, and this is quickly followed by leaf fall. Various species of *Picea* are attacked by the aphid.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 12.—*Committee present*: Rev. J. Crombleholme (in the chair), Messrs. J. Bamber, J. Cypher, A. G. Ellwood, J. Evans, J. Lupton, A. A. McBean, D. McLeod, W. J. Morgan, C. Parker, W. Shackleton, H. Thorp, A. Warburton, Z. A. Ward, G. Weatherby, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cattleya Trianae F. McBean, *Cattleya Suzanne Hye de Crom* var. "Magnifica," and *Odontioda Diana* var. "Leena," all from W. R. LEE, Esq. *Odontoglossum Mirum* (Wilkeanum x crispum), *Odontioda Schroderae* var. "Walton Gem" (Bradshawiae x crispum Oakwood Ruby); *Cattleya Trianae* var. "Walton Monarch," all from WM. THOMPSON, Esq.

Cymbidium Pauwelsii giganteum, from JOHN LEEMAN, Esq.

Odontoglossum crispum Eugenie, from J. BUTTERWORTH, Esq.

Odontioda Mrs. R. Le Doux (Bradshawiae x Wilkeanum), from R. LE DOUX, Esq.

AWARDS OF MERIT.

Cattleya Trianae Mirabile, from WM. THOMPSON, Esq.

Sophro-Cattleya-Laelia Marathon, "Lee-man's" var., and *Cypripedium Griffin* No. 2, from JOHN LEEMAN, Esq.

Odontoglossum Siren (Pluto x Etna), from R. ASHWORTH, Esq.

Laelio-Cattleya Dulce (*Cattleya Mendelii* x *Laelia anceps* Sanderiana), from MESSRS. SANDER AND SONS.

SHROPSHIRE HORTICULTURAL.

MARCH 14.—There was a good attendance of members of the Shropshire Horticultural Society at the annual meeting, which was held on the 14th ult. The President (Mr. E. B. Fielden), in the absence of Mr. W. E. Litt (chairman of the committee), read the annual report, which stated that the committee had once more to congratulate the society on the splendid success of the summer show of 1913, which was in almost every particular a record. The income from all sources was £6,245 3s. 7d., and the expenditure was £4,585 0s. 8d., showing a profit balance of £1,660 2s. 11d. The previous best year's profit was £920 in 1905. It would be seen, therefore, that the show in 1913 was the greatest summer show ever held by the society. The rock gardens were only a partial success, owing to the show being so late in the season. It had been decided this year to introduce a new class for "formal or informal gardens." The subscriptions for the year had been well maintained, and the sale of cheap tickets formed another great record in the society's history. Allusion was made to the valuable services rendered the society by Mr. H. W. Hughes in the face of great difficulties, and to those of Mr. W. G. Brazier, the secretary, of whose untiring energies too much, it was stated, could not be said in praise. The death of the late Annabella Lady Boughey, who had consented to act as President for 1914, was a great loss to the society. Her ladyship had promised to present a 50-guinea challenge vase for Carnations, and a further sum of 50 guineas to increase the prize money in the flower section. However, the assurance of Lady Boughey's nephew, Mr. W. A. L. Fletcher, had been given that her ladyship's wishes would be carried out.

Mr. E. B. Fielden was re-elected President, and the retiring members of the committee were re-elected, with the exception of Mr. H. J. Hearne, in whose place Mr. Harold Cock was elected.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending April 1, 1914.

The Sunniest and Warmest Day as yet this Year.—The last two days were the warmest of the year as yet, but previous to this, moderate temperatures, as a rule, prevailed. On the coldest night—that preceding the 28th ult.—the exposed thermometer registered 11° of frost, and on the two warmest days the temperature in the thermometer screen rose to 64°. The ground is at the present time 1° warmer at 2 feet deep, and 3° warmer at 1 foot deep, than is seasonable. Rain fell on five days, and to the total depth of ½ inch. The percolation through both the soil gauges is declining, but during the week two gallons of rainwater have come through the bare soil gauge, and 1½ gallons through that on which short grass is growing. The sun shone on an average for 3½ hours a day, which is half-an-hour a day short of the usual duration at the same period of the spring. Yesterday (31st ult.) was the sunniest day of the present year as yet, when the sun was shining brightly for 9½ hours. Light airs and calms alone prevailed during the week. There was about a seasonable amount of moisture in the air at three o'clock in the afternoon.

MARCH.

The Wettest March for 53 Years.—The first half of the month was, as a rule, very warm, but during the latter half, with the exception of the last day, there were no warm days, and but four warm nights. Taken as a whole, this was a warm March. On the warmest day the temperature in the thermometer screen rose to 64°, and on the coldest night the exposed thermometer registered 12° of frost. Both these extreme temperatures are high for the month. Rain fell on as many as twenty-four days, and to the total depth of 4½ inches, making this the wettest March during the past fifty-eight years—that is to say, as far back as the Berkhamsted rainfall records extend. The number of rainy days was nearly as remarkable. At no time during the month were there two consecutive days without rain. Snow fell on six days, and on one day the ground was covered by it for a short time to the depth of 1½ inch. The sun shone on an average for three hours a day, which is half-an-hour a day short of the average duration for the month. There were as many as eight days on which no sunshine at all was recorded. The winds were, as a rule, rather high, and in the windiest hour the mean velocity reached twenty-six miles, direction W.N.W., which is the highest velocity recorded here in March for eighteen years. For only four hours during the month was the direction of wind from any point between north and east—the average duration in March for those winds being 197 hours. In no previous March—that is to say, for twenty-eight years—has there been so little north-easterly wind. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by 4 per cent.

MARKETS.

COVENT GARDEN, April 1.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.]

Cut Flowers, &c.: Average Wholesale Prices.

	a.d.	s.d.		a.d.	s.d.			
Arums (Richardias), per doz.	4	0	5	Orchids, per doz.:				
Azalea, White, per doz. bunches	4	0	5	— Cattleya	15	0	18	0
Camellias, per doz.	1	6	2	— Dendrobium	1	6	2	0
Carnations, per dozen blooms, best American varieties	1	6	2	— Odontoglossum crispum	3	0	4	0
— smaller, per doz. bunches	12	0	15	Pelargoniums, per doz. bunches, double scarlet	6	0	8	0
— Carola (crimson), extra large	4	0	5	Roses: per dozen blooms, Bridesmaid	2	6	3	0
— Malmaison, per doz. blooms:				— Caroline Testout	2	6	3	6
— pink	6	0	10	— General Jacqueminot	1	9	1	6
Daffodils, single, per doz. bunches	2	6	3	— Joseph Lowe	2	0	3	0
— Golden Spur	4	0	5	— Kaiserin Augusta Victoria	2	0	3	0
— Emperor	4	0	5	— Lady Hillingdon	2	0	3	0
— Victoria	4	0	5	— Liberty	2	0	4	0
— Empress	4	0	5	— Mme. Carnot	3	0	4	0
— Sir Watkin	2	6	3	— Madame A. Chatenay	3	0	6	0
— Princeps	2	6	3	— Mme. Hoste	3	0	5	0
— Henry Irving	2	0	2	— Marschal Niel	1	6	2	6
— Double Von Sion	2	0	2	— My Maryland	2	0	3	0
Fuchsias, per doz.	2	6	3	— Melody	—	—	—	—
Forget-Me-Not, per dozen bunches	3	0	5	— Niphetos	1	6	2	6
Freesias, per dozen bunches	1	6	2	— Richmond	2	6	4	0
Gardenias, per box of 15 and 18 blooms	5	0	6	— Sunburst	4	0	6	0
Iris, Spanish, per bunch	2	0	2	— Sunrise	1	6	2	6
Lilium auratum, per bunch	—	—	—	— Yellow Souvenir	4	0	6	0
— longiflorum, per doz., long	2	6	3	Spiraea, per doz. bunches	6	0	8	0
— short	2	0	2	Stephanotis, per 72 pips	2	0	3	0
— lancifolium album, long	2	0	2	Tulips, per dozen bunches, pink	6	0	10	0
— short	2	6	2	— bronze	8	0	10	0
— rubrum, per doz., long	2	0	2	— scarlet	6	0	7	0
— short	1	0	1	— yellow	6	0	8	0
Lily-of-the-Valley, per dozen bunches:				— white	9	0	12	0
— extra special	12	0	15	— double, per doz. bunches, pink	8	0	12	0
— special	9	0	10	— orange	10	0	12	0
— ordinary	8	0	9	— red	10	0	12	0
Mignonette, per dozen bunches	5	0	6	— Darwin, per doz. bunches	12	0	15	0
Narcissus, Poeticus, per doz. bun.	2	6	3	Violets, English, per dozen bunches	1	6	2	0

Cut Foliage, &c.: Average Wholesale Prices.

	a.d.	s.d.		a.d.	s.d.			
Adiantum Fern (Maidenhair), best, per doz. bunches	7	0	8	Croton foliage, doz. bunches	12	0	15	0
Agrostis (Fairy Grass), per doz. bunches	2	0	4	Cycas leaves, per doz.	3	0	12	0
Asparagus plumosus, long trails, per half-dozen	1	6	2	Eulalia japonica, per bunch	1	0	1	6
— medium, doz. bunches	12	0	13	Mosa, grossa bunches	6	0	—	—
— Sprengeri	6	0	12	Myrtle, doz. bnchs. English, small-leaved	6	0	—	—
Carnation foliage, doz. bunches	3	0	5	— French	1	0	—	—

French Flowers.

	a.d.	s.d.		a.d.	s.d.			
Anemones, double pink, per doz.	1	0	1	Marguerites, yellow, per dozen bunches	1	0	2	0
— De Caen, per doz. bunches	1	6	2	Star of Bethlehem, per dozen	1	3	1	6
— Blue, per dozen bunches	1	6	2	Stock, white, per pad	5	0	7	0
Lilac white, per bunch	2	6	3	— per doz.	2	6	3	0
— mauve, p. bnch.	5	0	6	Violets, Parmas, large bunch	1	3	1	6
Ranunculus, scarlet, per dozen	4	0	6					

Guernsey and Scilly Flowers.

	a.d.	s.d.		a.d.	s.d.			
Anemone fulgens, per doz. bunches	2	0	2	Narcissus, Poeticus, per dozen	1	6	1	9
Daffodils (Guernsey) per doz.	2	0	3	— Grand Primo	2	0	2	6

REMARKS.—Supplies generally are shorter, and this week there is a large demand for flowers for the great Welsh festival on Palm Sunday. Next week is the busiest of the whole year in the flower trade, and we may expect prices to rise considerably. The subjects most in demand at Easter are Richardias, Lilliums, white Roses, Tulips, Spiraeas, Azaleas, Lily-of-the-Valley, and Narcissus Poeticus. There is every prospect

of a plentiful supply of these subjects. Carnations are arriving in a better condition, the blooms being much finer in quality. Roses show the biggest increase, and these are sold at much lower prices. The supplies of flowers from Guernsey and Sicily are becoming considerably less, owing to the crops of Narcissus and other Daffodils finishing. The supply of Irises is still limited. Lilac from Holland is arriving in a good condition, and there are good flowers of White Stock, Marguerites, Star of Bethlehem, a few Anemones, and Parma Violets. Single Violets are finished for the season.

Plants in Pots, &c.: Average Wholesale Prices.

s. d.	s. d.	s. d.	s. d.	
Aralia Sieboldii, dozen ..	6 0	7 0	Genista, 48's ..	8 0-10 0
Araucaria excelsa per dozen ..	18 0	21 0	Geonoma gracilis 60's per dozen ..	6 0-8 0
Asparagus plumosus nanus, per dozen ..	10 0	12 0	— larger, each ..	2 6-7 6
— Sprengerii ..	6 0	8 0	Hyacinths, 48's, per doz., white and coloured ..	6 0-8 0
Aspidistra, per doz., green ..	18 0	30 0	Hydrangeas, Pink, per doz. 48's ..	18 0-24 0
— variegated ..	30 0	60 0	— White ..	15 0-24 0
Azalea, per doz. ..	24 0	30 0	— Blue ..	18 0-36 0
Cacti, various, per tray of 15's ..	4 0	—	Kentia Belmoreana, per dozen ..	5 0-8 0
— tray of 12's ..	5 0	—	— Forsteriana, 60's, per dozen ..	4 0-8 0
Cinerarias, 48's ..	10 0	12 0	— larger, per dozen ..	18 0-36 0
Cocos Weddelliana, per dozen, 60's ..	6 0	12 0	Latania borbonica, per dozen ..	12 0-30 0
— larger, each ..	2 6	10 6	Lilium longiflorum, per dozen ..	24 0-30 0
Croton, per dozen ..	18 0	30 0	Lily-of-the-Valley 48's, per dozen ..	18 0-21 0
Daffodils, 48's, per dozen ..	6 0	8 0	— 48's, per dozen ..	21 0-30 0
Dracæna, green, per dozen ..	10 0	12 0	Marguerites, in 48's, per doz., white ..	8 0-10 0
Erica persoluta, per dozen 48's ..	18 0	24 0	— per doz., white ..	8 0-10 0
— Willmorei, 48's ..	12 0	15 0	Pandanus Veitchii, per dozen ..	36 0-48 0
Ferns, in thumbs, per 100 ..	8 0	12 0	Phoenix rupicola, each ..	2 6-21 0
— in small and large 60's ..	12 0	20 0	Spiræa japonica, per dozen pots ..	8 0-9 0
— in 48's, per dozen ..	5 0	6 0	Stocks, white, 48's ..	8 0-9 0
— choicer sorts, per dozen ..	8 0	12 0	— pink ..	9 0-10 0
— in 32's, per doz. ..	10 0	18 0	— red ..	9 0-10 0

REMARKS.—There is every prospect of a busy time in this department during the next week. There are good White, Blue and Pink-flowered Hydrangeas, White Spiræas, Genistas, Cinerarias, White Ericas, Lily-of-the-Valley, Liliium Harrissii, White Marguerites, and white and coloured Hyacinths. Well-grown pot plants of Stocks are the latest addition in this market. Ferns and Palms are improving in quality.

Fruit: Average Wholesale Prices.

s. d.	s. d.	s. d.	s. d.	
Apples, American, barrels ..	37 6	46 0	Grape Fruit, case ..	9 6-14 6
— Australian, per case ..	10 0	20 0	— 96's ..	—
— Californian New-town Pippin, case ..	10 6	11 6	— 80's ..	—
— Cox's, per case ..	35 0	40 0	— 64's ..	—
— Nova Scotian, barrel ..	24 0	36 0	— 54's ..	—
— Oregon, New-towns, case ..	14 6	16 6	Lemons, Messina, per case ..	8 6-22 0
— Wenatchee, case ..	12 6	13 0	Lychees, box ..	1 6 —
Bananas, bunch: ..	—	—	Mangos, Cape, doz. ..	5 0-8 0
— Double Ex. ..	11 0	12 0	Nuts: ..	—
— Extra ..	9 6	11 0	— Almonds, sack ..	64 0-65 0
— Extra-medium ..	10 0	—	— Barcelona, sack ..	44 0 —
— Giant ..	14 0	—	— Brazils, cwt. ..	50 0-56 0
— Medium ..	6 6	7 6	— Chestnuts, Naples, per bag ..	16 6-20 0
— Red, per ton ..	225	228	— Coco-nuts, per 100 ..	18 0-22 0
— Jamaica, per ton ..	£13	—	— Oranges, Jamaica ..	9 6 —
Custard Apples, per doz. ..	6 0	10 0	— Californian Navel, per case ..	13 0-14 0
Dates, dozen boxes ..	4 0	4 6	— Denia, per case ..	18 6-45 0
— per cwt. case ..	20 0	—	— Jaffa, per case ..	12 6 —
Figs, English, per doz. ..	12 0	24 0	— Mercia, p. case ..	8 6-9 6
— Kadrowi, cwt. ..	11 0	—	— Messina bitters, case ..	7 0-7 6
Grapes—English: ..	—	—	— Palermo Blood, case ..	7 6-8 6
— Gros Colmar, per lb. ..	2 0	4 0	— Seville, p. case ..	17 6 —
— Almeria, per barrel ..	20 0	24 6	— Tangerines, large ..	6 0-7 6
— Almeria, per dozen lbs. ..	7 6	8 6	Pears, Australian, case ..	20 0 —
— Belgium Gros Colmar, per lb. ..	1 8	2 6	— Californian, box ..	11 6-12 6
— Cape, box: ..	—	—	— Cape, box ..	4 6-5 6
— White Muscat ..	7 6	8 6	Pineapples, St. Michael ..	3 6-4 6
— Red Muscat ..	8 0	10 0	Plums, Cape, box ..	6 6-7 6
— Black Hermitage ..	6 0	6 6	Strawberries, Worth-ing, per lb. ..	—
— Raisin Blanc ..	5 0	6 0	— First quality ..	5 0-10 0
— Gros Colmar ..	13 0	14 0	— Second quality ..	4 0-5 0
			— Dutch, per lb. ..	6 0-8 0

REMARKS.—Consignments of fruits from Cape Colony received this week per s.s. "Kinfauns Castle" amounted to about 19,000 packages, consisting principally of Pears and Grapes. The Australian Apple crop is reported to be a very good one this season, and some fine fruits are expected to arrive shortly from Tasmania, Victoria, West and South Australia. Varieties to hand consist of Jonathan, Monro's Favourite, Cox's Orange Pippin, and Gravenstein. Both from English and Continental growers there are shorter supplies all round of Black Grapes. Forced Strawberries are becoming more numerous daily. A few fruits of green Figs are on sale. Asparagus continues to arrive in a fine condition. Beans and Peas are much more plentiful, and Marrows are available in fairly large quantities. Tenerife growers are

sending a good supply of Tomatoes; whilst Cucumbers, Seakale and Mushrooms are arriving from other sources in fairly large quantities. All ordinary vegetables in season are very plentiful, but root crops are getting scarcer.—E. H. R., Covent Garden, April 1.

Vegetables: Average Wholesale Prices.

s. d.	s. d.	s. d.	s. d.	
Artichokes, Globe, per dozen ..	2 0	3 0	Lettuces continued: ..	—
— ground, ½ sieve ..	1 0	1 3	— Cos, French, per doz. ..	6 0-8 0
Asparagus, Paris green ..	2 6	3 0	— Marrows, per doz. ..	6 0-9 0
— Cavillion ..	2 0	2 6	Mint, per doz. ..	2 6-3 0
— Sprue ..	0 5	0 6	Mushrooms, cultivated, per lb. ..	0 9-1 0
— Lauris ..	2 6	4 0	— Broilers ..	0 6 0-8
Bavaria, per doz. ..	3 0	3 6	— Buttons ..	1 0-1 6
Beans, Guernsey, lb. ..	0 10	1 0	Mustard and Cress, per dozen punnets ..	0 10-1 0
— English ..	0 10	1 0	Oatons, picklers, per basket ..	2 6-3 0
— Madeira, per bushel ..	2 0	3 0	— Dutch, bags ..	12 0-13 0
— Niggers ..	3 0	4 0	— English, bags ..	14 0-16 0
— Broad, French, per pad ..	4 0	6 0	— Spanish, cases ..	12 0-13 0
Beetroot, per bushel ..	3 6	4 0	— Spring, per doz. ..	3 0-3 6
Cabbages, per tally ..	3 0	5 0	Parsley, per dozen bunches ..	2 6 5 0
— French spring, per doz. ..	1 6	2 0	Parsnips, per bag ..	3 6-4 6
Carrots, (English), bags ..	3 6	5 0	Peas, Guernsey, lb. ..	1 9-3 0
— (French), pad ..	2 6	3 6	— French pad ..	6 0-8 0
— New, bunch ..	0 7	0 8	Radishes, per doz. ..	1 3-1 9
Cauliflowers, per hamper ..	3 0	4 0	Rhubarb, Leeds, forced, dozen bundles ..	1 3-1 4
— St. Male, per dozen ..	1 6	3 0	— Natural, per doz. ..	3 0 —
Celeriac, French, per dozen ..	2 6	3 0	Sage, per dozen ..	1 6-2 0
Celery, per doz. ..	8 0	12 0	Savays, per tally ..	3 0-6 0
Chicory, per lb. ..	0 4 ½	—	Seakale, per punnet ..	10 0-1 0
Cucumbers, per doz. ..	2 6	4 0	Spinach, per bushel ..	2 6-3 0
Eodive, French, per dozen ..	2 9	3 6	Spring Greens, bag ..	1 0-1 6
Garlic, per strike ..	3 0	4 0	Sprouting Broccoli, per bag ..	1 3-2 0
Horseradish, 12 bundles ..	10 0	15 0	Stachys tuberosa, lb. ..	0 4 —
Leeks, per dozen ..	2 0	2 6	— Swedes, bag ..	1 6-2 0
Lettuces, English, Cos, per score ..	3 6	4 0	Tomatoes, Canary, bundle ..	9 0-14 0
— English, round, per score ..	1 3	1 6	— English, per lb. ..	1 4-1 6
— French, round, per doz. ..	1 2	1 6	Thyme, per dozen bunches ..	2 0-6 0
			Turnips (English), per bag ..	3 0-3 6
			— New, bunch ..	0 9-10 0
			Watercress, per doz. ..	0 4 0-6

Potatoes.

s. d.	s. d.	s. d.	s. d.	
Bedford, per cwt. ..	3 0	3 3	Langworthy (Dunbar), per cwt. ..	5 6 —
Blacklands ..	2 9	3 0	Kent ..	3 3-3 9
British Queen ..	3 0	3 3	King Edward ..	3 6-4 0
Dunbar—Up-to-date ..	5 0	5 6	Scottish—Up-to-date ..	3 3-3 9
Evergood ..	2 9	3 6	Up-to-date ..	3 0-3 6

REMARKS.—Trade is about the same as last week, and there is but little alteration in prices. Fewer consignments have arrived, and it is expected that stock in London will not be so large from now onwards.—Edward J. Newborn, Covent Garden and St. Pancras, April 1.

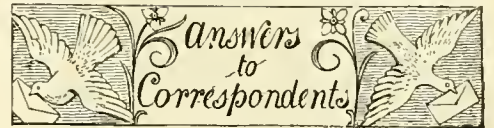
GARDENING APPOINTMENTS.

- Mr. Harry Edwards, for 2½ years Gardener to Mrs. NORMAN CHRISTIE, Esdale House, Hoddesdon, Hertfordshire, as Gardener to THOMAS CHATTO, Esq., Hillside, Elstree.
- Mr. W. Bowles, for the past 16 months Gardener to HUGH GRAHAM, Esq., Offchurch, Bury, Leamington, previously for 2½ years Foreman at Park Hall, Oswestry, as Gardener to Captain HARCOURT WOOD, Caer Beris, Builth, Breconshire.
- Mr. H. Pryor, for the past 5 years Gardener to H. F. STRAKER, Esq., as Gardener to W. RHODES, Esq., Gaton Cottage, Gaton, Reigate, Surrey. [Thanks for ls. for R.G.O.F. box.—EDS.]
- Mr. J. Taylor Diamond, as Gardener and Land Steward to Colonel O. S. NUGENT, Farrea Connell, Mount Nugent, Co. Cavan, Ireland.
- Mr. W. A. Hurst, for nearly 9 years in the service of HERBERT HICKS, Esq., Braewoods, Great Baddow, Chelmsford, as Gardener to HOWSON F. DEVETT, Esq., Frettons Danbury, Chelmsford.
- Mr. W. G. Warner, Gardener to Captain Sr. QUINTIN, Clifton House, Biggleswade, as Gardener to Captain G. E. TRYON, M.P., The Manor House, Great Durnford, near Salisbury, Wiltshire.
- Mr. G. Braddy, General Foreman at the R.H.S. Gardens, Wisley, and previously employed at Eastwell Park, Ashford, Kent, as Horticultural Instructor to the Keasington and Chelsea Cottage Homes at Banstead, Surrey.
- Mr. J. Marshall, for the past 2½ years at the R.H.S. Gardens, Wisley, as Gardener to F. NEWDEGATE, Esq., Arbury, Nuneaton.
- Mr. J. Ingall, for 2 years Foreman at Rampton Manor, Lincoln, as Gardener to E. E. HARCOURT-VERNON, Esq., Grove Hall, Retford.

Obituary.

PROFESSOR POYNTING, F.R.S.—The news of the death of John Henry Poynting, Professor of Physics in the University of Birmingham, will be learned with sorrow by large numbers of his pupils and colleagues in the scientific world. Beside rendering eminent services to the ad-

vancement of physical science, Professor Poynting took an active and distinguished part in the civic life of Birmingham. He was a Justice of the Peace, served on the Licensing Committee, and was for some years Chairman of the Birmingham Botanical and Horticultural Society and of the Botanical Gardens Committee.



A SLUG AND ITS PREY: *E. Lazenby.* The specimen sent for identification is not an insect but one of the carnivorous land slugs, *Testacella haliotidea*. It is generally believed that these slugs feed exclusively on earth worms, and your capture of the creature with its prey confirms this. *Testacella* is not injurious to plant life.

APPLE DISEASED: *A. W.* The insects on the Apple shoot are those of a beetle-mite (*Oribata*), and are harmless.

BULBS AFTER FLOWERING: *F. H.* Roman Hyacinths are practically worthless after they have flowered. But other kinds, whether forced or grown in beds, are useful afterwards for supplying cut flowers if the bulbs are properly ripened and planted out-of-doors in a sunny position.

CARDOONS: *H. B.* This vegetable should be grown in trenches, prepared much in the same manner as those for Celery, in March or early April. The trench should be 2 feet deep and 2 feet wide, and filled with farmyard manure, adding 3 inches of soil. Do not sow the seed before the first week in May, sowing two or three seeds in patches at about 20 inches apart, and thinning the plants to one at each station. An abundance of moisture should be afforded when the plants are growing actively, and the roots should be fed liberally with dilute liquid manure. To ensure well-blanching specimens the stems should be covered for eight or ten weeks, at first with brown paper, afterwards excluding the light by the use of long boards. The blanching should be done by degrees, banking up with soil as the work proceeds.

CHRYSANTHEMUMS: *J. F. S.* No disease is present on the plants. The injury is due to unsuitable soil or wrong cultural treatment in some other respect.

FAILURE WITH BULBS: *A. P.* For some reason which is not perfectly understood bulbs in certain seasons fail to flower satisfactorily, and you will see on reference to pages 175 and 207 that others have experienced the same trouble as yourself this year. The explanation is probably found in the bulbs not ripening properly the previous season. Local conditions may account for this, and as you purchased your stock from Holland only those on the spot could form a correct estimate as to the cause. A wet summer favours leaf-development late in the season, directing the energies of the plant in this direction, whereas a dry season results in the development and ripening of the flower-buds. Solid, well-ripened bulbs of a medium size always give better results than larger ones with loose scales.

GOOSEBERRY SHOOTS: *J. C.* Gooseberry mildew is not present. The injury has been caused by green fly when the shoots were young.

GRAFTING RHODODENDRONS: *J. B.* Rhododendrons are grafted on seedling stocks of *R. ponticum*, with stems about the thickness of a lead-pencil. The stocks are potted in October and grown in a cold pit or house until December, when they are brought into a warmer house, where there is a certain amount of bottom heat. As soon as root-action has started the plants may be grafted. This is usually done by saddle-grafting, or side-grafting. In saddle-grafting the top of the stock is cut off about two inches above the pot, and the stump trimmed up each side to roughly form an inverted V, taking care to make clean cuts. The graft should be of the previous sea-

son's growth, of the same thickness as the stock, and three inches or so in length. It should have a piece cut from its base to fit on the stock, and be tied firmly thereto, care being taken that the edges of both stock and scion unite. In side-grafting the stock is not cut back, but a portion about one inch long is cut from the side, and the graft is cut to fit. Either method is equally good, but saddle-grafting is perhaps the easier and simpler after a little practice. The grafted plants should be stood in a close propagating case, with a temperature of about 65°. Union takes place in from two to four weeks, after which the young plants should be gradually hardened and grown in cold pits until the end of May, when they can be planted in the open.

HORTICULTURAL FUEL: C., Maidstone. If only ordinary greenhouse plants, which succeed in a minimum temperature of 50°, are grown, coke (if obtainable close at home) is slightly cheaper than coal, but the furnaces require more attention during the twenty-four hours than when anthracite coal is used. In the case of forcing houses, in which a minimum night temperature of from 65° to 70° is maintained, the fires need to be made up with anthracite (large lumps) at 9.30 or 10 o'clock at night, and the water is on the boil at 6 o'clock the following morning. In order to do this with coke the fires would require attention every three or four hours during very cold weather, so that what is gained on the price of coke, as compared with the price of anthracite, is lost on the extra labour incurred in stoking.

LABELLING PLANTS: Foreman. The object of labelling a plant is to enable its identity to be readily determined, and the label should, therefore, be fixed where it can be read most easily. In labelling plants in rows the tally may be either in front of the first or behind the last specimen of the particular variety; it matters but little which method is adopted, and there is certainly no rule in the matter.

LIGHT SOIL ON GRAVEL: T. D. S. Deep digging will be beneficial provided you incorporate with the soil plenty of material that will assist in retaining moisture and plant food. Animal manure of all kinds, and especially cow dung, will assist in this direction, also leaf-mould, decayed vegetable matter, or any other form of humus.

MELON CULTURE: W. B. Having raised the young plants singly in 3-inch pots and grown them on in a position near to the roof-glass, shift them into well-drained 6-inch pots before the roots become pot-bound. The soil should consist of four parts loamy soil and one part horse droppings or short manure, quite free from worms. Let the materials be slightly warmed before being brought into contact with the roots. Make the soil moderately firm about the roots, and return the plants to their former position near the roof-glass and water to settle the soil. Place a short stick to each plant for support after they have made a few inches of growth. When the plants have attained to a height of about 15 inches they should be set in mounds of soil. These should be formed at intervals of 2 feet; if the soil is placed on the floor of the house close to the hot-water pipes, or on the stage over same, spread about one peck of short manure in each of the positions where the mounds are arranged. Set the plants there in the same depth as in the pots, making the soil quite firm, afterwards watering with tepid water to settle the soil. Do not stop the plants before they have reached the height limit of the trellis. In the meantime laterals will push forth regularly from either side of the stems. Train these to the trellis at right angles as they develop. Pollination may be carried out in the following manner:—When a sufficient number of female (large) flowers are open pretty regularly over the individual plants, insert, when the pollen is dry, one of the smaller flowers in each expanded large flower, after divesting the former of its petals, and let it remain therein. Stop the fruit-bearing shoots at two joints beyond the fruit. Remove the first fruits from the bottom laterals to in-

sure a regular crop on each plant. When it is seen which fruits it is best to leave, remove the others. Five to seven fruits, according to the size and strength of the individual plants and the size to which the fruits of the variety grown are known to attain, will be a fair crop for each plant to carry. All superfluous fruits should be removed as soon as they show. When the roots push through the hillocks or mounds top-dress them with a couple of inches thick of the same kind of compost as described above, and continue to apply such top-dressings as required until the intervening spaces are filled nearly level with the summit of the hillocks. Sub-laterals and all unnecessary growths should be pinched out as they appear to prevent crowding of the shoots. The soil in which the plants are growing must be kept uniformly moist during the whole period of the plant's growth. When the fruits are swelling plenty of tepid water should be distributed over the plants and in the house generally at closing time on bright afternoons. An atmospheric minimum temperature of from 65° to 70° at night, and 5° higher by daytime with artificial heat should be aimed at running up the temperature 10° or 15° with sun heat. A little fresh air should be admitted to the house sometimes, increasing or decreasing the amount given according to the rise or fall of the thermometer. Run the temperature up to 95° or 100° at closing time in the afternoon, with a free distribution of moisture in the house at the same time when the fruit is swelling. Plenty of water should be distributed during the heat of the day in order to maintain a moist atmosphere. When the fruit is approaching maturity maintain a drier atmosphere in order to enhance the flavour of the Melons.

MELON LEAVES: E. W. R. We can trace no disease nor discover any cause for the unsatisfactory condition of the plants.

NAMES OF PLANTS: D. R. Shenstone. 1, *Alonsoa incisifolia*; 2, *Stenotaphrum americanum variegatum*; 3, Probably a species of *Cordyline*: a single leaf is insufficient for determining the name.—*J. H. A.* *Skimmia japonica* (male plant).—*H. P.* 1, *Pinnus cerasifera*; 2, *Cnpressus pisifera squarrosa* (often called *Retinospora squarrosa*).—*F. B.* 1 and 2, *Eria bractescens*, the latter of the form figured in *Bot. Mag.* t. 4,163 as *Eria Dillwynii*.—*J. C., Constant Reader.* *Brunfelsia calycina* (Franciscana). Your other query was answered in the last issue, p. 228.—*W. B., Clare.* 1, *Polypodium aureum* var. *glaucum*; 2, *Onychium japonicum*.—*Isis.* 1, *Ornithogalum nutans*; 2, *Iris japonica* (fimbriata). A difficult species to cultivate in the open garden, but it will grow in very favourable situations.—*E. E. S.* A very promising seedling of *Odontoglossum crispum*. It should develop into a fine form.—*Mrs. J. H.* 1, *Asplenium Trichomanes*; 2, *Sedum Acre*; 3, 4, and 5, It is impossible to identify such dried up scraps without flowers; 6, *Cardamine hirsuta*.

NECTARINE LORD NAPIER: The injury is not due to a fungus. Branches of Nectarines are liable to die without any apparent cause.

PEACH SHOOT UNHEALTHY: D. r., Shenstone. The trouble is due to gumming. Sprinkle table salt on the soil as far as the roots extend in small quantities at intervals, using 4 lbs. of salt for one tree during the year.

POTATOS: Beginner. No disease is present in the tubers. The scab has been caused by injuries from the soil when the tubers were young.

PUBLIC SQUARES AND OPEN SPACES IN LONDON: J. W. The majority of public spaces and squares in London are under the control of the London County Council, and application for appointments should be addressed to the chief office, 11, Regent Street, London. A few are managed by the local public authorities, and some are private property. Apply to the Metropolitan Public Gardens Association, 83, Lancaster Gate, London, for a list of addresses.

RHODODENDRON LEAVES: Rhodo. The leaves have been injured by aphides when quite young. Spray with an insecticide.

RUNNER BEANS: Sherwood. For ordinary purposes it may not be necessary to employ such a large quantity of manure, but plants grown for supplying Beans for exhibition would benefit from the liberal dressing. The Climbing Bean is a gross feeder and repays for a generous treatment in the matter of manuring.

SALVIA SCLAREA: Perplexed. This beautiful Sage is a hardy perennial, but success is best assured by sowing a few seeds, which are freely produced, each summer. Plants thus raised will flower the following year, as in the case of hardy biennials.

SOFT SOAP FOR WASHING FLOWER POTS: F. A. E. We do not consider that the use of soft soap in cleansing flower pots would have the effect of rendering the receptacles less porous, but there is no need to use it for the purpose. If the pots are soaked in water a scrubbing brush will soon remove the dirt and other foreign matter.

TOMATOS: C. O. The disease is quite common, but the cause is not known, beyond that it is not due to a fungus. Such plants are never satisfactory, and the wisest course is to destroy them.—*Novo Castro.* The plant is not suffering from disease. Watering with a solution of potash, 1 oz. in one gallon of water, twice at intervals of a week would be beneficial.

VINES: Foliage. In the case of a viney with very large panes of glass and a south aspect, it may be advisable to use a little shading for three or four hours on hot summer days, such as is afforded by a herring net or something very light, merely to break the sun's rays. A coat of whitening or other permanent shading is objectionable, for vine leaves require plenty of sunlight. A maximum shade temperature of 90° to 95° will do no harm, excepting when the fruit is stoning, at which stage 10° lower is advisable. The leaves should not be close to the glass, and if your trellis is nearer than 2 feet the rods might be slung on wire hooks, which would make it easier to tie the shoots down. You should be careful to ventilate in the morning before the temperature rises much, and do not be afraid to open the lower ventilators and the door on hot, still days. Always anticipate a rising temperature, for the warmth of the atmosphere should never be lowered by ventilation.—*Singlehanded.* It will be advisable to train up young rods between the old ones with very long spurs if there is sufficient light for the young shoots, otherwise it will be useless to attempt it. Pigeon manure is a very powerful stimulant, and should not be applied in larger quantities than 28lb. to the perch for vines, and half that quantity for Peaches. The best way to use it is to dry it in an open shed, reduce it to powder, and apply in autumn or winter, but it may be applied now at half the strength stated. As you can obtain, free of cost, plenty of stable manure, bone meal, and wood ashes, you can do very well without a concentrated mixed manure, but you might apply a little quick acting stimulant, just before the flowers expand, such as nitrate of soda or ground saltpetre (nitrate of potash) 1lb. to the perch, and water it in. Wood ash and bone meal are both excellent plant foods, but rather slow in action, and may be applied liberally at any time. In a hot summer a light covering of partially decayed stable manure will be advantageous, but should not be applied before the border has become warmed by the sun.

VIOLETS MARIE LOUISE: H. J. P. and A. W. Violet leaf-blotch is present. Spray the plants with a solution of liver of sulphur, 1 oz. in four gallons of water. Be careful to wet the under sides of the leaves and drench the soil with the liquid.

Communications Received.—*H. R.*—*G. L. B.*—*G. S.*—*A. S. S.*—*J. D. H.*—*T. T.*—*H. A. C.*—*B. W. B.*—*J. S.*—*W. G. S.*—*Isis*—*J. C.*—*R. P. B.*—*H. S.*—*W. H. W.*—*M. R. S.*—*P. A.*—*W. G. S.*—*J. H.*—*Ireland*—*H. B. M.* and Sons.—*J. & A. C.*—*W. C.*—*C. M. V. S.*—*E. H.*—*G. M. B.*—*C. H. P.*—*W. H. N.*—*W. B. H.*—*E. M.*—*C. J. R.*—*W. C.*—*Wilts.*—*Retlaw*—*T. E. W.*—*J. L.*—*Paris*—*E. J.*—*Canqueiranne*—*H. C.*—*Geneva*—*I. B. B.*—*R. A. M.*—*C. R.*—*Ireland*—*D. M. R.*—*G. F. R.*—*Purley*—*W. L. S.*—*Hampstead.*

THE

Gardeners' Chronicle

No. 1,424.—SATURDAY, APRIL 11, 1914.

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SOME RECENT EXPERIMENTS IN THE APPLICATION OF ELECTRICITY TO PLANT PRODUCTION.

IT is desirable to make clear the scope of this article at the outset. There are many ways in which electricity may serve agriculture and horticulture in the future. Here it is only intended to discuss its possible direct application to increase or accelerate the production of a crop by modifying the electrical conditions under which that crop is normally grown. This is an application of electricity which is still in an experimental stage, but a brief description of the progress recently made will show that the next few years may enable a definite verdict to be pronounced as to its commercial practicability.

It is now a very long time since the first experiments upon this problem, modern though it seems to be. Perhaps some day it may be desirable to write the history of the investigation, but at the moment I think we may leave this pioneer work upon one side. As I shall hope to show later, the result of recent practical trials of this treatment has been to demonstrate that the significance of many of the statements of the earlier workers will have to be reconsidered. This is not the occasion for such a critical historical survey, so leaving aside this earlier work, which makes a fascinating chapter in the history of science, we will proceed at once to a discussion of the

modern methods of applying electricity to plant growth.*

At the present time in nearly all the large scale trials the electricity is applied as a discharge into the atmosphere above the plants. This simply modifies the electrical charge which is already reaching the plants from this source. Usually the air above the growing plant is charged to a positive potential. This charge is continually leaking away through the plants to the ground, and is continually renewed from the upper layers of the atmosphere. It is extremely variable, but in normal weather is comparatively small, not more than a few hundred volts at a point about a yard above the plant. But in thunder weather, when the electrical charge increases, the potential is greatly increased and the current leaks away more rapidly to the ground.

Now the method of electrical discharge

the supply of electricity to quite large areas.

The greatest practical difficulty on the electrical side is the adequate insulation of the system of wires which are kept at such a high electric potential. This is a very necessary precaution to ensure that the current shall be leaking away off the thin wire stretched above the crops at intervals of about ten to fifteen feet, rather than elsewhere. These difficulties have been overcome to an extent that shows that the electrical problems in the way of practical application of the discharge can be solved.† We may now, therefore, turn our attention to the experiments devised to ascertain whether such practical application would be advantageous.

The investigator who wants to apply electricity in the field is confronted with one great difficulty. He has no adequate knowledge of the scientific side of the



FIG. 107.—ELECTRIFIED AREA, DUMFRIES, 1913. LARCH POLES WITH INSULATORS SEEN IN THE CENTRE: THESE CARRY CHARGED OVERHEAD WIRES. ON RIGHT, WIRE NETTING ERECTED IN ORDER TO SCREEN THE CONTROL AREA.

employed in these experiments generates a very high potential of electricity by means of a coil and a series of rectifying valves, and then charges a system of thin wires spread above the plants at intervals of ten to fifteen feet, to this high potential of some 50,000 to 100,000 volts. The wires are so highly charged that though raised upon Larch poles to a height of from ten to fifteen feet above the plant (fig. 1), they continue to discharge sufficient electricity into the air to raise the electric current passing from the air to the plant to about ten thousand times its normal value.

The electrical apparatus for developing these high-tension currents has been designed by Mr. J. E. Newman, with the advice and help of Sir Oliver Lodge, and it can easily be rendered efficacious for

problem upon which to base his plan of treatment. Laboratory investigations are now in progress which may in time settle the broad principles of treatment, but the effect of the practical application of the discharge upon a large scale had to be demonstrated before it was realised that these problems called for solution. At present the times of applying the discharge, the strength used, the duration of discharge, are all matters that have to be decided empirically. The final answer to the practical problems involved will only be obtained when the practical control of the field experiment is based upon principles thought out and thoroughly tested by previous work in the laboratory. With the aid of a grant from the Development Fund, administered through the Board of

* Brief reference to these earlier experiments will be found in other papers. See, for instance, *Journal of the Board of Agriculture*, Vol. xvii., p. 14, and Vol. xx., p. 582; also *Journal of the Royal Horticultural Society*, Vol. xxxvii., p. 15.

† See the papers previously mentioned for further detail as to apparatus, also E. C. Dudgeon, "Growing Crops and Plants by Electricity."

Agriculture, these problems are now being attacked in the laboratory at the University of Leeds. Some points have been cleared up,* but there is still a great deal of work to be done, and until it has been done a general discussion of principles is premature.

In the meantime, large-scale field trials have also been in progress, carried out in part by the University of Leeds, and also through the energy and interest of private individuals, especially of Miss E. C. Dudgeon at Lincluden, Dumfries, Mr. William Low at Balmakewan, near Montrose, and Mr. Raymond Bomford at Salford Priors,

strength of the electrical discharge distributed over the plants. It was obviously no use to weigh crops from experimental and control areas with great care, unless these figures could be contrasted with significant figures as to the electrical comparison between the two areas. To take an extreme case, an increased yield of 50 per cent. would be of but little help to the experimenter unless it could be ascertained what were the actual electrical conditions accompanying this increased yield. An attempt to repeat this result might be made with different electrical quantities and an entirely different yield obtained.

in which the new facts learnt about the distribution of the discharge entirely alter the conclusions that might at first sight be drawn from it. It should first be stated that on a windy day the discharge does not spread equally on all sides of the electrified area. It is carried by the electrically charged particles of the air, and, therefore, of course, spreads very little against the wind, and a very long way in the direction of the wind. In the light of this knowledge let us discuss the field experiment carried out at Dumfries in 1912.

This experiment was made upon Potatoes (British Queen), and it was arranged that the crop should be lifted and weighed in tenth-acre plots from the whole of the electrical and control areas.

As these two areas totalled four acres of ground, this provided that any errors due to other local conditions, such as soil conditions, could be gauged very accurately. This experiment was carried out in complete ignorance of the facts about the distribution of the discharge stated above, and the experimental area was arranged as shown in the accompanying diagram (fig. 109). The idea in so distributing electrified and control areas was, of course, to equalise as far as possible differences in soil and exposure between the different ends of the field.

When the crop was lifted and weighed it was found that practically no difference existed be-



FIG. 108.—HIGH TENSION DISCHARGE APPARATUS AT DUMFRIES.

On the left coil, with mercury break in front, to right coil spark-gap, then a series of five Lodge valves to rectify alternating discharge, and at right edge of table the field spark-gap.

near Evesham. These field trials have lately entered upon a new phase, and the most useful purpose this article can serve will be to bring out this point of view and discuss its reference to the practical problems involved.

When funds were available for making large-scale experiments at the University Experiment Farm at Garforth, it was immediately decided to direct attention in the first place to the methods of measuring the actual

* See, for instance, Priestley and Knight, "The Toxic Action of Electric Discharge on *Bacillus Coli*," *Proc. Roy. Soc.*, and Knight and Priestley: "The Respiration of Plants under Various Electrical Conditions," *Annals of Botany*, 28, p. 135.

It took some time to devise suitable methods for measuring these electrical conditions, but the difficulties, which were considerable, were eventually overcome, and a paper will shortly be published elsewhere describing these methods and drawing certain conclusions from their use up to the present. One of these results is of very great significance. It has been demonstrated beyond doubt that the effect of the electrical discharge is by no means confined to the area directly beneath the wires. It will be seen how seriously this conclusion affects all the field trials made up to the present. Perhaps this may be made clear by reference to a specific experiment,

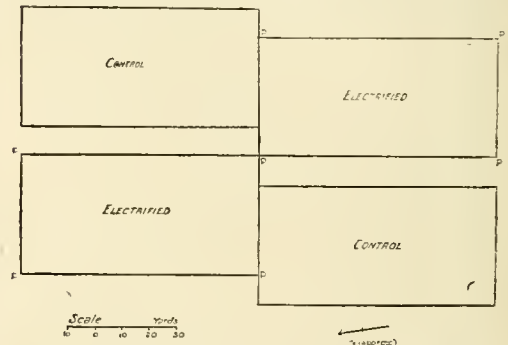


FIG. 109.—ELECTRIFIED AND CONTROL AREAS.

tween the yield from the electrified and control areas. At first sight this seemed a decisive proof that the electrical treatment had no practical value; the conditions for growing were good, and the crop on the light soil was excellent, averaging 14 tons to the acre. But concurrently with these experiments the measurements at Garforth were in progress, and by the time the Potatoes were weighed the data to hand from these measurements led us to anticipate that the crop should in any case give a nearly even yield. These measurements had shown the effect of wind in carrying the discharge. Now a little consideration of the arrangement of the plots will show that, in whatever direction the wind might blow, it always carried the charge from an electrified to a control area. Very light winds will carry the discharge the full length of the control areas in these experiments, so that the electrical difference between these four areas was negligible. By our very precautions we were undone, and the results of the year's trials are without significance. This example will suffice to show that experiments in which weight of crop alone are taken cannot be relied upon: they must be accompanied by figures expressing the electrical comparisons between the two experimental areas. In the light of these facts it would be interesting to review the earlier experiments.

Space will not permit a full discussion, but the two following points may be emphasised. Firstly, the validity of the results obtained with the system of electrical treatment will be greater as the size of the control area increases; secondly, the results will also be more reliable when the discharge wires are nearer to the ground, as this means less spreading of the discharge in the wind.

It should be pointed out that these new facts

as to the distribution of the discharge do not point to any impossibility in its practical application; rather the reverse, as they show how easy it will be to arrange for the discharge to cover a considerable area.

But they have considerably increased the difficulties in the way of carrying out crucial experiments which shall finally decide the question as to whether the discharge will produce a sufficiently increased crop to justify its application upon a large scale. To decide this point experiments must be carried out in which the weight of crop obtained under measured electrical conditions is compared with the weight of a crop from a genuine control area in which the electrical conditions approach closely to those under a normal atmosphere. The rest of this paper will describe the progress that has been made in obtaining this quantitative comparison between known electrical conditions and a genuine control area.

For this purpose it was necessary to standardise the methods of electrical measurement, so that they could be used in all field experiments. These measurements can now be carried out by convenient portable instruments with considerable ease, and will give a very fair representation of the electrical conditions of different points within an area. In subsequent years it is hoped that in all the large-scale experiments in Great Britain these measurements will be made so that the value of any difference in yields may be assessed in the light of valid electrical data. *J. H. Priestley.*

(To be concluded.)

ORCHID NOTES AND CLEANINGS.

LAELIO-CATTLEYA CORNELIENSIS.

This very delicately-coloured hybrid was raised by Mr. H. Chandler, Orchid-grower to the Earl of Craven, Coombe Abbey, Coventry, who for the second time kindly sends a flower of it, the present bloom being the lighter-coloured of the two, and more nearly resembling *Cattleya Schröderae*, which, with *Laelio-Cattleya luminosa*, produced it. The flower is as large as *C. Schröderae*, but rather thinner in substance. The sepals are nankeen-yellow, the petals blush-white, with a nankeen-yellow shade; lip broad, rose-coloured at the base, with yellow lines, the disc being orange-coloured shading to light yellow, the crimped front tinged with pink.

The lip of the variety previously seen was rose-purple, with an orange-yellow disc.

BRASSO-LAELIO-CATTLEYA AUREOLE.

THREE flowers of this pretty hybrid, between *Brasso-Laelia Mrs. Gratrix* (*B. Digbyana* × *L. cinnabarina*) and *Laelio-Cattleya luminosa* (*C. Dowiana aurea* × *L. tenebrosa*), are sent by Mr. F. C. Puddle, gr. to W. H. St. Quintin, Esq., Scampston Hall, Yorkshire. In colour and form they are nearest to *B.-L. Mrs. Gratrix*, and, although they vary in shape and tint, the dark colour of the lip of *L.-C. luminosa* is almost entirely suppressed. The form of the labellum differs in each flower, one having a distinctly trilobed arrangement, while in the other two the separation of the side and front lobes is not clearly defined. The flowers are 6 inches across, pale yellow more or less tinged and veined with copper-red, the slightly fringed labellums being veined with rose colour.

DENDROBIUM SUPERBUM HUTTONII SOUTHFIELD VARIETY.

OUR illustration (fig. 110) represents this rare *Dendrobium*, for which W. Waters Butler, Esq., Southfield, Edgbaston, Birmingham (gr. Mr. Jones), received the R.H.S. Award of Merit on the 24th ult. *Dendrobium superbum*, of the typical form collected in the Philippine Isles, has

rose-coloured flowers with claret base to the lip. It is often grown in gardens as *D. macrophyllum giganteum*, and the small-flowered variety as *D. anosmum*. Three white-petalled forms are known—viz., *Burke's* variety, white with pale-purple colour at the base of the lip; *Dearei*, which is wholly white; and *Huttonii*, in which the basilar part of the lip is dark violet, a character which is exhibited in the highest degree in the *Southfield* variety. The flowers have all, in greater or lesser degree, the odour of medicinal Rhubarb, the type being very strong, but the variety *Huttonii* only pleasantly so. The section is widely distributed in the Malay region, and all forms require the warm-house treatment.



FIG. 110.—DENDROBIUM SUPERBUM HUTTONII "SOUTHFIELD VARIETY."
(Photograph by R. A. Malby.)

CIRRHOPETALUM TRIMENII.

FOR the second time this rare species has flowered with the Hon. N. Charles Rothschild.

It is a dwarf, evergreen species, with slender scapes about 3 inches high, bearing at the apex a tuft of seven to nine flowers, arranged in a very short raceme; they are yellowish-white with purple spotting on the back of the dorsal sepal. The lip is primrose-yellow with a few rose-coloured dots at the base. *Cirrhopetalum* is merged into *Bulbophyllum* by many authors, and this species belongs to the section which is not distinguishable from *Bulbophyllum* by the characters assigned to *Cirrhopetalum*. It was imported from Ceylon, and is described in *Trimen's Handbook of the Flora of Ceylon*.

THE ROSARY.

WANTED, A REAL YELLOW CLIMBING ROSE.

ALTHOUGH there is a great wealth of climbing Roses, a real yellow variety is lacking. We have many free-growing sorts with yellow shades of colour, but unfortunately those with the most yellow are not free-flowering, if I except *Aglaia*, which is without doubt still the best in its section. Many fail to flower this Rose early, or well, owing to mismanagement in pruning. The plant requires time to become established, and

then the only things needed to assure an annual full crop of its pale yellow flowers are vigorous shoots which should be retained at pruning time their whole length, removing all weakly ones and any that flowered the previous season. The pruning should be done directly the flowering season is over, so that the shoots retained for furnishing next year's crop will have ample time to become matured. By a climbing Rose I mean one that will make shoots 12 feet long in a season and produce flowers almost the whole length of the shoot in the same manner as *Excelsa*, *American Pillar* and the bulk of those belonging to the *Wichuraiana* section, not varieties like *Allister Stella Gray* or *Trior*, which are but semi-climbers, although free-flowering.

The so-called yellows—such as Aviateur Blériot, François Guillot, Goldfinch, Klondyke and Shower of Gold, are either not good in colour or too sparse of flower. We need a yellow flower of the shade of Perle des Jardins with the freedom and habit of Dorothy Perkins. *E. M.*

NEW ROSES AT BAGATELLE.

A TRIAL of Rose novelties will take place as usual at Bagatelle in 1914-15. New Roses are sent to the authorities with the name of the raiser plainly attached thereto. So far as possible the plants should have been raised in pots, and at least five specimens should be sent to the "Conservateur des Promenades de Paris, Roseaie de Bagatelle, au Bois de Boulogne, En gare de Neuilly-Porte-Maillot-Paris," before April 15. A note of any special treatment required must be attached. They will be put in the ground immediately on reaching Bagatelle, and will remain there until October, 1915, so that the jury can observe their flowering and habit during two seasons. The following are some particulars of former awards:—

1907.

Bagatelle Gold Medal.—Marquise de Sinéty, Pernet-Ducher (Lyon).

Classed Roses.—Mme. Edmond Sablayrolles, Bonnaire (Lyon); Mme. Constant Soupert, Soupert et Notting (Luxembourg); Mrs. Peter Blair, Dickson and Sons.

1908.

Bagatelle Gold Medal.—Rhea Reid, E. G. Hill (Richmond, U.S.A.).

Bronze Medal of the Ministry of Agriculture.—Dorothy Page Roberts, Dickson and Sons.

Bronze Medal of the French Horticultural Society.—Mme. Ségond-Weber, Soupert et Notting (Luxembourg).

Bronze Medal of the Rose Section of the French Horticultural Society.—Mrs. Dudley Cross, W. Paul and Sons, Ltd.

Bronze Medal of the Society of Rose Lovers.—Frau Oberhofgärtner Singer, P. Lambert (Germany).

1909.

Bagatelle Gold Medal (French Roses).—Lyon Rose, Pernet-Ducher (Lyon).

Bagatelle Gold Medal (Foreign Roses).—Mme. Ségond-Weber, Soupert et Notting (Luxembourg).

1910.

Bagatelle First-class Certificate.—Molly Sherman Crawford, Alex. Dickson.

Bagatelle Certificate.—Mlle. Marie Mascuraud, Bernaix (Lyon); Lady Alice Stanley, MacGredy; Commandeur Jules Gravereaux, Croibier (Lyon).

1911.

Bagatelle Gold Medal (French Roses).—Beauté de Lyon, Pernet-Ducher (Lyon).

Bagatelle Gold Medal (Foreign Roses).—Jonkheer J. L. Mock, Leenders (Holland).

Bagatelle First-class Certificate.—Viscountess Enfield, Pernet-Ducher (Lyon).

Bagatelle Certificate.—May Miller, E. G. Hill (Richmond, U.S.A.); Walter Speed, Alex. Dickson; Désiré Bergera, Barbier et Cie. (Orléans).

1912.

Non-Competitive.—Rayon d'Or, Pernet-Ducher (Lyon); Sunburst, Pernet-Ducher (Lyon); Président Vignet, Pernet-Ducher (Lyon).

Bagatelle First-class Certificate.—Mme. Jules Bouché, Croibier (Lyon).

Bagatelle Certificate.—Frau Margrethe Moller, Poulsen (Copenhagen); Orléans Rose, Levavasseur (Orléans).

1913.

Bagatelle Gold Medal (French Roses).—Mme. Charles Lutaud, Pernet-Ducher (Lyon).

Bagatelle Gold Medal (Foreign Roses).—Mabel Drew, Alex. Dickson.

Non-Competitive.—Louise-Catherine Breslau, Pernet-Ducher (Lyon); Mme. Edmond Rostand, Pernet-Ducher (Lyon).

Bagatelle First-class Certificate.—Grange Colombe, Guillot (Lyon).

Bagatelle Certificate.—Mrs. Amy Hammond, MacGredy; Luise Lilia, Peter Lambert (Germany); Wichmoss, Barbier (Orléans).

THE HARDY FLOWER BORDER.

PERENNIAL ASTERS.

THE cultural requirements of these plants are very few, but a little attention to details is necessary to obtain the best results. February to early March is perhaps the best time for dividing and planting, and 4 feet each way proves a suitable distance for the more robust-growing varieties; the smaller sorts may be planted much closer, to form drifts, and do not require staking. Ten or twelve growths is sufficient to leave to each plant of the most vigorous, and about five Bamboo canes to each plant, well spread out and connected by a band of soft string, to which some of the growths may be tied, proves a neat way of staking, and encourages each growth to develop lateral flowering shoots almost to the base.

If inconvenient to dig the border when planting, a hole may be made, placing some short manure in and covering with a layer of soil previous to planting, after which operation the plants may be watered to settle the soil about the roots, and occasionally afterwards should the nature of the soil and weather conditions render it necessary. During the growing season an occasional sprinkling of some safe artificial manure will assist established plants, and frequent surface hoeings will prove beneficial.

Feltham Blue is a most desirable Aster, having large, distinct flowers, which last a long time in perfection. Other pleasing varieties are:—Ariadne, Beauty of Colwell, Coelestial, cordifolia, Captivation, Coombe Fishacre, Chapmanii, Delight, Edwin Beckett, Freedom, Grace Darling, Hon. Edith Gibbs, Isabel, Ophir, St. Egwin, Trumpeter, Triumph and White Dinah. *C. Luxford, Walmsgate Gardens.*

MECONOPSIS CHELIDONIFOLIA.

THE Chinese and Himalayan Poppies are usually considered to be plants which are not too easy to grow, so that it is refreshing to find one that grows well and is a good perennial. The first time I saw *Meconopsis chelidoniifolia* was in the late Mr. Gumbleton's garden, growing in ordinary soil on a border. Although not so striking or beautiful as the blue biennial Poppy, yet this newcomer is pretty and attractive. In 1912 it was 2 feet high, and last year it grew 4 feet when planted in a peaty soil. The stems are very slender, branching out freely at flowering time, in July, when the stems turn quite a deep brown or nearly black. The ovoid flower-buds are smooth, gracefully hanging on wire-like stems. The flowers are yellow, 1½ to 2 inches across, with crimped petals; the pods are hairless; the leaves are trilobed. Although rather similar to those of the Great Celandine, they are not so deeply lobed, and are less toothed. Another good point about *M. chelidoniifolia* is the freedom with which it may be increased. The roots divide easily in spring, and last year bulbils were produced on the flower-stems, which produced young plants. Wilson mentions this plant as occurring on the Lung-Sungpan highway in North-Western Szechuan, and the following paragraph from *A Naturalist in Western China*, Vol. I., p. 127, gives an idea of its associates in its own habitat:—"Tall-growing herbs made a grand display, especially the apetalous *Astilbe rivularis*, *Spiraea Aruncus*, *Anemone vitifolia*, with white and pink flowers like the Japanese *Anemone*, *Artemisia lactiflora*, with large panicles of milk-white fragrant flowers, Im-

patiens, with yellow, pink and purple flowers. Mixed with them were also the Meadow Rue (*Thalictrum*), *Aconites*, many *Senecios*, and *Meconopsis chelidoniifolia*, growing about 3 feet tall, with clear yellow flowers, saucer-shaped, and 2½ inches across. Acres of the countryside are covered by these various herbs." *C. P. Ball.*

THE YORKSHIRE RHUBARB HARVEST.

More Rhubarb is grown within a radius of twenty miles of Leeds than upon any similar area in the world. Hundreds of acres, chiefly on the south, south-east, and south-west of the city, are devoted entirely to its production. The Rhubarb industry in West Yorkshire represents a total capital of somewhere between £300,000 and £400,000. Why should West Yorkshire have been singled out for this distinction? A complete response to this question is not always forthcoming. Beyond a doubt, there is something in the soil, the climate, and the cleverly-directed native energy in handling a crop of forced Rhubarb that make for success in Yorkshire Rhubarb cultivation. In the south and south-west of England many experts have tried their hands at Rhubarb forcing for a few seasons, and have failed to find profit therein. They are not nearly so much to blame as is the climate. Just at the time of the year when Rhubarb roots require extra moisture, Nature condemns them to suffer thirst like the flocks and herds around them.

The industry of forcing Rhubarb on a large scale in Yorkshire, or in any other shire for the matter of that, is a development that has happened in the lifetime of those who have made fortunes out of it. It is about fifty years old, and the last thirty years have witnessed its advance from the stage of doubtful experiment to that of full fruition. The process of Rhubarb growing is this:—In spring you plant out-of-doors and encourage with ordinary manure roots chiefly cut from stock that has helped, perhaps, to produce two or three generations of Rhubarb. These roots develop, and if you destine them for forcing purposes you do not pluck their annual harvest, but leave even the most flourishing crop to rot as it were. If you refrain from plucking or pulling a crop of natural Rhubarb the sap you would draw off goes back to the root. In Yorkshire crops of natural Rhubarb are not very extensively pulled. Scores, if not hundreds of acres of healthy-looking, vigorous Rhubarb are left untouched, though the sticks, reduced to pulp, help dyers of textile fabrics in operations too occult to be described here. The natural Rhubarb leaves soon decay and enrich the earth that bore them. The Rhubarb root that has been plucked whilst it should have been husbanding its energy does not in two or three years in a shed, even though helped most powerfully by artificial aid, answer expectations either as to quantity or quality of crop. Unplucked Rhubarb yields twice as much of the forced product as plucked.

Having gathered sap and strength out-of-doors for two years or more, the original roots are either ploughed or dug out and ranged in a forcing shed, in tightly-fitting rows, with a little earth dividing each row, with here and there a narrow path between the rows. Thenceforward to the time of harvest, which early in the year is in full swing, almost the only aids to growth are heat, moisture, and absence of light, natural or other. Darkness gives to the curly, crisp leaves the desired golden hue. The least ray of light turns the leaves green. An incandescent or acetylene lamp will spread mischief coterminous with the range of its beams. So there is ample scope for human agency in forcing the best marketable Rhubarb. "Supervision is an art or a science," says a Yorkshire grower who has sent more Rhubarb to southern markets, probably, than

any four other growers combined. "It does almost as much as Nature for Yorkshire Rhubarb." Men who want their Rhubarb early for the Christmas trade transplant the roots in November; but their prospects of a good crop are less than if they transferred those roots in the sheds late in December or early in January. Heat is supplied to the houses by hot-water pipes and flues. A first-rate crop occasionally hides every little gap left for the foot of the gardener, and presents a beautiful mass of red, amber, and gold, if there be light enough to see it.

The length to which a stick of Rhubarb is allowed to grow depends on the grower, his customer, and the state of the market. If you let it alone long enough some Rhubarb will ascend towards the ceiling of a 4 feet high house; but from 20 to 25 inches is tall enough for handling in English markets. If unrestricted, a stick may develop 1½ lb. or even 2 lbs. avoirdupois, but most of the crop is plucked when the sticks weigh from 2 ozs. to ¾ lb. or 1 lb. Forced Rhubarb is most palatable and tender if plucked exactly when it is ready. Some sticks are ripe at 3 ozs., and others not till they reach 1½ lbs. A skilful grower knows what is ready. Like *Rosas* and other flowers, it is a case with Rhubarb of pluck and come again; so there are many crops in a season. The early season starts about a fortnight before Christmas, and lasts till the middle of February or later, weather permitting. Spring weather, arriving unduly early, forces outdoor Rhubarb into life before the Rhubarb forcer desires, for it kills his trade. Though most English epicures prefer delicately-forced Rhubarb to its coarser natural congener, they take to the latter for a change immediately it is offered them, at least for a while; then, perhaps, they go back to the more dainty growth. The marketing qualities of good forced Rhubarb are: a stick of deep red, a crisp, curly, golden leaf, and a fresh, bright bloom upon both stick and top. The limpness that an alert customer quickly detects, especially late in the season, when freshness wears off sooner, spoils forced Rhubarb in six or twelve hours after plucking. Tied in bundles and packed in hampers or boxes containing from 10 to 30 dozen bundles each, Yorkshire Rhubarb is sent to every considerable centre of population in the kingdom, even to Devonshire, Cornwall, and along the south coast. When the Rhubarb harvest is at its busiest, hawkers buy cheaply much of the inferior qualities—hence the idea that the nearer you are to the Rhubarb beds the worse the Rhubarb offered you. But the shopkeepers of Leeds and Bradford, whose customers can afford to pay for it, insist on having some of the best stock grown. Three of the principal railways run quick Rhubarb specials from Leeds to London, distributing their freight as they go, as mail trains do. London is the best customer.

Rhubarb farms vary from three to a hundred acres, and provide work for men, women and boys, many of whom are rough gardeners and farm hands who, in the height of the Rhubarb season, might be short of other occupation. Twenty or thirty years ago nearly all the Rhubarb sent from the West Riding was sold on commission by agents in London and at other centres. Many of the middlemen have now been dispensed with, shopkeepers and wholesale merchants receiving their stock direct from the growers. Carriage is cheapened by consigning the produce in bulk, and the receiver of a big consignment makes most of his profit out of the difference in carriage. Rhubarb farmers say that since railway companies began to work hand-in-hand as to charges, in 1903, claims for damage have not been met so reasonably and transit has not been so careful. Crops being light this season, the price—1s. 3d. to 1s. 6d. a dozen bundles at the markets—is higher than usual. Scotchmen sometimes buy Yorkshire Rhubarb by weight.

The old roots, after harvest, are dug up, and

many of them perish from keen frosts; the survivors, after resting a year or two, are cut up into sections and planted again to renew the general stock. Large quantities of Rhubarb are grown naturally in Yorkshire, the total amount varying with the seasons. What is plucked is marketed from soon after Easter onwards. It is not sent far from the West Riding, as nearly every district in England can grow what it wants. As soon as growers in the warm latitudes of the south have outdoor Rhubarb ready, they rush it to market and substantially check the sale of the forced article. W. L.

NOTICES OF BOOKS.

LA TAILLE LORETTE.*

Not many years ago the visitor to France found that pleasant country divided into two warring sections. The guilt or innocence of a hitherto unknown military officer was the cause of this division, and the cautious kept the inflammatory name unspoken.

In French pomological circles at the present time there also is a name which lovers of peace will studiously avoid. It is that of M. Louis Lorette, chief horticultural instructor at the school of Wagnonville, near Douai; and the cause of the discussion is a system of pruning which he advocates. Since the first detailed description which appeared in June, 1912, the resources of the French language in invective and satire have been put to fullest service, almost drowning the few small voices of appreciation which were raised in some quarters.

We now have the true and only authoritative message given us in book form by the author himself. As this pomological disturbance has not yet reached our shores, it may be of interest to state in a few words in what way this system of pruning differs from the established practice.

In the first place, it is an almost complete substitution of summer pruning for the more usual practice of winter pruning. Secondly, it relies on the development of the stipular buds rather than on the more prominent growth-buds.

The results are stated to be desirable in every way. Spurs are developed nearer the main branch; production is enormously increased; and lastly—a point by no means without importance—pruning is done under genial summer conditions.

Let us follow M. Lorette in pruning a cordon Pear tree, as an example. When planted early the one-year-old tree is pruned back one-quarter of its length. This will cause the side buds to shoot with varying vigour, the strongest being naturally at the top. The side buds, if examined carefully, will be found to possess stipular buds which do not in usual pruning develop. It is to these buds, however, that M. Lorette looks for the development of his future spurs. Instead of pruning the side shoots of the tree to three or four buds each, and after one year's growth making these the foundation of the spurs, he takes off the side shoots completely in June, and the tree will then push these stipular buds at the autumn growth, and they will form spurs. These spurs will therefore be close to the main branch and benefit by an increased food supply.

This is the basis of the system, and the growths from the spurs are treated in the same manner. When the leading shoot is cut in the following winter (this being the only winter pruning necessary), it is again a stipular bud which is made to supply the leading shoot.

By preventing the sap from passing upwards in the easiest manner, as through a terminal bud, the side spurs are greatly strengthened and their formation hastened.

* Par M. Louis Lorette. Versailles, 1913.

Whether the system is new, or whether it is only the old "taille à l'écu" revived, the fact remains that M. Lorette can show trees loaded with fruit, and the illustrations in the work before us show that formally trained trees can bear prodigious crops.

Such, then, is the system which is put forward by M. Lorette, and described in his book, somewhat circuitously it must be admitted. As to the work itself, it is illustrated by many photographs and cuts, but those not conversant with horticultural French will find themselves rather lost in a maze of "brindilles," "dards," "coursions," and similar formations. A good English translation would be of great interest, as pruners in this country make too little use of the refinements of the art.

It must be confessed that the padding, which is somewhat lavishly used in this work, is hardly worthy of its subject. Calendars of operations and such information as that "nurserymen may be found in the suburbs of all towns, and they graft, form and sell trees," seems scarcely needed in the twentieth century. E. A. Burnyard.

PLANT NOTES.

PSYCHOTRIA JASMINIFLORA.

ACCORDING to Nicholson's *Dictionary of Gardening*, the genus *Psychotria* consists of about 500 species, yet very few of them are in cultivation. From a floral point of view, the finest of them all is *P. jasminiflora* (figured in *Gard. Chron.*, August 16, 1879), which thrives in an ordinary stove temperature. It forms a neat-growing evergreen shrub, clothed with ovate leaves, about 3 inches in length, light-green and glabrous above, and glaucous underneath. The flowers, which are disposed in compact terminal panicles, are in shape very suggestive of those of a *Bouvardia*, but in the *Psychotria* the clusters of blossoms are partially drooping. A notable feature is their intense whiteness, in which respect there are very few flowers to equal them. The cultural requirements of this *Psychotria* are much like those of the *Ixoras*—that is to say, cuttings of the half-ripened shoots inserted in a sandy compost and placed in a close propagating case where there is a gentle bottom heat, will strike root without difficulty. A suitable compost for established plants is a mixture of loam, peat and sand. While this *Psychotria* is remarkable for the beauty of its blossoms a second species, *P. cyanococca*, is noteworthy for its profusion of bright-blue berries, the blossoms being insignificant. Introduced from Nicaragua by the late Mr. William Bull, of Chelsea, about forty years ago, this was for a time fairly popular, but it now appears to have almost dropped out of cultivation, though its name still occurs in the *Kew Hand List*. It is of soft growth, with hairy leaves, and forms an upright-growing plant. The berries, about the size of Peas, are of a bright-blue colour. Seedlings are very readily raised. W. T.

FOREIGN CORRESPONDENCE.

"A NEW SOURCE OF OAK TIMBER."

A CABINETMAKER to whom I communicated the information given by Mr. Jackson on p. 188, under the above heading, informed me that the mere fact of such timber having been discovered in the position indicated is not incredible, but he expressed some doubt on the enormous quantities stated to exist. The man told me that near Rosenheim, at the Austro-Bavarian frontier, there is embedded in the river Inn "a whole forest of oak timber," which cannot be made use of only on account of the inaccessibility of the place, but it would only require a road to be built to make the carrying of the logs to rail practicable. E. Heinrich, *Planegg (Bavaria)*.

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

SEED-SOWING IN THE COOLER HOUSES.—

The seed-vessels of *Odontoglossum* and allied Orchids are ripening fast. As soon as the pods show signs of bursting tie a piece of tissue paper around them to prevent the seeds from dropping to the ground. Tear a small opening in the top of the paper to admit the air, as close conditions might set up damping and cause the seed pods to decay. As recommended on page 22, *Odontoglossum* seeds should be sown on the tops of pots containing plants of their kind, and preferably growing seedlings, but the compost must be in good condition. Seeds, even from the same pod, do not all germinate at the same time; sometimes it is a very long time before the seedlings appear, therefore the soil should be such as will remain sweet for at least a year. Before sowing the seed on the pots, cut away all growing moss and remove lichens and other foreign growths, as these might smother the seedling Orchids. Water the compost a few hours before the sowing is done, so that the seed will adhere readily to the soil and distribute the seed evenly over the surface. The after-treatment consists in never permitting the seed to become dry, taking especial care in this matter when the weather is bright and the atmosphere dry. If only a few pots are sown, dipping the receptacles in water is the best means of keeping the surface moist, and this will obviate all danger of washing the seeds out of position by the water-can. But where large numbers of seedlings are raised this method is not practicable and a reliable sprayer must be brought into use. The greatest pest of Orchid seedlings is a miniature black fly, almost as small as a gnat. The insects lay their eggs in almost any new potting compost, and the maggots that hatch out attack not only the materials of the potting compost, but even the seedlings, usually at the base. I know of no certain method of combating this pest, but fumigations on frequent occasions will destroy the mature insects when in flight. It will be well also to spray with some safe insecticide. Seedlings raised from seed sown in the autumn are sufficiently large for pricking out into store-pots. Several seedlings may be placed together in receptacles 2½ inches to 3 inches wide. Do not neglect to shade the plants when the sun is shining brightly, and spray them overhead whenever the conditions are favourable, for overhead sprayings are beneficial to all *Odontoglossums* in their early stages of growth.

REPOTTING.—Plants sufficiently far advanced in growth that require more root-room should be repotted, and if the work is done now, the plants will become established before the hot summer weather sets in. When the seedlings have developed their fourth leaf, the roots need ample room for development. Fill the pots to about one-third their depth with chopped roots of bracken Fern to provide suitable drainage. The compost may consist of equal parts of broken peat, broken Oak leaves, and chopped Sphagnum-moss, lightened with plenty of sand. Make the compost moderately firm about the roots.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

HARDY BAMBOOS.—Now is a suitable time to divide and make fresh plantations of these charming evergreens. They may be planted in groups at a curve in a drive, on the slopes of a ravine, or on the banks of a pond or stream. In autumn and winter, when many other woody plants are bare of foliage, the greenery of Bamboos and their graceful habits provide a great charm in the garden. The sites for planting should be sheltered from cold winds, and partially shaded. The plants, however, will thrive

in full sunshine if the soil is loamy, and not liable to become baked up in summer. Strong, loamy soil, trenched 2 feet deep, and enriched at the bottom with well-rotted manure, is suitable for all the members of the Bamboo family. Plant in holes some 4 to 6 feet in diameter, and afford the roots an annual mulching of well-decomposed animal manure for the first three years afterwards. Given this treatment the culms will grow from 6 to 12 feet in height, and the plants make very ornamental specimens. *Phyllostachys nigra*, *P. Castillonis*, *P. flexuosa*, *P. Henonis*, *P. mitis*, *P. violescens*, *P. viridi-glaucens*, *Bambusa fastuosa*, *B. quadrangularis*, *B. palmata*, *Arundinaria nitida*, *A. Metake*, *A. Simonii*, *A. nobilis*, and *A. Falconeri* are all splendid plants. The last is a little tender in low-lying, humid districts.

SAXIFRAGA PELTATA.—This is a favourite subject for growing in partially-shaded spots. The large, umbrella-like leaves are 18 inches across and 2 feet high. The heads of rosy-pink flowers appear in spring, before the foliage, giving a quaint appearance.

SPIRÆAS.—The noble Goat's-Beard, *Spiræa Aruncus*, is another fine flowering plant worthy of extended cultivation. It is a gross feeder, and requires a similar treatment to the *Gunnera*. *S. gigantea* and *S. palmata* are other good garden species. The newer *Stenanthium robustum* is very ornamental, and should find a place in the pleasure grounds.

THE FORMAL GARDEN.—The spikes of Hyacinths, Daffodils, Jonquils and early Tulips should be secured to stakes or other supports. Keep the surface of the beds lightly hoed after a little fertiliser, such as Clay's or With's, has been spread on the surface. Common soot may also be employed as a dressing.

BEDDING PLANTS.—As soon as the cuttings of plants for the summer flower beds are well rooted, whether struck in the autumn or early spring, remove them from the glasshouses into cold frames, and harden them gradually. In fine weather they may be fully exposed during the daytime, and a little ventilation afforded at night, but not when strong winds are blowing or the weather frosty. If properly attended to they will make sturdy, floriferous plants before the time for planting-out arrives, and will grow in the beds straight away, producing a good effect almost immediately. Their removal from the houses will permit of the propagation of such tender plants as *Coleus*, *Iris*, and *Alternanthera*. Like many other gardeners, I have discontinued cultivating *Alternanthera* and plants of that type, for I doubt the wisdom of growing under glass for some nine months of the year subjects that are of value in the flower garden for only a short period. There are other plants of a hardier nature that will flower earlier and remain in bloom for a much longer period, of which *Antirrhinums*, *Verbenas* and *Salvias* are examples.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE,
Eastwell Park, Kent.

PERPETUAL-FRUITING STRAWBERRIES.—The chief value of these Strawberries in the average garden is to supply berries in the autumn. To ensure late fruiting remove all the flower-spikes as soon as they appear in the usual flowering season, and continue to do this until about the latter part of July. The flower-spikes thrown up after this date may be allowed to develop, and if the plants are well cultivated some good dishes of fruit will be available late in the season. In unfavourable autumns it is wise to cover the plants with glass lights in order to develop the flavour in the fruit, and it is well worth the trouble involved. The plan followed here is to plant strong, young runners in the spring in a warm, sunny border, as the greatest possible amount of sun is necessary to bring this late crop to perfection. The ground, having been prepared as recommended above, should be forked when in good order for the work, and the runners planted at once. Allow a distance of two feet between the plants, and if the weather is dry damp them

overhead occasionally until the roots are well established. Hoe the beds regularly, and when hot weather sets in mulch the roots with decayed manure; afford the plants liberal supplies of water during times of prolonged drought. Varieties recommended for autumn fruiting are *St. Antoine de Padou*, *St. Joseph*, and *Laxton's Perpetual*.

PROSPECTS OF THE FRUIT CROP.—Though the weather of the past winter was exceptionally mild, with very little frost, the fruit-trees generally in this district are considerably later than usual in coming into flower. In March more than 5 inches of rain fell on twenty days, and vegetation of all kind made slow growth in that month. But fruit trees of all kinds look very promising for bountiful crops. Apricots and Peaches on warm walls are a mass of bloom, and at the time of writing the weather is favourable for the setting of the fruits, for bright, sunny days are followed by dull nights, with an even temperature. Apples, Pears, Cherries, and Plums are, nearly without exception, laden with plump fruit-buds, and in early districts the blossoms are on the point of bursting; in fact, some have expanded their petals already. Small fruits, such as Gooseberries and Currants, are also looking well. In cold, exposed districts, or in gardens near to a large body of water, every effort should be made to protect the blooms of choice fruit trees when the temperature falls suddenly. Strawberries are starting strongly into growth; but few of these plants died during the past winter, and the crowns look plump and healthy.

BLACK CURRANTS.—The rapid spread of the mite which causes "big bud" has made the cultivation of Black Currants a matter of great hazard, for no variety is immune from attack, although such strong, vigorous sorts as *Boskoop Giant* seem able to resist the pest for a time; but, sooner or later, even these become infested. May is the best time to take measures for combating the mite, and continued vigilance must be exercised, for if left undisturbed, the pest quickly ruins whole plantations. If the bushes are old, with weak, scrubby growth, it is advisable to grub them up and burn them at once. Young bushes should be cut down to the ground level, the surface soil removed and burnt, and fresh soil substituted as a top-dressing. The plants will start strongly into growth, and it will be a simpler matter to remove any big buds that are detected on the young shoots. Hand-picking should first be carried out and the bushes afterwards sprayed with a mixture of soft soap and quassia extract, in the proportion of 2oz. of the former to 4oz. of the latter to each gallon of water. Another remedy which is strongly recommended is that to dust lime and sulphur liberally over the bushes and also on the ground underneath. The work should be done on a damp day, so that the materials will adhere to the branches. Two parts of sulphur to one part of unslaked lime should be well mixed and applied several times during the next two months.

YOUNG PLANTATIONS.—Young bushes must not be planted where old ones have been grubbed out because of infestations of the mite. They should be grown on ground far removed from the old plantation. Black Currants repay a generous treatment, and the ground for this crop should be thoroughly well cultivated. Watch carefully for the first appearance of the mite on the young bushes and adopt measures to prevent the pest from spreading directly its presence is detected.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY,
Knowsley Hall, Lancashire.

COLEUS THYRSOIDEUS.—Plants of this blue-flowered *Coleus* are getting over and should be rested in a pit having a temperature of 60° after first removing the old spikes. About the end of the present month they may be induced by frequent syringings to produce shoots for cuttings. The cuttings may be taken off when 2½ or 3 inches long and inserted in pots and pans filled with light soil. Pot the cuttings as soon as they are rooted into 60-sized pots, placing two plants in

each pot. When they have grown about 9 inches high stop the growth to cause side shoots to develop. Re-pot as required into 6-inch pots and grow the plants in a temperature of about 60° throughout the summer. Seed may be sown now and the seedlings grown as advised above.

GREENHOUSE CALCEOLARIAS.—These plants have filled their pots with roots, and the flowers are showing signs of colour. At this stage they should be grown under very cool conditions, and the roots fed twice weekly with liquid manure suitably diluted. Practise overhead sprayings on bright days, using a fine sprayer, and fumigate the house on frequent occasions to destroy aphids, which spreads rapidly and soon causes considerable damage. When the flowers have expanded shade the plants for a few hours during the brightest part of the day. Birch twigs placed neatly around the edges of the pots will support the flowering shoots, or a central stake may be used, and the growth slung to this.

CHINESE PRIMULAS.—Seeds of both the sinenses and star varieties should be sown now if plants are required for blooming in autumn. Sow in shallow seed-pans, provided with plenty of drainage and filled with a mixture of sifted loam and leaf-mould, in equal parts, with plenty of sand added. Press the soil firmly in the pan and moisten it with tepid water. When the soil has drained, sow the seeds evenly on the surface and cover them with either sand or fine soil to a depth of about one-sixteenth of an inch. Lay on the pan a piece of slate or glass covered with paper, and germinate the seeds in a temperature of 60° to 70°. When the soil needs moistening hold the pan in a bucket of water nearly up to the rim until it is thoroughly wetted. Shade the seedlings during times of bright sunshine.

PROPAGATING PRIMULAS BY SIDE SHOOTS.—The present is a suitable time to propagate double varieties of Primulas from side shoots treated as layers. Remove all the flower spikes and some of the lower leaves on each growth. Fill the pots to their rims with light soil—a mixture of leaf-mould and sand in equal proportions is suitable—and peg the shoots into this. Roots will soon develop, when the layers may be severed from the parent plant and potted singly into small (60 size) pots. Shade from bright sunshine and keep the frame close until the plants are well established. *Primula obconica* may be propagated in the same manner or the plants may be turned out of their pots, the ball of soil reduced, and the roots divided into two or three portions. Pot the latter singly into receptacles just sufficiently large enough to accommodate the roots, and afford water with extra care until they become re-established.

CALADIUMS.—These ornamental-leaved plants are growing freely and require repotting. Use compost of an open texture—a mixture of equal parts fibrous loam, lumpy peat, and well-broken manure with sufficient charcoal and sharp sand added to lighten the materials will be suitable. In order to avoid a check to growth, let the compost be warmed and, if practicable, it may be brought into the house where the plants are growing, and the repotting done there. If the plants are brought out of the house into a potting shed, see that no cold draughts reach them, as the leaves are delicate and soon injured. After one copious watering, afford moisture with extreme care until the roots are well established, but syringe the bare spaces frequently to promote plenty of moisture in the atmosphere, as humidity is beneficial to these plants. Grow them in a temperature of 70°.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCCHILD), Buckinghamshire.

PINES.—The proper airing of Pine plants is an important detail in their cultivation, for without careful attention to this matter it is impossible to secure that sturdy habit of growth which is indispensable to the production of fine fruits. At this season ventilation requires to be done with extra care, especially when the plants are grown in close pits, the winter growth being

specially liable to injury from sunshine. The temperature of the fruiting-pit may be 70° at night, with 75° by fire heat on sunless days, and 85° to 90° with sunshine. Admit a little air early in the mornings, and when the temperature rises to 80° admit air by the front ventilators also, but draughts of cold air must not be permitted. Raise the temperature in houses where successional plants are grown to 65° or 70° at night, and to 75° by fire heat on dull days; in sunny weather it may range from 80° to 90°. As soon as the plants of each batch of suckers are rooted proceed with the potting of them. The night temperature may be increased to 68° or 70°, allowing a rise of 10° or 15° by day.

FIGS.—Reduce the amount of root-waterings gradually in the case of pot-trees with fruits showing signs of ripening, but give sufficient moisture to keep the foliage in a healthy condition. The amount of atmospheric moisture should also be less, and rather warmer and drier conditions maintained whilst the fruit is ripening. Trees planted out with the fruit swelling require liberal supplies of water or liquid manure. A light mulching of half-decayed manure will help to maintain a uniform condition of moisture in the soil as well as afford nourishment to the roots of the trees. Judicious top-dressings of this kind aid considerably in perfecting the current crop of fruit, besides stimulating the tree for the second or following crops. Continue to pinch and thin out growths where the trees are inclined to become overcrowded, as both wood and foliage require full exposure to sunlight throughout the growing season in order to secure a good crop the following season.

MELONS.—Plants with fruit swelling require much heat and moisture. Indeed, at this stage the atmosphere should be fully saturated now that the sun's heat is increasing. Admit air freely during the early part of the day, but close the house early in the afternoon to husband all the sun heat possible in preference to hard firing. Maintain the bottom heat at about 75°. Plants that are showing fruit should have an abundance of air in favourable weather, and the atmosphere should be somewhat drier than hitherto. Pollinate only the strongest flowers; drought at the roots is often the cause of the fruits failing to set, but the trouble may also result from an excess of moisture. Therefore, exercise great care in watering, and restrict the rooting space as advised on p. 167. The pinching and training of the shoots should be done regularly, so that growth may not be overcrowded at any time. In doing this work take care not to injure the mature foliage. Canker and gumming frequently follow bruises on the stems caused by careless handling of the water-pot, or by tying the stems and branches too tightly. Make another sowing to raise plants for successional fruiting. Those who grow Melons on hotbeds or in pits should set the plants in position as soon as the beds are in a proper condition. Some growers place single plants in inverted seakale pots, or receptacles of a similar size, afterwards plunging these in the hotbed, and it is claimed that better results follow this method than when the orthodox plan of planting on ridges or mounds is practised. Pinch the shoot at the fifth or sixth joint to cause the plants to develop laterals as quickly as possible.

CUCUMBERS.—The best system to adopt in training Cucumbers depends to some extent upon circumstances. If space is limited, the plants may be stopped when about 6 or 7 inches high, but where there is plenty of room they may be allowed to grow several feet before being pinched. If trained on wires the shoots should be about 12 or 15 inches from the roof-glass, and the leaders stopped when they have grown to the desired length. The side growths will produce fruit, and each shoot should be tied securely at the joint where the fruit is produced. Stop each growth at the joint beyond the fruit, unless more space is required to be furnished. Syringe twice daily in fine weather, and close the house early in the afternoon, as soon as the syringing has been done. If the

plants are growing in frames, damp the surface of the beds daily, and afford water liberally when the plants require moisture, feeding with liquid manure at least once a week.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

FRENCH BEANS.—Where there is space under glass to plant a lesser or greater number of an early variety with sufficient heat to keep the plants moving, a very desirable addition to the early summer vegetables will be provided. Dwarfs crop much sooner than climbing varieties, though the pickings from the latter are considerably longer. Osborn's Forcing is still a valuable variety for growing indoors.

RADISHES.—Where there is a constant demand for Radishes sowings of French Breakfast variety should be made at intervals of a week to ten days; to save thinning the crop, place seed singly in shallow holes made at 2 to 3 inches apart. An old, worn wooden rake is admirable for making the rows, as the teeth are at the right distance apart.

BEET.—A small sowing of Beet may be made in gardens in favoured localities, though it is too soon for late districts. Beet succeeds best in very fine soil, and before sowing see that the ground is pulverised to a depth of several inches. A few seeds should be dropped at every 6 inches in rows 15 to 18 inches apart. The seeds should not be deeply covered, and made only slightly firm in the ground, if at all. Dell's Crimson, White's Black and Covent Garden are three good varieties.

ONIONS.—Plants in boxes intended for planting shortly should be exposed to all weathers except frosts, and not over-watered. When prepared by a short course of semi-dryness at the roots they bear all the more kindly the slight disturbances due to transplantation. If time permits, the ground set apart for the crop should be dug deeply and all clods that have resisted weather influences broken down. A slight dressing of well-decayed manure worked in when digging will help the young plants to make a good start.

ASPARAGUS.—The present is a suitable time to sow seeds of this vegetable, and if it is not intended to transplant the seedlings the rows should be 18 inches apart with 4-foot spaces after every third line. The beginning of growth of 2 to 3 year-old plants indicates the proper time to lift these to make new plantations. Plant slightly deeper than the plants were previously. If the garden is exposed to high winds it is almost essential to provide supports to the plants which otherwise would be twisted and thus damaged.

CUCUMBERS.—With increased light and sun heat the plants will grow at a greatly accelerated rate, and should be helped with surface dressings composed of equal parts rough turf and rotted manure. Soot-water and diluted manure-water are also valuable fertilisers. The growths should on no account be allowed to extend unless to take the place of worn-out shoots. When the growths are regularly stopped beyond each fruit and only a limited number of fruits permitted to swell at the same time, the plants continue in the best possible condition for a long time. Occasional vaporisings with nicotine preparations is a sure preventive of insect pests. Plants should be prepared for summer cropping in manure-heated frames or pits. In the meantime the plants should be grown in a heated pit.

CAULIFLOWERS.—Plants in pots from the January sowing may be exposed to the weather, but in a sheltered position and provided with means of protection on frosty nights or mornings. When watering let the liquid be strengthened with manure, but not over-much. It will have the effect not only of preserving the plants in vigour, but also of aiding in the production of young roots. The ground should be prepared in advance, and receive a thick dressing of rotted manure, which should not be dug too deeply in the soil.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

Local News.—Correspondents will greatly oblige by sending to the Editors 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.

MONDAY, April 13—

Bank Holiday.

TUESDAY, APRIL 14—

Kingsbridge Daffodil Spring Fl. Sh.

WEDNESDAY, APRIL 15—

Roy. Hort. Soc. Coms. meet (Special Daffodil Show, 2 days.)

THURSDAY, APRIL 16—

Manchester and N. of Eng. Orchid Soc. meet. B.G.A. (Watford branch) meet.

FRIDAY, APRIL 17—

Huntingdon Daffodil and Spring Fl. Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 46.5°.

ACTUAL TEMPERATURES:—

LONDON, Tuesday, April 7 (6 p.m.); Max. 52°; Min. 41°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, April 8 (10 a.m.); Bar. 29.3°. Temp. 51°. Weather—Fine.

PROVINCES, Tuesday, April 7. Max. 48°, Aberdeen; Min. 45°, Lancaster.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Hardy Bulbs and Herbaceous Plants at 12; Roses at 1.50; Palms and Plants at 5. Trade sale of miscellaneous Bulbs at 12; Japanese Liliiums at 2.45. By Protheroe and Morris, Rose Trees, Liliiums, Perennials, etc. At Stevens's Rooms, 38, King Street, Covent Garden.

FRIDAY—

Imported and Established Orchids, at 67 and 68, Cheapside, E.C. By Protheroe and Morris, at 12.45.

Maize.*

It is symptomatic of the change in appreciation of relative values that the Right Hon.

Louis Botha, to whom Mr. Burt-Davy's book is dedicated, holds the dual post of Prime Minister and Minister for Agriculture of the Union of South Africa. The fact is significant not only because of General Botha's keen interest in agriculture, but also because it shows that South Africa is alive to the great problem which lies before it—that of establishing agriculture before the other great South African industry passes into an inevitable, albeit as we hope far-distant, decline.

Mr. Burt-Davy, in his capacity of Government Agrostologist and Botanist in

the Department of Agriculture of the Union of South Africa, has had great opportunities for gaining knowledge of the plant about which he writes, and he has used those opportunities well.

That the Maize plant is worthy of the extended treatment meted out to it in this work will be evident when it is realised that Maize stands first in productiveness of all crops whatsoever. The total world's crop is no less than 3,875 million bushels, with Oats a far outpaced second (3,532 million bushels), and Wheat a close third with 3,428 millions, and Rice 3,203 millions, winning easily from Rye and Barley, the annual yields of which are considerably less than half that of Maize. In spite of the enormous production of Maize the world absorbs it readily, and although the United States raises 2,927 million bushels per annum, it consumes almost the whole of that vast amount, and exports only 1½ per cent. This means, of course, that the consumption of Maize by the people of the United States is enormous; as indeed is the case, for no less than 25½ bushels of Maize are consumed on the average by an individual American. Indeed, as the Professor of Economics of Harvard has said, Maize is the leading product of America.

The yield from the Maize industry is estimated as greater by five million pounds sterling than the yield from the manufacture of iron and steel. Mr. Burt-Davy, with his eye on these facts, aspires to make of South Africa a great Maize producing and exporting country—in fact, the Maize granary of Europe. So far as climate goes South Africa enjoys an advantage over the States; for the percentage of moisture in the grain exported is 5 per cent. less than that in American-grown Maize.

Needless to say our knowledge of the origin of this plant is meagre in the extreme. That it originated in America appears to be certain; but from what wildling the Maize has sprung is unknown. Some hold that it is descended from the Teosinte plant (*Euchlaena mexicana*), and affording some measure of plausibility for this origin is the fact that Teosinte is the only known plant which hybridises with the Maize. Support of an indirect nature is also supplied by the results in later generations of crossing these two plants. As Mr. Burt-Davy points out, the first and second generations of the cross consist of plants which for the most part resemble Teosinte. This, we think, was to be expected if the Maize has developed by the loss of a considerable number of factors, and if, therefore, the several characters of Maize are due to the absence of a number of factors.

From the practical point of view these cross-breeding experiments have proved useless for the immediate purpose for which they were instituted, that of conferring on Maize the greater resistance to chlorosis possessed by Teosinte.

Mr. Burt-Davy recognises clearly that if South Africa is indeed to become the Maize granary of Europe it must improve its methods of cultivation. He

shows us on the one hand that heavy crops may be and are produced in suitable parts of the Union—for example, yields of 35½ to 42½ bushels have been obtained on the Government Experiment Farms—and on the other hand that the average yield in the Union is so low as 14-18 bushels. In contrast with this poor result Mr. Burt-Davy puts the yields obtained in America—where good farmers grow 75-100 bushels of Maize per acre, and where without manure the average yield is half as much again as the average in South Africa. Nothing is more impressive in Mr. Burt-Davy's comprehensive account of the Maize than the description of the amount of systematic labour which has been and is being devoted in the United States to the further improvement and increase of the crop. It is in applying such labour and system that the author hopes to do for South Africa what the many workers and investigators have done for America.

That this is in course of achievement is shown by the excellence of the chapters on the "Improvement of Maize by Breeding."

To review the many aspects of the Maize problem treated of in this volume is beyond the space at our disposal, and we must conclude by congratulating both Mr. Burt-Davy on the success of his great undertaking and the South African Government on having the services of such a hard working and able agricultural officer as the author of this work.

Coloured Supplement.—Our Supplementary Illustration is reproduced from Mr. CORY's souvenir volume of the Royal International Exhibition, and represents the pretty hybrid *Cypripedium Maudiae*. It is from a cross between *C. callosum* Sanderae and *C. Lawrenceanum* Hyeatum ♀, and was first exhibited by Messrs. CHARLESWORTH AND Co. in 1900.

SALE OF THE WESTFIELD ORCHIDS.—The sale of Mr. FRANCIS WELLESLEY's small but choice collection of Orchids was conducted by Messrs. PROTHEROE AND MORRIS, at their rooms, on the 2nd and 3rd inst., and the event resulted in a notable gathering of orchidists. The 500 lots were offered without any reserve and realised £1,244. Fine varieties of *Cattleya Mendelii*, *C. Mossiae* and other species, and albinos, realised fair prices. The seedlings, both in store pots and small single plants, sold well; so also did showy *Isaelio-Cattleyas*. *Cypripediums* generally were cheap, although a few of the best and rarest realised high prices.

SURVEYORS' INSTITUTION.—The next ordinary general meeting of the Surveyors' Institution will be held in the lecture hall of the Institution on the 20th inst., when a paper will be read by Mr. DAWBARN YOUNG, entitled "Comments on the Land Enquiry Committee's (Urban) Conclusions." The chair will be taken at 8 o'clock.

FINCHLEY CHRYSANTHEMUM SOCIETY.—At a recent meeting of this Society held at the residence of the President (J. J. WARD, Esq.), Mr. E. J. FROOME was appointed secretary, to succeed Mr. W. J. DRUETT.

NATURE RESERVES IN CUMBERLAND.—With the object of protecting the local fauna in Cumberland a committee has been formed, with the Speaker as president, to set apart tracts of

* *Maize: Its History, Cultivation, Handling, and Uses with Special Reference to S. Africa.* By Joseph Burt-Davy. Pp. 831, illustrations 245. (Longmans, Green and Co.) 25s. net.

natural ground as reserves, one such tract, Kingmoor, near Carlisle, having been already secured. A "watchers' fund" to provide keepers for such reserves is being formed, and a close watch is to be kept on nesting ravens, peregrines, and buzzards throughout the country.

APPOINTMENT TO THE ROYAL BOTANIC SOCIETY.—MR. GEORGE KELF, gardener to A. W. MERRY, Esq., Danesbury, Hertfordshire, for the past six years, has been appointed head gardener to the Royal Botanic Society, Regent's Park. Before going to Danesbury, Mr. KELF was gardener for a number of years to Miss ADAMSON, South Villa, Regent's Park.

PRESENTATION TO MR. MATTHEW TODD.—On the occasion of the attainment of his diamond jubilee in the seed and florist trades, and to celebrate his appointment as a Justice of the Peace for the county of Midlothian, Mr. MATTHEW TODD, head of the Edinburgh firm of TODD AND Co., was made the recipient of a testimonial subscribed to by a large number of his friends to mark their appreciation of his services to horticulture, and of the honour conferred upon him. The presentation, which took the form of a handsome barograph and a purse of sovereigns, took place in the presence of a large gathering in the Royal British Hotel, Edinburgh, on the 3rd inst. Mr. DAVID KING, Murrayfield, president of the Scottish Horticultural Association, and one of Mr. TODD's oldest friends in the trade, made the presentation. In thanking the subscribers Mr. TODD drew many interesting comparisons between the conditions obtaining in the seed and florist trades now and sixty years ago, and gave an interesting résumé of the progress which both businesses had made in that time. A number of ladies and gentlemen contributed songs and recitations in the course of the evening.

HYACINTH SMUT.—Miss IVY MASSEE contributes to the *Journal of Economic Biology* an interesting account of her researches on the smut fungus, *Ustilago Vaillantii*, Tul., which is a parasite of various Liliaceous plants—*Scilla bifolia*, *Muscari comosum*, *Hyacinthus romanus*, and others. Miss MASSEE has proved by infection experiments the correctness of the view put forward originally by Mr. GEORGE MASSEE, that infection only occurs in the seedling stage. The spores in contact with seedlings germinate, gain entrance to the plant, and the mycelium takes up its position in the cushion or rudimentary stem of the young plant. There it remains and perennates. The mycelium enters the flower-stalk at an early stage, grows as it grows, and finds its way into the anthers of the flower. There it develops rapidly, and as a result the anthers contain smut spores instead of pollen. In rare cases spores are formed also in the ovules. Attempts to infect healthy anthers having failed, Miss MASSEE concludes that, as is the case with certain smuts of cereals, the plant is attacked only in the seedling stage.

SELF-STERILITY OF CHERRIES.—Investigations carried out at the Oregon Agricultural College show that the following varieties of Cherry are self-sterile:—Bing, Black Republican, Black Tartarian, Coe, Early Purple, Elton, Knight Lambert, Major Francis, May Duke, Napoleon, Rockpost, Waterhouse Williamette, Windsor and Wood. Of these some—for example, Bing, Lambert and Napoleon, the three chief varieties cultivated in Oregon—are inter-sterile, that is, they do not set fruit when pollinated either with their own pollen or with that of the other varieties. The best pollenisers are Black Republican, Black Tartarian and Waterhouse; but Coe, Early Purple, Elton, Major Francis and Wood are also good. It is noteworthy that according to these observations some of the Duke class of Cherry are capable of

pollinating certain of the Bigarreau class, and that some Bigarreaus set fruit when pollinated with the pollen of varieties of *Prunus Cerasus* (the sour Cherry). Hence it would appear that inter-sterility does not depend on degree of relationship.

MAIZE IN ARGENTINA.—The Board of Agriculture and Fisheries has received the following telegram from the International Agricultural Institute: "The estimated production of Maize in Argentina is 177,158,000 cwts., or 80.2 per cent. above last year's production."

THE "THOMSON" CHALLENGE TROPHY.—The Silver Cup illustrated in fig. 111 has been presented to the Royal Caledonian Horticultural Society by Messrs. WILLIAM THOMSON AND SONS, LTD., Clovenfords, and will be offered at the autumn exhibition for the best exhibit of six bunches of Grapes. The trophy, which must be won three times by a competitor before becoming



FIG. 111.—THE "THOMSON" CHALLENGE TROPHY FOR GRAPES.

his property, is to take the place of the Silver Cup offered by Mr. W. H. MASSIE, of Edinburgh, and won outright last year.

EELWORM IN NARCISSUS BULBS.—Experiments carried out by Mr. T. R. HEWITT and published in the official *Journal* of the Department of Agriculture, Ireland (January, 1914) claim to show that eelworm in Narcissus bulbs may be destroyed by soaking the bulbs in 5 per cent. copper sulphate. It is stated that the solution penetrates readily and kills the eelworm. The statement is very remarkable and requires substantiation. If it proves true it will constitute not only an observation of considerable service in practice, but also a discovery of very great scientific interest, for, as is well known, copper sulphate is exceedingly poisonous. Yet it is claimed that this poison penetrates the tissues of the Narcissus and destroys the eelworm without damaging the plant. We should advise extreme discretion in the use of this method, in spite of the good results which are claimed for it; for, although open to conviction, we are at present entirely sceptical as to this beneficent discrimination in destruction on the part of 5 per cent. copper sulphate.

RUST-PROOF ASPARAGUS.—An interesting account is given by Mr. J. B. NORTON, of the U.S. Department of Agriculture, in *The American Florist*, of the attempts which are being made to breed rust-resistant varieties

of Asparagus. The cultivation of Asparagus in America received a severe check in 1895 when the Asparagus rust (*Puccinia asparagi*) made its appearance. Introduced from Europe into New York State, it spread rapidly and reached the Pacific coast in five or six years. The only varieties which proved relatively immune were Palmetto and Argenteuil. In recent years attempts have been made to produce from the more resistant strains a race of Asparagus which shall prove completely immune to rust. Preliminary tests of varieties in cultivation showed that the most resistant male plant is New American, and the most resistant female Reading Giant. Crosses between these forms appear to show that the power of resistance to rust is inherited. By subsequent selection strains with a high degree of immunity have been obtained. Of species allied to Asparagus officinalis, the Chinese *A. devaricus* is nearly immune, and has given fertile hybrids when crossed with a rust-resisting male of the common species.

ORANGE FLOWER CULTIVATION IN FRANCE: DISCUSSION IN THE CHAMBRE.—Speaking

in the Chamber of Deputies on the 25th ult. in favour of an increased Customs tariff on certain essential oils, M. GILLETTE-ARIMONDY gave some interesting details on the culture of the Bigaradier, or Bitter Orange tree, the species cultivated for the production of "neroli" and "petit grain" perfumes. He produced specimens of the flowers and leaves of this tree, remarking that oil of neroli was distilled from the former and petit grain from the latter. This tree is only grown in France in the Alpes Maritimes district (the Riviera), and flourishes at an altitude of not more than 100 to 200 yards above sea level, in well-sheltered and sunny spots. It is necessary to dig the soil thoroughly, 8 inches deep at least, manure liberally and water twice or oftener during the dog days. The manure should be of nitrogenous nature. No other crop can be raised between the trees. The malady known as "fumagine" (due to a small insect like the cochineal) must be fought against by anti-cryptogamic treatment, and the *Crisomphalies mindi*, the worst foe of the Orange tree, destroyed by cyanhydric washings. Chilly spring mornings are to be feared; a cold April night may injure or even ruin a crop. Briefly, the culture is full of risk. Picking begins in April, and is at its height in May. Double ladders are set up around the trees. Men mount the highest rungs; the women work below, the children nearest the ground. Expert pickers use both hands; others have to use one hand to steady themselves on the ladder. All wear an apron, tied up in front to form a pocket or pouch, into which the flowers are thrown. An expert male picker, if the trees are well flowered, may gather 30 lb. or more a day; women seldom exceed 20 lb., children 8 to 12 lb. Piecework has always been the rule. A penny a kilogramme (about 2 lb.) was the rule a hundred years ago; it has been increased to 1½d. and to 2d., and last year a few growers paid their pickers 2½d. per kilo. The trees are planted in regular rows, each about 7 feet from the others. This gives 400 trees per hectare, and as the average yield per hectare is four tons, the production per tree may be taken as about 20 lb. Ten years of preliminary work is necessary to form an Orange grove, and the trees only bear their maximum of flowers when 25 years of age. The total French crop of Bitter Orange flowers is between two and three thousand tons, so that the amount of home-produced neroli oil is from two to three tons. Much is imported from Paraguay and used in French perfumery; the exact amount is not separately stated in the French Custom statistics. M. GILLETTE-ARIMONDY stated that the actual yearly cost of cultivating a hectare of Bigaradiers and gathering the flowers, distilling and selling, was 1,800 fr. (£72), and that

at recent prevailing prices the peasant only obtained 1,400 fr. (£56) for the produce. This was because the price of neroli oil was kept low by the imported article. Petit grain oil is produced from the leaves and twigs annually lopped from the Bigarediers, about 130 lb. of these being required to produce a pound of oil. France annually produces between 10 to 12 tons of this product, while from 30 to 40 tons are imported, mostly from Paraguay. A by-product of the Bigaredier is Orange-flower water. A ton of flowers, the speaker stated, would produce £6 to £8 worth of water, in addition to the 2 lb. of neroli oil already mentioned. Pure neroli oil is worth (cost price) £14 (350 fr.) per kilo. Some of M. GILLETTE'S figures were disputed by his critics, but as an increase in the Customs duties on the oils was voted by the Chamber of Deputies his asseverations were evidently accepted by the majority of his colleagues.

FORESTRY: A PLEA FOR WORKING PLANS.—

A correspondent writes us as follows:—"If one were to believe the statistics issued annually by the Board of Agriculture and Fisheries, the area of land growing trees is increasing. This may be all very well on paper, but it does not convince the practical man who is engaged in forest valuations all over the country. Full well does he know that the growing stock of timber is largely overdrawn, and year by year this over-draft is increasing until the vanishing-point is almost in view on most of the largest estates in the country. It is questionable, indeed, if there are half-a-dozen estates in Great Britain where the annual yield of timber per acre is known even approximately. There are no form factors recognised in this country, yet it would not be a difficult matter to ascertain how much timber is annually produced upon any estate. In an estate embracing 1,000 acres of woodlands, where the annual increment worked out at 40 cubic feet per acre, the owner would know that he could dispose of 40,000 cubic feet of timber every year without making any drain upon the growing stock of timber. We have no rule at present for the disposal of growing timber, hence the great necessity that exists for making a forest working plan upon every woodland property. This would serve a double purpose, for the owner would be aware of the quantity of timber he could sell, and the timber merchants in the vicinity would also know how much timber would be disposed of from every property in the neighbourhood, and could prepare their plans accordingly. As matters are at present this is impossible owing to the haphazard fashion in which home-grown timber is placed upon the market—a famine and a glut alternating at irregular intervals. Another point to which attention may be directed is the well-known fact that whenever a change of management takes place upon an estate the new management endeavours to go one better on the record of his predecessor, and in all probability both dispose of more timber than the woods under their charge are growing. To overcome the uncertain and most unsatisfactory system now prevailing on woodland estates, nothing could be more beneficial than for proprietors to adopt forest working plans. By doing so they would find that it would not only be for their own benefit, but also for the benefit of the wood merchants as the latter could afford, and would give, better prices than they now do for the trees they buy."

PLUM CULTIVATION IN CANADA.—Mr. W. T. MACOUN, Dominion Horticulturist, Central Experimental Farm, Ottawa, has published in Bulletin No. 43 a revised edition of his useful account of the cultivation of the Plum in Canada. He points out that the parentage of Canadian Plums is very mixed, the Plums of the present day being derived from (1) the European Plums, which have or may have sprung from *Prunus domestica*, *P. insititia* and *P. cerasifera*;

(2) the Japanese (*P. triflora*); (3) the American (*P. americana*, *P. nigra* and *P. hortulana*); (4) the Chinese *P. Simonii*; and (5) the North American Western Sand Cherry (*P. pumila* Besseyi). The European Plums succeed best in the more genial parts of Canada—for example, in S.W. Ontario—and the Niagara peninsula, and also in Quebec, along the south shore of the St. Lawrence, on Prince Edward Island, and in the warmer parts of Nova Scotia and New Brunswick. They do extremely well in Vancouver and the lower mainland of British Columbia. In the prairie provinces, however, the European Plums are found to lack hardiness and are winter-killed. The failure appears to be due—at Ottawa, at all events—to low winter temperature than to the destruction of flower-buds by dry, cold winter weather and spring frosts. Japanese Plums introduced in 1870 have been widely planted, but though prolific and of good keeping quality and appearance, they are generally only of medium quality; nor are the Japanese Plums, as a rule, so hardy as the European. The Simon or Apricot Plum, *Prunus Simonii*, probably of Chinese origin, was introduced into America from France about twenty years ago. Though of service, perhaps, for cross-breeding, it is not recommended for planting. The best varieties of American Plums derive from *Prunus americana* and possess the advantage of blooming later than those from the Canadian Plum (*C. nigra* Ait.). Having regard to the fact that the American Plum has been cultivated only for sixty years the improvements which it has undergone are remarkable. Nevertheless, there is yet room for further improvement in the skin, which is apt to be tough and thick, and in the flavour, which, however, is fairly good. Mr. MACOUN predicts that from among cultivated varieties of *P. nigra* will be found the Plums for the colder parts of Ontario and Quebec. The progeny of this species (or geographical form of *P. americana*) flower early and ripen quickly. Of hybrid Plums, Mr. MACOUN mentions that few of Burbank's raising have proved valuable in the severe climate of Canada. Omaha, a hybrid between Japanese and americana, is an early Plum which is proving useful at Ottawa, and it is suggested that further breeding between the cultivated varieties of the several species may result in forms which will grow in yet more northerly districts of the Dominion.

POISONING BY RHODODENDRONS.—A recent case of poisoning of cows by Rhododendrons is reported in the *Journal* of the Board of Agriculture. The article cites previous cases of poisoning of sheep, calves, and goats as a result of eating the leaves of *R. ponticum*, but, unlike the present case, the results were not mortal. Many species of Rhododendron are known or reputed to be poisonous. Thus *R. ferrugineum* causes frequent loss among grazing animals; *R. californicum* is said to be poisonous to sheep in Oregon; *R. chrysanthum* is known to be poisonous, as also is *R. cinnabarinum*, as reported in HOOKER'S *Himalayan Journals*. Of the properties of Rhododendron arboreum, HOOKER wrote (op. cit.) that in East Nepal "Rhododendron arboreum becomes plentiful at 5,000 to 6,000 feet (East Nepal), forming a large tree on dry, clayey slopes. . . . In the contracted parts of the valley the mountains often dip to the river-bed in precipices of gneiss, under the ledges of which wild bees build pendulous nests looking like huge bats suspended by their wings; they are 2 or 3 feet long and as broad at the top, whence they taper downwards; the honey is much sought for except in spring, when it is said to be poisoned by Rhododendron flowers, just as that eaten by the soldiers in the retreat of the Ten Thousand was by the flowers of *R. ponticum*."

PUBLICATIONS RECEIVED.—*British Flowering Plants*. By Mrs. Henry Perrin and Prof. G. S. Boulger. Vol. I. Complete in four volumes. (London: Bernard Quaritch. Price twelve

guineas.—*Transactions and Proceedings of the California Association of Nurserymen*. Secretary, Mr. Henry W. Kruckeberg, Los Angeles. Price 50 cents.—*Les Amis de Roses*. Journal de la Société Française des Roséristes. M. Albert Bontin, 67, Cours de la Liberté, Lyon.—*La Taille Lorette*. Par M. Louis Lorette. (Versailles: Librairie du Journal "Jardinage.")—*The Pershore Fruit Growers' Year Book*. Published by the Pershore and District Fruit Growers' and Market Gardeners' Association. Secretary, Mr. E. P. Whiteley, Mylor, Pershore, Worcestershire. Price 6d.—*The British Fern Gazette*. Published by the British Pteridological Society. Secretary, Mr. C. T. Druery, 11, Shaa Road, Acton, London.—*Annual Report of the Gardens of His Highness the Maharana Sir Fateh Singhji Bahadur, of Udaipur, Mewar*.—*Fellowship Books*. Edited by Mary Stratton. Flowers by J. Foord. (London: B. T. Batsford, Ltd.) Price 2s.—*Union of South Africa: Report of the Department of Agriculture*. (Cape Town: Cape Times, Limited.) Price 9s. 6d.—*Summary of the Meteorological Observations and Daily Records of Sunshine and Rainfall made at Victoria Park, Swansea, during the Year 1913*.—*Colonial and Foreign Statistics*. (London: Board of Agriculture and Fisheries.) Price 7½d.—*The San José and Oyster-Shell Scales*, by L. Cæsar; and *Box-Packing of Apples*, by E. F. Palmer. (Toronto: Ontario Department of Agriculture.)—*Coconuts: Experiments at Maha-Illuppallama*. November, 1913. (Colombo: Department of Agriculture, Ceylon.)—*Wissenschaftliche Ergebnisse der Deutschen Zentral-Afrika-Expedition, 1907-1908*, unter führung Adolf Friedrichs. Band II. (Leipzig: Klinkhardt and Biermann.) Price M. 4.20.

VEGETABLES.

RAISING SEEDLINGS.

Owing to wet weather in March the work in the kitchen garden is greatly in arrears, especially in such gardens as ours, where the soil is heavy and retentive. Seed sowing has been out of the question. The advantages of raising the seedlings under glass and planting out immediately favourable weather comes will prove a great gain this year to all who have practised it. The majority of vegetables answer well to such treatment, and better results always follow this method on cold stiff ground, let the character of the season be what it may.

Assuming that the ground has been properly prepared by manuring, trenching, or digging, take the first opportunity to rake the surface level for receiving the young plants, and all hands that can be spared should be employed to set the crops into their permanent quarters. Boards should be employed to save treading the ground. Peas and Broad Beans give far better returns when treated in this manner. Raise them in a cool place, never allow them to become drawn, and thoroughly harden them before planting. Slugs are likely to prove troublesome this spring, and the best preventive is a good coating of finely-sifted cinder ashes placed around the crops. Peas should be staked and protected from birds at the same time.

Cauliflowers, Brussels Sprouts and Cabbages should be pricked out into shelters just before the first rough leaves develop. The best method of ensuring a good crop of Onions is to sow in boxes and plant the seedlings out during April, as the plants will then be safe against attacks of the Onion fly, and the crop can be harvested much earlier than if sown in the open. Both Runner and Dwarf Beans for early crops are much better raised in cold frames, pots, or boxes, and planted out as soon as danger from frost is past. These crops will be found to make much better headway than if sown in the open garden.

AUBERGINE (EGG PLANT).

THE large, purple variety of Aubergine is much the best. The plants should be grown in a hot, moist house, and saved from check at any stage. Three transplantings are necessary—first, from the seed-pans to small 60-sized pots; later, when plenty of roots are made, into 6-inch pots; and, finally, into 8-inch pots, in which they will fruit. Let the pots be well drained, and for compost use a mixture consisting of three parts loam and one part finely-sifted, well-decayed cow manure. Make the soil moderately firm, and after a good set of fruit is assured afford the roots a liberal supply of manure-water. The foliage should be well drenched with tepid water morning and afternoon to keep down attacks of red spider. For fruiting late in the summer the plants may be grown in cold frames or pits, and good results are often obtained from plants grown in the open if strong specimens are put out on a border facing south and well protected from winds. *E. Beckett.*

TREES AND SHRUBS.

A STATELY TULIP TREE.

In the *History of Horsham and Antiquities* (second edition, 1889), the gifted authoress, the late Miss Dorothea Hurst, refers to the existence of a Tulip tree (*Liriodendron tulipifera*), said to be one of the finest in England, growing in the grounds of Horsham Park, the ancient seat of the Hurst family. Horsham Park is situated between the northern confines of the town and the railway station; it is interesting to the gardener because it contains a rich collection of trees and tall evergreen shrubs which border the eastern boundary of the park, separating it from the highway leading into the town. The four boundaries of this fine, rectangular park form a plateau of rich grazing verdure, encompassed by a continuous bordering of tall, old forest trees, chiefly consisting of Oaks, Elms, Beeches and Scotch Pines, on its three sides, whilst the pleasure grounds already indicated surround the substantial mansion, situated in close contiguity to the highway. The house is a good specimen of the solid brickwork with stone facing of the latter part of the seventeenth century. It is in front of its eastern façade that the famous Tulip tree is growing, and only separated by the broad carriage drive running parallel with the substantial stone-built boundary wall. There appears to be no record of the planting of the specimen in question, but it is regarded as one of the first consignments of the plants introduced from Canada about 250 years since. As seen from the highway (North Street) the tree, standing out in bold relief, cannot well fail to attract the eye of the least observant, especially when it is in flower, some of the blooms being carried over 100 feet high. The circumference of the bole at 4 feet from the ground is 16 feet, and at the base the assemblage of surface roots, radiating around and forming an admirable pedestal-like support to the symmetrical bole, with its gigantic branches, having a spread of about 300 feet in circumference, present an effect of no ordinary character. A somewhat peculiar characteristic connected with the fruition of the Tulip tree is that it retains during the winter its crop of seed vessels, and the dark-brown colour of their involucre presents a somewhat sombre and not over-ornamental or picturesque feature. In addition to the Horsham Park specimen there are two or three others within the precincts of the town of considerable age and size, but not nearly approaching the one in question, while at Leonardslee, so famous for its Alpine and wild gardens, situated about five miles distant, there is a specimen rivalling that at Horsham Park, both in height and other proportions. *William Gardner, Horsham.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE PATENTS AND DESIGNS ACT.—As your readers are aware, the amendment of the Patents and Designs Act is now under the consideration of Parliament. We have already received a number of valuable suggestions from our Fellows on the subject, but as the Institute represents inventors generally, we shall be obliged

the exhibits are the outcome of selective triumphs contributed from many sources, foreign as well as home. We cannot fail to note that the plants themselves include far more exotics than native ones, and that in no case can any grower claim that he is only indebted to the British Isles and British growers for his acquisitions. On further examination we shall find, too, that most of the magnificent results are due to crossings between different species or genera, so that to a very large extent an element of artificiality is introduced so far as Nature pure



FIG. 112.—TULIP TREE (*LIRIODENDRON TULIPIFERA*) AT HORSHAM PARK.

if you will afford us the opportunity of appealing to all those who have not yet communicated their views to us. *Walter F. Reid, Chairman, Institute of Inventors, 20, High Holborn, London.*

THE BRITISH FERN CULT.—It is a great pity that plant lovers in general fail to profit by the fact that in some peculiar way Nature has endowed Great Britain with an altogether unique branch of horticulture. If we examine into the history of all the innumerable branches of plant culture to which we owe the wonderful wealth of flowering and foliage plants exhibited at our great shows, we find in every case that

and simple is concerned. The British Fern lover, on the other hand, who has fairly mastered the capacity of variation in the few native species indigenous to Great Britain, Ireland, and the Channel Islands, can only feel regret that, despite a sort of general recognition shown in the fact that few gardens are without some specimens of the common native Ferns, a proper recognition of their wonderful variation into more beautiful types is very rare indeed. At the Great International Show of 1912, so many splendid forms were shown both by the amateur and the trade, and these were so greatly admired, that one would have expected wider recognition of these

purely native and perfectly hardy plants. Those wonderful exotics, *Nephrolepis exaltata*, and allied species, in their recent developments, are sold by the myriad, although they are tender and require warmth, while the equally beautiful, and often far more diverse forms of our Shield Ferns, Lady Ferns, Lastreas, Hartstongues, and other hardy variations are rarely seen in the places they are fitted for, such as cold conservatories and shady nooks in gardens. The connoisseur, indeed, finds it extremely difficult to understand why multitudes of people, when visiting the ferny districts of Great Britain, do their best to denude them by digging up the Ferns or pulling them out of the old walls and rocks, when for a few pence, in many cases, they could obtain far more beautiful variations or "sports" from a nursery near home. Anyone who has seen a well-grown specimen of one of our best frilled and fringed Hartstongues, or one of our beautifully crested, feathery Lady Ferns—or, better still, a choice Soft Shield Fern of the finest type—will at once admit that our wonderment is fully justified. It is not as though the material is scanty. Out of some forty odd native species Nature alone, and unaided by man's selection, has given us hundreds of different types, feathery, tasselled, or both combined, in the most curious, beautiful, and interesting ways, these hundreds being largely made up of Hartstongues, Lady Ferns, Shield Ferns, and Lastreas, all hardy and of the easiest possible culture. All these varieties have either been found wild, or have been reared from the spores of wild plants, and by selection of better types which have appeared among their offspring. It is undoubtedly to these latter, the selective improvements, that the most beautiful of all belong; but they are mostly the immediate progeny of the wild "sports," and without any selection at all the wealth of fine wild original "sports" runs well into four figures—one and all found within the limits of Great Britain. To foster these beautiful native plants the writer in recent years has undertaken the editorship of the *British Fern Gazette*, published quarterly by the British Pteridological Society for the benefit of its members, and he would be happy on receipt of a postcard to send a copy of the *Gazette* to anyone contemplating membership. *Chos. T. Druery, V.M.H., F.L.S., 11, Shaa Road, Acton, W.*

CYANIDING TO DESTROY MEALY BUG.—The remarks of your correspondent, Mr. Shakelton (page 223), may create a wrong impression in the minds of many of your readers as to the exact point at issue. I do not think that Mr. Shakelton has proved anything new by informing us that he has been more or less successful in killing hugh with cyanide of sodium of 130 per cent. strength. As a matter of fact, it is not only probable but quite possible that the sample he used was considerably below the standard quoted by me, viz., 98 per cent. pure cyanide of potassium. It would, I think, be interesting and instructive if your correspondent would consult some qualified analytical chemist and ask him to define in plain English the meaning of the term so frequently used with samples of cyanide sodium (130 per cent.). I adhere to my original opinion, that the great majority of failures may be traced to the want of a proper standard of purity in the materials used. In support of this I will quote a case in point. A very intelligent and clever amateur in this neighbourhood commenced cyaniding many years ago with varying degrees of success, but instead of purchasing commercial sulphuric acid he used instead a preparation as supplied for electric light accumulators. Having run out of this requisite he sent to me for a supply of acid to enable him to cyanide his conservatory. I need hardly state that there has been no more cyaniding done there since. Before any success could be secured, it was necessary to increase the dose of cyanide to treble the quantity required, and when acid of the proper standard was used the gas was so strong that practically every plant in the house was ruined, and several climbers killed to the ground. Mr. Shakelton should not be over-sanguine

as to the efficacious results to be obtained from sealing over the eggs of mealy bug in the cracks and crevices of vine rods with styptic or any other adhesive material of a similar nature, or he will, I fear, like myself in previous years, suffer disappointment. So long as the vines remain dormant and the seals perfect, little or no change takes place in the eggs, but as soon as the vines begin to grow freely and the wood and bark expand sufficiently to split the seals then the eggs quickly hatch, and if some effectual means are not adopted at once to check the spread of the insects they increase very rapidly, and in a few weeks defy all attempts to exterminate them, except of course that never-failing remedy, summer cyaniding. Mr. Shakelton appears to be somewhat surprised that those of your correspondents who claim success in the use of hydrocyanic acid gas should have any mealy bug in their houses, but I fail to see why he should, as I am sure he would be the first to admit that it is next to impossible to exterminate bug in a mixed house of stove plants where it has gained a firm foothold, unless there is sufficient labour to admit of a daily inspection of every plant and climber in the house, and there are few gardeners in such a fortunate position nowadays. Besides, the stove is one of the most difficult houses to cyanide successfully, owing to the nature of many of the plants and the adverse climatic conditions of the house, and as this operation of extermination should be carried out in the growing (and breeding) season, one readily understands what a difficult matter this is to accomplish. But what we do claim for hydrocyanic acid gas is that provided the conditions of the house are proper there is no other insecticide on the market to equal it for efficiency and safety. *Jas. Fulton.*

STATE FRUIT FARMS.—There has been a good deal of discussion on the subject of the necessity for improvement in our methods of agriculture and horticulture, but up to the present very little has been done by the State in this direction. The paucity and poor quality of English-grown fruit has also been much bewailed; and I should like to make a suggestion in this direction, which might be taken up with advantage by the Board of Agriculture. It is that the Government should institute in some of the leading fruit-growing counties (Kent, Gloucestershire, Herefordshire, and Devonshire) small stations of about twenty-five acres, to be laid out in sections for the experimental growing of different kinds of fruit. Each station should be placed in the charge of an expert in culture, and systematic planting, pruning, eradication and prevention of pests, manuring and cropping, could be demonstrated in the case of each kind of fruit. The stations should be open at all times to inspection and examination by those wishing to learn, and would provide valuable centres for the dissemination of knowledge. Half-a-dozen such centres, even if the land were acquired by purchase, would not be expensive; they would be welcomed by those who required guidance in the growing of fruit, and if well managed might be the means of checking the import of foreign fruit, a great cause of which is the inferior quality of that at present grown in England. *E. Molyneux.*

THE N.E.H.S.—I am very pleased to see Mr. Jackson's contradiction of my statements, for this serves my purpose admirably and makes me bring forward some of the facts. I feel sure the Council is unaware of how in committees things go on which are not to the welfare of the society. (1) A lecture was arranged to be delivered at York by Dr. Russell, of Rothamsted. About a score of persons attended! This was simply due to the lecture being given on the very night of the annual meeting of the York Florists' Society. A little tact and a little of that spirit of co-operation which is so lacking would have enabled local gardeners and amateurs to attend the lecture. (2) On October 22 the then secretary of the Northern Fruit Congress was requested to see the Hexham local committee and talk over a scheme of co-operation, if not amalgamation. While the negotiations were proceeding satisfactorily matters were completely taken out of the secretary's hands; new negotiations

arranged with the inevitable result—the union movement was nullified. This surely is lack of courtesy and tact. (3) As to there being no policy of isolation, I ask who prevented the then so-called editor of the N.E.H.S. *Journal* from publishing an editorial last year advocating "co-operation" among northern societies? I refrain from giving more of these incidents, for the reason that only from a sense of duty to others have I entered on this (to me) rather unpleasant criticism of the N.E.H.S. If Mr. Jackson will publish the attendances of the council and committees of the last six months it will soon be seen how it is that there is such a Leeds bias. The N.E.H.S. is too good a thing, and many of us have spent too much money and time in trying to make it a good thing, to be spoiled by what I must call a little and a local policy. *J. Bernard Hall.*

RAINFALL.—The rainfall in these gardens during February amounted to 4.20 inches, and there were 18 rainy days. During March 5.02 inches fell on 25 days. In March, 1913, the rainfall amounted to 5.02 inches, and there were 25 wet days. Garden and farm work has been much delayed in consequence of the wet spring. *G. S., Hartland Abbey, Devonshire.*

—The following record of the rainfall in the months of January, February and March for the past three years may be of interest to your readers. 1912:—January 2.81 inches on 14 days, February 2.35 inches on 17 days, March 4.41 inches on 19 days. The total rainfall was 9.57 inches, and the number of wet days 50. 1913:—January 4.73 inches on 21 days, February 1.23 inches on 11 days, March 4.98 inches on 15 days. Total rainfall 10.94 inches, and 47 rainy days. 1914:—January .72 inch on 10 days, February 4.62 inches on 16 days, March 5.16 inches on 25 days. Total rainfall 10.50 inches, registered on 51 rainy days. *Thos. Tyson, Wykehurst Park Gardens, Haywards Heath.*

—Our rainfall for February was 10.95 inches, but the amount is not a record for this district. In March, 1913, the fall totalled 10.43 inches; in August, 1912, 11.89 inches; in December, 1912, 11.26 inches; and in March, 1912, 10.53 inches. In March of the present year the amount recorded was 7.52 inches. Our records for the past two years may be interesting. (The rain gauge is 700 feet above sea level. Latitude, 51° 44' 45" N.; longitude, 309' W.)

	1912.		1913.	
	Wet days.		Wet days.	
January ..	7.68	21	9.70	25
February ..	6.02	23	4.15	12
March ..	10.53	36	10.43	24
April ..	.37	7	9.48	21
May ..	2.16	14	4.63	16
June ..	6.87	21	2.19	10
July ..	6.12	19	.60	7
August ..	11.89	25	2.47	12
September ..	1.26	6	3.83	13
October ..	7.77	17	7.55	18
November ..	3.67	19	7.63	23
December ..	11.26	28	2.77	16

Lewis E. Bailey, Parks Superintendent, Abertillery, Monmouthshire.

JOURNEYMAN GARDENERS' WAGES.—I fully agree with Mr. T. Smith (p. 224) that gardeners are born, not made. The further statement that all who are so born are, like cream, bound to get to the top, will need further explanation. The point is, what does Mr. Smith mean by the top? Does he consider that all men who are to-day working with no consideration of hours, and are not sparing themselves in any way, who are undoubtedly "born gardeners," are at the top, or have any prospects of reaching the top in the near future? Mr. Smith's reference to cream brought to my mind the fact that in many modern dairies a separator is used. I am not a member of the B.G.A. and therefore cannot take up the cudgels on its behalf, but if I may be allowed to make a suggestion, I should advocate that the B.G.A. act as a separator, so far as possible, by accepting only born gardeners as members, and certainly not the aspiring young men so aptly described in Mr. Smith's note. *Roamer.*

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 7.—The exhibition, on the occasion of the fortnightly meeting held in the Vincent Square Hall, Westminster, on Tuesday last, again filled the whole of the building. Orchid lovers found much to admire in the many excellent groups of these flowers, and numerous novelties were submitted for Awards, two receiving 1st Class Certificates and three Awards of Merit from the Orchid Committee.

The Floral Committee recommended one 1st Class Certificate and eight Awards of Merit to new plants, whilst twenty-three groups were awarded Medals.

The Narcissus Committee recommended seven Awards of Merit to novelties, and eight collections were awarded Medals.

The only exhibit of importance in the Fruit and Vegetable Section was a collection of vegetables staged by Messrs. SUTTON AND SONS.

At the three o'clock meeting in the Lecture Room, Mr. C. R. FIELDER delivered an address on "The Cultivation of *Amaryllis*."

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. C. T. Druery, W. J. Bean, C. E. Pearson, C. E. Shea, W. H. Morter, Wm. Howe, J. W. Moorman, George Gordon, John Green, W. P. Thomson, A. Turner, Chas. Dixon, John Dickson, W. Bain, Thomas Stevenson, J. Jennings, J. F. McLeod, W. H. Page, F. W. Harvey, W. Cuthbertson, C. R. Fielder, Jas. Hudson, J. T. Bennett-Poë, E. H. Jenkins, Geo. Paul, R. C. Notcutt and E. A. Bowles.

AWARDS.

FIRST-CLASS CERTIFICATE.

Clematis Armandii (see fig. 113).—An evergreen, Chinese species, remarkable for its handsome foliage, as much as for its profuse trusses of white flowers. The leaves are ternate, glossy, leathery, with three deep-arched veins 6 inches long. The flowers are borne in dense, axillary clusters, each stalk branching and bearing three flowers 2 to 2½ inches in diameter and composed of six to eight segments. It seems closely allied to *C. indivisa*, and it is hoped that it will prove hardy in this country. The flowering specimen shown had received the protection of a cold house. Shown by Hon. V. GIBBS, Aldenham (gr. Mr. E. Beckett). The species was first figured in *Gard. Chron.*, July 8, 1905, as a Supplementary Plate.

AWARDS OF MERIT.

Prunus Blicicana fl. pl.—This is the best double form of *Prunus cerasifera atropurpurea* (*P. Pissartii*). The foliage is prettily tinted, even deeper in shade than the type. The flowers are 1¼ inch in diameter, almost peach-pink in colour and semi-double. The vigorous growths shown were covered with flowers, and the plant promises to be an excellent addition to hardy shrubs. It is an improvement both in size and colour of flower on the variety known as *P. Moseri fl. pl.* Shown by Mr. R. C. NOTCUTT.

Osmanthus Delavayi.—This beautiful shrub is a valuable acquisition from China. It bears small, dark evergreen glabrous foliage, ovate in shape with serrate edge, ½ to ¾ inch in length by ¼ to ½ inch in breadth. Its great beauty, however, lies in the dense, axillary clusters of white, fragrant flowers, which are as long as the leaves, and therefore more showy than in the coarser species. They often number twelve or more in a cluster, and as these are in opposite pairs the flowers have the appearance of being in whorls. The plant shown was 18 inches high, and had been protected by a cold frame, but it is hoped that the species will prove hardy. Shown by Hon. V. GIBBS.

Columnea major glabra.—A handsome, scarlet-flowered stove plant with arching growths, which make it an admirable basket plant. The stems are stout and fleshy; the leaves thick, glossy, ovate-lanceolate in shape, and about 1¼ inch in length by ½ inch in breadth. The flowers are 3 inches long, borne singly in the axils of the upper leaves to form a raceme-like cluster; they twist round on their stalks to face upwards and spread showily from the horizontal or hanging stems.

Anthurium conchiflorum.—A showy hybrid between *A. Scherzerianum* and *A. Chamberlain-*

ianum, with the intense self-scarlet spathe with glossy reverse and twisted spadix of the former species, but the spathe is much larger and broader, and is hollowed out to a shell or saucer-like shape. The foliage is large and handsome, the leaf blade being a foot in length by 5 inches in width. These two were shown by ELIZABETH LADY LAWRENCE (gr. Mr. W. Bain).

Auricula Gordon Douglas.—This is a good addition to the fancy varieties. The colour is a warm yellow, a shade of buff or orange suffusing the margin of each segment. The pip is flat, round and even, and a perfectly-formed disc of pure white meal surrounds the small eye.

Primula Bookham Gem.—From the florist's point of view, this is perhaps the best of the *viscosa* × *Auricula* crosses. The flowers are deep violet-purple, 1½ inch in diameter, with full, overlapping, broad segments and small, white eye. It was shown with the variety Mrs. James Douglas, which was given an award last year, but the flower of Bookham Gem is larger, deeper in colour, and neater in the round, white eye. The foliage is pale-green, downy, slightly serrated in the upper half, and bold in growth. These two were shown by Mr. JAS. DOUGLAS, Great Bookham.

Rose Constance.—In its rich yellow this beautiful Pernetiana hybrid at once challenges comparison with Rayon d'Or. It is not inferior in colour and has the same tinting of crimson on the outer petals. In habit and form it is a great advance. Blooms on 2 feet stems from pot plants were shown; the buds are finely pointed and free from the shallowness which spoils Rayon d'Or as an exhibition variety. The foliage is firm and the growths spiny, whilst the blooms possess a fine fragrance, reminding one of the Teas. Shown by Mr. H. BECKWITH, Hoddesdon.

Rhododendron fastigiatum.—This is a dwarf alpine Chinese Rhododendron allied to *R. intricatum* and *R. violaceum*. It has the same open flowers and spreading stamens as the latter, but is of a purer blue, expands perhaps a little less flat, and is rather smaller, being an inch across. In habit it is one of the dwarfiest, the 4-inch high plant shown being branched and carrying several trusses of from 3 to 5 flowers. The leaves are closely crowded, overlapping in a tile-like arrangement. They are ovate in shape and covered with rusty dots, and vary in length from ½ to 1 inch, and in breadth from ¼ to ½ inch. Shown by Mr. REUTHE, Keston.

OTHER NOTEWORTHY PLANTS.

Syringa pinnatifolia is a pretty, white Chinese Lilac. The axillary flower-trusses are neither very large nor showy, but the foliage is elegantly cut into four or five pairs of small, glabrous, bright-green leaflets, each about ½ inch in length by ¼ inch in breadth, which makes the plant a very graceful addition to a valuable flowering group. Shown by Hon. V. GIBBS.

Clematis montana superba, exhibited by Messrs. JACKMAN, is a very large-flowered form of the type.

Agapetes macrantha, a rare Indian shrubby evergreen, was given a First-class Certificate in 1860. A handsome spray of the curious ribbed flowers, marbled pink and crimson, was shown by W. MAPPIN, Esq., Sheffield.

Primula Listeri, which has the reputation of being the non-poisonous ally of *P. obconica*, was shown by Miss WILLMOTT.

MISCELLANEOUS EXHIBITS.

Col. MARK LOCKWOOD, M.P., Bishop's Hall, Romford (gr. Mr. J. Craddock), was awarded a Silver-gilt Lindley Medal for standard Gardenias. The plants attracted attention by reason of their fine culture, each being a very healthy specimen some 6 feet tall, and bearing plenty of flowers and unopened buds.

Messrs. R. and G. CUTHBERT, Southgate, had the largest individual exhibit, in a collection of forced shrubs. (Silver Flora Medal.)

Messrs. H. B. MAY AND SONS, Edmonton, had a mixed exhibit of flowering plants, including Hydrangeas, the blue-flowered varieties being uncommonly good. (Silver Banksian Medal.)

Messrs. JAMES VEITCH AND SONS, Chelsea, were awarded a Silver Flora Medal for Azaleas, Boronias, Hippeastrums and pans of Alpines.

Messrs. W. CUTBUSH AND SONS, Highgate, showed Roses and Carnations, in addition to their exhibit of Alpines. (Silver Flora Medal.)

Mr. JAMES DOUGLAS, Great Bookham, showed exceptionally fine Auriculas. Each plant was a splendid specimen and the varieties some of the finest in existence. A selection includes Canary Bird, gold with a rim of white paste; Vincent Douglas, purple with cream centre; Mrs. Gardiner, puce with white mealy rim; Lady Veitch, old-rose colour; Harrison Weir and the beautiful new Gordon Douglas, which received an Award of Merit.

Bunches of Zonal-leaved Pelargoniums were displayed by Messrs. H. J. JONES, LTD., Hither Green, Lewisham (Bronze Banksian Medal); and Messrs. H. CANNELL AND SONS, Eynsford.

Mr. PHILIP LADDS, Swanley, Kent, was awarded a Bronze Banksian Medal for a small collection of popular greenhouse flowers.

Messrs. WILLS AND SEGAR, South Kensington, showed an exhibit, as at the last meeting, of Azaleas, Mignonette, Cyclamens, Heaths, and Boronias.

Mr. L. R. RUSSELL, Richmond, showed the scarlet *Clianthus puniceus* finely in a collection of other flowers and ornamental Ivies. (Bronze Flora Medal.)

Mr. GEO. PRINCE, Oxford, exhibited Roses, for which a Silver Flora Medal was awarded.

There were many beautiful exhibits of Perpetual-flowering Carnations, the exhibitors being Mr. C. ENGELMANN, Saffron Walden (Silver Banksian Medal); Mr. H. BURNETT, Guernsey, Silver-Gilt Flora Medal; Messrs. STUART LOW AND CO., Enfield (Silver Banksian Medal); Mr. J. C. JENNER, Rayleigh, Essex (Bronze Banksian Medal); Messrs. W. WELLS AND CO., LTD., Merstham; Messrs. YOUNG AND CO., Hatherley (Bronze Flora Medal); and Messrs. ALLWOOD BROS., Wivelsfield, Haywards Heath, whose fine blooms of Lady Millar, a perpetual-flowering variety of the Malmaison type, were much admired. (Silver Banksian Medal.)

Messrs. A. H. COLE, LTD., Swanley, again showed their strain of the pretty Star Cinerarias.

Messrs. JARMAN AND CO., Chard, staged a floor group of Star Cinerarias.

Messrs. CARTER PAGE AND CO., London Wall, again showed a collection of Violas, and the beautiful clear blue *Nemophila insignis*.

Rhododendrons in variety and of fine quality were shown by Messrs. R. GILL AND SONS, Falmouth. (Silver Banksian Medal.)

Messrs. PHILLIPS AND TAYLOR, Bracknell, Berkshire, had a large patch of the beautiful *Primula rosea* in a mixed collection of spring flowers.

Messrs. BLACKMORE AND LANGDON, Twerton-on-Avon, Bath, showed a fine strain of Polyanthus in batches of yellow, crimson, white and mixed varieties.

Messrs. GEO. JACKMAN AND SON, Woking, introduced sprays of flowering Apples and Peaches at the back of their choice exhibit of hardy flowers.

Other exhibitors of hardy flowers were Messrs. BAKERS, Wolverhampton; Mr. G. MILLER, Wisbech; Mr. VERNON T. HILL, Langford, near Bristol, whose Polyanthus were very good; THE BURTON HARDY PLANT NURSERY; Messrs. W. CUTBUSH AND SON, Highgate; Messrs. G. and A. CLARK, LTD., Dover; GUILDFORD HARDY PLANT NURSERY; Mr. G. REUTHE, Keston, Kent. Mr. REUTHE also displayed flowering shrubs, including *Viburnum Carlesii*, with fragrant, pink-tipped flowers. (Bronze Flora Medal.)

Messrs. J. PIPER AND SONS, Bayswater, again carried off the palm amongst the rock-garden exhibits, receiving a Silver-gilt Banksian Medal for an excellent display. There was a large pool at one end, and this was grouped about with Primulas, clumps of Daffodils, and other flowers. The Genus *Primula* was well represented in escarpments and on bluffs of the rockery. A notable feature was a batch of the Alpine Wall-flower—*Matthiola fenestralis*.

Mr. JAMES BOX, Haywards Heath, Sussex, filled the east corner of the hall with a large rock garden of excellent design, the back having large clumps of Rhododendron Pink Pearl, Magnolia Soulangeana, and other flowering shrubs. The clear blue *Omphalodes cornifolia* (cappadocica) was a conspicuous object amongst the rockwork. (Silver Banksian Medal.)

Mr. MAUNICE PRICHARD, Christchurch, had a dainty rockery, well furnished with a variety of beautiful alpines. (Silver Banksian Medal.)

Messrs. T. S. WARE, LTD., Feltham, also utilised a rockery, on which to display alpines, the masses of *Aubrietia* Lloyd Edwards and *Primula frondosa* being very striking. (Bronze Flora Medal.)

Rock gardens were also shown by Messrs. BARR AND SONS, King Street, Covent Garden; Messrs. J. CHEAL AND SONS, Crawley; Messrs. THOMPSON AND CHARMAN, Bushey, Hertfordshire; Mr. CLARENCE ELLIOTT, Stevenage; Messrs. JOHN WATERER, SONS, AND CRISP, LTD., Twyford; the Misses HOPKINS, Shepperton; Messrs. WHITELEGG AND PAGE, Chislehurst (Bronze Banksian Medal); and Messrs. R. TUCKER AND SONS, Oxford.

Messrs. REAMSBOTTOM AND Co., Geashill, Ireland, displayed vases of their fine *St. Brigid* Anemones, which were awarded a Bronze Flora Medal.

Orchid Committee.

Present:—J. Gurney Fowler, Esq., in the chair, and Messrs. Jas. O'Brien (hon. secretary), H. J. Chapman, F. Sander, R. G. Thwaites, F. J. Hanbury, F. M. Ogilvie, T. Armstrong, A. McBean, J. Charlesworth, J. Cypher, W. H. Hatcher, H. G. Alexander, A. Dye, E. H. Davidson, W. H. White, W. Bolton, Gurney Wilson, R. A. Rolfe, and Sir Harry J. Veitch.

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum Mogul (*Oakwoodense* × *ardentissimum*), from Lieut.-Col. Sir Geo. L. HOLFORD, K.C.V.O. One of the most beautiful of hybrid *Odontoglossums*; perfect in shape and unique in colouring. The flowers had equally broad segments, three-fourths occupied by a large, irregular claret-purple blotch, the margins being clear white, the petals and lip fringed. The white of the outer parts of the segments is in effective contrast with the dark inner zone.

Cattleya Tityus *Shrubbery* variety (*Enid* × *Octave Doin*), from F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth). This beautiful variety, which received an Award of Merit at a former meeting, has developed into one of the largest and best *Cattleyas*. The large, broad flowers had the sepals and crimped petals white, with a pearl-pink tint; the fine labellum rose-purple in front, and with a yellow disc.

AWARDS OF MERIT.

Laelio-Cattleya amabilis Fascinator (*L.-C. Fascinator albens* × *C. Luddemanniana Stanleyi*), from Messrs. CHARLESWORTH AND Co. A really charming hybrid, and quite distinct. Sepals and petals pure white, lip deep claret-red, the front finely expanded.

Odontioda Clive (*parentage unrecorded*), from Mrs. NORMAN COOKSON, Oakwood, Wylam (gr. Mr. H. J. Chapman). A flower of good size and shape, the dark colour suggesting *Odontoglossum Vuystekei*. Sepals dark red-purple; the broader petals similarly coloured, but with a white margin. Lip with dark purple blotches.

Odontioda Graireana splendens (*Odontoglossum Rossii* × *Cochlidia Noezliana*) from M. GRAIRE, Amiens. In habit this closely resembles *O. Rossii*, but the inflorescence has more flowers. Sepals and petals blotched with orange-red; lip light rose with yellow crest.

CULTURAL COMMENDATION.

To Mr. H. G. ALEXANDER, Orchid-grower to Lieut.-Col. Sir Geo. L. Holford, K.C.V.O., for a grand specimen of *Laelio-Cattleya Tigris* (*L. Cowanii* × *L.-C. Dominiana*), with two spikes of many bright yellow flowers, with red markings on the lip.

GENERAL EXHIBITS.

Mrs. NORMAN C. COOKSON, Oakwood, Wylam (gr. Mr. H. J. Chapman), showed a group of hybrid *Odontiodas* and *Odontoglossums* raised at Oakwood. The choicest were *Odontioda Sibyl*, claret-red with light markings; *O. Arthur* (*Bradshawiae* × *percultum*), the yellow ground colour prettily marked with red; and *O. Oakwoodiense Futurist* (*percultum* × *Bradshawiae* Oakwood variety), white spotted with red, and with a broad violet margin. Among the many seedling *Odontoglossums* *O. crispum Phoebe*, almost wholly dark claret colour, was the most remarkable. (Silver Flora Medal.)

Lieut.-Col. Sir Geo. HOLFORD, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander), staged a select group of typical Westonbirt quality, and comprising two specimens of the beautiful *Cattleya Schröderae* The Baron, *Cattleya Magnet* (*Mossiae* × *Whitei*), *Sophro-Laelio-Cattleya Sunloch* (*L.-C. Goldfinch* × *S.-L.-C. Danae*), reddish-orange, with rose veining, a grand specimen of the true *Cymbidium Parishii* *Sanderae*, with two spikes of bluish-white flowers with ruby spotting on the lip; the superb *Brasso-Cattleya* The King, which was such an attraction at the Chelsea International Exhibition, and various other good *Brasso-Cattleyas*. (Silver Flora Medal.)

Sir JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. Collier), staged an interesting group in which were noted *Odontioda Vuystekeae* *Gattonense*, *Odontoglossum Pescatorei* album, of a clear white, with yellow crest; a charming plant of the red *Polystachya paniculata*, with four spikes; *Coelogyne Sanderae*, *Masdevallia Arminii*, *Pleione yunnanense* and *Brasso-Cattleyas*.

Messrs. CHARLESWORTH AND Co., Haywards Heath, staged a group of finely-grown Orchids, which included a dark form of their new *Odontioda Brewii*, *Miltonia Hyeana*, with a prettily-veined light rose lip, a dark form of *Phaius simulans*, *Laelio-Cattleya Percy* Scott, with striped flowers, of unusual colour, and other *Laelio-Cattleyas*, the finest being the new *L.-C. amabilis Fascinator* (*L.-C. Fascinator albens* × *C. Luddemanniana Stanleyi*), one of the best of its section. (Silver Flora Medal.)

Messrs. SANDER AND SONS, St. Albans, had a very effective group of good *Odontoglossums*, *Laelio-Cattleyas*, *Odontiodas*, and other Orchids. A plant of *Lycaste Skinneri* alba bore seven large white flowers; there were also the white *Cattleya Susannae* Hye de Crom, some fine *C. Schröderae*, *C. Parthenia* Prince of Wales, *Coelogyne Lawrenceana*, *Cymbidium amabilis* (*Lowi-Mastersii* × *insigne*), and other good *Cymbidiums*, *Dendrobium thyrsum*, *D. aggregatum* and *Miltonia Bleuana*. (Silver Flora Medal.)

Messrs. STUART LOW AND Co., Bush Hill Park, Enfield, staged a fine group in which *Dendrobiums* were prominent, *D. Brymerianum*, *D. Jamesianum*, and *D. Wardianum* being specially fine. The varieties of *Cattleya Schröderae* included a good pure white form; *Oncidium sarcodes* and other *Oncidiums* were well represented, and *Brasso-Cattleyas*, *Cymbidiums*, *Odontiodas* and *Odontoglossums* were shown well. (Silver Flora Medal.)

R. G. THWAITES, Esq., Chessington, Streatham, showed a small selection of hybrid *Odontoglossums* and *Dendrobiums*, together with a plant of *Sophro-Cattleya Thwaitesii* with pretty red flower. (Silver Banksian Medal.)

Messrs. JAS. CYPHER AND SONS, Cheltenham, staged a group, in which a fine plant of *Phaius tuberculatus*, *Dendrobium Cambridgeanum* and other *Dendrobiums*, including the rare white and violet *D. superbium* *Huttonii*, some pretty *Odontoglossums*, and *Arpophyllum giganteum* were noted. (Silver Banksian Medal.)

J. T. BENNETT-POE, Esq., Holmwood, Chessington (gr. Mr. Downes), showed *Cymbidium Lowianum* *Holmwood* variety, *C. L. Bennett-Poe's* variety, and *Brasso-Cattleya Digbyano-Warszewiczii*, all of good quality.

PANTIA RALL, Esq., Ashted Park, Surrey, exhibited *Odontioda Vuystekeae*, and *Brasso-Cattleya Digbyano-Schröderae*.

Messrs. HASSALL AND Co., Southgate, staged a pleasing group, in which were several plants of *Laelio-Cattleya* G. S. Ball, whilst on either of these were fine *Cattleya Schröderae* and the pretty white *Brasso-Cattleya Menda*.

F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford, showed three fine plants of the rich yellow *Dendrobium Thwaitesiae* Veitch's variety.

Major LISTER, Warninglid Grange, Haywards Heath (gr. Mr. Johnson), showed a plant of the singular *Gongora quinquenervis*.

EUSTACE F. CLARK, Esq., Evershot, Dorset, sent a flower of *Laelio-Cattleya* (*C. Trianae* × *L. Boothiana*), and an *Odontioda*.

Mrs. MEADE-KING, Seven Elms, Drnid Stoke, Bristol, sent for name *Schomburgkia Luddemannii* illustrated in the *Botanical Magazine*, t. 8427; the species is closely allied to *S. undulata*.

Narcissus and Tulip Committee.

Present: E. A. Bowles, Esq., in the chair, Miss E. Willmott, Rev. Joseph Jacob, Messrs. J. T. Bennett-Poe, Arthur Goodwin, H. V. Warrander, G. W. Leak, J. D. Pearson, P. D. Williams, W. Goldring, C. S. Dickins, P. Rudolph Barr, Herbert Smith, W. A. Watts, W. A. Milner, C. Lemesle Adams, Christopher Bourne, W. F. M. Copeland, F. Herbert Chapman, H. Backhouse, Wm. Poupart, and Chas. H. Curtis (hon. secretary).

AWARDS OF MERIT.

Narcissus Tantalus (suitable for cutting).—A giant Leedsii variety, with a corona as large as in some Trumpet varieties. The white perianth segments are nearly pure white, of good substance, and setting off the long, tubular, soft yellow corona, which is daintily frilled. Shown by Mr. W. A. WATTS.

N. Inglescombe (suitable for cutting).—This exceedingly decorative double Daffodil is of large size, of a pleasing medium shade of yellow, and the blooms are well disposed on stout stalks.

Crocus (garden).—A splendid large *Incomparabilis* variety, in which the orange-yellow corona glows with bright colour, and contrasts finely with the pale yellow-coloured perianth; the blooms are carried on long, stout stalks. This and the foregoing was shown by Mr. ALEX. M. WILSON.

N. Ivorinc (show).—This medium-sized Leedsii variety possesses good colouring. The perianth segments are ivory-white, and the flattish corona is of a very pale yellow shade of colour.

Royal Sovereign (show).—A rather more than semi-double Daffodil, giving the impression of a Leedsii flower which has endeavoured to produce three coronas and half a dozen extra-perianth segments in place of the normal corona. It is a rather novel form, which would have a certain decorative value. These two varieties were shown by Messrs. CARTWRIGHT AND GOODWIN.

White Maximus (show).—Although the blooms are not quite white, they are sufficiently so to justify the name. The colour is a very deep cream or the palest sulphur-yellow, and the blooms have all the merits of the well-known type. Shown by Messrs. WALTER T. WARE, LTD.

Queen Primrose (show).—A Trumpet variety which bears the blooms at right angles to the stalks. The perianth segments are pale primrose in colour, and the widely-expanded trumpet is sulphur-yellow. Shown by Mr. H. W. PHILLIPS.

GENERAL EXHIBITS.

Messrs. BARR AND SONS, Covent Garden, London, filled a goodly space with many admirable blooms. Of the newest sorts *Carmenta*, a giant Leedsii, with white perianth segments and pale yellow corona, and *Justicia*, a splendid rich yellow Trumpet variety, were especially noteworthy. (Silver-gilt Flora Medal.)

Messrs. R. H. BATH, LTD., Wisbech, specialised in magnificent Darwin Tulips growing in bowls of fibre. The best market sorts were represented, and many good Daffodils were also shown. (Silver-gilt Flora Medal.)

Mr. ALEX. M. WILSON, Shovel, Bridgwater, gave his new variety *Crocus*, which received an Award of Merit, the place of honour in an admirable collection. *Dragon* and *Gadfly* also attracted much admiration. (Silver-gilt Flora Medal.)

Mr. C. BOURNE, Simpson, Bletchley, staged a very representative collection of Daffodils as well as good Darwin Tulips. (Silver-gilt Banksian Medal.)

Messrs. SUTTON AND SONS, Reading, illustrated in an admirable manner the decorative value of the standard varieties of *Narcissus*. (Silver-gilt Banksian Medal.)

Mr. HERBERT CHAPMAN, Rye, Sussex, had a noteworthy collection of *Narcissus* blooms in the annex, which included enormous blooms of *Van Waveren's* Giant. (Silver Flora Medal.)

Messrs. CARTWRIGHT AND GOODWIN, Kidderminster, arranged a small but select set of cut blooms, including several promising unnamed seedlings. (Silver Banksian Medal.)

Messrs. WALTER T. WARE, Bath, in addition to *White Maximus*, showed other excellent

Trumpet varieties, and several bright-eyed Barrii blooms. (Silver Banksian Medal.)

Messrs. CARTER AND Co., Raynes Park, had a very decorative exhibit; Mr. W. A. WATTS, St. Asaph, staged a collection of Welsh-grown Daffodils; Messrs. R. SYDENHAM, LTD., Birmingham, contributed cut Daffodils and Lily-of-the-Valley growing in vases of fibre; and the Rev. G. ENGLEHEART, Dinton, Salisbury, showed a selection of unnamed seedling Daffodils, in which excellent Trumpet varieties predominated.

Fruit and Vegetable Committee.

Messrs. SUTTON AND SONS, Reading, were awarded a Silver-gilt Knightian Medal for a collection of vegetables, including splendid heads of Superb Early White Broccoli, Pride of the Market Cucumbers, Golden Ball Lettuces, and Princess of Wales climbing French Beans.

Messrs. J. CHEAL AND SONS, Crawley, showed varieties of Apples, including the new Crawley Beauty.

CORNWALL DAFFODIL AND SPRING FLOWER.

MARCH 31.—This society, of which Her Majesty Queen Mary and Her Majesty Queen Alexandra are patronesses, opened its eighteenth annual show at this early date, in the great Market Hall, Truro. The arrangements were, as usual, admirably carried out under the supervision of the Hon. John Boscawen, who has been hon. secretary of the society ever since it was founded. Owing to the extreme lateness of the season it was a difficult matter to procure some of the spring flowers, Erythroniums, which are usually in full bloom at this time, being as yet unopened. However, an excellent display was provided in every section of the show.

In the leading Daffodil class, that for 24 varieties of Daffodil in commerce or not in commerce, Mr. J. C. WILLIAMS again won the 1st prize, with a splendid collection of mostly unnamed seedlings. On his stand were Croesus, with primrose perianth and wide, saucer-shaped orange cup, Mrs. Robert Sydenham, white trumpet, and the others were unnamed. The class for a collection of 24 varieties of Daffodils in commerce attracted several entries. The 1st prize was won by Miss CLARICE VIVIAN, who staged fine flowers, including those of the varieties Lord Roberts, King Alfred, Duke of Bedford, Hamlet, Tennyson, Bullfinch and Horace. For 9 distinct varieties of Trumpet Daffodils, the 1st prize was won by Mr. A. BLENKINSOP, the blooms of King Alfred and Cornelia being very good. For 6 varieties of *N. incomparabilis*, the 1st prize was won by Miss CLARICE VIVIAN, whose best blooms were Autocrat, Pilgrim and Brigadier.

Lady MARGARET BOSCAWEN excelled in the class for 6 varieties of the Barrii section with Albatross, Blood Orange, Oriflamme and Incognita on her stand, which was exceptionally good. For 6 varieties of *N. Leedsii* the 1st prize was awarded to Mr. A. BLENKINSOP, White Queen and Janet Image being exceptionally good. In the classes for the finest blooms in commerce the 1st prize for the best Trumpet Daffodil was won with Lord Roberts by Miss CLARICE VIVIAN, who also showed the finest *incomparabilis* bloom in Victory. Mr. H. G. HAWKER had the best Barrii variety in Sunrise, whilst the finest *Leedsii* was Miss Mary, shown by Miss VIVIAN, who also excelled in the class for a Poeticus variety. For varieties not in commerce the 1st prize for Trumpet Daffodils was won by Mr. P. D. WILLIAMS.

OTHER FLOWERS

For three bunches of Anemones and one bunch of *Anemone fulgens* Mrs. R. BARCLAY FOX won the 1st prize. For Primula species in 3 varieties equal 1st prizes were awarded to Mr. E. J. P. MAGOR and Mr. P. D. WILLIAMS. For 12 spring flowers the 1st prize was won by Mr. P. D. WILLIAMS with *Scilla italica alba*, *Ourisia macrophylla*, *Caltha platypetala*, *Ornithogalum nutans*, *Muscari Heavenly Blue*, *Fritillaria Thumbergii*, *Ficaria grandiflora*, *Tulipa Fosteriana*, *Muscari moschatum*, *Epimedium sulphureum*, *Iris bucharica*, and *Anemone blanda rosea*. For 6 spring flowers the 1st prize was won by Lady MARGARET BOSCAWEN, who showed *Anemone fulgens*, Wall-

flowers, *Tulips*, *Caltha platypetala*, *Muscari Heavenly Blue* and *Iris tuberosa*. The best miniature rock-garden was exhibited by Miss G. WATERER, who showed several Saxifrages, Violas and Primulas. In the classes for Rhododendrons 1st prizes were won by Mr. J. C. WILLIAMS, Mr. R. BARCLAY FOX, Mr. O. H. SHILSON and Mr. J. C. DAUBUZ. The 1st prize for 6 Camellias grown in the open was won by Mr. J. C. WILLIAMS, whilst for 6 Camellias grown under glass the 1st prize was awarded to Mr. J. C. DAUBUZ. One of the most attractive exhibits in the show was a collection of hardwood plants in pots. These were raised from seeds sent from Yunnan, China, in 1911 by Mr. Forrest. Plants of a form of *Rhododendron racemosum* were in splendid flower, as were several plants of *R. oleifolium*. Others were *R. intricatum*, with lavender-blue flowers, *R. rigidum*, and an unnamed species with purple flowers; and there

NON-COMPETITIVE EXHIBITS.

Messrs. BARR AND SONS, King Street, Covent Garden, exhibited a collection of Daffodils, including several new seedlings. THE DEVON ROSEBY, Torquay, had a very pretty stand with flowering shrubs and Roses. Messrs. VEITCH AND SON, Exeter, staged *Eutaxia myrtifolia*, *Grevillea sulphurea*, *G. alpestris*, *G. Priessii*, *Burchellia capensis* and other choice flowering shrubs. Mr. G. REUTHE, Keston, showed a selection of Alpines. Mr. J. C. MARTIN exhibited some very interesting Daffodils, amongst which were Silver Chimes, Rockery Gem, Sea King, Iron Duke, Artificier, Searchlight, Great Dane and Frost Cave. Messrs. ALLWOOD BROS., Haywards Heath, showed Carnations. Messrs. JOHN PIPER AND SONS., Bayswater, showed a collection of Primulas. Messrs. TRESEDER AND Co., Truro, staged Tree Ferns, *Senecio Greyi*, *Acacia Drummondii*, *Forsythia aurea variegata*, Pitto-



FIG. 113.—CLEMATIS ARMANDII : FLOWERS WHITE.
(R.H.S. 1st class certificate on Tuesday last; see p. 257.)

was also a new Photinia. The collection was exhibited by Mr. J. C. WILLIAMS, and was awarded the 1st prize. For three vases of outdoor Acacias the 1st prize was won by Sir A. P. VIVIAN, for an unknown species, *A. Riceana* and *A. melanoxylon*. The Rev. A. T. BOSCAWEN excelled in the class for 20 varieties of hardwood flowering shrubs and climbers, with *Euphorbia mellifera*, *Magnolia stellata*, *Pernettya ciliaris*, *Acacia diffusa*, *Correa speciosa picta*, *Clematis indivisa lobata*, *Euphorbia Wulfenii*, *Eriostemon neriiifolium*, *Grevillea sulphurea*, *Agonis parviceps*, *Chorizema Lowii*, *Anopterus glandulosus*, *Correa speciosa bicolor*, *Correa speciosa Harrisii*, *Veronica macrocarpa*, *Erica australis*, *Ceanothus rigidus*, *Cytisus proliferus*, *Prostanthera rotundifolia* and *Corylopsis* variety. In the smaller class for 6 of the same kind the 1st prize was won by Rev. A. T. BOSCAWEN.

AWARDS.

A Premier Award was given to Mr. J. C. WILLIAMS for the group of Chinese Rhododendrons already mentioned. To Mr. WALTER WARE, Bath, for Daffodil Queen of the West. An Award of Merit to Mr. P. D. WILLIAMS, for Daffodil Ivory. To Mr. J. C. MARTIN, Truro, for Daffodil Silver Chimes. To Messrs. BARR, for Daffodil Boreas. To Messrs. ALLWOOD BROS., for Carnation Mary Allwood. To Mr. G. REUTHE, for Primula Julia. To Rev. A. T. BOSCAWEN, for *Correa speciosa Harrisii*. To Messrs. VEITCH AND SON, for *Grevillea longifolia*. To Mrs. POWYS ROGERS, for *Clivia citrina aurea*, and to Mr. PERCY WATERER, for *Isopogon latifolius*.

sporum tenuifolium and *Eucalyptus Beauchampiana*.

LIVERPOOL HORTICULTURAL.

APRIL 1 and 2.—This society held its twentieth spring show in the local Corn Exchange on these dates. The exhibition proved a success, and from a decorative point of view was especially good. In the class for pots or pans of hardy herbaceous and four bulbous plants there were three exhibitors, and the 1st prize was won by W. J. LOCKETT, Esq., Aigburth (gr. Mr. E. R. Finch); 2nd, W. TON, Esq., Dry Grange, Allerton (gr. Mr. G. Eaton); 3rd, T. WOODSEND, Esq., Cleveley, Allerton (gr. Mr. H. Osborne). The best twelve Hyacinths, distinct, were shown by ARTHUR EARLE, Esq., Childwall Lodge, Wavertree (gr. Mr. T. Hitchman). The varieties Ivanhoe, King Alfred and General Vette were extra good. R. G. MORRISON, Esq., Victoria Park, Wavertree (gr. Mr. H. Raper) was placed second. For six varieties of these plants Miss MCKEAN, Wavertree Lodge (gr. Mr. T. Rigg) was successful, whilst for six pots, three bulbs in each pot, Mr. E. R. FINCH was placed first. There were three good exhibits in the class for six pots of Daffodils. LOO THOMSON, Esq., Formby, led with a fine exhibit, his choicest varieties being Fairy, Glory of Leiden, and Mme. Plemp; 2nd, J. W. WRIGHT, Esq., Mossley Vale House, Mossley Vale (gr. Mr. T. Atkin). For twelve pots of single Tulips C. J. PROCTER, Esq., Boscobel, Oxton (gr. Mr. J. Williams) won with excellent specimens, and he won the 1st prize also in the class for six pots of single Tulips and six pots of double Tulips.

For eight vases of Narcissi Drs. TISDALL and INGAL, Tuebrook Villa, Tuebrook (gr. Mr. G. Osborne) excelled. The best basket of Daffodils was shown by Sir W. H. TATE, Highfield, Woolton. For six hybrid Amaryllis, A. A. PATON, Esq., Oneida, Toxteth Park (gr. Mr. W. R. Bentham) won with a fine lot, King Edward, a fine crimson, being noteworthy.

For two Orchids distinct, Mr. G. EATON led with grand plants of *Cymbidium Lowianum* and *Coelogyne cristata* Chatsworth var., G. L. PILKINGTON, Esq., The Grove, Gateacre (gr. Mr. H. Hurd). For two cool Orchids, J. B. HENSHAW, Esq., Aymerstry Court, Woolton (gr. Mr. H. Hudson) was first with good types of *Odontoglossum*.

Mr. G. EATON was well ahead with Cinerarias, winning in the three classes. Mr. J. MCCOLL had the best Primulas, Mr. F. ATKIN the Lily-of-the-Valley, E. H. COZENS-HARDY, Esq., The Hollies, Woolton, the Cyclamen; Mr. E. R. FINCH six table plants; three hardy Azaleas, Mr. H. OSBORNE; two Callas, Mr. G. EATON.

The show was greatly enhanced in value by the many and varied displays arranged "not for competition." Gold Medals were awarded to the following exhibitors:—Messrs. MANSELL AND HATCHER, Rawdon, for a capital display of Orchids. Messrs. SUTTON AND SONS arranged a charming display of Daffodils on velvet, which were greatly admired for the excellent taste shown. Messrs. BARR AND SONS' contribution of the same class, in which choiceness was the prevailing point, contained Michael and The General, and also a number of unnamed seedlings.

Mr. W. S. PEET, as secretary, discharged his new duties with success.

DEVON DAFFODIL AND SPRING FLOWER.

APRIL 2.—The spring show of the above Society was held in the Guildhall, Plymouth, on the 2nd inst. In many ways it was a great success, the flowering shrubs being quite as good as those exhibited two days earlier at Truro. The leading class for 24 varieties of Daffodils was keenly contested. The 1st prize was won by Miss CLARICE VIVIAN, whose flowers consisted of Whitewell, Peregrine, Chaffinch, King Alfred, Epic, Scarlet Eye, Pilgrim, Firebrand, Ursula, Queen Sophia, Almira, Amazon, Cassandra, Diogenes, Cavalier and others. For a group of Daffodil seedlings not yet in commerce the 1st prize was won by Mr. H. G. HAWKER. Six varieties Trumpet, 1st, Miss CLARICE VIVIAN, who also excelled in the classes for six varieties of bicolor Trumpet Daffodils; for six varieties of incomparabilis, with Gloria Mundi, Homespun, Autocrat, Ursula, Queen Sophia and Léonie; three varieties of Barrii, with Castile, Coeur de Lion and Tomtit; for three varieties of Poeticus with Horace, Epic and Almira; a single bloom of incomparabilis; and single bloom of Poeticus variety with Tennyson. For three varieties of incomparabilis the 1st prize was won by Mrs. SOLTAN-SYMONS with Lady Margaret Boscawen, Lucifer and Pilgrim. For three varieties of Leedsii the 1st prize was awarded to Earl of MORLEY with Lord Kitchener, Queen of the North, and Janet Image. For three varieties of double Daffodils Mr. H. G. HAWKER won the 1st prize, and he was also placed 1st for a single bloom of Trumpet Daffodil variety and a single bloom of Leedsii with Evangeline. Mrs. SOLTAN-SYMONS showed the best Barrii in Gold Coin. There were sixteen classes restricted to residents in Devon. In the class for twelve spring flowers the 1st prize was won by Mrs. SOLTAN-SYMONS. Other first prize-winners were Miss VONGE (six bunches Anemones), Earl of MORLEY (six bunches *Anemone fulgens* and three plants of *Polyanthus*), Hon. Mrs. TREMAYNE (three varieties of Carnations), and Mrs. HEATHCOTT (Primroses). For nine varieties of spring flowers the first prize was won by Mrs. FROUDE. The blooms of *Iris tingitana* received a Cultural Commendation. Mr. H. W. GRIGG showed best in the class for 15 varieties of flowering shrubs, and in this group *Osmanthus Delavayi* received a First-class Certificate. The competition in this class was so keen that there were only four points between the first three groups. Flowering shrubs in six varieties

were best shown by Mr. T. B. BOLITHO with *Grevillea Preissii* (Award of Merit), *Grevillea ornithopoda*, *Acacia diffusa*, *Eriostemon myoporoides*, *Dendromecon rigidum* and *Clematis indivisa lobata*. The Earl of MORLEY had the best group of Rhododendrons, and the finest truss of Rhododendron, and this nobleman also excelled in the classes for Camellias.

NON-COMPETITIVE EXHIBITS.

THE DEVON ROSERY, Torquay, showed flowering shrubs and Roses. Messrs. D. VEITCH AND SON, Exeter, showed *Camellia magnoliaeflora*, *Primula verticillata*, *Petrea volubile*, *Hibiscus magnificus*, and other shrubs. Messrs. BARR AND SONS, King Street, Covent Garden, contributed a very fine collection of Daffodils.

ROYAL METEOROLOGICAL.

MARCH 18.—The monthly meeting of this society was held on the 18th ult., at the Institution of Civil Engineers, Great George Street, Westminster, Mr. C. J. P. Cave, president, in the chair.

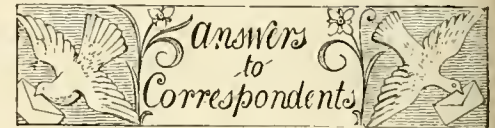
Professor A. C. SEWARD, F.R.S., gave a lecture on "Climate as Tested by Fossil Plants." Problems connected with the climates of past ages have long exercised the minds of scientific writers, both from an astronomical standpoint and from the point of view of the gradual development and wandering of plants and animals since the earliest periods that have left recognisable records. An estimate of the value of plants as "thermometers of the ages" necessitates an enquiry into the power of acclimatisation of recent plants and their ability to respond to external stimuli; a comparison of land and water plants illustrates the plasticity of vegetative organs and the intimate relation between form, structure and environment; similarly plants growing in dry places or in other conditions unfavourable for the absorption of water are characterised by certain structural features reflecting the circumstances in which they live. A comparison of individuals of the same species grown at high altitudes, at lower levels, or in continuous light affords striking evidence of the power of adaptation. The difficulty of using fossil plants as tests of climate becomes increasingly great in proportion to the degree of difference between the extinct types and their nearest living relations. It is from the examination of petrified plants, the delicate tissues of which are almost perfectly preserved, that data may be obtained throwing light on climatic conditions. This method of enquiry is best illustrated by a consideration of some of the anatomical features of the leaves, stems and roots of trees which grew in the forests of the coal period; the form and arrangement of cells in the leaves indicate fairly bright sunlight; large spaces in the cortex of roots point to growth in swamps. The geographical distribution of plants during the latter part of the Palaeozoic era affords evidence of the existence of two botanical provinces, a northern province characterised by a luxuriant flora living in conditions more genial than those to which the poorer flora of the southern hemisphere was exposed. The presence or absence of rings of growth in the petrified stems of plants may afford evidence of the occurrence or absence of seasonal changes. A general survey of the Jurassic flora of the world leads to the conclusion that the climate was comparatively uniform, and in Arctic and Antarctic regions much more genial than at the present day. The fossil floras of more recent geological periods furnish clear evidence of sub-tropical conditions in Europe; in later times the occurrence of northern types in Britain heralds the approach of the glacial period, and in post-glacial beds are found fragmentary remains of immigrants from neighbouring floras which have largely contributed to our present flora.

GARDENING APPOINTMENT.

Mr. F. Bailey, for the past 2½ years Foreman at Canwell Hall Gardens, Sutton Coldfield, as Gardener to A. Cross, Esq., Brixworth Hall, Northampton.

Obituary.

JOHN PATERSON.—By the death of Mr. John Paterson there has been severed one of the last links which bind the gardener of today with a former generation of noted Scottish gardeners. In the days when specimen Heaths and Azaleas were popular, Mr. Paterson was one of the most successful cultivators, and for his exhibits of these plants at the shows of the Royal Caledonian Horticultural Society he probably secured more awards than any other gardener of his time. Mr. Paterson's greatest feats in Heath and Azalea-growing were carried out at Millbank, Edinburgh, where for many years he was head gardener to the late Professor Syme. He afterwards removed to Saltoun Hall, East Lothian, as gardener to the late Mr. Fletcher, and after a number of years he retired from active service. He has since resided in the neighbouring village of Saltoun, where he passed away on the 27th ult.



FERN WITH DAMAGED LEAVES: *Beeleigh*. Your plant is *Asplenium Nidus* var. *australasicum*, and the fronds have been damaged by insects, probably wood-lice, which often eat the young leaves before they uncurl. Wood-lice may be trapped by placing pieces of vegetables, such as Carrot or Potato, in the greenhouse, examining them early in the morning and the last thing at night.

NAMES OF FRUITS: *G. C.* Apple Roi d'Angleterre.

NAMES OF PLANTS: *L. Y.* *Hedera hibernica* (Irish Ivy). The fine colouring of the foliage is due to local conditions.—*Bournville*. Rose Maréchal Niel.—*C. G. A.*, *Leitchworth*. *Cardamine* sp. (cannot identify in this condition).—*W. E. S.* *Primula denticulata* var. *cashmiriana*.—*C. S. I.* *Cardamine triflora*; 2, *Saxifraga ligulata*; 3, *Veronica carnea*; 4, *Genista fragans*; 5, *Buxus balearica*; 6, *Erica mediterranea*; 7, *Phillyrea media*; 8, *Anemone Hepatica*.

POISONOUS WEED IN FIELD: *A. J. C.* The reputation of Turnover (*Lamium purpureum*) in Huntingdonshire as poisonous to sheep and cattle, is probably due to some other plant growing in the same field, or not to any weed at all, if the symptoms described "rupture of blood-vessels" is the usual symptom in the fatal cases. A closely-allied species, *Lamium album*, is recommended in Herbs as a remedy in catarrhal conditions of the mucous membrane, and *Lamium purpureum* is classed with it by Gerarde and others. It has certainly never been recognised as a poisonous plant. The possible cause of the fatality may be due to the animals eating too much of the Lucerne. It is well known that in spring time, when animals are turned out to pasture on green food, after long deprivation during the winter, or only a sparing supply, that they are apt to eat of it excessively, and in these circumstances great abdominal distension and inflammation are apt to follow, the inflammation sometimes proving fatal. This is particularly the case with leguminous plants, which, to animals as to human beings, are "windy meat." It is possible that the mysterious instinct that animals possess may have led them to eat the *Lamium* as a remedy for inflammation, i.e., if it was found in their stomachs. No mention is made of *Lamium purpureum* as a poisonous plant in Dr. G. Lander's *Veterinary Toxicology* published recently.

Communications Received.—*G. B.* Blackwell (thanks for the Violets; very fine specimens).—*C. S.*—*G. L. V.*—*Capt. V. S.*—*R. A. D.*, Uganda—*R. Cory*—*W. M.*, Italy—*J. G. B.*—*F. R.*, Germany—*E. J.*, Carqueiranne—*D. M.*—*A. P.*, Darmstadt—*W. C.*—*Retlaw*—*A. B.*—*C. H. E.*—*B. W.*—*J. R.* and Sons—*C. G.* Van T., Haarlem—*A. H. F.*



THE
Gardeners' Chronicle

No. 1,425.—SATURDAY, APRIL 18, 1914.

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NITROLIM.

THE use of artificial manures enables the gardener to grow heavier crops than may be grown with the aid of animal manure alone. This has been known from time immemorial. In the Roman period, B.C. 55 to A.D. 410, the Britons used dung, wood ashes, lime, marl and chalk; then agriculture flourished—Britain was the granary of the Romans and "staff" of the Roman Empire. The Anglo-Saxons and Danes, 410 to 1066, relied chiefly on marls. In the Norman and Plantagenet periods, 1066 to 1399, agriculture used marls, chalk and dung, with recourse to bare fallows. The Houses of Lancaster and York, 1399 to 1485, reverted to pasture, wool being the most important item produced on the farm, and marls, chalk, and dung were the chief substances applied to restore the soil fertility. Under the House of Tudor, 1485 to 1603, the agriculturist and horticulturist woke up. They used, in addition to dung and lime, salt, fish refuse, street sweepings, malt dust and vegetable ashes, even

going so far as to employ coal dust and coal ashes, as well as sand. This period was marked by a great improvement in farming and gardening, a return being made to a rotation of crops. Clover was introduced and the cultivation of Potatoes became a part of husbandry.

The House of Stuart, the Commonwealth and Restoration, 1603 to 1714, were chiefly notable, from the point of view of the cultivation of the land, for reliance on stable or farmyard manure as the way of returning to the soil the substances upon which all plant-growth depends. Attention was also paid in this period to draining of land and bringing into cultivation of the Fen districts. Naturally, this drainage of land tended in no small degree to the improvements in breeds of cattle, there being nothing like sound land for betterment of live-stock, as well as of crops. Under the rule of the House of Brunswick, 1714 to 1840, followed great improvements in cattle breeding, root-crops—turnip and mangel-wurzel—were introduced into husbandry, and farmyard manure was supplemented by bone manures, salt, etc. From 1840 bones, guanos, superphosphates, nitrates of potash and soda, sulphates and chlorides of potash and magnesia, with sulphate of ammonia, have been utilised as auxiliaries to stable and farmyard manure, and a scientific basis for the respective uses of these manures has been established. The precise uses of these manures, it must be admitted, were but little understood by farmers or gardeners in 1840, the garden routine consisting in the application of dung, any amount of it from the stables, soot from the mansion chimneys, wood ashes from the burned prunings of trees and clippings of hedges, etc., with a store of lime and a seasoning of salt, bones being reserved for vine borders and other fruit-producing subjects, while carbon in the way of charcoal was not overlooked. There was no science in these things but much practical knowledge, yet the gardeners then grew grand Pineapples and splendid Grapes, and the kitchen and dining-room never lacked supplies of prime comestibles. There were followers of Jethro Tull in those days—spadesmen devoted to deep-digging, there being virtue in mixing soil equal to that in good manuring, a fact well known to the ancient Romans and not yet lost to Britons, as witness the precepts of such moderns as Mr. Edwin Beckett, the champion of deep cultivation and grower of prize-winning vegetables.

The old gardeners relished, as did their plants and crops, a little stimulus, such as a pinch of Peruvian guano or its solution in water as liquid manure, and they got from this to the use of nitrogenous, phosphatic and potassic substances, so as to enable them or their successors before the close of the nineteenth century to grow crops two or three times as heavy as were possible without the aid of artificial fertilisers. This is a very important matter in many gardens at the present time when the motor-car is supplanting the carriage, petrol the horse-power, for the former returns nothing to the soil while the latter yields the indispensable humus for the maintenance of the soil in "condition" and for the deriving of full benefit from applied artificial fertilisers.

Of artificial fertilisers it may be said that three substances contained in them only may be valued and charged for, namely, nitrogen, phosphates and potash, and that a soil lacking any one of these in an available form cannot produce a maximum crop. All three are necessary in well-balanced proportions, the quantities of each depending upon the particular requirements of the crop and the available quantities present in the soil. Nitrogen is the main essential of all plant growth, a powerful stimulant without which plants cannot develop (excepting such as derive nitrogen from the atmosphere), while in excess it produces rank growth at the sacrifice of quality. Phosphates are required to promote the

healthy growth of the plants and hasten the maturity of their crops. Potash, in combination with nitrogen and phosphates, is the prime factor as regards health—the first wealth, and is found in large proportions in all plant tissues, lack of fruitfulness and of quality resulting from its absence. All artificial fertilisers contain other ingredients, some useful, others harmful; therefore it is necessary to have a detailed analysis of a special article in order that the gardener may know the substances, and the amounts of those substances which it contains.

Nitrolim, one of the newer sources of nitrogen, contains also lime and carbon, as given in the following approximate analysis:—

Nitrogen, 18 per cent., expressed as ammonia	21.85	per cent.
Free lime	20 30	" "
Lime in combination	20-30	" "
Carbon	10-12	" "
Oxides of iron and alumina	2.5	" "
Siliceous and other inert mineral substances	8-10	" "

The active principle is the nitrogen, but this, being in the form of ammonia, requires time for conversion into nitrate, which depends in a great measure on the presence or application of lime. This is an important constituent of nitrolim. Upon it depends the activity of the nitrifying bacteria, beside which it also is an indispensable plant food, while it tends to sweeten acid soils. Lime also prevents the caking of clay lands, reacting on the soil particles, and brings potash into soluble form, and thus renders it available for plants.

On sandy soils the best results from the application of potash are secured only in the presence of sufficient lime, for without this substance a considerable proportion of potash—the essence of fertility on sandy soils—is liable to be lost. On the other hand, heavy soils, and even the lighter soils, well provided with lime, hold on tenaciously to the potash which they receive, and crops in consequence are healthy and profitable.

Soils poor in lime and to which superphosphate is applied as a fertiliser suffer by the reaction of the acid on other soil constituents. If, however, plenty of lime is present the insoluble compounds cannot form and the phosphate is retained as superphosphate of lime, which is readily available as plant food.

Carbon may be said to be soil-sweetening, and the old-fashioned gardener's practice of using charcoal in potting soil and in vine and other fruit borders, where the vines or trees had to remain long in the same soil, seems a method of soil-sweetening, conjointly with the lime, of considerable importance. The carbon in nitrolim is as pure as the electric furnace can make it, and its extreme fineness renders it readily diffusible through the soil.

The active fertilising constituent of nitrolim, however, is nitrogen, guaranteed 18 per cent., and this in a suitable condition for ready assimilation. In appearance nitrolim is a dark, fine, heavy powder. As regards solubility, quickness of action, and other properties, it closely resembles sulphate of ammonia, and is suitable for most purposes for which sulphate of ammonia is employed. It has a lasting effect and does not wash out of the soil like nitrate of soda, therefore its benefits are not exhausted in the year of application, but continue for some time afterwards provided the soil also contains a sufficient supply of available phosphate and potash. This is likewise a necessity of nitrolim application—either the land must have an ample supply of phosphate and potash from a previous crop or these substances must be provided by admixture with the nitrolim or applied separately. A good general mixture may be

made as follows:—Nitrolim, $1\frac{1}{2}$ parts; superphosphate of lime, 6 parts; sulphate of potash, $1\frac{1}{2}$ parts. The potassic manure should be mixed with the nitrolim first; superphosphate should then be added to the nitrolim and potash mixture in thin layers at a time. Should the heap get hot during the mixing water must be sprinkled over it, care being taken, however, not to add too much or the heap will become pasty. This mixture is a good all-round fertiliser and may be applied at the rate of 9 cwt. per acre, $6\frac{1}{4}$ lb. per square rod, $3\frac{1}{4}$ oz. (or a little more) per square yard. The mixture should be applied in preparing ground for sowing seed or setting plants or "sets"—say ten days or a fortnight before sowing or planting, mixing well with the soil. If used as a top-dressing for fruit trees, etc., the manure should be mixed with six times its weight of finely divided damp earth and allowed to stand for a few days before

Nitrolim has other properties, those of a weed killer and a soil-pest destroyer being of importance. The quantities of nitrolim before mentioned for separate application, if applied on the first appearance of weeds, destroys most of them, but the dusting naturally affects the growing crop, the leaves assuming a light-yellow colour; but this effect is temporary and disappears, and the consequent remarkable improvement becomes the more apparent through the favourable effect of the nitrogen and lime. Albeit, the use of nitrolim as a top-dressing may not always be considered advisable, for crops that hold it as well as weeds are just as likely to be injured, if not destroyed.

As regards the destruction of weeds and of soil-pests, I may mention that a plot of land badly infested with slugs and with weed seeds was given a dressing of nitrolim in the spring of 1912, lightly pointed in and left for a fortnight,



FIG. 114.—ACACIA DECURRENS VAR. DEALBATA.

application. This applies to all cases of top-dressing.

For separate application nitrolim is a somewhat difficult substance to handle, as I found when first applying it, the free lime acting on the moisture of the hands and other exposed parts of the body, and producing irritating and burning action. This may be overcome by wearing cotton gloves bound around the shirt sleeves and wrists with a cloth bandage, wearing a handkerchief around the neck and tying the trouser-legs around the ankles. The hands, however, are the only parts that need protection in using nitrolim in the garden. The quantity of nitrolim to use separately is $1\frac{1}{2}$ cwt. to 2 cwt. per acre, 1 lb. to $1\frac{1}{4}$ lb. per square rod, $\frac{1}{2}$ oz. to $\frac{3}{4}$ oz. per square yard. It must not be applied directly over foliage or placed in direct contact with stems, since it seriously injures the former and even destroys the latter, killing the plants. It should be lightly hoed in, and may be used advantageously to crops needing nitrogen.

and then well forked over in preparation for setting summer bedding plants. It proved not only free from slugs in that season, and also remarkably free from weeds, but there were very few slugs in 1913, as also fewer weeds.

Nitrolim is nitrogen obtained from the air by a process of distillation at an excessively low temperature. The nitrogen is combined with calcium carbide by an electric process at a temperature approximating $1,000^{\circ}$ C., thus forming calcium cyanide, which is subsequently ground to a fine powder, partly hydrated, so as to produce the finished product free from carbide and dustless.

I believe superphosphate mixed with nitrolim in course of manufacture can be obtained from the principal manure manufacturers and merchants in Great Britain and Ireland. This compound presents the advantage of forming a mixture (by the addition of potash or otherwise) easy to handle on the farm and in the garden. *G. Abbey, St. Albans.*

NEW OR NOTEWORTHY PLANTS.

HYBRID ACACIA H. L. WHITE.

In the *Gardeners' Chronicle*, October 4, 1913, p. 236, a note appeared from Mr. J. H. Maiden, Director of the Botanic Gardens, Sydney, on a hybrid Acacia which he had named in compliment to Mr. H. L. White, of Belltrees, Scone, in whose garden it flowered the previous year. The parents were not definitely stated. It was, however, assumed that *Acacia dealbata* (see fig. 114) was the seed parent, and *A. Baileyana* (see fig. 115) the male parent, as both these species were growing in close proximity to each other. Having examined a dried specimen of the hybrid, I have no doubt but that Mr. Maiden's assumption as to the parentage is correct. Although it possesses characters intermediate between those of its parents, the dried floriferous spray of the hybrid suggests a more marked resemblance to *A. dealbata* in the long, loose racemes of globular flowers, which in *A. Baileyana* are comparatively short. The leaves also favour the seed-parent by being disposed at greater intervals along the branches, and while the leaflets are quite intermediate in length they do not possess that bluish tint which is characteristic of *A. Baileyana*. It would be interesting to learn whether the hybrid is likely to inherit the strong, vigorous growth of *A. dealbata*, and also whether the flowers possess the delicious fragrance of that species.

Among the large number of Australian Wattles the parents of this hybrid are, perhaps, more extensively cultivated in European gardens than any other Acacias. In the warmer parts of the British Isles there are many gardens in which they thrive and flower freely in the open air, but where the climatic conditions are not so favourable they require the protection of a greenhouse.

Acacia dealbata, "The Silver Wattle" (see fig. 114), is a well-known species of very vigorous habit, therefore it cannot be recommended for pot culture; but when planted in the border of a large house it seldom fails to produce a glorious display of its fluffy, yellow balls of flowers soon after Christmas. During the first three months of the year large quantities come into the English markets, chiefly from the South of France, when it is sold in our streets under the erroneous name of "Mimosa."

Acacia Baileyana, "The Cootamundra Wattle" (see fig. 115) is a very beautiful species, which has come into prominence during recent years. It forms a small tree about 20 feet high and comes into bloom at least a fortnight earlier than *A. dealbata*. The deep yellow flowers are produced in great profusion; they harmonise splendidly with the small pinnate leaves, which possess a decidedly bluish colour. In the vicinity of large towns it is occasionally injured by fogs, which cause the leaves and flower-buds to drop to some extent. This lovely Acacia promises to become a general favourite in English gardens as it has proved to be the hardiest of the genus.

Acacia H. L. White (see fig. 116) appears to be very floriferous, therefore it should prove a valuable addition to gardens where Acacias thrive out-of-doors; more especially does this apply if it is intermediate in habit of growth, and possesses the hardiness of *Acacia Baileyana*. *W. T.*

ORCHID NOTES AND CLEANINGS.

MESSRS. ARMSTRONG AND BROWN.

We had the opportunity on a recent occasion of inspecting the excellent block of houses at this interesting nursery at Tunbridge Wells (see illustration in *Gardeners'*

Chronicle, December 16, 1911, p. 430). In the first large house, where throughout the late winter some hundreds of the handsome *Cattleya* Maggie Raphael Orchidhurst variety displayed their large, fragrant blooms, were many fine Laelio-Cattleyas in flower, one of the best being L.-C. Geo. Woodhams, raised by Mr. Armstrong, a showy, finely-coloured flower and excellent grower. With it was L.-C. Macqueda (*Laelia* Geo. Woodhams × *Cattleya* Lord Rothschild), a stately hybrid. Other hybrids in their first flowers prove the high quality of the parents used. Some hybrids of *Cattleya* Schröderae with yellow-tinted Laelio-Cattleyas exhibited great variety in shades of yellow, from primrose to orange, with variously tinted labellums, all on flowers of good shape. A very handsome form of *Cattleya* Niobe (*Mendelii* × *Aclandiae*) was remarked. *Mendelii*, being the seed-bearer, gives a much stronger growth and larger flower than the original, the white and rose-purple blooms being nearly as large as *C. Mendelii* itself and of very fine substance. Some plants of Laelio-Cattleya Myra and hybrids of it have the yellow petals of Myra on larger flowers, with ruby-coloured lip; and some excellent forms of *Cattleya* Schröderae, the white *C. Susannae* Hye de Crom, and other large-flowered Cattleyas, were in bloom, while for later-flowering the numerous flower-sheaths give assurance of a fine display.

Several houses of unflowered hybrid Cattleyas, *Laelias* and *Brassavola* Digbyana crosses, were in fine condition, the healthy roots of the plants in all stages being a good feature. This free-root action is attributed to the uniformly moist atmosphere maintained by evaporation from the arched brickwork on which the stages are arranged, which evaporation is always proportionate to the temperature of the house. Watering by means of the waterpot is carefully restricted, as it is found that Cattleyas and *Laelias* root more freely and make better growths when not heavily watered, the roots being induced to develop by the moisture in the air.

The houses of *Cypripediums* contained a large number of good things in bloom. Varieties of *C. Leeanum*, *C. aureum*, the beautiful *C. Moonbeam*, *C. Bianca*, *C. Beryl*, *C. Beeckmannii*, and some hybrids of it; the handsome *C. Venus* Orchidhurst variety, *C. Maudiae*, *C. Holdenii*, *C. Lawrenceanum* in fine coloured forms, and the still rare emerald-green and white *C. Lawrenceanum* Hyeanum; forms of *C. Euryades*, an interesting lot of *C. Fairrieanum* crosses, *C. Queen Alexandra*, and a very large number of hybrids. As time passes the standard of excellence rises, and although most of the hybrids are acceptable for decorative purposes, it is found that only really fine and distinct things command high prices, and for these, as Mr. Armstrong says, the raiser has a strong liking himself. A case in point is the noble *Cypripedium* Royal George (*Harrisianum* superbum × *Minos Youngii*), which Messrs. Armstrong and Brown sold, but of which they have again acquired the stock.

In the cool houses was a good show of scarlet *Odontiodas* and hybrid *Odontoglossums*, some of which were flowering on small plants for the first time. To the casual observer several different crosses with blotched *O. crispum* appeared at first sight to be identical with each other, but the expert could easily detect differences inherited from the species which produced them. As the plants gain strength these characters appear more strongly marked, though in all the *O. crispum* section good shape is retained. It is also noticeable that the progeny of two blotched forms of *O. crispum* often show variation in the form of the labellum almost identical with that of some of the hybrids. This throws doubt on the claim of the blotched *O. crispum* as a species.

Forms of *O. eximium*, *O. ardentissimum*, *O.*

percultum, *O. amabile*, and others were in bloom, one fine hybrid between *O. amabile* and *O. eximium* being especially attractive.

Before the coming of the *Odontioda* there was a dearth of scarlet and other red flowers, especially in winter and spring, but with a good supply of *Odontiodas* bright colour is present for a great part of the year. Those in bloom at Orchidhurst have given a good show for a considerable time, the brightest at present being *O. Charlesworthii*, *O. Keighleyensis*, *O. Bradshawiae*, *O. Vynlstekeae* and *O. rosefieldensis*. These give a brilliant display, and the modest cinnabar-scarlet *Cochlioda* Noezliana, without which they would have been impossible, although pretty, looks comparatively insignificant in the presence of its offspring.

With these some good typical *Odontoglossum* *crispum* were in bloom, one plant carrying a four-branched spike of thirty-three flowers; and

NOTES ON IRISES.

IRIS ROSENBACHIANA.

This gorgeous Iris is unique in more ways than one. To the botanist it is interesting because its seeds are entirely unlike those of any other Iris in cultivation, while the gardener's curiosity and astonishment are aroused by the great development of the fleshy roots, which are usually four or five in number, and often as large as the bulb itself. In the upper parts they are very thick, then suddenly decrease in diameter, and end in a long, thin thong. No other Juno Iris is known to possess roots so large in proportion to the size of the bulb.

Gorgeous seems to be the word that we must apply to this Iris when we see a sun-lit group of the brightly-coloured flowers standing out

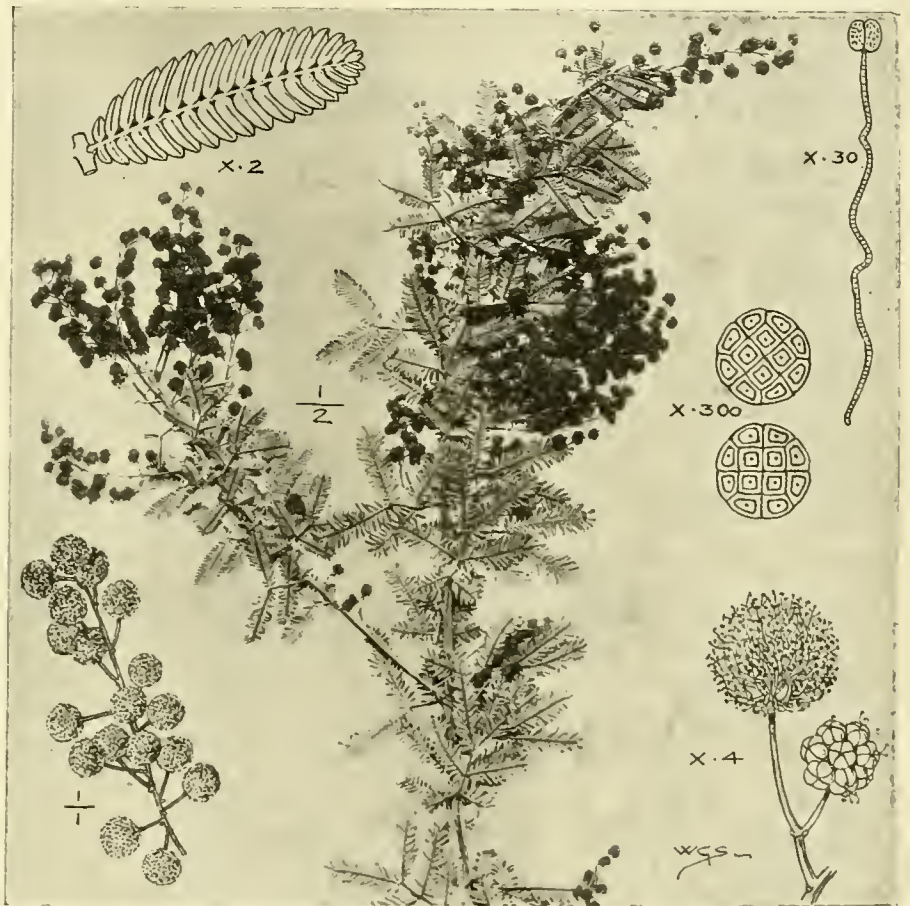


FIG. 115.—ACACIA BAILEYANA.

Flowering shoot, 1/2 nat. size; details magnified. (See p. 262.)

some *O. Pescatorei* of an excellent type, one having very large flowers of fine form, heavily tinged with purple at the back, the colour showing through to the surface, and a distinct red-blotched lip. A batch of *Miltonias* had some good *M. vexillaria*, *M. Blenana*, *M. Hyeana* and *M. St. Andre* in bloom. At the end of a warm, moist house large specimens of *Coelogyne pandurata* were in extraordinary vigour, and in an intermediate house a batch of albino *Cattleyas* was noted.

The corridor, which connects the houses and offices, contained a very fine display of *Dendrobiums*. These had been in bloom for a long time, and among them some hundreds of the pure-white *Dendrobium nobile virginale* have flowered. In hybridising the production of yellows is being attempted with good results. In the North House in bloom were some showy *Cymbidium* varieties of *C. insigne* and its hybrids, *C. Woodhamsianum*, *C. Wigianum* and *C. eburneum*. Also varieties of *Lycaste* *Skinneri* and *Masdevallias*.

against the sombre background of the bare earth, for the leaves are so immature at flowering-time as hardly to attract the eye at all.

Early in the new year broad, nipple-like shoots with a whitish, membranous sheath begin to burst through the surface of the ground. Soon the tips of the leaves appear through the sheath, and then suddenly, often almost in one night, the flowers shoot up and open, if the sun appears only for a few minutes.

There are, I am convinced, local forms of this Iris, the peculiarities of which are preserved by at least the first generation of seedlings. There is an early flowering race with yellow pollen, and so far as I know, few colour variations, and a later race of which the pollen is white, and of which hardly any two plants produce flowers of the same shade of colour. For the last month I have had in flower between 20 and 30 seedling plants of the earlier kind. Each flower lasts a week or more, and as each bulb throws up two or three flowers in succession a group of these Irises is a lasting pleasure. It was

certainly disappointing to find so little variation in colour among these seedlings, for, although it is true that minute differences were numerous—for instance, the "standards" were either horizontal or drooping, some pointed, others broad and obtuse—the general effect was uniform.

The strap-shaped falls have along the haft, flanking a yellow or orange central ridge, either four or six crimson-purple veins on a silvery-white ground, which is often slightly suffused with a pale red-purple. On the blade the central ridge becomes a crest and is sometimes irregularly dotted with crimson-purple. It is surrounded by a large patch of the same brilliant colour, which covers all the blade of the falls with the exception of the tip, which is a pure white. The large overlapping crests of the style-

My experience is that *I. Rosenbachiana* makes very few offsets. A flowering bulb is only obtained from seed after four or five years of growth. It then flowers regularly for three, four, or even five years, after which it either dwindles away or dies outright. Fortunately, however, this *Iris* seems to be peculiarly well adapted for easy fertilisation. The stigmatic surface is larger and more prominent than in most, if not in all, other *Iris*es. The anthers also are large, and the pollen very abundant. Seed sets readily if the flowers are cross-fertilised one with another, and provided that the plants are given some shelter from heavy rain. I have counted so many as 80 or 90 seeds in a single capsule, and their very number may be an indication that it is a plant which must be continu-

PLANT NOTES.

CAMPANULA PYRAMIDALIS.

UNDER good cultivation splendid specimens of the Chimney Campanula may be grown from seed in fifteen or eighteen months. The cultivator should aim at securing good plants with strong crowns by the autumn of the first year, and to attain this the seed should be sown in spring in well-drained pans, using a light, friable soil sifted through a fine sieve. As the seed is very fine, the pans should be immersed in tepid water before sowing. Sprinkle the seeds evenly over the surface, cover them lightly with fine soil or sand, and press them down. Cover the seed-pans with a piece of glass, placing over this a layer of paper, and germinate the seeds on a mild hotbed. As soon as the seedlings appear remove the coverings, and put the pan near to the roof-glass in a frame that can be well ventilated, thus ensuring sturdy growth from the beginning. When large enough to handle, prick them off singly into small pots, using a compost of two parts fibrous loam, one part leaf-mould, and one part manure from an old hotbed, with a good dash of sand and mortar rubble. Place the plants again in the frame, shade them from bright sunshine for a few days afterwards, and syringe to encourage a free growth. If the roots are watered carefully they will soon fill the pots, when the plants may be re-potted, this time into large sixties, using slightly rougher soil. At this stage cold frame treatment is suitable, closing the lights every afternoon and spraying them at the same time for a week or two to give the plants a good start. As the pots become filled with roots water the latter with diluted liquid manure or feed them with a concentrated fertiliser. The plants produce roots very quickly, therefore no time should be lost in potting them on into six-inch pots when once they are ready, for they must not receive a check from becoming pot-bound. Soil similar to that used in the earlier stages will suit them, but the loam should be pulled to pieces about the size of walnuts. Sift the leaf-mould and manure through a half-inch sieve, and in addition to the sand and mortar rubble add a six-inch pot of coarse bone-meal to every barrow-load of the compost. Pot firmly, and place the plants back in the frame for a few days, after which, if the frames are required for other purposes, the Campanulas will do well outdoors on a bed of coal ashes. Attend to watering and feeding the roots as before advised, until the winter, when but little water will be required. The pots may be plunged in a bed of leaves or cocoa-nut fibre refuse beneath a covering of old frame lights, which will ward off rains or snow. Protection is only necessary in very cold weather, when litter or bracken may be thrown over them. Under this treatment they will do very well until February, when they may be potted into eight or nine inch pots. I prefer to pot them singly, as the plants differ very much in their growth, some throwing up only one strong spike, whilst others develop seven, eight, or even more. Rich soil in a rough condition should be used at this potting. The addition of fertiliser or soot will enhance the colour of the flowers and foliage. The soil is best mixed several days before use, storing it in a dry shed. Use clean, well-drained pots. After potting transfer the plants to a cold frame, and afford water with extra care. With the advent of warmer weather the flower spikes will soon develop, and the plants may then be removed to the greenhouse. Feed the roots freely until the flowers begin to show colour, and then use clear water only. Secure each plant to a neat stake. Remove the blossoms as they fade, and give the plants a little stimulant, for this will result in a second crop of flowers, although they will not be quite so large individually as those of the first spike. In hot, bright weather shade the

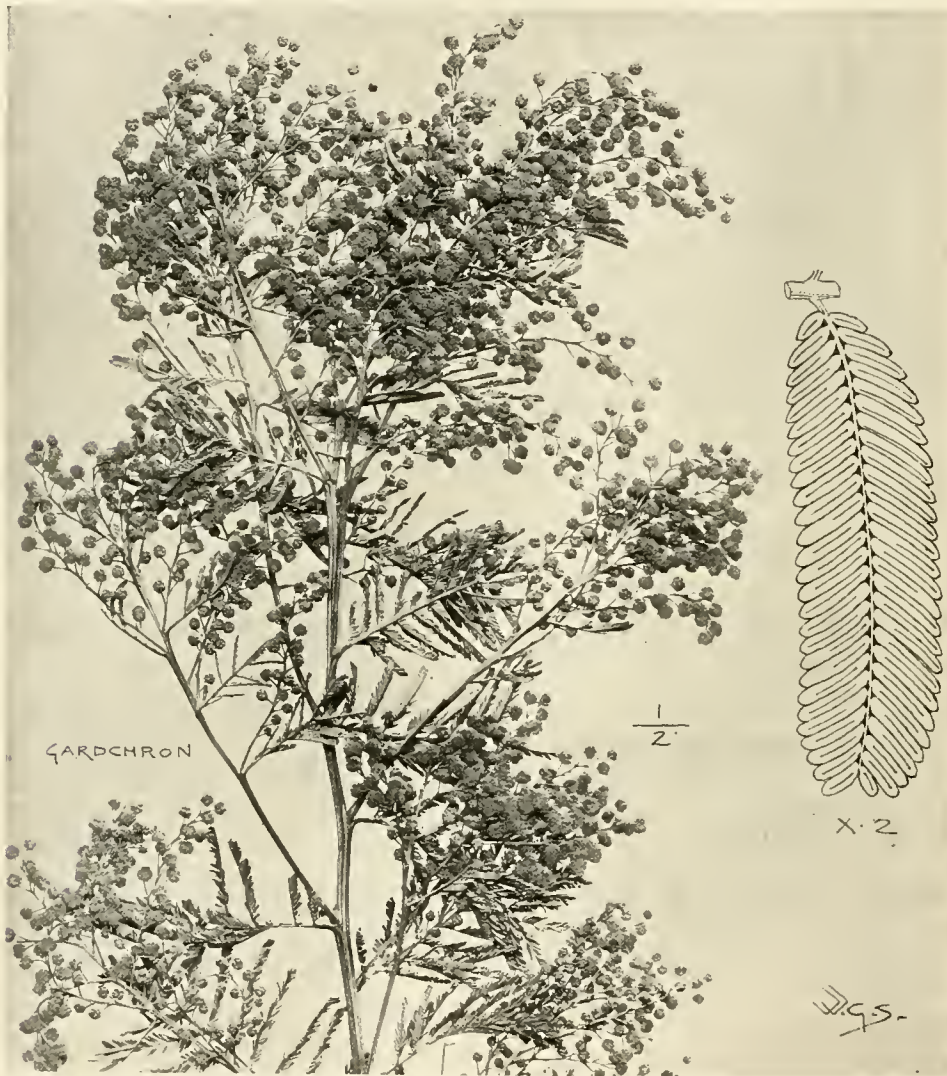


FIG. 116.—HYBRID ACACIA H. L. WHITE (*A. DECURRENS DEALBATA* × *A. BAILEYANA*).
Flowering spray, $\frac{1}{2}$ nat. size; leaf mult. 2. (See p. 262.)

branches are either white or white faintly flushed with red-purple, and the standards are of the same colour. The style-branches have a central band of pale red-purple changing to yellowish at the base on a silvery-white ground. The flower measures 3 or 4 inches across and is raised on a long perianth-tube of a yellowish-purple colour, rising 1 to 3 inches above the top of the spathes. In the only other colour form of this early variety that is known to me the silvery-white ground is replaced throughout by a pale red-purple.

On the other hand, the later race is extraordinarily variable. The plants begin to come into flower just when the last flowers of the earlier race are fading. All shades of both blue and red-purple occur, and yellow flowers, though rare, are not entirely unknown. The blooms are perhaps rather smaller than those of the earlier race, and the plant seems to be less vigorous.

ally raised from seeds. The latter should be sown at once in pots plunged in the open, and may be sown very thickly, for only a few germinate each year. Each summer the minute bulbs and the remainder of the seeds must be sifted out, and the latter re-sown at once. The young bulbs do best planted out under the protection of a cold frame.

Owing to the nature of the rootstock this *Iris* must be extremely difficult to collect satisfactorily in the wild state from the hard sunbaked soil of the steppes and mountain slopes of Turkestan. Consequently we must usually rely on home-raised seedlings to replenish our stock. If, therefore, anyone who sees these notes has specimens of this *Iris*, I would suggest an exchange of seeds or bulbs in order that, by cross-fertilisation, we may be able to keep it in cultivation. *W. R. Dykes, Charterhouse, Godalming.*

plants when in bloom, or the flowers will fade quickly. Any plants not required for pot culture may be planted out in the borders, where they will throw up fine spikes of flowers; but as there are so many other hardy varieties of Campanulas, *C. pyramidalis* may be used mainly for indoor decoration. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

NOTICES OF BOOKS.

A CONTRIBUTION TO THE HISTORY OF BOTANY AND GARDENING.*

PROFESSOR VINES and Mr. Druce have followed up their *Account of the Dillenian Collections in the Herbarium of the University of Oxford* with a further and worthy contribution to the history of the botanical pioneers and botanical possessions of the venerable institution which they represent. It is interesting alike to botanists and horticulturists that these early collections of dried plants should be classified, named, arranged in an accessible manner, and their elements put on permanent record. That the editors' task has been critically performed may be taken for granted from the long list of specialist coadjutors on page lxviii. The introduction of upwards of sixty pages is the most generally interesting section of the book, beginning with the foundation of the garden and the Professorship of Botany at Oxford, and continuing with the history of the garden, personages and events of the botanical establishment of the period, down to 1720. It is embellished by a view of the Danby Gateway, erected in 1632, and portraits of Earl Danby, Morison and the Bobarts, father and son. Some of the leading facts are here given in extract. The Physic Garden was founded by the Earl of Danby in 1621, and, although the oldest of its kind in Britain, it is not nearly the oldest in Europe, having been preceded by those of Padua (1545), Pisa (1547), Bologna (1567), Leiden (1577), and Montpellier (1598). It is a singular fact, the authors state, that the true date of the foundation of the Oxford Garden has not been given previously in any of the very numerous books which refer, directly or indirectly, to its history. Though the formation of the garden was begun in 1621, it was some years after 1632 that Jacob Bobart, sen., was appointed the first Superintendent; but the exact date has not been ascertained. It seems, however, that there had been previous negotiations with John Tradescant, sen., sometime gardener to Charles I. Bobart was a German by birth, and was twice married, whether to English women or not is not actually stated, but their Christian names are in the English form. From the published accounts of distinguished visitors to the gardens we learn that Bobart was an accomplished gardener. A feature of the garden in later years was offered by some remarkable examples of topiary work by the elder Bobart. Two, especially, are noticed, clipped to represent men, the one bearing a club, the other a halberd, which finally grew up to be gigantic, bulky fellows. A catalogue of plants cultivated in the garden appeared in 1648. It contains names of no less than 1,600 species, of which 600 were British, and many were Canadian.

Robert Morison, a native of Aberdeen, born in 1620, was chosen first Professor of Botany at Oxford in 1669, after a successful educational career at home and abroad. He was a prolific writer, and, in a way, one of the pioneers in the classification of plants, though his contemporary, Ray, excelled in this direction.

* *An Account of the Morisonian Herbarium in the Possession of the University of Oxford, together with Biographical and Critical Sketches of Morison and the Two Bobarts and Their Works and the Early History of the Physic Garden, 1619-1720.* By S. H. Vines and G. Claridge Druce. (Oxford: Clarendon Press, 1914.) Small 8vo, pp. lxviii. + 350. Price 15s. net.

Jacob Bobart, the younger, succeeded his father as Superintendent of the Garden, and, later, Morison as Professor of Botany. He also edited the third part of Morison's great work: *Plantarum Historiae Universalis Oxoniensis*.

The Morisonian Herbarium was prepared to illustrate the *Historiae Universalis, etc.*, and consists of about 6,500 specimens, derived from all parts of the world, and the present book is a record of its contents under pre-Linnean designations or phrases, together with the generally accepted modern names. *W. Botting Hemslley.*

his little volume a supplement, including the English and Continental publications up to date, and an index of authors which will considerably increase the usefulness of the work. The book is printed on good, stout paper.

FLORA OF KATANGA.

THE botanical collections made by numerous travellers in the Belgian Congo have been worked out with great assiduity by the late Th. Durand and by Em. de Wildeman, his successor as director of the Brussels Botanic Garden, and the results published in a some-



FIG. 117.—FRUITING SPRAY OF HYBRID ACACIA H. L. WHITE. 1/2 Nat. Size. Pod and Seeds Mult. 2. (See p. 262.)

THE FLORISTS' BIBLIOGRAPHY.*

It is now more than five years since the first edition of the *Florists' Bibliography* was published. It was then fully up to date; but the last half-decade has been a busy one among garden authors, and a very large number of new books have appeared on horticultural subjects, some insignificant, but many of real importance. The author, recognising this fact, has added to

what bulky form in the *Annales du Musée du Congo Belge*. The Botany has appeared in five series of one or more volumes each, and includes several hundred plates. The contents of most of these volumes have been described in these columns. The last to hand is the first fascicle of the second volume of *Etudes sur la Flore du Katanga*. The Katanga district borders on Rhodesia, therefore this publication is of importance and interest on the British side. This part is illustrated by about a score of plates giving full-sized representations of herbarium types.

* *The Florists' Bibliography.* By C. Harman Payne. Second edition, with Supplement and Index. W. Wesley and Son, London. Price 5s., cloth gilt.

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

COELOGYNE DAYANA.—This plant is producing flower scapes from the centres of the developing growths, and the roots require a liberal supply of moisture. Afford the plants every encouragement to assist them to develop their flowers. It is my experience that the plants grow best when suspended from the roof at the cooler end of the plant stove, and for this reason they should be planted in shallow pans or baskets. Grown in this way the pendent racemes of flowers are seen to the best advantage. The plants should be kept in the same position after the flowers commence to expand, as the least disturbance causes the flower scape to become twisted, often destroying the effective arrangement of the flowers. Potting is best done immediately after the flowers are over. It is not desirable to repot annually; for this reason the compost should be of a lasting nature, and may consist of a mixture of Al fibre, peat and Sphagnum-moss in equal proportions. Make the soil moderately firm about the roots.

PHAIUS.—Plants of Phaius that have passed out of flower, and hybrids of *P. simulans* that have failed to bloom, may be repotted. *P. Cooksonii* and the numerous varieties of *P. Norman* grow most satisfactorily where the conditions are suitable, and they are exceedingly useful plants for all purposes of house decorations from the middle of March until the month of May. In this district many fine plants of this Orchid are grown in ordinary plant stoves where there is plenty of humidity in the atmosphere at all times. A compost consisting of equal portions of fibrous peat, turfy loam and leaf-mould with plenty of sand intermixed is suitable to their requirements. The roots are fleshy, and need plenty of room. The pots should be clean and filled to about one-third their depth with clean broken crock for drainage. The compost should be made firm, and if a layer of chopped Sphagnum is placed over the surface it will give a smart appearance. Afford water sparingly at first, but as soon as the roots become established liberal supplies of moisture may be afforded. Spraying at regular intervals of about once a fortnight during the summer will keep thrips in check. Scale insects are also troublesome to these plants, and the leaves should be sponged carefully as soon as these pests are detected, or they will soon cause a permanent disfigurement of the foliage. Frequent dampings of the bare spaces to keep the atmosphere humid will be beneficial in keeping insect pests in check. The members of this class of Phaius do not benefit by direct sunshine during the spring, summer, and early autumn, therefore the blinds should be drawn down early in the morning if the plants are placed where they will receive the sunshine. Later in the season a light permanent shading may be placed on the roof.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE,
Eastwell Park, Kent.

APRICOTS are the earliest fruit trees to expand their blossoms, and the first to require disbudding. Though the removal of superfluous growths should be commenced as soon as the shoots are large enough to handle, in severe weather it is better to postpone the work until the conditions are more favourable. The disbudding of Apricots is not done so severely as in the case of Peaches and Nectarines; the principal object is to remove badly-placed shoots, such as those that grow behind the branches and close to the wall, and any that develop at right angles to the face of the tree. In the case of trees that have filled their allotted spaces the pinching of superfluous shoots to three or four

leaves will tend to make them form fruit spurs. Do not disbud too many of the branches at one time, but go carefully over the upper part of the tree first; then, after a few days do the centre part, and after another interval complete the work by doing the bottom of the tree. Where protection has been afforded let the material remain in position at night till all danger from frost is past, as severe frosts are often experienced late in April.

GOOSEBERRIES.—There is every prospect for a good crop of these fruits. Gooseberry bushes often receive very little attention beyond the annual pruning. Too often, in common with other small fruits, the plants are cropped heavily year after year, and little or no manure is afforded the roots, with the result that the bushes deteriorate, and, lacking vitality, fall an easy prey to insect and fungous pests, whilst the fruit is of inferior size and quality. If a supply of animal manures was not available for top-dressing the bushes in winter, a dressing of fish manure or other fertiliser should be spread on the ground now. Wood ash, lime and soot may with advantage be mixed with the manure and the materials forked lightly in the soil, or, if the latter is of a light open texture, hoeing the surface will suffice. This treatment will greatly benefit the bushes, enabling them to develop their berries early. Gooseberries are much appreciated as dessert fruits, and to obtain extra fine berries the crop should be thinned early—as soon as the berries are as large as Peas. Those that remain should be allowed to grow until they are nearly full size, when the bulk should be picked, leaving a few of the best to ripen. Green Gooseberries are much appreciated for the making of preserves.

GENERAL REMARKS.—Soil of a heavy retentive nature has become caked on the surface by heavy rains since it was dug in winter, and the crust should be broken with the fork. This will greatly facilitate the work of hoeing during the summer, and will tend to keep the surface open and friable. Nothing assists fruit trees in making free, healthy growth so much as constantly moving the surface soil, either by hoeing or forking, according to the nature of the ground; moreover, weeds have no opportunity of becoming established when this work is carried out in a systematic manner. Fruit trees that have borne heavy crops of fruit and have not been fed with farmyard manure for some considerable time should be afforded artificial stimulant in the form of fish manure, bone meal, or other quickly-assimilated manure. The fertiliser should be sprinkled on the surface before hoeing or forking the soil, and will soon be washed down to the roots, benefiting the trees in time to assist them to develop their crops.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

ANNUALS.—Seedling annuals growing in boxes, pans or pots need careful attention, as they may become drawn if neglected, and spindly plants never give satisfactory results. Thin or transplant the seedlings directly they are large enough for removal. Those of the stronger-growing kinds may be pricked out in beds of soil arranged on the floor of cold frames. It is an advantage to first spread some finely-broken manure on the bottom of the frame, for the roots will grow into this, rendering it an easy matter to lift the plants with good balls of soil.

BULBS IN THE GRASS.—At Madresfield we have a good variety of bulbous flowers already expanded. The Dog's Tooth Violet, *Erythronium Deniscanias*, has succeeded with us in the grass for the first time this season. It is a case of patience rewarded, for the clumps are strong both in flower and foliage. *Fritillaria Meleagris*, the Snake's Head; *Narcissus poeticus ornatus*, Muscari (Grape Hyacinth), *Anemone apennina* and *A. fulgens* are all exceptionally fine. *A. apennina* appears as a sheet of azure blue in the bright sunshine. All these plants require some years to become thoroughly established, and they thrive best near deciduous trees, for in such positions the grass does not grow so rank as to smother the plants after they have flowered.

WILD FLOWERS.—In these gardens certain wild flowers are encouraged to grow in large patches, and they give a delightful effect. Few flowers have a more delicious perfume or are more greatly appreciated than the white wood Violet, and none appears more beautiful than Primroses, Cowslips, Bluebells, Buttercups, Anemones, Agrimony, Loosestrife, and wild Orchids, arranged in dells. All are easily grown, and they may be afforded space in the wild garden or along woodland paths.

CLIMBERS.—Plants of summer-flowering Clematis, whether trained on arches, pergolas, or walls, need constant attention in the matters of training and spreading out the young growths, which develop rapidly at this season, and soon become intertwined if neglected. Our plants of *Jasminum primulinum*, trained loosely on south or west walls, are very handsome just now, bearing a profusion of their large yellow flowers, and they look well associated with the dark blue-flowered *Ceanothus rigidus*. *Clematis montana rubens* should be grown in every collection. Allow the plants plenty of room for extension; they look fine rambling over old trees that have been lopped 10 or 20 feet from the ground. *C. flammula* flowers in the late summer or autumn, when the blossoms perfume the whole vicinity. *Wistaria sinensis* and the early and late-flowering Dutch Honeysuckles are other beautiful climbing plants, whilst climbing Roses are universal favourites.

WATER-LILIES.—Nymphaeas may be propagated by division of the root-stocks just as growth commences. Division of the old plants is necessary periodically, in order to obtain large flowers; for, as in other plants, overcrowding of the shoots results in inferior flowers. Divided plants soon make fine specimens that flower well. The late Mr. W. Coleman, of Eastnor, grew Water-Lilies very successfully in old paraffin casks, cut through the middle, and sunk on the lawn to the ground level.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

STRAWBERRIES.—Examine the plants in pots at least twice a day during bright weather, and water copiously such as are dry. The airing of the house must be done carefully when drying winds prevail, for cold currents of air cause the young fruits to partially dry up and cease to swell. Plants that are carrying an abundance of bloom should have the flowers thinned to twelve, or even fewer. Bring forward in gentle heat batches of plants to provide for a succession of fruits. Plants with berries that have just commenced to swell should be grown in plenty of atmospheric moisture, gradually increasing the temperature to 80° or 85° during bright days with top ventilation. This treatment may be maintained until the fruit commences to colour, when the temperature should be gradually lowered to 65° or 70° with a freer circulation of air. Water should be afforded with extra care at this stage, for only sufficient moisture is needed to keep the foliage healthy and firm.

VINES.—The present month, or early in May, is generally considered to be the best time for planting young vines. Assuming that the border has been prepared properly in advance, select a dull day for the planting. "Cut-backs" that have made an inch or two of young growth should have most of the old soil shaken away, or washed from the roots, the latter spread out carefully and covered with a light dressing of soil. Do not bury the roots deeply, for in time the soil will settle, and this must be allowed for in planting. For several days afterwards shade the vines from bright sunshine, and syringe them several times during each day until the roots have made a fresh start. Maintain a moist, growing atmosphere, and a temperature of about 70° to 75°.

PINES.—The fruits will now progress much more rapidly than hitherto. Each plant should be examined regularly, and when moisture is needed the roots watered freely with weak guano water made tepid. If the bed in which the

plants are plunged is heated by hot-water pipes, and the material has become dry, take advantage of a fine day to moisten it thoroughly with tepid water. By doing this and damping the paths daily the atmosphere will be humid and genial, and the practice is far preferable to frequent syringings which are the ruin of many plants. Continue to treat successional plants as I advised in a former calendar. Encourage suckers potted recently to grow robust by giving them every attention. Maintain the bottom heat at 70° to 80°, and stand the plants close to the roof-glass, allowing sufficient space between each to prevent them becoming drawn and spindly. Syringe the plants very lightly once or twice a week at the time the pit or house is closed, which should be done when the temperature ranges from 80° to 85°.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynningham, East Lothian.

MUSHROOMS.—The last bed for the season may now be made of dimensions according to unoccupied space. Beds not yet exhausted may be helped by spreading a light dressing of soil mixed with a sprinkling of superphosphate evenly over the surface. Admit air freely when the weather conditions are favourable, and dispense with fire heat.

SCARLET RUNNERS.—A few plants may be started in pots to gain strength for planting out five or six weeks hence, or in very mild localities a few seeds may be sown out-of-doors. If the tops are pinched the plants will assume a branching habit and will fruit well without the support of sticks.

MUSTARD AND CRESS.—These salads will succeed now in the open. A suitable method of sowing is to scatter the seeds thickly on a small piece of newly-dug soil. After sowing, pat the soil with the back of a spade, so that the seeds are firmed, sprinkle with water, and cover with a piece of sacking till germination has taken place. Cress takes a week to ten days longer to grow than Mustard, and their sowing should be regulated accordingly.

NEW ZEALAND SPINACH.—Two or three seeds sown now in a 3-inch pot, and enough pots filled to plant what is required, allowing the plants 3 feet apart, will provide a stand by should Spinach fail, as it did last year, owing to drought and heat. The seedlings should have the protection of a frame till well established, and the plants require a few square feet each to develop after planting.

PLANTING ONIONS.—It is quite safe in most parts of the country to plant the early-raised Onions. Even if severe frost occurs the plants do not seem to suffer any bad effects. If the soil has been allowed to become rather dry in the boxes, the roots will be easy to separate. I like to draw the roots through a mixture of soil and water before planting, which usually gives the plants a start without having recourse to watering. For ordinary purposes, space the rows at 15 inches apart, and set the plants at 5 inches apart. Hoe between the rows after planting is completed.

SALSAFY.—This vegetable and Scorzonera are usually sown at this time. In my experience it is best to let the seed-sowing stand over for a few weeks, early sowing and "running to flower" being concomitants. If sown very thin—one seed to every 4 inches—the crop will need no thinning, and there is plenty of space at that distance alike for the roots and the top growth.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

CYCLAMEN.—Seedling Cyclamens are growing freely and may need shifting into 3-inch pots. Let the pots be well drained and place a layer of moss or other suitable material over the crocks. For soil use a mixture consisting of two-thirds loam and one-third leaf-mould, with a few lumps of charcoal, some sharp sand, and a little lime rubble or finely-broken crocks in

addition. Take care that the soil around the corm is moist before repotting the plant, and make the soil moderately firm. Stand the pots on a bed of ashes and syringe them in the early morning and again early in the afternoon, closing the house soon after midday to maintain a moist atmosphere and a temperature of 60° at night. These conditions should be maintained until the plants become established, but about the end of May they may be placed in cold frames close to the roof-glass. Shade from bright sunshine and fumigate the house or frame on frequent occasions.

CHRYSANTHEMUMS.—Plants intended to produce large blooms should be shifted into 6-inch pots before the roots become pot-bound. The compost should be mixed some days in advance of the potting, and may consist of three-parts loam, one part each of leaf-mould and manure from a spent Mushroom bed, and a little soot. Pot firmly, and stand the plants on an ash bottom in a cold frame. Spray the shoots overhead in the forenoon, but do not water the roots until moisture is absolutely necessary. Bush varieties may be treated similarly. When these plants are re-established pinch out the point of the growth to encourage side shoots to develop and repot as required. Green and black fly are very troublesome at this stage, and should be destroyed by dipping the plants in quassia extract or dusting the leaves with tobacco powder. If the leaf-mining maggot attacks the foliage pick off the worst infested leaves and burn them.

TUBEROUS-ROOTED BEGONIAS.—The main batch of plants of these handsome summer-flowering Begonias require shifting into pots from the boxes in which they were started. Begonias grow freely in a light, porous compost, such as a mixture of two-thirds fibrous-loam, and one-third each of leaf-mould (not too far decayed), and spent manure from an old Mushroom house, adding a little soot and sand. Lift the plants carefully from the boxes, taking care not to injure the mass of roots. The size of the pot must be determined by the size of the plant, and the receptacles should be well drained. Pot moderately firm, and return the plants to a warm pit or house shading them from bright sunshine. Syringe overhead in the early part of the day to allow time for the foliage to become dry before night, as excess of moisture on the foliage after dark may set up damping. Remove the flowers until the plants become established, and when strong enough to carry bloom feed the plants twice weekly with weak liquid manure.

THE "FRENCH" GARDEN.

By PAUL AQUATIUS.

HOT-BEDS FOR CLOCHES.—Lettuces Little Gott grown on these beds should be removed as the Cos varieties are spreading their leaves and require increased space. Shade the crop from 10 a.m. till 3 p.m. on bright days; if the cloches are whitewashed for the purpose the wash should be applied on the south of the glasses only, but this system of shading is not to be recommended where only a few hundred cloches are in use.

UNHEATED FRAMES AND CLOCHES.—The crops in these beds require abundant ventilation daily, and watering every week. The Radishes have been marketed, and the removal of these and weeds will afford all the space for the plants of Lettuce Little Gott, which are forming hearts and will be ready for market within the next fortnight. The frames and lights will be removed from the variety White Passion in ten or twelve days, as this variety does not form good heads when grown under glass. It may be necessary to fix mats around the beds when the frames and lights have been removed, to shelter the crops from strong winds. Instead of shading the Cos Lettuces grown in these beds remove the glass on bright days.

MELONS.—These plants have grown freely during the past week or so, and ventilation may be afforded more freely than hitherto and over a longer period, but it is essential to spread dry straw or manure over the lights to break the rays of a glaring sun. Plants of the early batch

require increased space, and they should be syringed on all fine days. The ground allotted to the Melon quarter should be hoed or broken deeper if dug in winter. Fork over the black soil reserved for filling the frames. Mark out the space of the first bed, allowing for an 18-inch path on the outside, and 4 feet 6 inches width for the frames. Dig a trench 2 feet wide and 1 foot deep, and cart the soil to the bottom end, to be utilised for fitting the last row. Have ready a supply of fresh manure for making the hot-bed, allowing about three tons for every bed of fifteen lights. If the frames are intended for growing a crop of Vegetable Marrows the plants should now be in 4½-inch pots. Afford the plants plenty of space, abundant ventilation, and copious waterings. They should be set out in ten or twelve days time. Meanwhile, prepare the beds by digging a trench 12 inches wide and 12 inches deep, to be filled with good hot manure that should be soaked with water to hasten fermentation. Place the soil of the second trench on the top of the manure, and set the frames so as to have the trench just in the centre. Place three barrowloads of black soil in each frame as a top-dressing, and then place the lights in position. About the third week of April set six plants very deeply in each frame to within 2 or 3 inches of the manure. When the roots are well established ventilation and water may be afforded. It is essential that the frames be covered at night with mats.

PUBLIC PARKS AND GARDENS.

By SUPERINTENDENT.

GROUNDWORK.—As far as practicable all groundwork improvements should be finished for the season and the surface of the soil either turfed over or sown down with suitable grass seeds. With the unusually mild and damp weather grass has been readily established, indeed that in the London parks has rarely been seen in better condition than at the present time. Should the weather continue damp both seed sowing and turfing may still be engaged in, but after the end of May it is rather a hazardous proceeding, for should a spell of warm and dry weather set in both seed and turf would suffer in consequence.

RENOVATING HEDGES.—Deciduous hedges if cut back at once will soon become green. Where the soil along the line of hedge has become poor an application of thoroughly decomposed manure will greatly improve the appearance and strength of the plants. It should be spread along the surface and gently forked amongst the existing soil, great care being taken to prevent injury to the roots of the shrubs of which the hedge is composed. Blanks in the fence may at the same time be filled up by using stout, bushy plants of a similar kind to those of the hedge. Shrubberies should likewise receive attention in the matter of necessary pruning and digging. Recently-transplanted trees and shrubs must be examined, and those loosened by the wind made firm by treading.

GENERAL WORK.—Roads and paths should be maintained in a thoroughly efficient state, the former being kept in good surface and the latter smooth for pedestrians. When about to apply gravel to paths the surface should first be lightly picked over, so that the material may adhere firmly to the original roadway. Sand or pounded cockle shells make excellent path surfaces, and should be applied preferably after rain. A light application is all that is necessary, the surface presumably being in a fairly even and sound condition previous to the application. Compost heaps should be turned over and a quantity of fresh lime added, this not only depriving seeds of their vitality but helping to sweeten the mixture. When thoroughly rotted, weeds, leaves, and road sweepings make excellent manure, especially when mixed with a small proportion of unslaked lime. General tidiness should be maintained, the paths kept free from weeds and dirt, shrubberies dug over, lawns neatly mowed, and roads and foot-paths edged and cleared of any overhanging branches which obstruct visitors.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are mis-directed.

Letters for Publication. as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

Local News.—Correspondents will greatly oblige by sending to the Editors 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.

TUESDAY, APRIL 21—

Roy. Hort. Soc. Coms. meet (Nat. Auricula and Primula Soc. combined Show.) (Lecture at 3 p.m. on "The Probable Origin of Existing Flowering Plants.") Lincolnshire Daffodil Soc. Show.

WEDNESDAY, APRIL 22—

Herefordshire Spring Fl. Sh., Shire Hall, Hereford. Darlington Hort. Soc. Spring Fl. Sh. in the Corn Exchange.

THURSDAY, APRIL 23—

Nat. Rose Soc. Spring Ex. at R.H.S. Hall, Westminster. Midland Daff. Soc. Sh. at Birmingham (2 days). Roy. Botanic Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 48.5°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, April 15 (6 p.m.): Max. 58°; Min. 42°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, April 16 (10 a.m.): Bar, 30°; Temp. 52°. Weather—Sunshine.

PROVINCES, Wednesday, April 15. Max. 51°, Yorkmouth; Min. 45°, Aberdeen.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Liliums and other Hardy Bulbs, at 12; Roses and Carnations, at 1.30; Palms and Plants, at 5, at 67 and 68, Cheapside, E.C. By Protheroe and Morris.

WEDNESDAY AND THURSDAY—

Unreserved Clearance Sale of 1,900 Orchids and other stock, at Dover House, Rochester, by order of the executors of the late J. Pierpont Morgan, Esq. By Protheroe and Morris, at 12.

The Daffodil Season.

The Daffodil season of 1914 has followed on a winter of unusual mildness, as did the season of 1913, but so far as can be seen at present the two seasons will prove very different in character. In 1913 the earliest Daffodils out of doors, Pallidus Praecox and minimus, made their appearance about the 26th of January, whilst the early Trumpets, Henry Irving, Golden Spur, and Tenby, came into flower during February. By the end of March many of the mid-season varieties were in bloom, but curiously enough as the season progressed this precocity of opening was not maintained, and the varieties which flower late came into flower at dates not far removed from their normal period of opening. For some reason, which is not easy to explain, the present season has so far shown itself rather later than usual, and much later than its predecessor. Pallidus Praecox and minimus did not open until the end of February, while March was

half-way through before the bright yellow flowers of Henry Irving and Golden Spur or Tenby were to be seen, and even at the end of March only a few of the early varieties had opened. It is true the bright sun of the first few days of April brought out many of the garden Daffodils with a rush, not altogether to their advantage as show flowers, and now in the middle of April the many Daffodils in flower, though perhaps decidedly later than in 1913, are not far from normal in their time of blossoming. It may be urged that the lateness of the present year has to some extent been brought about by the dryness of the ground throughout the summer and early autumn of 1913, but such an attempt at explanation is little better than a cloak to conceal our ignorance.

Although the early flowers have suffered somewhat in the garden from the copious and persistent rains of one of the wettest Marches on record, there have been some very fine flowers exhibited at the Horticultural Hall. The season may be said to begin with the forced-bulb show, which took place this year on the 10th and 11th of March. The flowers exhibited at that early date were the products of protective culture, and were almost independent of weather conditions, but the fine flowers exhibited since that date from plants grown in the open show how, with a little care in gathering, the Daffodil may be had in perfection in spite of inclement weather.

An interesting event early in the season was the exhibition by Messrs. Barr and Sons of flowers of a new class of hybrid Narcissus similar to the Poetaz and probably crosses between the Poeticus and Tazetta or Polyanthus sections, as were the original Poetaz introduced by Van der Schoot. This new class of Poetaz appears to be rather nearer the Polyanthus parent, but with somewhat larger or at least more noticeable cups. Like this parent, it is not unlikely that they may prove chiefly valuable for forcing, but until they have been tried out-of-doors in this country a final opinion on this point must be reserved. It is a coincidence that Mr. Wilson is at the same time showing us illustrations of varieties of a similar cross, but nearer Poeticus; Rubellite is one of these with a brilliant cup and about a couple of flowers on the stem.

The Narcissus Committee has made a new departure this year in giving awards to Daffodils suitable for special purposes. The variety W. P. Milner was given an award as specially suitable for rockwork, and for this purpose as well as for growing in pots this charming little flower is well adapted; but one wonders why minimus and cyclamineus varieties pre-eminently adapted for this purpose were overlooked. Olympia received an award as specially suited for growing in pots. It is a fine and richly coloured Trumpet for the garden. At the later show at the beginning of April awards were given to Tantalus, a very large Leedsii, and Inglescombe, a really beautiful double of a charming shade of soft canary-yellow, as suitable for cutting; Croesus, a big

Incomparabilis somewhat of the White-well type, received an award as specially suitable for the garden. It is evidently a tall flower, and one immediately inquires—Can it stand wind? if so, the award is justified. For show purposes awards were given to Ivorine, a particularly beautiful creamy-white flower with an expanded, almost flat cup, and not too big; Royal Sovereign, a double; White maximus, a pale sulphur edition of the well-known and rich coloured maximus; and Queen Primrose, a trumpet which holds its head up, or rather out, from the stem, and is of the colour indicated by the name. These awards to Daffodils suitable for special purposes are certainly a step in the right direction; they will, however, be of little service to amateurs and the public if the awards for excellence in the garden and on wallwork are confined to varieties brought before the Committee at the shows. Nor will any awards to new varieties not likely to be popularly distributed for 10 or 15 years be of much immediate value. If the members of the Committee will go into their own and their friends' gardens, and note the large perianth forms capable of standing a wind or a bleak hillside, and will carefully compare and classify their observations, the results would prove of considerable value.

The new varieties exhibited have been many and good. Northern Queen is a particularly beautiful Leedsii, with a well-filled rounded perianth and a pale yellow cup, while all who have attended the recent dinners of the Horticultural Club will remember the pleasing vases filled with Queen of the West, a trumpet flower of a soft self yellow. In the garden a self flower, that is, one with the perianth of equal colour with the crown or trumpet, is always striking; it is to this tint that Homespun owes its value, and Queen of the West, when it can be grown in quantity, should have a long reign in the garden. Sparkler, though not new, is worth notice as perhaps the earliest of the red cups to come into flower out-of-doors. A particularly fine Leedsii with a cup like a trumpet has appeared in Capella, and while recalling the cream-coloured forms, perhaps few have been more attractive than Carmenta, a large flower, but refined in form, of the type called Giant Leedsii, the perianth creamy-white, with the crown very pale yellow.

Mr. Engleheart's garden continues to produce wonderful flowers of all sizes and types, so many, in fact, that he has shown most of them unnamed. Some particularly large and fine coloured Trumpets were to be found in these exhibits, one of which, at first called Dinton (though it is said the name has been since changed), was very striking. Size of flower is a quality always fostered by flower shows, whether of Daffodils or Roses, and to such an extent that even the most careful have sometimes to remind themselves that the true end of the gardener should be beauty and not gross culture, however difficult may have been the task by which such culture is attained. This reflection was aroused by a little vase of quite small flowers of a variety called Dewdrop, ex-

hibited by Mr. Bourne at a recent show. Each little flower was perfect of its kind, beautiful in form and graceful in pose, while the creamy-white colour and tasteful arrangement of the vase gave to the whole a most delicate and refined appearance.

Lavender is another flower of very attractive and delicate tint. It might almost be described as a study in "art" colours, the prevailing tint in the cup being a soft terra-cotta with a suspicion of lavender in the edge.

It is impossible to get up enthusiasm over a mere number, and so it is usually best not to refer to varieties merely indicated in this manner and shown without a name, but an exception may perhaps be made in favour of one or two Jonquilla hybrids similar to Buttercup, though of a deeper colour, and stated to flower earlier than that variety. When the time arrives that varieties of this fine colour can be planted in quantity in our gardens, they should produce a good effect. Judging, however, from the price at present asked for Buttercup we seem to be looking forward to a sufficiently distant future. Some few years ago a gentleman of great experience in these matters gave it as his opinion that the high prices then being asked for new seedling Daffodils could not be maintained. Since then the

period has the number of beautiful new forms been greater than it is at present. The supply, however, appears to have in-

is apparent. It has, however, probably led to a more rapid discarding of inferior forms and poor growers.



FIG. 118.—SYRINGA PINNATIFOLIA : FLOWERS WHITE.



FIG. 119.—OSMANTHUS DELAVAYI : FLOWERS WHITE.
(R.H.S. Award of Merit, April 7, 1914.)

A satisfactory feature of some of the Daffodil shows this year has been the endeavour to get rid of the formal and bank-like arrangement of groups hitherto adopted. The experiments in this direction made by Mr. Bourne, Messrs. Barr and Messrs. Carter have each in its way been interesting and have lent an additional attraction to these several exhibits.

Coloured Supplement.—The subject of the coloured plate to be published with the issue for next week is a terraced pergola exhibited at the Royal International Exhibition, Chelsea.

NEW CHINESE SHRUBS.—Trees and shrubs have formed a considerable proportion of the large numbers of new plants sent home by collectors in China during the past few years, but up to the present they have not seemed of such importance as the new border flowers from that source, because a long time must necessarily elapse before hard-wooded seedlings reach the flowering stage. However, many of the shrubs have already blossomed, and at the meeting of the Royal Horticultural Society on the 7th inst. three of the newer species were exhibited in flower by the Hon. VICARY GIBBS. Two of these are illustrated on this page. The spray of Lilac (*Syringa pinnatifolia*) shown in fig. 118 is reproduced in natural size, and was taken from a plant about 4 feet high growing in a pot. The foliage is divided into four or five pairs of small glabrous, bright-green leaflets, each about $\frac{1}{2}$ inch long. The flowers are white and borne in short racemes, not unlike those of species of *Ribes*. *S. pinnatifolia* forms a neat bush, and will be valued for its decorative effect in spring. *Osmanthus Delavayi* (fig. 119) is evergreen, grows about 18 inches high, and is therefore a good subject for planting on rockeries. The white flowers are borne in dense clusters and possess a delicate scent. The small, dark-green, ovate leaves have serrated margins, and are not so long as the tubular flowers, which appear in clusters in the leaf axils.

number of raisers of new varieties have increased yearly; and perhaps at no

present no indication of a fall in prices

HORTICULTURAL CONGRESS, PARIS.—The 26th congress organised by the French National Horticultural Society will be held in Paris, in the Society's Hall, 84, Rue de Grenelle, at 9 a.m. on Friday, May 22. The subjects discussed will include workmen's gardens; the influence of radio-activity and of catalysis on plants; co-operation in the sale of horticultural produce; new methods of heating glasshouses by hot water, steam, waste heat or electricity; deleterious effects on plants of smoke and harmful gases produced by factories.

NARCISSUS SEEDLINGS.—Mr. A. J. BLISS has succeeded in raising some pretty libid hybrids from *Narcissus triandrus albus* crossed with the pollen of the Jonquil. The flowers are a clear lemon or canary-yellow, and have that peculiar clearness of petal which is characteristic of so many triandrus hybrids. They grow from 9 to 12 inches in height, and some partake rather of the character of the seed parent in colour and habit, whilst others approach more nearly the pollen parent in appearance. They should make charming little plants for a patch in the rock garden. A pleasing feature about them is that they appear to have retained the delightful fragrance of the Jonquil. Mr. BLISS states that this particular cross has not yet, to his knowledge, been exhibited.

INTERNATIONAL HORTICULTURAL EXHIBITION AT PARIS, 1915.—The general committee to be entrusted with the organising of the great exhibition to take place in Paris next year has just been appointed by the French National Horticultural Society. It is divided into four sections, the first to take charge of the Congress and receptions, the second to arrange the programmes, prizes, classes, etc., the third to manage the advertising, and the fourth to make arrangements for subsidies and special prizes.

NATIONAL ROSE SOCIETY.—The spring exhibition of the National Rose Society will be held on the 23rd inst. in the Royal Horticultural Society's Hall, Vincent Square, Westminster. The Society's Gold Medal is offered for the best group of pot roses staged by a nurseryman, and raisers are invited to submit new varieties, for which Gold Medals, Silver-gilt Medals, or Cards of Commendation will be awarded, according to merit. Money prizes are offered in the other 25 classes.

NATIONAL AURICULA AND PRIMULA SOCIETY (SOUTHERN SECTION).—The exhibition of the National Auricula and Primula Society will be held in the Royal Horticultural Society's Hall, Vincent Square, Westminster, on Tuesday, the 21st inst. Entries must be sent in at least four clear days before the date of the show. The James Douglas Memorial Challenge Cup is offered in class 14 for twelve Alpine Auriculas, and not in class 1, as stated in the schedule. The secretary is Mr. T. E. HENWOOD, 16, Hamilton Road, Reading.

FORESTRY: NATURAL REGENERATION.—Lectures on Forestry delivered recently at Fochabers, Morayshire, by Mr. LESLIE, of the Aberdeen and North of Scotland College of Agriculture, evoked an interesting discussion by Mr. MURHEAD, Commissioner to his Grace the Duke of Richmond and Gordon, Gordon Castle, Mr. LESLIE, Mr. SHARP, Mr. JONES and others. The chief point debated was the natural regeneration of forests, the speakers contending that forests should be allowed to re-plant, or rather re-sow, themselves. It was pointed out that if forests were enclosed by close wire-fencing and game kept out, seedlings would spring up naturally and obviate the need for planting.

ROYAL CALEDONIAN HORTICULTURAL SOCIETY.—The spring show of this society will be held in the Waverley Market, Edinburgh, on the 29th and 30th inst. On the first day members of the society will be admitted at 12 noon, one hour before the general public. The secretary is

Mr. DONALD MACKENZIE, 23, Rutland Square, Edinburgh.

PERPETUAL-FLOWERING CARNATION SOCIETY.—The provincial spring show of the Perpetual-flowering Carnation Society will be held in the Bournemouth Winter Gardens Pavilion on the 29th and 30th inst. The show will be opened by the Mayoress of Bournemouth on the 29th inst. at 2 p.m.

ENTOMOLOGICAL SPECIMENS REQUIRED.—Mr. C. NICHOLSON, of 35, The Avenue, Hale End, Chingford, is requiring for purposes of scientific investigation a few larvae of the small Narcissus fly (*Eumerus strigatus*), cocoons of the Pine saw-fly (*Lophyrus pini*), and a good supply of larvae of the large Narcissus fly (*Merodon equestris*), also cocoons of the large Larch saw-fly (*Nematus erichsonii*). Perhaps some of our readers may be able to furnish Mr. NICHOLSON with specimens of some of these pests, and he will refund the postage on any that may be sent him.

ROYAL METEOROLOGICAL SOCIETY.—A meeting of the Royal Meteorological Society will be held at the Institution of Civil Engineers, Great George Street, Westminster, on Wednesday, the 22nd inst., at 7.30 p.m. The following papers will be read:—(1) "Report on the Phenological Observations for 1913," by J. E. CLARK, B.Sc., and R. H. HOOKER, M.A.; (2) "A Small Anemometer for Tropical Use," by A. J. BARNFORD, B.Sc.

CHRYSANTHEMUM CONGRESS AT MELUN.—In conformity with the decision arrived at on the occasion of the congress at Nantes, and confirmed by that at Ghent, the nineteenth annual Congress of the Société Française des Chrysanthémistes will be held at Melun. The date is not yet definitely fixed, but the Congress will be held early in November next. The horticultural societies of Seine-et-Marne are meanwhile preparing an exhibition of all kinds of horticultural produce, to be opened at the same time. An excursion to the Palace of Fontainebleau, with the magnificent Park of Vaux-le-Vicomte, which was designed by Le Nôtre, will close the Congress.

WOMEN'S NATIONAL AGRICULTURAL AND HORTICULTURAL ASSOCIATION (U.S.A.).—A National Association of women interested in horticulture and agriculture has been formed in the United States. The objects of the association are the exchange of information among its members; to bring together supply and demand both of produce and of labour, and to increase the knowledge and use of existing institutions. As a means to this end it is hoped that a general secretary may be employed, conferences of a practical nature may be held, local exhibitions encouraged, and printed matter distributed. The president is Mrs. FRANCIS KING, Alma, Mich.; corresponding secretary, Mrs. SUSAN H. VOLLMER, Huntington, N.Y.; and treasurer, Miss LOUISA G. DAVIS, Ambler, Pa. Affiliation with the Women's National Agricultural and Horticultural Union of London is under consideration.

AMERICAN GOOSEBERRY MILDEW.—The Board of Agriculture and Fisheries has received information that the summer stage of American Gooseberry mildew (*Sphaerotheca Mors uvae*) was discovered in a Cambridgeshire garden on the 6th inst. All Gooseberry growers are advised to examine their bushes carefully, and should any sign of disease be found to spray their bushes with a solution of liver of sulphur (one pound to 32 gallons of water). A leaflet describing the disease and giving directions for dealing with it can be obtained from the Secretary, Board of Agriculture and Fisheries, 4, Whitehall Place, London, S.W., gratis and post free. Letters so addressed need not be stamped.

FLOWERS IN SEASON.—Mr. C. G. VAN TUBERGEN, jun., of Haarlem, who has already

exhibited in this country variously-coloured hybrid Freesias, has sent us a collection of flowers representing a fresh batch of novelties, each variety being named. Taken collectively, they show a considerable increase in the diversity of colouring, and many of the flowers are improved in size as compared with the earlier representatives of this section. The varieties are as follows:—Doreen, rich yellow, with orange flush on the lower segments; Dulcinea, pale lilac and white, flowers rather small; La Surpassante, rose-colour and white; Robinetta, small white flowers, the points of the segments reddish-purple, the petals very beautifully lined; Canari, yellow and cream; My Pet, pale greyish-mauve, the colour one sees in *Mackaya bella*; Heliotrope, a shade of purple; Contrast, white, with bright orange on the lower segments; Dainty, bright purple with silver underneath; Mouette, a very large, open flower, white and pale mauve, with bright orange at the base of the segments; Charmante, pale salmon-rose and Conquest, purple and white.

—Mr. F. DENIS sends us flowers of a hybrid *Ophrys* he has raised from a cross between *O. tenthredinifera* and *O. aranifera*. The first-named species is the seed-parent. The flowers of the hybrid vary considerably, ranging between the two natural hybrids *O. Grampinii* and *O. Etrusca*, which are admitted to be derived from the same parentage. The new hybrid flowers very early, at the same time as *O. Battandieri*, the result of a natural cross between *O. fusca* and *O. lutea*. Flowers were exhibited before the Société Nationale d'Horticulture de France in March, 1912 (see *Orchid Review*, July, 1912).

HIPPEASTRUMS.—Lecturing before the Royal Horticultural Society on Tuesday, April 7, Mr. FIELDER gave an interesting account of the history and cultivation of Hippeastrums. He mentioned that hybrids of these plants were first raised in 1790 by Dr. GRAFF, and referred to the many raisers in this country who have taken part in this work. Mr. FIELDER pointed out that amateurs need not deprive themselves of the pleasure of growing these plants since the popular idea that Hippeastrums must have considerable heat is erroneous. A temperature of from 55° to 60° suffices, and bottom heat may be dispensed with. New varieties may be raised from seed and good strains may be continued by off-sets. A noteworthy observation was that in the experience of the lecturer off-sets do not appear to be formed from bulbs which have themselves grown from off-sets. For flowering in winter Mr. FIELDER advised the use of the less choice varieties, for when treated in this way the bulbs wear out quicker. He remarked that bulbs which have been forced go into the resting stage earlier than they would if they had been grown in their natural season. With respect to the raising of seedlings, Mr. FIELDER urged that if seed be sown as soon as it is ripe (in June or July), and if the seedlings be grown on instead of rested during the winter, flowers may be produced in one year and nine months. Those who are wont to receive bulbs of Hippeastrums from the East should impress on the senders the need for lifting and despatching the bulbs only during the resting season. The practice of the inexperienced traveller on seeing a taking flower is to lift the bulb forthwith, and to despatch it on a long journey without any special treatment. An interesting statement was made in the course of the discussion that bulbs of Hippeastrum sent from Malaya bear during their first year or so in this country leaves and flowers simultaneously, but that after a longer or shorter period the leafless bulb throws up its flowering shoot and the bulbs deteriorate. Whether this is due to improper cultural treatment during the resting period—too complete dryness, for example—or whether it is due to the bulb endeavouring to recall its normal habit in the less propitious circumstances of a temperate house we do not know. As Mr. FIELDER insisted, the amount of

water should be reduced during the time the bulbs are ripening, and after resting over winter in a temperature of 40° or 45°, the bulbs, when started in spring, should receive little water for the first ten days, during which time growth begins.

SOME RECENT EXPERIMENTS IN THE APPLICATION OF ELECTRICITY TO PLANT PRODUCTION.

(Concluded from p. 247.)

A much more difficult problem is presented by the need for a control area under normal electrical conditions, and yet close to the electrified area, so as to avoid differences in soil and exposure. This need for proximity renders it almost impossible to obtain a complete control. Winds cannot be avoided, and in a wind the electrically-charged air over the electrified area must move away from the wires in the direction of the wind. Something can be done by placing the control to one side of the electrified area, and if there is a direction from which the winds usually blow, to put the control on this side of the electrified area.

Some advance towards the solution of the problem was made at Dumfries in 1913, and the arrangement as adopted there is shown in the diagram (fig. 120). It will be seen that the electrified area lies to the north of the control, which is the direction from which in both 1911 and 1912 winds had most rarely come. Potatoes were grown again in this year, and again gathered and weighed from small areas, either one-tenth or one-eleventh acre in extent; the different areas weighed are numbered in the plan. Between the control area and the last overhead charged wire there intervenes a space of twelve yards. Across this space stretches a network of galvanised iron wire of 1/2-inch mesh 10 feet high. This network is earthed at intervals, and was intended as a screen to cut off some of the discharge from the electrified area. For purposes of comparison one-tenth acre of the control, No. 4, was completely enclosed in a cage of the same material 6 feet high. The main wire screen was not in place until June 28; by that time the horse labour upon the crop had finished. In another year it is intended to have it in place earlier. The result of interposing these screens was studied by various electrical methods, and it was found to have some effect, but not enough.

There was clear evidence that with this height (10 feet) of screen, as compared with the height of the charged wire (about 14 feet), a very large amount of the discharge came over the top of the network, and on days when the wind blew from the north with any vigour it was impossible to continue the discharge.

Unfortunately the weather was very exceptional in 1913 in this locality, very dry, with frequent winds from the north, so that the occasions when the control was not efficacious were far too numerous. The season of 1914 will see further attempts to get a satisfactory control. The relative heights of the charged network and the wire screen are being changed to try to cut down the leakage of the electricity over the screen, and other methods are being tried which it is not necessary to describe until their efficacy has been tested.

It is unfortunate that the value of the control obtained for the latter part of the season at Dumfries cannot be assessed in the light of the weight of Potatoes obtained during this year. That this cannot be done with fairness is owing to the abnormally dry season. As was pointed out before, dry weather is unfavourable to electrical treatment, and the whole district sustained one of the driest seasons known for years. From June 13 until August 20 only 1.54 inches of rain fell, and there were fifty days within this period without any rainfall. Under these conditions lack of moisture was the limiting fac-

tor all over the field and undoubtedly determined the very small yields obtained. The yields per acre by the different plots is given in the table below, and in all cases where on either side the yields are better the reason is a slightly deeper soil holding more moisture. The plots just to the north of the wire screen which were not weighed were in the same slight hollow as Nos. 12 and 13 of the control, and these unweighed plots undoubtedly cropped heavier than any other portion of the field.

In 1914, with normal weather, some important figures should be obtained. The control at Dumfries, if not all we might desire, will certainly be better than in 1913, and the electrical comparison between the two areas will be de-

These experiments have been briefly described, but so far they have not been fully followed up, because the special working conditions involve many new problems, which require special consideration.

Insulation is the great difficulty in the glass-houses, and the impression of the present writer is that critical electrical tests would show that up to the present no satisfactory experiments have been carried out in greenhouses, but that the discharge has been impartially distributed upon the many earthed conductors, from supporting wires to hotwater pipes, waiting to receive it. It is hoped to return to this problem later if the results of the trials under the conditions in the open seem to justify it, and indeed some small experiments are now in progress in a greenhouse. In the long run, if increased yields can be expected, then the outlay in apparatus would

TABLE OF YIELDS (DUMFRIES EXPERIMENT).
The number of the plots refers to the diagram shown in fig. 120.
Electrified Area.

Plot No.	Yields.	Fraction of Acre.	Yield per Acre.	
			tons	cwt. qr. lb.
1	13 2 3	One-eleventh	7	9 3 3
2	12 3 27		7	3 0 9
3	14 0 20		7	4 5 3 24
4	14 2 14	One-tenth	8	0 3 14
5	14 1 7		7	3 0 14
6	15 2 3		5	15 1 2
7	16 0 14	"	8	1 1 0
8	16 0 0	"	8	0 0 0
9	17 0 21	"	8	10 0 20
10	17 3 17	"	8	19 0 2
11	14 3 24	"	7	9 2 16
12	14 1 16	"	7	3 3 20
15	16 0 21	"	8	1 3 14

Total—9 tons 18 cwt. 1 qr. 18 lbs. on 1.26 acres.
Average 7.77 tons per acre.

Control Area.

Plot No.	Yields.	Fraction of Acre.	Yield per Acre.	
			tons	cwt. qr. lb.
1	13 3 25	One-eleventh	7	13 2 23
2	13 2 2		7	8 2 22
3	14 1 19		7	18 2 13
4	13 0 23	One-tenth	7	5 1 21
5	13 2 5		6	15 1 22
6	13 0 23		6	12 0 6
7	14 1 20	"	7	4 1 4
8	13 2 23	"	6	17 0 6
9	14 1 7	"	7	3 0 14
10	13 2 13	"	6	16 0 18
11	13 1 23	"	6	14 2 6
12	17 2 14	"	8	16 1 0
13	15 1 7	"	7	13 0 14

Total—9 tons 4 cwt. 1 qr. 8 lbs. on 1.26 acres.
Average 7.31 tons per acre.

probably be most justifiable in the intensive practice of the horticulturist. But for the present, until the actual question of yields under different treatment is settled, the actual crop under treatment is rather a matter of convenience than anything else. When once the general principles of the methods are understood the application of these principles to the electrification of crops is a comparatively simple matter.

In conclusion, a word to the reader who feels that progress is slow. We are dealing with a problem that has been more or less under investigation since 1750, and in which all hasty work has only succeeded in confusing the issue. Nothing will be gained by hasty generalisation on ill-considered, insufficiently-repeated experiment. The apparatus and method of treatment involve considerable expense, and the large-scale trials in which controls have to be obtained have involved many difficult and tentative experiments. Hasty decision invariably means repentance at leisure. Especially must it be remembered that we are still applying a very little understood power to affect the development of an organism the interior and essential processes of which are still largely unknown to us. Little wonder, therefore, that progress is slow, is accompanied by much destructive criticism of earlier work, and is unaccompanied by any confident predictions. J. H. Priestley.

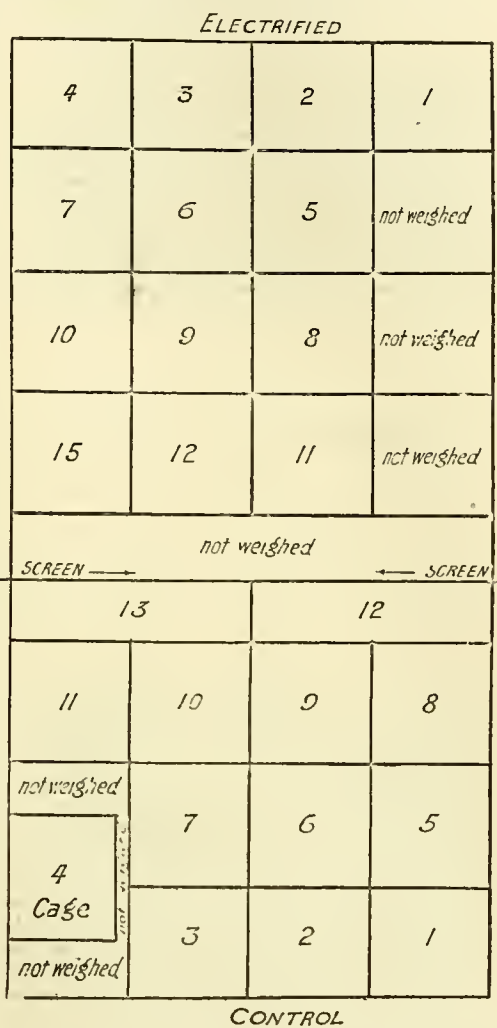


FIG. 120.—CONTROL AND ELECTRIFIED AREAS.

finite. Furthermore, Mr. Low is also putting up a lofty wire screen in the Balmakewan experiments, and, with good fortune, both should be conducted in weather that will not prevent the detection of the value of electrical treatment. Therefore 1914 should go far to settle the practical point at issue. But there must always be this proviso, that until more laboratory results come in we shall still be working in the dark.

Nothing so far has been said about the application of electrical discharge under greenhouse conditions. It is impossible to do justice to this subject in the space of a brief article, as the greenhouse conditions introduce many new problems which require detailed discussion.

Attempts have been made to apply the discharge in greenhouses at Bitton, near Bristol. The crops chiefly treated being Tomatoes and Cucumbers grown commercially (see fig. 122).

NOTES FROM WISLEY.

PLANTS IN FLOWER.

A LARGE bush of the graceful evergreen Chilean shrub, *Azara microphylla*, is covered with small yellow flowers, which diffuse a most pleasing Vanilla-like fragrance. The specimen, which is about 12 feet high, is protected from east winds by a belt of Austrian Pines. The fine tree of Weeping Cherry (*Cerasus sinensis pendula*) is in full flower, and covered with delicate pink blossoms. On the far side of one of the larger ponds a tree of *Salix babylonica* is very effective at the present time. *Forsythia suspensa*, *Ribes sanguineum* and *Nuttallia cerasiformis* are flowering freely in the garden. Camellias are blooming in the wild garden, and on the shrub border by the glasshouses *Ribes speciosum*, with its deep-red Fuchsia-like blossoms, is very attractive, whilst *Corylopsis spicata* is opening its spikes of Cowslip-scented flowers. Large numbers of Primulas and Daffodils are flowering in the wood. Of the many plants in flower in the alpine house the following are especially noteworthy:—*Epigaea repens*, with wax-like, faintly-scented rose-tinted blossoms; *Anemone palmata*, *A. fulgens*, *Aubrietias* Dr. Mules and Lloyd Edwards, *Primula frondosa*, *Narcissus Bulbocodium*, *N. juncifolius*, *Thalictrum anemonoides*, *Sanguinaria canadensis*, *Morisia hypogaea* with bright yellow flowers, and *Saxifraga afghanica*, of which a large plant carrying many spikes of pink flowers makes a striking feature.

SCOTLAND.

SUPERINTENDENT OF ABERDEEN PARKS.—At a meeting of the Aberdeen Town Council, held on the 6th inst., a recommendation by the Links and Parks Committee that Mr. Robert Walker should be appointed general superintendent of the city parks was adopted. Mr. Walker has been for 42 years in the employment of the Corporation of Aberdeen. His first appointment carried with it a salary of only £52 per annum, and the most recent one, that of Superintendent of Victoria Parks and several other parks and open spaces, had attached to it a salary of £170. The new appointment, which involves the duties of a general superintendence of all the parks, golf courses, children's playgrounds, etc., has a salary of £200 per annum.

GRANTS TO HORTICULTURAL SOCIETIES.—Aberdeen Town Council has again voted money grants to the two local horticultural societies. The Royal Horticultural Society of Aberdeen receives £10 10s., and the Aberdeen Chrysanthemum Society £5 5s.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

RAINFALL.—The rainfall here in February amounted to 6.65 inches; and in March, 6.90 inches. Rain fell on twenty-two days in February and twenty-five days in March. Our gauge is 240 feet above sea level. *W. Mann, The Observatory Gardens, Penllergare, Swansea.*

—During March rain was registered here on 30 days out of the 31, and the total was 8.98 inches. The greatest fall was on the 21st, when 1.10 inch was recorded. In February rain was registered on 20 days, the total being 8.16 inches. *George Laurence, Manor House Gardens, North Bovey, Moretonhamstead, Devonshire.*

MISTLETO ON THE COMMON HAZEL (see p. 240).—My friend, Mr. Crump, will be interested to hear that many years ago I found the Mistletoe growing upon a branch of the common Hazel overhanging the trout stream, which,

as he will recollect, passes near to the Hendre kitchen gardens. Subsequently rabbits destroyed the bark of the Hazel's stem, and killed the branch, together, of course, with the Mistletoe. If my memory serves me rightly I asked at the time in the pages of the *Gardeners' Chronicle* if Mistletoe found growing upon the Hazel was a rare occurrence, and Mr. A. D. Webster replied that he had seen an instance of it. *Thos. Coomber, The Hendre Gardens, Monmouth.*

—I have known for many years past a case of the Mistletoe growing on the Hazel in one of



FIG. 121.—MEASURING THE ELECTRIC DISCHARGE, GARFORTH.

On the right the candle within a wire cage supported on an ebonite rod. The candle takes up the potential of the air at the point its flame reaches; a wire carries the charge to the electrometer standing on the glass plate. The observer then determines the voltage by the deflection of the aluminium leaves of the electrometer.

(See p. 271.)

the Cobham Hall woods in Kent, though when I last saw it the Mistletoe was decreasing in size. On the Maple there I have seen growths 9 feet long, but the finest specimens I have seen were on Acacia, the clumps being 5 feet through, mea-



FIG. 122.—ELECTRIFIED CUCUMBER HOUSE AT BITTON.

One charged wire runs down middle of house, and is suspended from insulator attached to each door. When the house is entered the wire sags to ground and so avoids danger of shock. The photograph makes clear the waste of electricity to poles, supporting wires, water pipes, etc.

(See p. 271.)

sured after being blown out by a storm. I have seen it growing in Kent on the following trees: Black Poplar, Lime, Ash, Elm, Acacia, Medlar, Apple, Pear, Crab, Thorn, Blackthorn, Maple, Hazel, and Plane. *T. R. Cuckney, Arnside, Carnforth.*

THE NARCISSUS FLY.—I should be sorry if the expression of my hopeful opinion in my note on March 28 regarding the *Eumerus lunulatus* should cause anyone to relax his precautions against it while still *sub judice*, and I hope that Mr. Charles E. Shea (see p. 240) will counteract any such effect. My object was rather to put forward an alternative view, which the results of my experience seemed to strongly support, in order that it may be tested by anyone carrying out a thorough scientific investigation. For my part, while we are still in a state of uncertainty, acting on the principle of "he's a stranger, heave half a brick at him," I take up all doubtful bulbs (so far as I have time and opportunity) and destroy all grubs and flies that I can capture. The case for the view that the *Eumerus* is a scavenger is, however, I think, stronger than Mr. Shea will allow. Insects, like fungi, which feed on living tissue, are generally specialised for a particular species or kind of plant, or group of more or less closely allied species. Whereas insects which live on dead matter, like saprophytic fungi, can attack a much wider range of substances, provided only that these substances are in a suitable state of decay. It seems, therefore, very unlikely that a grub could vary its habit and diet so widely as to feed both on the living bulb of a Daffodil (*Amarylidaceae*), and on the rhizome of an Iris. Still more, that it should be alternatively a feeder on living or dead matter. On the other hand, if the *Eumerus* is a scavenger it might very well be expected to be found in a rotting Daffodil or Iris, or any other convenient rotting plant tissue. A further experience, not mentioned in my note of March 28, is that in a plot containing some 400 special Daffodil bulbs, which for convenience of crossing were all numbered, and a plan kept, I did not lose a single bulb from 1907, when they were planted, until 1910, when the *Merodon* first appeared; and 1911, when the *Fusarium bulbigenum* was so prevalent, although there were numbers of *Eumerus* about in 1908 and 1909. During the same period in my selection plots containing over 700 poeticus seedlings only 8 bulbs were noted as "dead" (cause unspecified). There is another point that Mr. Shea appears to have overlooked which I wish to draw attention to, all the more as it gives an opportunity of suggesting a practice which would be advisable whether the *Eumerus* be a scavenger or not. The *Eumerus* grub matures in a much shorter period than the *Merodon*. I do not know how many broods there may be in a year, but there are certainly more than one, and possibly three. The grubs found in bulbs now will be soon pupating, and will form the first brood. Some *Eumerus* grubs found in bulbs taken up at the end of June pupated in July, and developed into flies in the first days of August (perhaps prematurely from having been disturbed). The grubs found by Mr. Shea in his bulbs must have come from eggs laid by this second (or a still later) brood. But by this time all Daffodil foliage is gone. There would have been no leaves (of any particular bulb) for the fly to lay its eggs on as Mr. Shea suggests. Either the fly must have found a hole above the neck of the bulb, if a healthy one, or in some way can scent out a bulb that is rotting and deposit its eggs above the spot. As for the bulbs having been absolutely strong and healthy last year, a bulb attacked by *Fusarium bulbigenum* may be apparently quite healthy, may flower and even seed, and yet be diseased throughout and rotting by October. It would appear, then, that if the soil is raked over and the holes left by the decaying leaves and stalks are filled up as soon as the foliage has died down the healthy bulbs would be protected, at any rate from the later broods of the fly, if not altogether. *A. J. Bliss.*

THE QUINCE AS A FLOWERING PLANT.—Writing in *Mollers Deutsche Gärtner Zeitung* (No. 13, 1914), Mr. B. GOERTH, of Proskau, extols the beauty of the Quince as a flowering "shrub." He points out that the Quince does well in grass, and the large-flowered varieties present a beautiful sight when in blossom. Among the varieties of *Cydonia vulgaris* which Mr. GOERTH recommends are:—Badener Champion, "Mammut" (Mammoth), Riesen Quitte (Giant Quince) of Leskovac, Persische Zucker Quitte, and FULLER'S Birn Quitte (Pear Quince).

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 15 AND 16.—The special competitive Daffodil Show, which was held at the Vincent Square Hall on these dates, was very successful. There were numerous exhibits, most of the blooms were good, and in many instances the competition was keen. More than 50 seedling varieties were submitted to the Narcissus and Tulip Committee for award, and of these eight received Awards of Merit. The three other committees also met, and the Orchid Committee recommended four and the Floral Committee two Awards of Merit to novelties, but the Fruit and Vegetable Committee found nothing to do. At the 3 o'clock meeting of the Fellows Mr. Arthur W. Hill, M.A., delivered a lantern lecture on "The History and Function of Botanic Gardens."

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. E. H. Jenkins, W. P. Thomson, Chas. E. Pearson, Arthur Turner, Charles Dixon, W. H. Page, J. W. Moorman, C. R. Fielder, F. W. Harvey, George Gordon and John Green.

AWARDS OF MERIT.

Primula Fille de Nancy.—This is a handsome hardy garden variety, derived probably from *P. Veitchii*, which it closely resembles in habit and colour, and in the breadth, substance, lobing and variation of the leaves, which differ, however, in being much less hairy below. The flowers are borne in close umbels of about a dozen flowers on stalks six to nine inches high. In colour they are a bright magenta-rose, with a small yellow eye, and the edge of the petal is distinctly and prettily fimbriated. (Shown by Messrs. J. PIPER AND SON.)

Amygdalus persica rosea fl. pl. pendula.—A weeping form of the rose-pink Peach, shown as a tall standard. The plant will be most valued for its habit. (Shown by Mr. L. R. RUSSELL.)

Orchid Committee.

Present: De Barri Crawshay, Esq. (in the chair), Messrs. Jas. O'Brien (hon. secretary), Gurney Wilson, W. Bolton, S. W. Flory, J. E. Shill, J. Charlesworth and T. Armstrong.

AWARDS.

AWARD OF MERIT.

Odontoglossum eximium The Dell variety (ardentissimum × crispum), from Baron BRUNO SCHRODER, The Dell, Englefield Green (gr. Mr. J. E. Shill). A very fine flower, of perfect shape, the sepals and petals broadly margined with white tinged by the reflection of the dark purple on the back. The inner surface bears one large, irregular, claret-red blotch, with some smaller markings round it. Lip white in front, with a large red blotch and some smaller red lines; crest yellow.

Miltonia vexillaria Lyoth (vexillaria chelsiensis × Memoria G. D. Owen), from Messrs. CHARLESWORTH AND Co., Haywards Heath. One of the best of their fine home-raised *M. vexillaria*. Flowers large rose, with a fine purplish-crimson mask on the lip, from which radiate short lines of the same colour.

Odontioda Joan (Odontioda Charlesworthii × Odontoglossum ardentissimum), from Messrs. CHARLESWORTH. In colour near to *O. Charlesworthii*, but with a more broadly-expanded flower. Colour bright red, with yellow crest and some light-yellow markings on the lip.

Odontoglossum Elissa (Edwardii × illustrissimum). Flower of the same form as several of the *O. Edwardii* crosses, but with broader segments, purple in colour, and with yellow crest. From PANTIA RALLI, Esq., Ashtead Park.

GENERAL EXHIBITS.

Lord GRANTLEY, Red Rice, Andover, showed *Odontoglossum Zena (Sceptum × Harryanum)*.
DE B. CRAWSHAY, Esq., Sevenoaks, showed a fine form of *Odontoglossum Crawshayanum*.

G. HAMILTON SMITH, Esq., Finchley (gr. Mr. Coningsby), showed a natural hybrid form of *Cymbidium glebelandense (Schröderi × insigne)* (syn. *C. Cooperi*).

Messrs. SANDER AND SONS, St. Albans, showed the white *Cattleya Gravesiana amabile (Mossiae Wageneri × Luddemanniana)*.

PANTIA RALLI, Esq., Ashtead Park, exhibited *Odontoglossum Pescatorei virginea*, a large form with violet-coloured blotches, and *Cattleya Luddemanniana Stanleyi*.

Messrs. CHARLESWORTH AND Co., Haywards Heath, showed a good selection of home-raised hybrid Orchids, including *Odontoglossum crispum Albania*, a seedling form of remarkable beauty; *Brasso-Cattleya Digbyano-Schröderae Bradshawiae*, a fine white flower; *B.-C. Princess Elizabeth*, a pretty hybrid between *B.-C. Digbyano-Mendelii* and *C. Mossiae*; *Angraecum fastuosum*; and the pure white *Trichopilia Backhouseana*.

Narcissus and Tulip Committee.

Present: E. A. Bowles, Esq. (in the chair); Rev. Joseph Jacob, Messrs. Wm. Poupard, W. W. Fowler, C. Lemesle Adams, H. Backhouse, P. D. Williams, W. A. Milner, G. Reuthe, P. Rudolph Barr, G. W. Leak, J. D. Pearson, Alex. M. Wilson, Arthur R. Goodwin, F. Barchard, H. V. Warrender, W. F. M. Cope land, J. T. Bennett-Poë, W. A. Watts, Herbert Smith, Charles Dawson, and Chas. H. Curtis (hon sec.).

AWARDS OF MERIT.

Narcissus Lady Superior (show).—An exceedingly beautiful Barrii bloom which has broad, overlapping white perianth segments, and yellow corona tipped with fiery orange. (Shown by Messrs. R. H. BATH, LTD.)

N. Nightingale (show).—An early Poeticus variety of almost perfect form; the perianth segments are pure white, and the corona is flat and brilliant in colour. This and the two following varieties were shown by Messrs. CARTWRIGHT AND GOODWIN.

N. Morven (show).—A medium-sized Trumpet variety in which the white perianth forms a fitting background for a lemon-yellow trumpet, which is long and widely expanded.

N. Scarlet Gem (show).—A rather small-flowered Poetaz (Polyanthus) hybrid of striking appearance. The combination of clear yellow perianth and compact fiery-orange corona is very pleasing.

N. Southern Gem (garden and for cutting).—A chaste Leedsii Daffodil of large size. The white perianth segments are broad and of good substance, the trumpet-like corona is primrose-coloured when it first opens, but changes to milky-white in a few days. (Shown by Mr. HERBERT PHILLIPS.)

N. Admiration (garden).—A Poetaz (Polyanthus) hybrid which has rather large, soft yellow perianth segments and orange-coloured corona. (Shown by Messrs. VAN WAVEREN AND SONS.)

N. Princess Juliana (show).—A very large, rich yellow Trumpet Daffodil; the long trumpet being regularly serrated and widely expanded. (Shown by Messrs. BARR AND SONS.)

N. Golden Sceptre (show).—An unusually large Jonquilla hybrid of perfect form, rich yellow in colour and sweetly perfumed. (Shown by Messrs. DE GRAAFF BROS.)

OPEN CLASSES.

Collection of Daffodils, 48 varieties.—The three exhibits in this champion class made such an imposing display as to largely atone for the thinness and lack of attraction in some of the other classes in this division. In these splendid exhibits were arrayed rows of beautiful blooms, most of them of the highest quality, characterised by bright fresh colours, the blooms boldly set on stout stalks, compelling the admiration of the visitors. The schedule required distinct varieties fairly representative of the different divisions. As regards the first four divisions, the latter condition was liberally interpreted, and the Poeticus varieties were plentiful, but the remaining sections were very poorly represented.

The 1st prize was won by Mr. A. M. WILSON, Shovell, Bridgwater, whose collection was particularly strong in Incomparabilis varieties. But his outstanding variety, and probably the "flower of the show," was an unnamed Leedsii,

which we understand will go to Holland. The very large flowers are fully 4 inches across, and the pure white perianth segments are of good substance, overlapping so as to form the desired round bloom, whilst the small, creamy corona is brightened by splashes of orange-yellow. The chief Trumpet sorts were Berseker, Countess of Stamford and Cleopatra. Of the Incomparabilis blooms the most noteworthy were Lamancha, Lanceolot, Leontes, and several unnamed seedlings; whilst Cossack, Brambling, Gothelmey and Bonfire, amongst the Barrii sorts, were particularly charming; 2nd, Mr. C. BOURNE, Simpson, Bletchley, who had also many beautiful Incomparabilis varieties, of which the principal were Whitewell, Duke of Leinster, Bernardino, Brilliancy and Countess. Also noteworthy were such Barrii sorts as Sunrise, Cossack and Red Lady, and the Trumpet varieties, Judge Bird, Lord Roberts, Cornelia, and Mrs. H. T. Veitch; 3rd, Mr. F. H. CHAPMAN, Rye, in whose collection Crater, an Incomparabilis, in which the beauty of the yellow perianth segments is enhanced by the broad, widely-expanded rich orange corona, attracted a deal of attention. Of the standard sorts, Orangeman, Will Scarlett, Seagull and Gloria Mundi were particularly good.

Twelve Long Trumpet Daffodils.—The 1st prize exhibit of Mr. C. BOURNE was noteworthy for the purity of the varieties with white perianth segments, and of these Mrs. Robert Sydenham, White Emperor and Conqueror were splendid; 2nd, Messrs. CARTWRIGHT AND GOODWIN, whose collection included the beautiful variety Morven, which received an Award of Merit, and excellent blooms of Onslaught, Fort George and King Solomon; 3rd, Mr. W. A. WATTS, Bryn, St. Asaph.

Twelve Incomparabilis Daffodils.—Messrs. CARTWRIGHT AND GOODWIN won the 1st prize with an exquisite set of blooms, amongst which the bright corona of Marshlight was particularly prominent. Tiger, Sulphur Queen, Wonderland and Giraffe were also unusually fine; 2nd, Mr. C. BOURNE, whose outstanding variety was Macebearer; 3rd, Mr. W. A. WATTS.

Twelve Barrii Daffodils.—The competition in this class was very good indeed, and the dainty, bright-eyed blooms had a very pretty appearance. Mr. C. BOURNE, who staged Queen of Hearts, Brilliancy, Red Eve and Southern Star in exceedingly good form, won the 1st prize; 2nd, Mr. F. H. CHAPMAN, who had several beautiful unnamed seedlings.

Nine Leedsii Daffodils.—The 1st prize in this class was awarded to Messrs. CARTWRIGHT AND GOODWIN, who had good blooms of Nemesis, Thistle and Felspar; 2nd, Mr. W. A. WATTS, who showed good blooms under seedling numbers.

Nine Daffodils, Selected from Divisions V., VI., and VII.—Messrs. CARTWRIGHT AND GOODWIN, the only exhibitors, were awarded the 1st prize for an interesting collection, which included Quakeress, Araby, Buttercup, and Water Nymph.

Six Polyanthus (Tazetta) Daffodils.—In this class also Messrs. CARTWRIGHT AND GOODWIN found no competitor, and they were awarded the 2nd prize.

Six Poeticus Daffodils.—Of the three sets of blooms, the best was shown by Mr. F. H. CHAPMAN, who had excellent flowers of Ditty Ibis and four unnamed seedlings; 2nd, Mr. C. BOURNE; 3rd, Mr. W. A. WATTS.

Six Double Daffodils.—Messrs. CARTWRIGHT AND GOODWIN, the only exhibitors of Double Blooms, staged very attractive flowers of Tintoretto, Sundown and Plenipo.

SEEDLING AND NEW DAFFODILS.

Except in the first class, which allows the varieties to have been introduced into commerce since or during 1910, the following classes are for distinct varieties not yet in commerce, one stem of each to be shown:—

Twelve Daffodils.—The R.H.S. Standard Cup and 1st prize were won by Mr. C. BOURNE for a beautiful collection, from which we select Even-song (white perianth, pale primrose corona), Golden King (rich yellow Trumpet), Lullaby and Red Eve (Poeticus varieties of good shape and pure white perianth surrounding bright corona); 2nd, Mr. W. A. WATTS, whose collec-

tion of unnamed varieties contained several promising novelties; 3rd, the Duke of Rutland.

Twelve Daffodils.—Mr. P. D. WILLIAMS, Lanarth, St. Keveine, Cornwall, won the Engleheart Challenge Cup and 1st prize with varieties shown under seedling numbers. This collection contained several very good Barrii varieties, a promising Leedsii, and an excellent Trumpet bloom; 2nd, Mr. W. WELCHMAN, who showed all Trumpet varieties, Lord Cromer (rich yellow self), Clodia (white perianth and yellow trumpet) being exceedingly good; 3rd, Mr. F. H. CHAPMAN.

Six Daffodils.—Mr. A. M. WILSON, showing Abigail (lemon-yellow Trumpet) and unnamed seedlings, won the 1st prize; 2nd, Mr. H. G. HAWKER, Strode, Ermington, who in Dread possesses a chaste Leedsii flower; 3rd, Mr. W. A. WATTS.

Three Daffodils.—The best seedlings were Harpagon (Barrii) and unnamed Barrii and Incomparabilis blooms; 2nd, Messrs. CARTWRIGHT AND GOODWIN, whose Crimson Queen (Barrii) promises to be valuable; 3rd, Rev. T. BUNCOMBE.

Twelve Hybrid triandrus Daffodils.—In this class Mr. W. A. WATTS won the 1st prize with a very interesting collection, shown under seedling numbers; 2nd, Mr. F. H. CHAPMAN.

The class for 6 Hybrid triandrus Daffodils attracted only one exhibitor, Mr. W. F. M. COPELAND, West View, Shirley, Southampton, who showed some interesting forms.

Twelve Seedling Daffodils.—In this and the following seedling classes the varieties shown were to have been raised by the exhibitor. The 1st prize collection, shown by Mr. A. M. WILSON, was exceedingly beautiful, and very varied. Most of the varieties were unnamed, but Anzila, a pink-flushed Leedsii, Anicot, which has an orange picotee-like edge to the corona, and Martha, a charming Barrii bloom, were admirable; 2nd, Mr. W. WELCHMAN, who showed Trumpet varieties; 3rd, Mr. W. F. M. COPELAND.

The 6 seedlings which won the 1st prize for Mr. P. D. WILLIAMS included Lysander, a Barrii bloom with a broad fiery-orange rim to the yellow corona; 2nd, Mr. F. H. CHAPMAN; 3rd, Mr. W. A. WATTS.

Mr. W. G. LOWER, showing good unnamed Barrii, Trumpet, and Poeticus varieties, won the 1st prize for 3 seedlings; 2nd, Mr. F. BATSON, Beaworthy, Devon; 3rd, Mr. C. L. ADAMS, Pendeford Hall, Wolverhampton.

SINGLE BLOOMS.

Mr. P. D. WILLIAMS, showing large, well-formed, unnamed blooms, won the 1st prizes for Trumpet (1a and 1b) Daffodils, and Messrs. CARTWRIGHT AND GOODWIN, who showed Conqueror, were similarly successful in the bicolor Trumpet class.

Martel (rich yellow), from Mr. W. B. CRANFIELD, East Lodge, Enfield Chase, was the best Incomparabilis (a), and Great Warley, from Mr. W. A. WATTS, the best (b) variety.

Unnamed blooms from Mr. A. M. WILSON, won the 1st prizes for Barrii (a and b) blooms.

Thistle, shown by Messrs. CARTWRIGHT AND GOODWIN, took first place in the class for Leedsii Daffodils. Canopy, by Mr. CRANFIELD, was the best trumpet-shaped triandrus bloom, and an unnamed seedling by Mr. P. D. WILLIAMS the best short-cupped variety.

The best Jonquilla hybrid proved to be Buttercup, shown by Mr. P. D. WILLIAMS.

Mr. A. M. WILSON, showing very fine unnamed seedlings, won the 1st prizes for Poeticus (Polyanthus) and Poeticus seedlings.

Mr. W. A. WATTS, who showed Linos, a very attractive pale yellow and orange-coloured bloom, had the best double variety.

AMATEURS' CLASSES.

Collection of Daffodils, 24 varieties, distinct.—The premier class in the amateurs' division contained only two exhibits, and of these the better was shown by N. G. LOWER, Esq., Presteign, Radnorshire, who had especially good blooms of Bernardino, Noble, Sunrise, Ethelbert, Cleopatra, Giraffe, and Madonna; 2nd, Rev. T. BUNCOMBE, The Rectory, Black Torrington, whose collection was strong in the Poeticus varieties.

Six Long Trumpet Daffodils.—There was not much to choose between the two competitors in

this class. The Rev. T. BUNCOMBE, who won the 1st prize, showed a rather wider range of colouring, whilst Mr. H. R. DARLINGTON, Park House, Potters Bar, staged especially good, rich yellow varieties. The best variety in the 1st prize set was Weardale Perfection, and Olympia was the pick of the 2nd prize exhibit.

Six Incomparabilis Daffodils.—The same exhibitors as in the previous class shared the prizes here, and the Rev. T. BUNCOMBE again won the chief award by means of a greater range of colour; his blooms of Gloria Mundi, Lucifer, and aurantius were very charming. Whitewell, as shown by Mr. DARLINGTON, was distinct and attractive.

Six Barrii Daffodils.—In this class the positions were reversed, Mr. H. R. DARLINGTON winning the 1st prize with an excellent set of blooms, the varieties Sunrise, Seagull, Branston and Circle being delightful. The best of the Rev. T. BUNCOMBE's exhibit was Stonechat.

Six Leedsii Daffodils.—The Duke of Rutland, Belvoir Castle, Grantham (gr. Mr. W. H. Divers), won the 1st prize in this class quite easily, showing superior varieties and finer flowers, Diana, Lowdham Beauty, and Marguerite Durand being exceptionally fine; 2nd, Rev. T. BUNCOMBE.

Six Poeticus Daffodils.—Nearly all the blooms in the two exhibits in this class were of very good quality. Mr. H. R. DARLINGTON, who was awarded the 1st prize, had very fine examples of Herrick, Homer, and Horace, whilst the 2nd prize set of the Rev. T. BUNCOMBE was especially rich in Lycidas and Horace.

Six Hybrid triandrus Daffodils.—Mr. H. R. DARLINGTON was the only exhibitor, and was awarded the 1st prize for typical blooms of such varieties as Queen of Spain, Zoë, and White Witch.

Six Polyanthus (Tazetta) Daffodils.—Here again Mr. DARLINGTON was uncontested, and was awarded the chief prize. His stems of Jaune à Merveille and Klondyke were first-rate.

Three Double Daffodils.—The two exhibits of these varieties were of very ordinary quality. Mr. H. R. DARLINGTON was awarded the 1st prize and the Duke of Rutland the 2nd.

The competition in the class for a collection of Daffodils, 3 stems each of 36 varieties, representing divisions 1, 2, 3, 4, 5, 9, and 10 (6 and 7 optional), open to all amateurs, was the best in the show, and brought forward many excellent blooms. The 1st prize was won by Mr. W. B. CRANFIELD, who showed a fairly representative collection, in which Royalty, Falconet, Boomerang, Seagull, Zita, and Princess May were exceptionally good; 2nd, Rev. T. BUNCOMBE, who could not have been many points behind the former; 3rd, the Duke of Rutland.

SECTION III.

The following classes were open to amateurs who did not exhibit in the previous classes:—

Mr. L. STUDHOLME, Ballyeighan, Birr, Ireland, won the 1st prize offered for 12 Daffodils, representing the different divisions, with a splendid set of blooms, in which Heroine, Argent and King Alfred were prominent; 2nd, Mr. W. F. MITCHELL, The Lodge, Leek Wootton; 3rd, Rev. Canon FOWLER, Earley Vicarage, Reading.

Mr. G. CHURCHER, Woodcote, Alverstoke, showing excellent blooms, was placed 1st for three Trumpet (a) Daffodils.

Mr. W. B. CRANFIELD won the 1st prize for three Trumpet (b) and three Incomparabilis (b).

Mr. R. MORTON, 5, Coptball Court, E.C., was the most successful exhibitor with Trumpet (c), Incomparabilis (b) and Barrii (b) blooms.

Mr. W. F. MITCHELL showed the finest Leedsii and Double Daffodils.

Miss WARREN, The Oaks, Westbere, Canterbury, won 1st prize for three Tazetta blooms, and Mr. J. CHURCHER was similarly successful with three Poeticus varieties.

Scientific Committee.

APRIL 7.—Present: Mr. E. A. Bowles, M.A. (in the chair); Sir Everard in Thurn; Messrs. Shea, Bateson, Wilson, Worsdell, Worsley, Bennet-Poë, Fraser, Hales, F. J. Chittenden (hon. sec.), and Chapman (visitor).

Abnormal Narcissi.—Mr. W. C. WORSDELL reported upon the abnormal flowers of *Narcissus tridymus* de Graaf, shown at the last meeting, as follows:—The three sepals were normal.

The three petals were partially transformed into stamens. In this process each petal exhibited two main parts—an outer portion, consisting of the upper part of the versatile anther, with two petaloid lateral extensions; an inner portion consisting of the corona; this latter composed of the lower lobes of the versatile anther with two petaloid lateral extensions (corona proper). In fact, just as there were clear transitions between the upper anther lobes and the ordinary petaloid lamina, so there were still clearer transitions between the basal anther lobes (in some cases upturned, in others deflexed) and the ordinary corona of the petal. These transitional structures demonstrate the homology existing between (1) the "trumpet," or corona, and (2) the upturned basal lobes of a versatile anther which has become petaloid. From which it follows that the perianth of *Narcissus* has been derived in the past from stamens. Celakovsky observed similar phenomena, and deduced the same conclusions in petaloid stamens of *N. tazetta*. The stamens and pistil were normal. It is interesting to note that the malformation occurred in 1913 as well as this year. It was very similar to that shown by the specimen sent to the Committee by Sir F. W. Moore last season, and to that which occurred in the garden of Mr. Polman Mooy.

Pollination in Orchards.—Mr. C. H. HOOPER sent a communication concerning this matter with suggestions of experiments and observations which have already been printed in these columns.

Narcissus hybrid.—Mr. CHAPMAN, of Rye, showed a pretty little hybrid miniature *Narcissus* with the corona slightly paler in tint than the perianth. He had raised it by crossing *N. calathinus* with *N. cyclamineus*, the former being the seed parent. It flowered six years from the sowing of the seed.

Fasciation.—Mr. WORSLEY showed a specimen of *Daphne odora* greatly fasciated, and Sir Daniel Morris, a fasciated Primrose.

Pelargonium hybrids.—Mr. J. FRASER contributed further remarks upon hybrid scented *Pelargonium* dealing with the group of forms round *P. Unique*.

Cymbidium madidum.—Mr. BENNETT-POE showed an inflorescence of *C. madidum* (= *C. albuciflorum*), a species native in North Australia and rarely seen in cultivation.

Salix Caprea with pistiloid of stamens.—Mr. FLETCHER, of Aldwick Manor, Bognor, Sussex, sent shoots of *Salix Caprea* bearing catkins in which the stamens had become converted into pistils. The example was very similar to that shown by Mr. Bowles in *Salix cinerea* at a previous meeting, and described and figured in *R.H.S. Journal*, vol. 36 (1910), pp. xxxv., xxxvii., xxxviii.

Leaf variation in Lonicera japonica.—Mr. CHITTENDEN showed a specimen of *Lonicera japonica* with strong young shoots on which the foliage was rather deeply lobed instead of being entire, as in the normal form. Similar changes in form of foliage are frequent in *Symphoricarpos racemosus* in certain stages of growth.

HORTICULTURAL CLUB. THE FLORA OF NIGERIA.

APRIL 7.—The monthly dinner of the Horticultural Club was held at the Hotel Windsor, on the above date, when Mr. W. A. Bilney presided over a gathering which included Miss Amaury, Mr. and Mrs. P. Amaury Talbot, Miss Willmott, Dr. and Mrs. Fraser, Captain and Mrs. Villiers Stuart, Dr. Shillitoe, Mr. and Mrs. H. R. Darlington, Messrs. E. A. Bunyard, W. Cuthbertson, C. H. Curtis, C. T. Drury, R. Hooper Pearson, W. T. Ware, and A. Worsley.

Mr. P. Amaury Talbot, who has been District Commissioner for the Oban and the Eket Districts of Nigeria, delivered a lecture on the Flora of that colony. By the aid of excellent lantern-slides and many water-colour drawings from the brush of Mrs. Talbot, the lecturer conveyed realistic impressions of the wonderful vegetation of the tropics and the habits and superstitions of the natives. Mr. Talbot is known to science as a painstaking anthropologist, but to the general reader he is best known as the author of "In the Shadow of the

Bush," a work of consuming interest in which he records the habits and folklore of the natives of Nigeria, especially dealing with the blood-stained "Juju and Fetish Worship." Although this book is written primarily from the standpoint of the anthropologist, it contains much of interest to the horticulturist. The general views of the country, including its rivers and waterfalls, of giant lianes which crush the life from their supports, and the intensely interesting cauliflorous trees, cannot fail to interest the garden-lover. In introducing his subject at the Horticultural Club, Mr. Amaury Talbot remarked that whilst he intended to make special reference to some of the 250 new genera and species which he had been fortunate enough to discover, he did not propose to give a technical enumeration of these new flowers—such details will be published by the Natural History Museum authorities. The scope of the lecture was to give a general idea of the Nigerian vegetation, and of the point of view from which the natives regard the vegetable kingdom; "animated for them by spirits—either beneficent or malignant—varying in power from the dryads of the great trees to the 'Mana' of each little flower." In many villages the great trees are looked upon as being the guardian spirits of the compound and mighty to protect its inhabitants from enemies. These primitive people often believe that great trees, such as the giant silk-cotton trees, which tower to a height of 200 or more feet, their clean straight trunks crowned with luxuriant verdure, always give signs to those who believe in them.

Commencing with the Gulf of Guinea, where the coastal lands consist of Mangrove marsh, which he described as "only land in the making," the lecturer described the Palm stretches, where these trees wave their branches high above the under vegetation. Then followed what is usually termed the evergreen belt, but a more critical investigation showed that this district contains a large number of deciduous trees, which renew their growth and flower twice, and in some instance, as many as four times, a year. Beyond to the north lies the grass lands, which support grasses 15 to 16 feet high, and which further northwards give place to the vast arid Sahara desert.

Reference was made to the dangers of the forest attendant on trips to the interior—from dead trees, which collapse at unexpected moments, and falling fruits, solid and heavy, as large as cannon balls, which give no warning. The frail bridges of bamboo, or merely a tree trunk, thrown across the deep creeks of icy-cold water, quickly decay in the humid climate and "crave wary walking." These dangers, as well as the pleasure and excitement of discovering new species, were shared by Mrs. Talbot and her sister, Miss Amaury, both of whom assisted greatly in collecting the botanical specimens—an arduous task in the all-pervading moisture, which necessitated fires for drying the specimens.

NEW PLANTS.

Of the discoveries described and illustrated, the most interesting were the cauliflorous trees—trees which, as sometimes does the Judas tree (*Cercis Siliquastrum*) in this country and an occasional Apple or Pear tree, produce flowers on the mature trunks. The reason for this divergence from the normal method yet awaits explanation, for species which flowered in the ordinary way in Obau were cauliflorous in the marsh lands of Eket. In the latter district these "bark-flowering trees, so rare in other quarters of the globe, exist in such countless numbers and varieties" as to form an attractive problem. Dr. Otto Stapf suggests that a solution may be found by studying the slugs of the neighbourhood, which probably fertilise the flowers. The humidity caused by the excessive rainfall, which averages 175 inches, may also be a contributory cause.

Most wonderful of these trees is a new Anacardiaceae, whose "branchless trunk shoots up for a hundred feet or more, all but covered by bunches of flowers, often a foot to a foot and a-half in length, and much the shape of our own Lilac trusses, but vivid red in colour. The fruit of this wonderful tree is, however, the most striking sight of all; for the clusters hang from the trunk like colossal Grape-bunches formed of scarlet Plums, the juice of which, delicious though sharp in taste, is the colour of red ink."

Many new species of *Napoleona* were found, and of these *N. Egertonii*, which, instead of the normal solitary flowers, has a paniculate inflorescence, *N. Alexandri*, *N. parviflora*, *N. megacarpa*, *N. Gascoignei*, which produces its flowers in clusters of 10 to 30, *N. rhodantha*, distinct in that the staminal whorl is pink instead of white, and the second whorl is edged with oval spots of white set in crimson, are the names of a few.

Paintings of many new Rubiaceae were also on view, and of these *Randia Galtonii*, which has a flower-tube 8 in. long, and *Gardenia physophylla*, with flowers so long in the tube that they may well pass for blooms of a *Datura* (*Brugmansia*), are typical. *Strophanthus Cunliffei* was shown, bearing sprays of beautiful, pink-flushed flowers; it is from this plant that a most deadly poison, used for tipping arrows, is obtained. A new *Vanilla* (*V. nigerica*) is of decided garden value, *Urania obanensis*, *Markhamia lutea*, *Cola gigas*, orange-like fruits of *Landolphia stipulosa*, and *Spathodea campanulata*, were also illustrated in colours.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 26.—Committee present: Z. A. Ward, Esq. (in the chair), Messrs. J. Bamber, J. Cypher, A. G. Ellwood, J. Evans, A. Hanmer, W. H. Hatcher, J. Howes, J. Lupton, D. McLeod, W. J. Morgan, C. Parker, W. Shackleton, H. Thorp, G. Weatherby, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cymbidium Pauwelsii maxima, from J. LEE-MAN, Esq.

Brasso-Cattleya Vilmoriniana var. Centaur (*B.-C. Leemaniae* × *C. Mossiae*), from W. R. LEE, Esq.

Odontoglossum × *Princess of Pless*, a large flower of brilliant colour, and evenly marked, from R. LE DOUX, Esq.

Odontoglossum Brewii "Walton Grange" variety, from WM. THOMPSON, Esq.

Cattleya Warneri "Ardenholme," from Colonel J. RUTHERFORD, M.P.

AWARDS OF MERIT.

Cymbidium Pauwelsii, *C. delicata*, and *C. Andreana*; *Cattleya Enid excelsa*, *Brasso-Cattleya Veitchii* "Leeman's" variety, all from J. LEE-MAN, Esq.

Odontoglossum ardentissimum Phoebe and *Dendrobium nobile Goliath*, from WM. THOMPSON, Esq.

Odontoglossum × *Nigger* and *Odontoglossum crispum White Swan*, from R. LE DOUX, Esq.

Odontoglossum Jasper "Beardwood," *Brasso-Cattleya beardwoodense* (*Empress Frederick* × *Digbyana*), from Col. J. RUTHERFORD.

Lycaste gigantea Ashlands variety, from R. ASHWORTH, Esq.

Dendrobium superbum Roebelenii giganteum, from Messrs. MANSELL AND HATCHER, Rawdon.

Brasso-Cattleya Pocahontas Undine (*B. Digbyana* × *C. Eldorado alba*), from Messrs. CYPHER AND SONS.

NURSERYMEN, MARKET GARDENERS, AND GENERAL HAILSTORM INSURANCE CORPORATION.

APRIL 3.—The nineteenth annual meeting of this company was held at 41 and 42, King Street, Covent Garden, on the 3rd inst. Sir Harry J. Veitch, who presided, congratulated the shareholders on the continued growth and success of the corporation and the strength to which it had attained. The company had during the past year increased the allowance to policyholders from 15 to 25 per cent. The Reserve Fund amounted to more than twice the paid-up capital. Five claims had been received during the year.

The usual dividend of 1s. 6d. and bonus of 6d. per share were declared, and a further sum of £1,000 was added to the Reserve Fund.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

APRIL 6.—The monthly committee meeting of this society was held in the R.H.S. Hall on the 6th inst., Mr. Chas. H. Curtis occupying the

chair. Four new members were elected. Seven members were allowed to withdraw double the amount of interest, amounting to £23 18s. 4d., one member over the age of seventy years withdrew from his deposit account the sum of £20, one lapsed member over sixty years was allowed to withdraw his deposit, viz., £32 6s. 10d., and one member over the age of seventy years was allowed 5s. per week for life from the Distress Fund. The sick pay for the month on the ordinary side amounted to £88 10s. 6d., and on the State side £36 3s.; whilst £10 10s. was paid for maternity benefits.

DEBATING SOCIETIES.

DERBYSHIRE GARDENERS.—At the meeting of this association, held on the 20th ult., an address on "The Use of Phosphatic and Potassic Manures in Gardening" was delivered by Mr. W. Goodwin, Principal of Kingston College. Mr. Martin presided. The lecturer stated that the effect of nitrogen was an increase in leaf development, and it tended to produce abnormal growth to the disadvantage of the productiveness of fruit, roots or flowers. To counterbalance that state of things something was necessary to push in opposition and keep the nitrogen in check, to stimulate and promote the reproductive organs, and make the tree fulfil its normal functions, and this phosphate would do. Phosphate, said Mr. Goodwin, was obtained from several sources, but originally it was supplied only from bones dissolved in sulphuric acid. The acid destroyed the lime in the soil, so that a lack of lime was always a disadvantage, and that point should be safeguarded, otherwise there was a risk of "finger and toe" and fungoid diseases appearing in the crops. A medium dressing was 1lb. to 10 square yards. Another form of phosphate was steamed bone-flour, which was largely used for potting purposes, and it might be employed with advantage on sandy soils in conjunction with farmyard manure. It necessitated intelligent observation by the individual himself, for much depended on the physical condition of the soil and the quality of the natural manure; any leakage at the manure heap was a loss of phosphate. Another phosphatic manure, basic slag, contained lime, but no acid, was slow in action, therefore lasting, and suitable for wet, cold, clayey land. It then gave up its phosphate quicker on account of the watery nature of the soil, hence it might be determined that its effect would be extremely slow on a dry, sandy land, but under ordinary conditions the effect of basic slag would last six or eight years. The specific use of potash was concerned in the production of sugar and starch in the plant, which was an important point. Kainit contained 12 per cent. of potash. It was slow in action, but satisfactory results would be obtained if applied to the land in the autumn in conjunction with basic slag. Sulphate of potash contained double the quantity of available potash, and was often used in conjunction with superphosphate.

BIRMINGHAM AND DISTRICT GARDENERS.—At the meeting of this society, held on the 23rd ult., the prizes were presented for the essays written by junior members, on *Begonia Gloire de Lorraine*. A lecture was delivered by Mr. A. D. Christie on "Success and Failure in Growing Vegetables in Towns." Mr. Christie gave his experience as a grower both in this country and in Russia.

—At the meeting held on the 9th ult., Mr. J. Palmer, Chad Valley Nurseries, Edgbaston, read a paper on "The Best Varieties of Sweet Peas and Antirrhinums." A review of the big shows, he said, provided ample proof that Sweet Peas are not declining in popularity, but splendid as many of these varieties are today, there is still room for development in their colours. A second paper, entitled "Salvia splendens for Summer Bedding," was given by Mr. S. Smith, Handsworth. A new idea, unadvoiced hitherto, was the growing of *Salvia* in tubs, the rapid growth and free flowering of this plant rendering it specially adaptable for this purpose.

READING GARDENERS.—At the meeting of this association held on the 2nd ult., Mr. W. F. Giles, of Messrs. Sutton and Sons, gave a lantern lecture on "Vegetables for Home and Exhibition, with Notes on Staging." He described the chief points to be observed in exhibiting single dishes or collections, how to group the subjects and on what background, how to build them up and fix them securely against accidents.

—There was a large attendance at the meeting held on the 16th ult. Mr. J. T. Tubb (chairman of the committee), presiding. The lecturer for the evening was Mr. J. W. Barks (a member of the Redhill and Reigate Society), and his subject was "Vines and Peaches." Mr. Barks, in his paper on the vine, said that his methods, which were greatly criticised by his neighbours at the time, were based on the fact that he was expected to produce Grapes in as short a time as was compatible with securing crops in subsequent years. Hence, when he planted his canes, they were not shortened as usual, the object being to have as much of the training space as possible filled in the first season, besides securing one or two bunches of fruit. By carefully stopping vigorous shoots and allowing weaker ones to grow, he successfully established lateral shoots on either side of his newly-planted canes in the first season. He was careful to explain that he avoided over-cropping for the first year or two after planting, and did not force the vines in their early stages of growth. The originality of his treatment was justified by the results and the description of his methods was closely followed. In the remaining

portion of his paper—on the Peach—Mr. Barks gave details of his treatment in the crucial stages of the forcing of the fruit.

KILMARNOCK AND DISTRICT GARDENERS'.—At the monthly meeting held on the 11th ult., presided over by Mr. R. K. Sillars, Mr. Thos. Limond, Lecturer on Agriculture for the county of Ayr, delivered an address entitled "Modern Ideas about Manuring." Mr. Limond described how our knowledge and use of manures had increased from the time when the term "manuring" was merely used to indicate hand tillage of the soil, to the present when it denotes the use of any substance which enhances the fertility or cropping capacity of soils. One may apply fertilisers regularly and in abundance, but unless the physical condition of the soil is correct, good results cannot be expected. The lecturer recommended the use of a moderate dressing of dung supplemented with suitable artificial fertilisers.

GARDENING APPOINTMENTS

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

Mr. W. E. Hyde, for the past 3 years Gardener to H. F. HOLLINS, Esq., Mainstone Court, Ledbury, and previously for 3 years at Norwood Hall, Sheffield, as Gardener to Admiral Sir F. INGLEFIELD, Mickleover Manor, Derbyshire. [Thanks for Is. 6d. for R.G.O.F. box.—EDS.]

Mr. G. W. Songhurst, for the past year General Foreman at Killarney House Gardens, Killarney, Ireland, as Gardener to F. PEREGRINE BIRCH, Esq., Massbrook House, Lahardane, Crossmolina, Co. Mayo, Ireland.

Mr. W. Ansell, for the past 4½ years Gardener to the late J. W. FIELD, Esq., Southsea House, Dorking, as Gardener to W. M. DEAN, Esq., Greenways, Sunningdale, Berkshire.

Mr. G. W. Chapman, for the past 6 years Gardener to Sir JAMES WOODHOUSE, Stratton Chase, Chalfont St. Giles, Bucks, as Gardener and Bailiff to C. J. WHITTINGTON, Esq., Sandhills, Betchworth, Surrey.

LAW NOTE.

"ENGLISH" TOMATOS.

A FIRM of fruiterers carrying on business in Chelsea was summoned by the Board of Agriculture under the Merchandise Marks Act for applying a false trade description, to wit "English" Tomatos, to goods exposed for sale.

Evidence was given to show that the Tomatos came from the Canaries, and it was urged by the prosecution that cases of this kind are numerous. The defendant, who pleaded guilty, observed that during the quarter of a century that he had carried on his business no suggestion of improper trading had been made against him. He told the inspector who asked whether the fruit was English that it came from Tenerife and maintained that there could be no real deception since no one could expect Tomatos at this season at 6d. per pound.

A fine of £10 and £12 12s. costs were imposed.

Obituary.

JOSEPH BLACK.—This able cultivator of Chrysanthemums died at his home, Maxwelltown, Dumfries, on April 7th, after a long illness. A composer by calling, Mr. Black was for many years incapable of following his avocation, and devoted himself to his flowers. His collection of border Chrysanthemums was one of the finest in Scotland, and it was wonderful how admirably they were cultivated, seeing that their owner was suffering from chronic illness.

WILLIAM DAWKINS.—From *Horticulture* we learn that a gardener of English extraction, William Dawkins, has died in Boston, Mass., at the age of 76. Mr. Dawkins was born in Tottenham, and went to Canada as a private in a foot regiment. On leaving the Army he entered the florist's business, but eventually became the assistant of Mr. Jackson Dawson in the Arnold Arboretum, where he was employed for over 21 years.

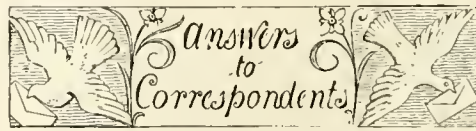
A. W. HAYTER.—The death took place at Horton, near Wimborne, Dorset, on the 5th inst., in his seventy-eighth year, of Mr. A. W. Hayter, who was for twenty years gardener to

the late Earl of Shaftesbury at St. Giles, and later for ten years gardener to Lady Henry Somerset at The Priory, Reigate. Mr. Hayter was a striking personality and a capable all-round gardener. The funeral took place in the cemetery at St. Giles on the 10th inst.

DR. JACQUES HUBER.—We learn with regret of the death of Dr. Jacques Huber, Director of the Museum Goeldi, Belem do Para, Brazil. Dr. Huber died on February 18, after a brief illness.

EDWARD MEEHAN.—The *Florists' Exchange* gives the news of the death of Mr. Edward Meehan, a well-known American nurseryman who was born in the Isle of Wight, but spent the greater part of his life in Philadelphia. Mr. Meehan was first employed in the nursery of the late Robert Buist, at Philadelphia, but later he became the manager of his brother's large nursery business at Germantown, Pa. He died on March 18, in his 79th year, leaving a widow and three sons.

BREWER OSBORN.—The news of the death, on the 12th inst., of Mr. Brewer Osborn, gardener at Holme Park, Sonning, from 1870 to 1898, will be learned with general regret. Mr. Osborn was a skilful gardener, as his exhibits at the shows of the Reading Horticultural Society testified, for he won many prizes. He was one of the original members of the Reading and District Gardeners' Society. When the Holme Park estate changed ownership in 1898, Mr. Osborn entered into business as a fruit and poultry farmer at Orchard House, Shinfield, where he passed away after a long and painful illness at the age of 71. Deceased leaves a widow, one son (Mr. A. Osborn, foreman of the Arboretum Department, Kew Gardens), and one daughter.



CANNAS: Novice, Darwen. Cannas would grow quite well in your greenhouse. The roots, if small, should be started in 4 or 6-inch pots, using a compost consisting of good loam, leaf-mould, a little manure from a spent Mushroom-bed, or thoroughly-decayed farmyard manure, with enough sand to keep the whole porous. The roots may be potted up at any time during March or April. Afford water sparingly, for an excess of moisture at the start may cause the plants to rot off. Thus they should be kept fairly dry until they have made some growth, but when numerous roots have formed and the leaves are growing freely Cannas require plenty of water at the root. The foliage should be syringed or sponged frequently, as the leaves are very liable to infestations of red spider. When growing freely the plants may be fed twice a week with diluted liquid manure or soot water. Large specimens may be shifted into 8 or 10-inch pots, but plants in 7-inch pots should be sufficiently large for a small greenhouse. In the autumn the root-stocks should be dried off gradually, and, when the foliage has completely died down, they should be stored for the winter in a dry position where frost cannot reach them.

HOLLY HEDGE FAILING: Giglamps. From your description we suspect that the cause of your Holly hedge going wrong in places is due to improper root action. The soil is most probably too dry in summer. Ascertain the condition of the roots; if they are found to be in good order replace some of the old soil with fresh compost containing a liberal quantity of manure. If the roots are unhealthy and decayed grub up the plants and replace them. An old hedge sometimes fails in places through the weaker plants being killed by their stronger neighbours.

MARÉCHAL NIEL WITH SPOTTED FLOWERS: J. D. J. The spots on the blooms may be due to canker or to the roots having grown in an uncongenial sub-soil. Feed the plant once a week with liquid manure made from cow dung and soot, alternating this with dissolved blood manure. In order to allow of the liquid penetrating to the roots make three

or four holes in their vicinity with a small iron crowbar. Should canker be present, which shows itself in a warty-like growth, soil could be heaped up over the affected part provided the latter is near to the surface, but if it is at the junction of stock and scion make an incision with a sharp penknife down the stem of the tree.

NAMES OF PLANTS: S. W. B. Rhododendron; probably R. Edgeworthii.—W. B. C. Tussilago Petasites (Butter Coltsfoot).—Constant Reader. 1, Lonicera fragrantissima; 2, Abutilon Savitzi; 3, Pteris serrulata; 4, Adiantum formosum; 5, Pteris cretica albolineata; 6, Abelia triflora.—Victor. 1, Oncidium flexuosum; 2, Ondontoglossum blandum; 3, Masdevallia Estradae; 4, Oncidium pubes.—J. S., Wrexham. Cyclamen latifolium, a native of Greece and Asia Minor.

NARCISSUS: M. P. The abnormal flower of Narcissus has the corona split up, each perianth lobe having a two-lobed portion thereof; also, in the case of one or two of these split portions of the corona, the transition in structure between them and the basal lobes of a versatile anther is obvious.

PALM UNHEALTHY: W. G. S. The portion of the Palm-leaf contains no sign of disease due to fungous or insect pests, but the plant is in a very unsatisfactory condition, pointing to wrong cultural treatment. Turn the roots out of the pot and see if the drainage is in proper order.

PEACH SHOOTS: B. W. B. We can find no trace of disease in the specimens you send us, but the wood is not properly ripened, and such shoots are best removed from the trees in the autumn, for they cannot be expected to fruit satisfactorily.

PINE BRANCHES: N. M. The shoots themselves are not diseased, but there is every indication that disease exists at the roots. Your best plan will be to assist the trees as much as possible in developing healthy rootlets by forking the soil lightly and applying a layer of animal manure as a mulch.

TOMATOS: S. J. The trouble is due to canker; a notifiable disease under the regulations of the Board of Agriculture and Fisheries. Remove all the diseased plants and burn them, also take away the soil in which they have been growing and soak the house thoroughly with a solution of sulphate of potash at a strength of one ounce in each gallon of water. It would be better not to grow Tomatos in the same house again this season, but if circumstances compel you to do so obtain fresh compost and water the plants at intervals with the specific recommended.

VINE LEAVES: D. G. P. The very dark colour of such leaves as have expanded, and the glutinous exudation on them, point to an excessive supply of nitrogenous matter to the roots. The mischief was probably done before the present season. There is no hope of the vines ever recovering.

VINES: S. J. The leaves and shoots have been damaged by some external cause, such as scalding. Your letter seems to point to something wrong in the roof-glass at the spot where the vines are injured, seeing that two laterals only are affected whilst the others on the same plant are perfectly healthy.

WINTER-FLOWERING BEGONIAS: W. Brown. There are numbers of winter-flowering Begonias other than B. Gloire de Lorraine which you might cultivate in an intermediate house, including B. manicata, B. fuchsoides, B. Haageana, B. Gloire of Cincinnati, B. Gloire de Sceaux, B. acuminata and B. semperflorens. Many pretty garden-raised varieties of B. semperflorens are of great value for decorative purposes during the winter, and especially Gloire de Châtelaine, which has rose-coloured flowers and blooms in profusion nearly all the year round.

Communications Received.—W. K. T. L.—W. S., Lincoln—D. R.—L. F.—T. G.—P. A.—C. J. B., Cranbrook—A. H.—E. J. W.—Journeyman—R. R. C.—A. and B.—E. J. W.—J. W.—Finborough—F. S.—E. B.—C. W. J.—G. H. O.—W. H. W.—R. P. B.—A. G., Polegate—E. A. C.—G. H. W.



THE

Gardeners' Chronicle

No. 1,426.—SATURDAY, APRIL 25, 1914.

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THE MANURING OF VEGETABLES AND FLOWERS.*

TO those who know the excellent results achieved by French horticulturists, the pronouncement of the author that his compatriots in the horticultural world are chary in the use of artificial manures will come with surprise. Yet such is apparently the case, and the purpose of this work is to convert French gardeners from indifference to a proper belief in the use of artificial fertilisers.

If sound argument and the evidence of prolonged and careful experiment can effect this conversion, M. Dumont will undoubtedly succeed.

* *La Fumure raisonnée des Légumes et des cultures maraichères.* By R. Dumont. Published by Larousse. Paris. 3 francs.

The standpoint adopted by the author is expressed with directness and lucidity in the opening chapter.—The staple manure for horticultural purposes is humus, and hence the application of dung or some other source of humus must form the basis of every rational system of manuring. The functions of artificial manures are to supply special and necessary plant foods; the mineral salts which, though present in insufficient quantities in humus, are essential for the nutrition of all plants.

M. Dumont reminds his readers that the philosophy of manuring has passed through three main phases. In the early part of last century the humus theory prevailed. That theory maintained that humus is the food of plants. Liebig in 1840 shattered the humus theory and replaced it by the "mineral" theory, teaching that plants feed on the inorganic salts—nitrates, phosphates, potash salts, etc.—which are contained in the soil solution. The shattered theory gathered itself together again, and, effecting a compromise with its rival, gave rise to the "organic-mineral" theory, which is held at the present day. As summarised by the distinguished French agriculturist Grandeau, this theory holds that humus is essential for perfect and rapid plant growth, since it makes the ideal environment for the roots. It not only helps to bring the necessary salts into solution and helps to hold them in the soil at the disposal of the plant, but it also serves the no less important function of holding water and absorbing heat. Without humus a clay is sour and a sandy soil is a loose powder. Wherefore the wise gardener digs dung into his ground and adds with the natural manure such mineral substances as his soil lacks and his plants require. Once it is admitted that the rôle of artificials is to supplement, not to replace, farmyard manure, the way is open to an intelligent and economical use of both.

Such a use must be based on a knowledge, which need be by no means profound, though it must be sound, of four sets of facts, namely, those concerning (1) the several amounts of the essential minerals which are contained in a given soil, (2) the average chemical composition of dung, (3) the requirements with respect to mineral substances of different kinds of cultivated plants, (4) the general properties and relative prices of the chief artificial manures. Such knowledge is well within the grasp of every gardener; books such as the excellent treatise under review provide information with respect to (2), (3), and (4), and simple experimentation suffices to determine the chemical composition of the soil. For this purpose direct soil-analyses, although of great value if carried out properly, are not absolutely necessary; plants themselves may be used to make the analysis, and by observing the behaviour in the garden of plants known to be exacting with respect to a given inorganic food-substance, potash or phosphoric acid or nitrogen salt, the deficiency of the soil may be inferred. As the great pioneer of plant physiology, Boussingault, observed,

"I prefer the opinion of the plant to that of ten professors."

The scope of M. Dumont's volume may be indicated in outline. After the general introduction to which we have given such prominence he describes the qualities and defects of the several types of soil—sandy, calcareous, clayey, and humus—and demonstrates by simple methods the relative powers of these soils to hold water, showing that for 100 parts of each soil, humus retains 190 parts of water, clay about half as much, chalk not much more than a third, and sand as little as from one-seventh to one-eighth. After pointing out the enormous capacity for cultivation of the wide stretches of neglected peat soils and showing what may be done by draining, liming, and supplying phosphates (as basic slag), M. Dumont deals with the liming of the soil. He takes as a standard that the lime content of light soils should be not less than 2 per cent., of medium loams 3 to 4 per cent., and of clays and peaty soils 5 to 6 per cent.

Examining next the general chemical composition of the soil, the author defines as a fairly rich soil one which contains of nitrogen 1 part in 1,000 of the natural soil, of phosphoric acid also 1 part, and of potash 2.5 parts, and insists also that these figures give not only the minimum amounts, but also the proper relations which should subsist between these mineral soil constituents. Examples of the chemical composition of special soils are given and from the composition their manurial requirements are indicated. Then follows a consideration of the perfect soil from the point of view of vegetable cultivation. It should consist of:

- Sand, 500-650 per 1,000 parts.
- Clay, 200-250 per 1,000 parts.
- Lime, 50-150 per 1,000 parts.
- Humus, 50-150 per 1,000 parts.

Such a soil would be easily worked, warm, well aerated, a good bed for nitrification, and capable of holding well the manure supplied to it.

Chapter 3 gives an account of the principal manures and their composition, and makes the most important point that the composition of the dung of the chief farm animals varies enormously, according to the kind which supplies it. After enumerating the chief artificials, their specific actions are considered, the rules to be followed in their application and the artificials which may and may not be mixed with one another. For example, dung or other organic manure must not be mixed with lime, nor basic slag with sulphate of ammonia, for in either case chemical interaction takes place and loss ensues.

The concluding sections of the work give in detail the manures appropriate to leaf, stem and fruit vegetables of the garden. We cannot but add that this admirable book deserves well the honour accorded to it—that of the Agricultural Prize given by the Society of French Agriculturists for the best contribution on "The Use of Manures in Horticulture."

ORCHID NOTES AND CLEANINGS.

COMMERCIAL ORCHID GROWING.*

The main object of this handy little volume is to demonstrate the methods by which certain classes of Orchid may be grown profitably for supplying cut flowers for market purposes, and to indicate suitable species and hybrids that may be acquired at a reasonable cost.

The cultivation of Orchids for cut flowers is a branch of floriculture which has been proved to be profitable, and the fact that the supply, especially in winter and spring, is seldom equal to the demand proves that Orchid culture for market purposes might well be added to many florists' nurseries at present growing commoner and less remunerative subjects.

For these persons and amateurs who would like to enjoy the pleasures of Orchid growing and get some return for their expenses Mr. Harrison's little treatise will be a great help.

The careful instructions on cultural points also make it a desirable guide for the beginner in Orchid culture, although he may only require flowers for his own purposes.

EULOPHIA SAUNDERSIANA.

A FINE inflorescence of a form of this African species is sent us by the Hon. N. Charles Rothschild. It belongs to the small evergreen section which is represented by *E. pulchra*, *E. macrostachya* and *E. megistophylla*, the botanical differences in which are not very well defined. *E. Saundersiana* is figured indifferently, especially as to colour, in *Xenia II*. Mr. Rothschild's plant was collected in Uganda. The scape is 3 feet long and the upper third bears 27 flowers each $1\frac{1}{4}$ inch wide. The sepals are lanceolate, the odd one erect and the laterals extended at right angles level with the column. The petals are broader and shorter, both yellowish-green, striped with purple. The lip is trilobed, the middle lobe divided in front, whitish, the side lobes striped with purple and the mid-lobe having a few purple lines. The column is green with a purple line round the margin and at the back; spur short, obtuse.

THE ROSARY.

"LES AMIS DES ROSES."

Les Amis des Roses is the title of the journal of the French Society of Rosarians, a periodical that has recently completed the eighteenth year of its publication. The journal appears every two months, and that for the year just completed forms an imposing volume of some 500 pages. It is nicely got up and clearly printed, with numerous illustrations of Roses and Rose gardens.

It is interesting to note that the French Society of Rosarians appears, like our own English Rose Society, to have discovered that there is no more efficient manner of increasing the number of its members than by continuously adding to and improving its publications. The Society may be heartily congratulated both on its increasing membership and the advance it is effecting in its literature under the editorship of the secretary, M. Albert Boutin.

The number contains, among other articles, a notice of a curious modification of the Rose *Veilchenblau*, which, it is suggested, may be due to the production of a graft hybrid. Another interesting article deals with the perfume of Roses. The author laments the decadence of many modern Roses in this respect, and suggests that in hybridisation perfume is more difficult to fix than is colour; he instances the case of the Permetiana Roses, which have not preserved the disagreeable odour of *Rose lutea*. This is undoubtedly a subject well worthy of further attention.

* *Commercial Orchid Growing*, By C. Alwyn Harrison (Lockwood Press.) 2s.

NEW DAFFODILS.

The illustrations in figs. 123, 124 and 125 may be regarded as mementoes of the R.H.S. Daffodil Shows of 1914, for they represent some of the most interesting novelties shown this season, while several of them have received

obtained when well grown, but the perianth was of particularly good substance, and pure white; it will be seen from the picture that it is very rounded.

Crater was shown by Mr. Herbert Chapman, and seems very happily named. The flower is of the Sunflower type with a yellow perianth, its special feature being the corona or cup, which



FIG. 123.—NARCISSUS CROESUS; CORONA ORANGE-YELLOW; PERIANTH PALE YELLOW.
(R.H.S. Award of Merit, April 7, 1914.)

the recognition of the Narcissus Committee in the shape of an Award of Merit. The large flower at the top of fig. 124 is a flower of the Leedsii section shown without a name by Mr. A. M. Wilson. It was some 4 inches across, which is large for a flower of this type, though not larger than *White Lady* may often be

is rather flat and very widely expanded. It is a very distinct flower and certain to attract attention.

Morven is a medium-sized trumpet-shaped flower with a long trumpet of lemon-yellow colour widely expanded at the mouth, and a white perianth. Perhaps the special feature of



FIG. 124.—NEW DAFFODILS FROM THE R.H.S. SHOW.
1, UNNAMED SEEDLING OF LEEDSH SECTION; 2, CRATER; 3, MORVEN; 4, SCARLET GEM; 5, GOLDEN SCEPTRE.
See page 278.

the flower was the pleasing and cool effect produced by the contrast of colour between trumpet and perianth. It received an Award of Merit.

Scarlet Gem is one of the Poetaz section, the flowers are of moderate size, but very striking owing to the combination of brilliant orange colour in the cup with the clear yellow of the perianth. Most of these Poetaz varieties are turning out to be excellent garden flowers, but this variety was given an Award of Merit in the show section. Golden Sceptre was shown by the firm of de Graaff. It was given an Award of Merit in the show section, and is noticeable for its rich yellow colour and sweet perfume. It is a Jonquil hybrid.



FIG. 125.—NARCISSUS WHITE MAXIMUS.
(R.H.S. Award of Merit, April 7, 1914.)

There are two other flowers illustrated in figs. 123 and 125 which were exhibited at the earlier show held on April 7. Croesus (see fig. 123) is a very fine flower, and it was shown well at both exhibitions. It is a giant Incomparabilis raised by Mr. Henry Backhouse; its characteristics are a large, rounded imbricated primrose-coloured perianth, and a widely expanded crown rather of the Whitewell type, but of deep red colour. White Maximus (fig. 125) is a lemon or cream-coloured form of the well-known N. Maximus of our gardens, and similar to that variety in its fine, crinkled cup.

The above are some of the best novelties exhibited this season, but it is hoped that the Birmingham Show, which takes place on the 23rd inst., will reveal others of equal or surpassing interest.

THE VINERY.

PLANTING A NEW VINERY.

WHEN planting a new vinery it is not to be expected that the vines will furnish the space until after a few seasons have elapsed, but supernumerary vines may be set between the permanent ones, and this method is to be especially recommended where the border is inside the house. There are several advantages in growing these extra canes, but their chief value is to furnish a supply of Grapes without allowing the permanent vines to be cropped early or so heavily for a season or two as the grower might be tempted to do otherwise. When vines

made on the north side until the two borders meet. I practised this system in growing vines for ten years and no harm was done to the main rods, but we obtained a heavy crop of fruit annually within two years of planting. At Aldenhām House Gardens the system has been practised during the past few years with the greatest success, especially in vineries of Muscat of Alexandria. The temporary vines need a different treatment to the others, for instead of cutting them down to two eyes at the base, the rod is left sufficiently long to allow three buds beyond the first wire. These three buds will furnish a pair of side shoots and a leader. Remove any Grapes that form for the first year and encourage the vines to grow freely by syringing them in the afternoon, closing the house when it is well warmed with the sun's heat. At the time of pruning the following year the leader may be allowed to carry 2 feet, or, if strong, 3 feet of new wood, and from this and the side shoots already formed half a dozen bunches will be obtained the second season. In a few seasons the vines will reach to the top of the house, and the rod can then be trained down the back wall; spurs should not be permitted after the top of the roof is reached. As the permanent vines require more space the lower spurs of the supernumeraries may be cut away. If the vinery is not planted with Muscat of Alexandria, the most suitable varieties to interplant are Black Hamburg and Foster's Seedlings for an early crop, and Madresfield Court, Black Alicante, Black Hamburg and Lady Downes for a late supply. *E. Molyneux.*

FOREIGN CORRESPONDENCE.

NOTES FROM SOUTHERN ITALY.

WE have had a very warm February here in Naples—during the day the weather was almost hot, though the nights were cool. The first spring flowers are developing well, especially the Oriental Juno Irises and the Crocuses. The Irises have flowered splendidly. Our *Iris alata* and the varieties *alba* and *marginata* were in flower continuously from Christmas until the end of February. The greenish *Iris palestina* is better this year than usual, but it is not a striking flower, nor of much interest to any but collectors. *Iris Bolleana*, whitish-green with dark, purplish-brown patches on the falls, is very handsome, and I hope to gather a good harvest of seed from its flowers crossed with other species. *I. Heldreichii* and *I. Tauri* have done well, and I have two fine hybrids from a cross between these species. *I. Mme. Müller* (*Heldreichii* × *Tauri*) resembles *Heldreichii* in form and *Tauri* in colour. The falls are 2½ inches long, of a purple-violet colour; the large blade is blackish-purple, and around the yellow crest are white stripes. The standards are an inch long and broad at the ends; the styles are as long as the falls, and reflexed. The plant grows quickly, and is very floriferous. I have had as many as four blossoms from a single bulb. The cross was effected in the spring of 1908, but the hybrid has not flowered until this year.

Iris Mme. Wenner (*Tauri* × *Heldreichii*) resembles *Tauri* in form and *Heldreichii* in colour. The falls are 1½ inch long, with broad, ascending wings of pale blue. The blade is small and somewhat darker in colour, the median ridge yellow, coming right to the top, and striped with white. The standards are small and spreading, of a pale blue colour; the styles are of the same hue. It is interesting to note that in both these hybrids the colour is derived from the pollen parent and the size and shape from the seed parent.

A fine lot of Crocus species, which I received from Messrs. Barr and Sons, have flowered well

are intended to remain for, say, 30 or 40 years, it is most essential that they are not over-cropped at the start, for bearing a crop of Grapes the first and few subsequent years after planting entails a great strain on the plant's energies. Whatever variety is planted, whether Muscat of Alexandria, Madresfield Court, or Black Hamburg, the supernumeraries should be of the same variety, for then the treatment may be such as is suitable to that particular kind. Assuming that the vinery is 16 feet or more wide, the extra row of canes should be planted 6 or 8 feet from the front wall in a border specially prepared and 3 feet wide, for the first two years. The border for the permanent vines will, in usual circumstances, be made piecemeal—say, about 3 feet wide the first season. Additions to the border for the extra vines may be

here. The chrysanthus varieties are the best—namely, Sikkim, Warley and Bowles varieties. The largest flowers, however, are always seen on our native Imperati, with its two white varieties, though they are not quite so floriferous as the chrysanthus, on one bulb of which I have had seven flowers open at once. Among these species I have received *Crocus biflorus pusillus*, which is identical with a variety to be found growing wild near Naples, or more frequently near Pozzuoli, the old Puteolanum. Several years ago I found a white form of this, which could be named *C. biflorus pusillus albus*.

Varieties of *Iris reticulata* have done very well. One batch of the variety *cyanea* gave special satisfaction, several of the flowers having had four falls and standards, though I doubt whether these abnormal flowers will come true again. I have also had some very pale-blue flowers, but the finest of all were some on which the standards and style were white and the falls pale blue. Some very dark purple varieties are also handsome.

The following are the flowering dates of some Irises grown in the open here:—

- Iris alata*, December 5.
- I. alata* vars. *alba* and *marginata*, December 20.
- I. histrioides*, January 15.
- I. palestina*, January 25.
- I. persica purpurea*, February 3.
- I. Tauri* and *I. Heldreichii*, February 10.
- I. reticulata cyanea* and varieties, February 20.
- I. Statellae*, March 5.
- I. Madonna*, March 10.
- I. pumila*, March 14.
- I. rubromarginata*, March 15.
- I. obiensis*, March 16.

Willy Müller, *Fratte di Salerno, Naples.*

CULTURE OF WATERCRESS.

THAT Watercress may be successfully grown without water is now generally accepted, and when properly cultivated under glass it is superior to the open-air product. It is during the late winter and early spring months that it is of most value, and an excellent method of cultivation is to sow the seeds in shallow boxes thickly, much as Mustard and Cress are sown, cutting the young plantlets in the same way as Mustard. A more delicious salading, with a slightly piquant flavour, is hard to obtain. *H. Rabjohn, Twickel Castle Gardens, Delden, Holland.*

CORONA DI NOVIA.

HAVING seen the enquiry in the *Gardeners' Chronicle* concerning the plant in South America called by the natives Corona di Novia, I may say that the name of the plant is *Spiraea lanceolata*, and it is so named in the Botanical Gardens at Buenos Aires. *H. R. Amos, Estacion Experimental, Pontaut, F.C.S., South America.*

NOTICES OF BOOKS.

TREES AND SHRUBS AT ALBURY PARK.*

IN the introduction and acclimatisation of hardy trees and shrubs successive Dukes of Northumberland, from the middle of the eighteenth century to the present time, have played an illustrious part. Their most important planting was done at Syon House, near Brentford, where there is still to be seen one of the finest collections in England, especially as regards large examples of species long introduced. It is gratifying to know that this interest is maintained by the present Duke, as is shown by the preparation and printing of

annotated lists of trees and shrubs growing on his demesne. We noticed at the time of its publication the little volume dealing with the Syon House property, and we have lately received a companion volume dealing with the trees and shrubs growing at Albury Park. It has been compiled by Mr. A. Bruce Jackson, and shows all the care and excellence that characterised the previous work.

Albury is not so famous a place in the annals of horticulture as Syon, yet this volume shows that many remarkable trees grow within its confines. It is situated five miles east of Guildford, in the valley of the Tillingbourne. We learn from the preface that it is within three miles of Wootton, the home of John Evelyn, who is credited with having laid out the place.

One of the most interesting trees at Albury Park is a Black Walnut, which has pendulous branches, but differs still more remarkably from the type (which has its fruits nearly always solitary, rarely in pairs) in bearing its nuts in clusters of so many as six. Mr. Jackson has named it *Juglans nigra* var. *alburiensis*. It is 75 feet high and 9½ feet in girth. Of the White Lime (*Tilia argentea*, syn. *T. tomentosa*) Albury possesses the finest example known; it is 109 feet high and 16 feet in girth of trunk. Two magnificent Tulip trees approach 100 feet in height. *Magnolia acuminata* is 85 feet high, a remarkable stature for this tree in the British Isles. A black Italian Poplar (*Populus serotina*) is 150 feet in height, and probably the highest in the kingdom; and a Balsam Poplar (*Populus candicans*) is 96 feet high. A specimen of the Kentucky Coffee tree (*Gymnocladus canadensis*), of which there are few large specimens in cultivation, is 44 feet high and nearly 5 feet in girth; and of *Liquidambar styraciflua*, the Sweet Gum tree of Eastern N. America, an example is of the same girth, but 68 feet high. A *Sequoia* mentioned in the *Gardeners' Chronicle* of 1879 as being then 54 feet high is now 97 feet. A magnificent pair of trees are two London Planes (*Platanus acerifolia*), respectively 112 feet and 118 feet high. *Zelkova crenata*, a beautiful Caucasian tree, has a representative 88 feet high. *Thuja plicata* (better known as *T. gigantea*) is 94 feet high and 8 feet 3 inches in girth, and we learn that a high opinion as to its timber value is held at Albury.

BOTANICAL RESULTS OF THE DUKE OF MECKLENBURG'S TRAVELS IN CENTRAL AFRICA.

A NOTICE of *Lieferungen* i-iv. of this work appeared in the *Gardeners' Chronicle* of November 2, 1912, where the general plan of the work is described and the full German title given. In that notice the name "Mildbraed" is incorrectly given as "Milbraed." The fifth *Lieferung* is now to hand, and it contains the Geraniales to the Malvales (as classified by Engler) by various botanists. *Fagara* (Rutaceae), sometimes combined with *Zanthoxylum*, is represented by about half-a-dozen new species, and new and interesting species belonging to most of the families are here described for the first time. The plants figured are: *Balanites Wilsoniana* (here referred to the *Zygophyllaceae*); *Eutandrophragma speciosum* (Meliaceae); *Dichapetalum spathulatum*, *D. choristylum*, *D. nnguiculatum*, *D. flaviflorum*, *D. Adolphi Friedricii*, *D. beniense*, *D. longifolium*, *D. Poggei*, *D. brachystachyum* and *D. aruwimense*. This pantropical genus, more familiar as *Chailletia*, now numbers nearly 150 species, largely African. *Lingelsheimia* is a relatively new genus of *Euphorbiaceae*, of which two species are figured. *Baccaureopsis lucida* is another new generic type of the same family, as also *Mildbraedia paniculata*. *Hippocatea* and *Salacia*, both large pantropical genera, are illustrated by new species. The imperfectly-known *Pancovia* is now proved to belong to the *Sapindaceae*, and a figure is given of *P. harmsiana*. Three new species of *Impatiens* are figured, and *I. Prainiana* is remarkable for having a slender spur 6 inches long.

TREES AND SHRUBS.

ERICA LUSITANICA.

THIS Heath is better known as *E. codonodes*. About the advent of Christmas its earliest buds commence to show white, and in the south-west towards the close of January it is in flower. Large specimens, 6 feet or more in height, are very beautiful when in full bloom, giving the impression of tall pyramids of white faintly tinged with lavender. The natural growth is erect, and the upright shoots are covered with a profusion of drooping, white, elongated bells, which have the appearance of feathery white plumes when cut. Where, however, the flower-sprays are all cut as soon as the flowers are expanded, the bush assumes a dwarfer habit, and one from which the sprays are cut every winter as soon as they are fit for indoor decoration has entirely lost its natural pyramidal habit, and has developed into a shrub 6 feet in width and 5 feet in height. In Devon and Cornwall this Heath grows superbly and propagates itself from self-sown seedlings rapidly in certain gardens, these seedlings often attaining a height of 8 feet. At one little station in Cornwall the embankment is covered with self-sown plants of *E. lusitanica*. Its foliage is of an extremely rich green, and its flowering season is a very prolonged one, lasting from Christmas, when the earliest blooms expand, until April, when the last fade. In the colder districts the plant cannot be considered absolutely hardy, since it is a native of Spain and Portugal, but south of London it is rarely injured by frost. The individual flowers have a suspicion of lavender-pink when closely examined, but this is not noticeable when they are seen crowded on the sprays of the growing plants. *Wyndham Fitzherbert, Devonshire.*

CRATAEGUS HETEROPHYLLA.

CONSPICUOUS amongst all other thorns—and, indeed, all other trees—in the Victoria Park, Bath, at the present time are several specimens of this somewhat little-known species. The two finest specimens are shapely trees about 30 feet high and as much through. They are objects of considerable interest to the numerous visitors to the park by reason of the delightful fresh green of the young leaves, which at the time of writing (March 31) are almost fully developed. In general habit the tree resembles the common Hawthorn, *Crataegus Oxyacantha*, but it has many features which distinguish it from that species. The leaves, as the specific name denotes, vary considerably both as regards shape and size, many being narrow, not more than an inch long, and quite entire, whilst others are almost cuneiform in shape and deeply cut at their apices into three or more acute lobes, these in many cases being sub-serrated. There are many variations between these extreme forms. The young leaves are very soft in texture, but become coriaceous and shiny as they mature. This characteristic alone easily distinguishes the plant from all other species. Not only is it the first to develop its leaves, but—in the collection here, at any rate—it is the last to shed them in the autumn, being quite green for some considerable time after other species have become bare. The flowers are white and borne in good-sized corymbs. The fruit is large—quite twice the size of the ordinary Haw—ovate in shape, and of a fine, rich crimson colour, and usually borne in abundance. Very frequently—although not so this year—the fruit of the past season persists throughout the winter and well into the following spring, making a very effective contrast with the fresh green of the developing leaves. The plant appears to have been common at one time, as many specimens are to be found in this park, and it is mentioned by the late Dr. Hanham in his *Manual* for the park, published in 1862. *J. D. Halliburton, Bath.*

* *Albury Park Trees and Shrubs*. Compiled by A. Bruce Jackson. Pp. 66, 8vo. interleaved. London. (Printed for private distribution only.)

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKSON,
Oakwood, Wylam-on-Tyne.

CATTELEYA.—Plants belonging to the autumn-flowering section of Cattleyas are producing new growths, and certain of them are developing roots. Such plants should be re-potted before the roots become far advanced, or there may be a danger of injuring them. The potting compost may consist of good fibrous peat or a mixture of *Osmunda* and *Polypodium* fibres. Peat of a suitable type for Orchids is becoming very scarce, but when it may be obtained I prefer it to even the best quality *Osmunda*-fibre. Plenty of sand and broken crocks should be intermixed with the materials for potting, and the drainage should be ample to allow surplus water to drain away readily. The pots should not be larger than will just accommodate the plants, for it is not wise to use a greater bulk of potting compost than is necessary. The material should be pressed firmly about the roots and the pseudo-bulbs secured to neat sticks. Very little moisture will be required by the roots until they have become re-established in the soil, when water may be afforded liberally. Shade the plants from the direct rays of the sun or the leaves will rapidly turn yellow and drop. Spray the plants overhead whenever the conditions are favourable, and keep the atmosphere humid by damping the spaces between the pots. The presence of atmospheric moisture will help to keep the shoots plump until the roots can gather moisture again after their disturbance. Certain varieties of *C. Warscewiczii* (syn. *gigas*) are very irregular in their flowering, and I am inclined to the opinion that these shy-flowering Orchids are all imported from a particular locality. If the plants are started in a dry, well-ventilated house at the present season, exposed to the full rays of the sun during the whole of the summer and syringed freely each day, they will bloom with more regularity. The flowers from shy-blooming plants are usually larger and superior in quality than those from such as flower regularly under ordinary treatment. The spikes of summer-flowering Cattleyas, *Laelias* and their hybrids are prominent. Such species as *C. Mossiae* and *C. Mendelii* require careful attention as the flower-buds advance in the sheath, for moisture accumulating in the latter would cause the flower-buds to rot and decay. This may be prevented by cutting away the flower-sheath just above the flower-buds or by carefully splitting it open horizontally from the base to the top. As the plants come into flower place them where they will be well exposed to the light, but as soon as the flowers expand grow them in cooler and drier conditions and afford shade, as this treatment will improve the quality of the flowers and cause them to remain fresh for a long time.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE,
Eastwell Park, Kent.

RASPBERRIES.—As soon as the new growths are sufficiently advanced they should be thinned, in order to concentrate the energies of the plants into those canes required for fruiting. After thinning to the number of shoots required, those that develop subsequently can be chopped off with the hoe when keeping the plantation clear of weeds. If a dressing of farmyard manure was not afforded established plants during the winter, it should be applied at once, or, failing this, a dressing of artificial manure, working the materials in the soil lightly with the fork or hoe. The manure is best applied when the weather is dull or showery. Young canes that were planted during last autumn or winter should be cut to the ground level. As soon as the new shoots are sufficiently advanced, thin them to three or four of the strongest for each root, as this number will be ample for the first season.

LOGANBERRIES AND BLACKBERRIES.

Recently-planted specimens of these fruits should be afforded the same treatment as recommended for Raspberries. The new shoots will grow vigorously from the start, and the energies of the plants be directed into the building up of strong fruiting canes for next year. See that newly-planted canes do not suffer from lack of moisture in hot weather and when drying winds prevail. Watering the roots at such times will assist the plants greatly, and in conjunction with a light mulching of animal manure carry them through till well rooted.

PLANTING FORCED STRAWBERRIES.

The later batches of Strawberries which have not been unduly weakened by hard forcing are first-rate for planting in the fruit garden. Before doing this, however, harden the plants gradually by affording them the protection of a cold frame for a week or two after the fruits have been gathered. If red spider or mildew is present on the leaves, dip the plants in an insecticide, or a mixture of sulphur, at the time of moving them from the houses. When planting Strawberries that have been forced, break the ball of soil about the roots with a strong, pointed stick. When this is done the roots grow quickly in the new soil. If the ground is of a heavy nature, and the surface lumpy, place a little discarded potting soil or wood-ash about the roots at the time of planting. First prepare the ground as recommended in previous calendars, and if the planting is done when the weather is hot and dry, water the roots and continue to apply moisture as required. When the work of planting is finished, rake the surface and afterwards hoe the bed on frequent occasions in suitable weather. Varieties such as *Royal Sovereign* and *Viscomtesse Héricart de Thury* when planted in this way produce trusses of fruit the following autumn, and if the weather is favourable for the berries ripening, the latter offer a pleasing addition to dessert fruits at that time.

EARLY STRAWBERRIES.—Small batches of an early variety, such as *Royal Sovereign*, planted on a warm, sheltered border, will afford berries in advance of the general crop. Always select very strong plants for the purpose; feed the roots now with a little quick-acting artificial manure, and place straw along the rows as litter. The protection of frames or odd lights will hasten the development of the flower trusses, which should be thinned to a very moderate number.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

STENANTHIUM ROBUSTUM AND CRAMBE

CORDIFOLIA.—These are two grand subjects for planting in clumps on the margins of lakes, ponds, or streams in association with *Water Lilies*, *Glyceria spectabilis*, *Iris Monnieri*, *I. ochroleuca*, and the newer *Iris* hybrids raised by the late Professor Michael Foster. The following *Water Lilies* are worthy a place in every collection, however small:—*Mariacea carnea*, *chromatella*, *sulphurea grandiflora*, *albida*, *igneae*, *Gladstoniana*, *candida*, *gloriosa*, *W. Falconer*, *Robinsoniana*, and the sweet-scented *Nymphaea pygmaea*, the last for shallow water.

HARDY FERNS.—This is the best time to transplant or to divide deciduous Ferns. Large plants growing wild in woods may be dug up with balls of earth and replanted in suitable situations in the wild garden, such as beneath the shade of trees or near to rocks. Large-growing *Lastreas* have a special charm, and may be removed now without experiencing much check to growth.

MICHAELMAS DAISIES.—Perennial *Asters* should be divided annually, or at least biennially, if flowers of the best quality are expected. If grown in permanent beds on the grass, as at Madresfield Court, some of the old soil should be removed, replacing it with fresh, loamy compost, the beds trenched and a thick layer of decayed manure placed at the bottom of the trench, for *Michaelmas Daisies* are gross feeders. *Amellus Riverslea*, *St. Egwin*, *Finchley White*,

Beauty of Colwall, *ericoides*, *E. Beckett*, *Nancy Ballard*, *Peggy Ballard*, and *Mrs. Rayner (red)* are all good varieties. A little bone-meal added to the staple will prove beneficial. If annual or biennial division is not practised, the next best thing is to thin out the young growths to at least 7 to 10 inches apart.

LILIUMS.—We have never been quite successful in bringing *Liliums* through the winter and spring, neither those planted on our heavy clay nor in prepared beds. In these circumstances we have in recent years started them singly in pots (now ready to plant out) with greater success, especially *L. longiflorum*, *L. speciosum*, and *L. auratum* varieties. It is necessary to dust around the plants on frequent occasions with fresh soot, in order to preserve them from damage by slugs and snails.

VIOLETS.—As the plants of *Princess of Wales* or *Kaiser Wilhelm* type pass out of flower secure healthy, vigorous runners for next season's stock. Plant them in well-manured 5-foot beds, allowing a distance of 1 foot from plant to plant. Stick a few stout branches from evergreens in amongst them for providing shade and shelter from cold winds.

LATHRAEA CLANDESTINA.—This exceedingly quaint parasite is in full flower, growing upon the partially bared roots of a *Weeping Willow*, *Salix babylonica*. It is not a difficult plant to cultivate, although it requires several years to become established. Specimens thrive here planted in the ordinary way, in a moist place, amongst the larger roots of the *Willow*.

RECENTLY TRANSPLANTED SHRUBS AND TREES.—Trees and shrubs that were transplanted in clayey soil during March or early in April, whilst the ground was wet with constant rains, should be mulched with half-decayed manure, or, failing that, lawn mowings, after the surface has been first loosened by the Dutch hoe. This will conserve the natural moisture in the soil, preventing rapid evaporation by drying winds.

FLOWERS IN SEASON.—The following shrubs and trees are in their full beauty in these gardens:—*Spiraea arguta*, *S. multiflora*, *S. Albertii*, *Magnolia Soulangiana*, *M. conspicua*, *M. ovata*, *Lennei*, *M. stellata*, *Halleana*, *Pyrus Malus floribunda*, *P. atrosanguinea*, *P. Scheideckeri*, *Cerasus Gauntlettii*, *Prunus Padus*, the *Bird Cherry*, *P. Watereri*, *P. H. J. Veitch*, *P. serrulata*; the newer Japanese varieties of flowering *Cherry*, such as *Lida nova* and others; *Double-flowered Peach*, *Gorse*, and various *Heaths*. Amongst bulbs in grass, those in flower include the early section of *Dutch Tulips*, *Hyacinths*, *Daffodils*, *Narcissus poeticus* varieties, *Muscari* (*Grape Hyacinths*), *Scilla nutans* and *S. hyacinthiflora alba*.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY,
Knowsley Hall, Lancashire.

BOUVARDIA.—Plants that have been cut back and rested are growing afresh, and may be repotted. Remove a portion of the old soil, and replot the plants into receptacles sufficiently large to accommodate the roots. For soil use a mixture of equal parts loam, peat and leaf-mould, adding sufficient sand and charcoal to keep it porous. Place the plants in a pit having a temperature of 60° and a moist atmosphere. Syringe frequently, and pinch out the points of the shoots when they have grown 4 inches long. Specimens raised as rootlets may be potted on in small pots; when the plants are established pinch the leading shoot if bush specimens are required, but not for standards.

LANTANA.—These evergreen, shrubby plants are of easy culture, and may be propagated either from seeds or cuttings. Seeds may be sown now in well-drained pans, barely covering them with soil. Germinate them in a temperature of 70°. Cuttings may be rooted at this season in a peaty compost under a bell glass. Shift the plants into pots when rooted, and grow them in a temperature of 55° to 60°. Pinch out the points

of the shoots to induce a bushy habit. Afford increased root-room as required, putting them finally into 5 or 6-inch pots. Pinch out all the flowers until five or six weeks before the blooms are required, then feed with liquid manure and concentrated fertiliser, using them alternately.

CYTISUS RACEMOSUS.—When the flowers are over prune the shoots to form shapely specimens and grow the plants in a temperature of 55° to 60°, syringing them freely on bright days. In about a fortnight new growth will appear, and specimens requiring re-potting may be attended to. Reduce the ball of soil slightly by means of a pointed stick and re-pot in a compost consisting of two-thirds loam and one-third peat and grit. The plants are best grown under glass until July, when they may be plunged out-of-doors in a bed of ashes until October to allow the wood to ripen. Cuttings struck now make useful plants in 18 months' time. Insert the cuttings singly in thumb-pots filled with sandy soil and mixed with a little peat-dust, and cover them with a bell-glass. When rooted re-pot them as required and pinch any shoots that grow unduly strong to preserve a good balance of growth. Rooted cuttings should be treated as advised for older specimens. The stock may also be increased from seeds sown now, but cuttings are to be preferred and do not grow so straggly. *C. canariensis* is useful as a succession to *C. racemosus*, for plants will flower from May onwards. The propagation and cultivation is the same in both cases.

EUPHORBIA JACQUINIAEFLOREA.—This species should be grown in a temperature of 75° to 80° with sun heat to produce cuttings. Plunge the cutting-pots in a brisk bottom heat.

CALLICARPA PURPUREA.—Plants that were cut back in the spring have made shoots suitable for cuttings, and these should be dibbled into pots and rooted in a propagating frame. When rooted shift the plants into 2-inch pots filled with a compost consisting of two-thirds loam, one-third peat and sufficient sharp sand and broken charcoal to ensure porosity. Stop the growths at intervals to form bushy specimens, unless it is intended to train them as standards. When they have attained to the desired height pinch out the point and stop each subsequent side-shoot when two or three pairs of leaves have developed. Remove all flowers until August, but those that develop after that time should be allowed to remain. The blooms will be quickly succeeded by the bright purple berries, which are attractive from October to the following spring. Old plants may be re-potted and treated as advised above.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

VINES.—Red spider may make its appearance in houses that are being kept drier because the Grapes are ripening, and the pest must be guarded against. If the borders are allowed to become the least dry an attack of this pest is almost sure to follow. Therefore examine the soil occasionally, and when moisture is needed afford water copiously during the early part of the day when the maximum amount of air is afforded, for ventilation will prevent the rising moisture from settling on the fruit. After watering the roots place a thick mulch of half-decayed leaves or manure from a spent Mushroom bed over the surface to retain the moisture about the roots and prevent undue evaporation. Maintain a mild, genial atmosphere in vineries where the berries are swelling. Make the most of the sun's heat on fine days by closing the ventilators early in the afternoon. Attend to the work of disbudding, stopping, and tying the shoots of later vines. On bright days keep the fires low; for the use of fire heat when the sun is shining is not only unnecessary, but harmful to the vines. Now is a suitable time for making fresh borders for planting young vines that are being raised during the present season, as these will require planting in a few weeks. Make the borders about 3 feet deep, and employ fresh maiden loam, adding about 10 per cent. of $\frac{1}{2}$ -inch bones. If the loam is adhesive in texture, employ the bones and add about the same quantity of old lime rubble and crushed bricks. Spread out the roots, cover them with a thin

layer of soil, and soak the border with water warmed to about 100°. Keep the house close until the roots are well-established, when the treatment may be the same as for established vines. Plants that have been raised from eyes inserted in pieces of turf may be planted without disturbing the roots by simply inserting each turf level with the surface, and pressing soil firmly about them.

PEACHES AND NECTARINES.—Trees with fruits at the stage of the second swelling need most careful attention in watering, especially where the border is inside the house. If moisture is necessary let the water be warmed to about 90°, the quantity to be determined by the condition of the soil and the energies of the trees. If the border is well drained, and the soil light and free in texture, some form of liquid manure may be afforded in liberal quantities, say once weekly; but if a mulch of partly-decayed manure is spread over the surface there will be less need to use the manure water. Close the house sufficiently early in the afternoons of sunny days to secure a temperature of about 85°, and syringe liberally with soft, clear water warmed to the same temperature as the atmosphere of the house. Proceed with the thinning of the fruit in successional houses in accordance with the condition of the trees. Those that are weakly should only be allowed to carry moderate crops, and every assistance should be afforded such trees by surface dressings and applications of liquid manure; but vigorous trees, or such as are young and growing in newly-made borders, may be allowed to carry heavy crops. Adopt every means to keep insect pests in check.

ORCHARD HOUSE.—Maintain a moist, genial atmosphere in orchard houses in order that the trees may grow freely and swell their fruits. On warm mornings syringe the trees early and freely, but if the weather is cold keep the atmosphere somewhat drier. Ventilate the house early and gradually, but do not allow cold draughts of air to reach the plants. Close the house between 2 and 3 p.m. if it is safe to do so. Water any of the pot trees that require moisture and syringe them copiously. Admit air in the mornings when the temperature has reached 60°, and allow it to rise to 80° or thereabouts. No danger need be apprehended by a high sun temperature, with proper ventilation; on the contrary, if attention be paid to keeping the atmosphere of the house moist, it will be of the greatest benefit to the trees. Disbud and pinch the young shoots when necessary, but do this work gradually and often, for the removal of many shoots at one time is harmful. Pinch the stronger shoots first and the weaker ones afterwards. Where the fruits are very thick, thin them gradually. Guard against the presence of harmful insects, and if aphids is present fumigate the house or spray the trees with clear water, or dust the infested branches with Tobacco powder, this being an excellent specific for the destruction of both black and green fly.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

OUTDOOR TOMATOS.—To have strong plants for culture out-of-doors they must not be stinted for pot-room, and should not be over-watered, the objective being very stout short-jointed plants that will fruit at the earliest possible moment. A layer of cinders for the pots to stand upon obviates the necessity of much watering, but watering is a practice which observation alone enables one to understand, to hit the happy medium of giving just enough to keep the plant moving sturdily, without on the one hand inviting grossness or on the other an insufficient food supply.

PEAS.—From this time Peas are almost wholly grown on ground from which a crop such as Broccoli has been cleared. Instead of trenching all the ground, only that to be occupied by the Peas is trenched, the top spit being turned over on one side and the bottom spit dug and left in the bottom. If the soil is known to require manure let the dung be incorporated with the lower spit, but usually find ground in good heart needs no further

aid to fertility. I have known a 6-inch layer of rotted manure to be placed in the bottom of the trench, but in our soil, however helpful it may be elsewhere, it is of no advantage. The Peas are arranged in a wide furrow 6 inches below the surface, the soil having previously been trodden firmly to provide the necessary cohesion, and conserve the moisture from rains or waterings. They are covered with 3 inches of soil, leaving a depression of about 3 inches, into which liquid can be poured without losing any of it. I know no better variety for general use than Sharpe's Queen, and along with it for late sowing Gladstone and Autocrat. The last-named seems to be quite mildew-proof. Following Broccoli the trenches are made in every third furrow of that crop, and after the Peas are sown, and supports placed along the rows, the interspaces are dug for catch-crops of Lettuces, Spinach and Turnips.

GENERAL REMARKS.—Clear away winter and spring crops as soon as they become non-productive. It is not only a means to conserve the fertility of the soil, for in the later stages of a plant's existence it exhausts fertility more than when young, but the practice can be commended because it enables work to be carried on more expeditiously and systematically. Even if time cannot be spared at a particular date to finish clearances, by cutting over with an ordinary switching knife exhausted Brussels Sprouts and other crops the toil on the soil is terminated, and the tops will become lighter every day by evaporation. Spinach is destroyed by means of a sharp hoe run along each row just under the surface, and this crop, if not too far over-grown, may be dug into the ground as a manure. Digging and trenching at this time of the year should be carried out early in the day, and, if possible, in dull weather. Nothing is gained by exhausting men's strength by working them hard in the hot hours of the day, unless necessity imposes. All crops in the seedling stage, such as Parsley and Leeks, should be hoed often, and any weeds that cannot be reached among the plants removed by hand.

THE "FRENCH" GARDEN.

By PAUL AQUATIAS.

HOT-BEDS.—The bulk of the Lettuces grown on hot-beds have been marketed, and the frames need ventilation daily, and even at night in calm weather. Carrots require watering at least once weekly, and to expedite this operation all the lights may be piled up on the end ones of each row and the watering done with the hose. It will be necessary, owing to the increase of growth, to raise the frames one or two inches higher by placing wisps of straw under each corner. The paths may be filled during the present month with dry manure in order to prevent the soil from rolling off when removing the frames and lights early in May. Now that the Turnips are growing fast ventilation may be afforded both day and night, and the lights removed entirely in bright weather. The soil should be kept just moist until the roots swell, when a greater amount of water may be afforded.

OPEN-AIR CROPS.—Sow the first batch of Turnips in drills made 10 to 12 inches apart. Such sorts as Snowball, Early Milan, and White Marteau are suitable. A better growth will be obtained where the beds are top-dressed with black soil. The disadvantage of this first batch is the proneness of the plants to bolt; last year all those sown before April 10 were failures owing to cold, wet weather. Cabbages are ready for market only a few days earlier than last year, despite the milder winter. The variety Early Market was grown exclusively and not one plant bolted, which speaks well for the variety; the seeds were sown on July 23, and the ground is very light. The Lettuces (January sown) are ready for planting out, but this must only be done if the plants are well hardened, as they are more tender than those sown in October. There will be pressure of work later with the Melon crop, therefore all planting and sowing should be completed at an early date, for it sometimes happens that Melons are neglected during May owing to arrears of work.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

APPOINTMENTS FOR MAY.

FRIDAY, MAY 1—

Dundee Hort. Assoc. meet.

TUESDAY, MAY 5—

Roy. Hort. Soc. Coms. meet. and Nat. Tulip Soc. Show. (Lecture at 3 p.m. on "The Value to Gardens of some of Mr. Wilson's Introductions from China.") Hort. Club dinner, 6.30 p.m. (Lecture on "Indian Garden Craft," by Mrs. Patrick Villiers-Stuart.) Scottish Hort. Assoc. meet.

WEDNESDAY, MAY 6—

B.G.A. Ex. Council meet.

THURSDAY, MAY 7—

Linnæan Soc. meet.

MONDAY, MAY 11—

United Hort. Ben. and Prov. Soc. Com. meet.

THURSDAY, MAY 14—

Manchester and N. of Eng. Orchid Soc. Ann. Meet.

TUESDAY, MAY 19—

J. J. Hort. Soc. Spring Sh. at Roy. Hospital Gardens, Chelsea (3 days).

WEDNESDAY, MAY 20—

Roy. Nat. Tulip Soc. Sh. at Roy. Hospital Gardens, Chelsea (2 days).

MONDAY, MAY 25—

Linnæan Soc. Anniversary meet. at 3 p.m. Rhododendron Sh. at R.H.S. Hall (5 days).

THURSDAY, MAY 28—

Bath and West and Southern Counties Soc. Sh. at Swansea (5 days). Royal Botanic Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 49.4°.

ACTUAL TEMPERATURES:—

LONDON, *Wednesday, April 22* (6 p.m.): Max. 65°. Min. 50°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, April 23* (10 a.m.): Bar. 29.7°; Temp. 55°. Weather—Dull.

PROVINCES, *Wednesday, April 22*: Max. 63°, Shields; Min. 52°, Chester.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Hardy Bulbs in variety, at 12; Carnations, etc., at 1.30; Japanese Lilliums at 4; Palms and Plants at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris. Orchids at Walton Grange, Stone, Staffordshire, by order of W. Thompson, Esq., by Protheroe and Morris at 1.

FRIDAY—

Established Orchids, by Protheroe and Morris, at 12.45.

The capacity of Englishmen for taking sides, considered as a national characteristic, has much to be said in its favour. It gives a zest to politics, and makes amusements tolerable. The quality has its drawbacks, however, and when it is manifested in controversies, such as that on State afforestation recently engaged upon in the columns of the *Spectator*, it is apt to make the less argumentative despair. For as we have endeavoured to show on more than one occasion, State afforestation is required urgently in these islands.

The controversy to which we have referred must, however, do good, for although the protagonists on either side were doughty in debate, it does not seem open to us to doubt but that the honours rest with the "ayes," led by Sir John Stirling Maxwell, as against the "noes," who number in their ranks the Duke of Northumberland and Mr. Elwes.

The correspondence is published in part in the April number of the *Quarterly Journal of Forestry*, and although we could have wished that it had been published *in extenso*, a fair reading of the argument must, we think, lead to the conclusion that the case for State afforestation is—once again—made good. The main lines of argument used by Sir John Maxwell are not to be controverted. They are that the world's timber supplies are ceasing to meet the world's demands, and that prices are rising in consequence: that the evidence of the better part of a century of State afforestation in Germany shows that forest returns rise as management becomes more efficient: that the returns to be obtained from a properly managed estate, though not high, are such as is to make afforestation, even at present timber prices, a profit-yielding investment: and that apart from monetary returns, the gain in rural population is so certain and so valuable that even though afforestation but paid its way it would yet be the duty of the State to undertake it. As Sir John Maxwell puts it, "no one who knows the Vosges or the Jura, Saxony or Bavaria or the Belgian Ardennes, can doubt that forestry is the one sure anchor of rural life in a rough hill country. In the Highlands of Scotland it offers the only reasonable hope of settling small holders in the glens—because it is the only industry to which they can turn for winter employment." It is, of course, open to the polemical to make argumentative use of the fact that the advocates of State afforestation seek to underpin their faith in the commercial promise of afforestation by means of arguments relating to national welfare. But we have yet to learn that this is unscientific. It is not in serious dispute that a rural problem exists. No one who talks with British men of peasant stock settled successfully in Canada or the United States can be unaware that they went abroad, and would not return, because they found in the new country rural occupations and rural conditions which gave them scope. If afforestation, therefore, did something—as it would assuredly—to stem this tide of the emigration of the fittest, that also must be reckoned in casting up the balance sheet of afforested areas. Apart, however, from this argument, which some call sentimental or patriotic, or uneconomical, though it is in fact an economic argument of indubitable cogency, there is enough evidence to show that a properly managed forest brings in a moderate and sure return, and for that evidence we refer our readers to the record of the recent controversy as republished in the official *Journal* of the Royal English Arboricultural Society.

"The Rose Annual."

The members of the National Rose Society have received during the past few days *The Rose Annual* for 1914, a volume of 185 pages. The first article is by M. Jules Gravereaux, the well-known president of the French Rose Society, and it

contains a description of his Rose garden at L'Hey, near Paris, in which is grown the most complete collection of Roses in the world. The last edition of his catalogue of the Roses there cultivated, published in 1902, enumerated 6,781 species and varieties, and these have been largely added to since, so that the collection now includes about 7,500 varieties. The article is accompanied by a plan and photographs of the garden. Later in the volume we find an article by another Frenchman, M. Pierre Guillot, on "The Rose in the Ornamentation of Gardens," while distant lands are represented by a "Jotting" by Mr. R. H. Nicholson, on "Rose-growing in China."

A feature of this year's Annual is the treatment of certain subjects by a number of different writers, so that an endeavour is made to present the questions dealt with from different points of view. Thus we find articles on the classification of Roses from nine contributors, five more deal with mildew and black spot and the treatment of these diseases, whilst Mr. Darlington writes an article on autumn-flowering pillar Roses based on the reports of some sixteen observers in different parts of the country.

Seeing that the National Rose Society is contemplating taking up the difficult subject of classification, the editor of the *Annual* has no doubt been wise in publishing these articles on the matter, so that the subject may be thoroughly considered before any action is taken. We hope in a future number to discuss the views presented by the several contributors.

The writers who have discussed mildew and black spot deal with the matter in very different ways, but certain broad principles seem to emerge on which all or most of them agree. These we venture to sum up as follows:—(1) There is very little benefit derived from winter spraying; (2) mildew may be checked or occasionally cured by treatment, but in the case of black spot treatment is of little use to cure the disease, though it may prevent it spreading to other plants; (3) black spot is a very serious and sometimes fatal malady; (4) in both cases the best results are likely to be obtained by preventive rather than remedial measures. Preventive measures may include early and persistent syringing and the breeding of plants immune from the disease. Dr. Waddell takes exception to the generally received view as to the fungus causing mildew, namely, that it is caused by the fungus *Sphaerotheca pannosa*, which is seen in the early part of the season as a powdery appearance on the leaves, afterwards attacking the buds, and later still the thorns and stems, in the two last-named cases the mildew appearing as a more or less felt covering, in mild winters sometimes persisting till spring. He regards each of the three attacks as due to a distinct fungus. (1) The powdery mildew, he holds, is caused by the hop fungus, *Sphaerotheca humuli*; (2) the felted mildew on buds and stems by *Sphaerotheca pannosa*; and (3) the mildew attacking thorns and stems to a third species



PERGOLA
(FROM "THE HORTICULTURAL RECORD")

of *Sphaerotheca* as yet unnamed, which he provisionally calls "thorn mildew." Dr. Waddell, however, admits that the powdery mildew (his *S. humuli*) grown on the Rose will not germinate on the Hop, and does not give any proof that the Rose mildew cannot (as is usually supposed) change in character as the season advances. Until, therefore, the contrary is proved rosarians will in all probability continue to regard any of the three forms as "just mildew" to be got rid of as best they may, and equally objectionable by what name soever it ought strictly to be designated.

Besides these questions a number of matters of interest to rosarians are dealt with in various articles. Dr. Williams tells us how to breed new Roses, Mr. Courtney Page how to bud them, Dr. Lamplough how to treat them the first year after planting, and Mr. Easlea why they sometimes fail to prosper, while Mrs. Darlington treats of the lasting qualities of cut Roses, and incidentally how to make them last as long as possible. We may surmise she would by no means approve of the rule observed in the garden of Mr. J. Gravereaux, namely, that no flower shall be cut, for she holds that it is a satisfactory point in using Roses for the house that, as a rule, they last better when cut than they do in the garden.

A word should be said of the jottings, or short notes, from different members of the society. Mr. G. M. Taylor, who contributed to these columns [January 31, 1914, p. 69] an interesting note on the value of *Rosa laxa* as a stock specially suited for light soils, refers to the subject again in the *Annual*. Some six years ago we employed this stock for some of the yellow-hued Roses with which we had found difficulty. The results were good, but they were better even when the same stock was used for climbers of the *Wichuraiana* type. *Rosa laxa* stocks produce enormous root systems, and with the vigorous climbing Roses a balance of systems is maintained which appears very favourable to the Rose, at least on light soils.

Miss M. E. Curle contributes a useful note on the relative hardness of climbing Roses in Scotland. Besides a number of photographs, the book contains six photographs of Roses in colour. These are a considerable advance on those of last year, but are a long way as yet from expressing the colours of the Rose and its foliage. Still, some of the pictures—those, for instance, of the Roses Mrs. Edward Mawley and Mrs. John Laing—are beautiful as pictures of individual flowers.

Supplementary Illustration.—Our Supplement is reproduced from Mr. CORY's volume, *The Horticultural Record*, and illustrates a pergola exhibited by Messrs. J. CHEAL AND SONS at the Chelsea Show of 1912. The exhibit consisted of a paved court with a pool, displaying twin fountains in the centre, the margins and approaches being of stone paving. A clipped Yew fence formed one boundary, a stone wall supporting a raised terrace the other. The pergola tastefully festooned with Roses, vines, and Clematis converged on a dial plateau which

faced a garden resthouse. On either side of the formal garden, but screened therefrom, were rock gardens and pools suitably placed, the whole forming an effective garden retreat.

CITY OF LONDON ROSE SOCIETY.—We have received a copy of the Book of Arrangements of the City of London Rose Society, including the schedule of prizes to be awarded at the second annual exhibition, which will be held at Cannon Street Hotel on Thursday, June 25. The report and balance-sheet for the first year show excellent results, and the society has met with such encouragement and support that its future seems assured. The sum offered for prizes totals close upon £100, and eight Challenge Cups are offered for competition. There are several additional classes this season. Following the precedent established by his predecessor, Sir DAVID BURNETT, Bart., the present Lord Mayor, Sir VANSITTART BOWATER, has become President of the society during his term of office, and has con-

EXHIBITION OF PRINTING AT THE ROYAL AGRICULTURAL HALL.—The Printing and Allied Trades' Exhibition to be opened at the Royal Agricultural Hall by the Lord Mayor of London on May 13 promises to be the largest exhibition of its kind ever held, every available space being occupied with exhibits strictly appertaining to the graphic arts. New machinery and appliances will be shown alike interesting to the expert and the general public, in addition to a very fine display of specimens of printing by all processes, including photogravure. The exhibition will remain open until May 30.

THE CINEMA AS AGRICULTURAL INSTRUCTOR.—The use of the cinema as a means of agricultural instruction is being considered in Belgium, and M. HENRY, of the Central Belgian Society of Agriculture, is preparing a scheme. The chief difficulty in the matter is the present scarcity of suitable films, but this is being solved by the preparation of a number of special ones for the



FIG. 126.—RAISED TERRACE WITH DAFFODILS AND SHRUBS, EXHIBITED BY MESSRS. JAMES CARTER AND CO. AT THE R.H.S. MEETING ON APRIL 15, 1914.

sented to open the exhibition. The Hon. Sec. is Mr. A. E. PROTHEROE.

HIGHGATE CHRYSANTHEMUM SHOW.—The annual exhibition of the Highgate and District Chrysanthemum Society will be held on Thursday and Friday, November 5 and 6, at the Highgate Hall, Highgate. The secretary is Mr. E. F. FENWICK.

NECTRIA DITISSIMA.—A note by the editor in the current issue of the quarterly *Journal of Forestry* (April, 1914), draws attention to the fact that *Nectria ditissima*—the fungus associated with Apple canker—has been specially prevalent during the past autumn and winter. Specimens of the fungus growing both on Apple and Ash have been received by Professor SOMERVILLE, who would be glad if gardeners and others would keep a look-out for the fungus during the coming autumn and send any specimens found growing on trees other than the Apple to him at the School of Rural Economy, Oxford.

purpose. The proper working of agricultural machines and implements, the pruning of trees, the destruction of insect pests, and many other processes will be shown on the screen.

SWISS NATIONAL PARK.—The States Council has voted almost unanimously for the creation of a national park in the Basse-Engadine. The park will extend over 200 square km. of ground at the extreme south-west of the Grisons, between the River Inn and the Italian frontier.

NATIONAL HORTICULTURAL SOCIETY OF FRANCE.—We have received the annual list of members of this Society. It is a bulky volume of 248 pages, uniform with the *Journal* of the Society. It contains a report of the Society's general meeting held in December last, an account of the past year's work, the rules and details of the various sub-committees. The lists of members begin at page 45. In addition to the name and address, the year of admission of each member is added, and also a note in italics of such specialities as the member may be interested in.

The volume is an extremely useful work of reference for those who have business relationships with the Continent.

ST. PETERSBURG EXHIBITION.—The date of this show has been postponed until May 26 on account of the unfavourable spring. Under the auspices of the National Horticultural Society of France an excursion will be organised for the benefit of its members. It is proposed that a start be made from Paris on May 21. The party will reach Berlin on the 22nd and St. Petersburg on the 24th. After spending four days at St. Petersburg the party will leave for Moscow on the 29th. A couple of days will be spent there. On June 1 the party will depart for Warsaw, and from there proceed to Vienna, thence to Munich, returning to Paris on June 11. The inclusive cost of the trip is £42 per person.

SPRING FLOWERS AT BELVOIR.—The spring flowers at Belvoir Castle are now in full beauty, and will continue for several weeks. The mild winter has been much in their favour, and the present display excels all previous years. *Rhododendrons Falconeri*, *Thomsonii*, and *campanulatum* are flowering well, also many of the early-flowering hybrids, and *Camellias*. The Duchess Garden is open to the public every day except Sundays.

MILK FROM SOYA BEANS.—With the increasing demand for fats—a demand which is due to various causes, among others the greater consumption of fatty foods and the increase in habits of personal cleanliness, or rather of washing with soap—the vegetable world is being ransacked for supplies to meet the demand. Coconuts are being planted over wide areas of the Tropics and other Palms are being made to yield their oil to the soapmaker. Flax is becoming more profitable, and now it is claimed Soya beans are being used for the manufacture of vegetable milk. The synthetic milk is said to be indistinguishable by sight or taste from the milk of the cow. To make the resemblance complete beneficent bacteria which occur naturally in cow's milk are introduced into Soya-bean milk, with the result that the latter behaves in all respects like the former, yielding "butter" and "cheese," the quality of which is said to be excellent. The synthesis of this milk-like fluid is the more remarkable since, as stated in a notice in the *Times*, the first consignment of the Soya bean reached Europe so recently as 1906. To-day the imports are of the value of a million pounds per annum, and amount to about a million tons. China, Japan, Korea and Manchuria supply the Western market, and the beans enter into the composition not only of milk, but also of other foodstuffs, such as biscuits and oil-cake. Formerly, therefore, the cow was the necessary intermediary between the Soya bean and the milk; now the cow is replaced by the chemist. If, as is stated, the synthetic Soya milk is as good as the ordinary article, the fact that the chemist can perform the intermediate operations in his laboratory more cheaply than the cow in hers, it may prove "so much the worse for the cow," and must prove a boon of inestimable value for the poor.

SALE OF GARDENING BOOKS.—At a sale of books and manuscripts held at Sotheby's Rooms on the 6th, 7th, and 8th inst. the following were amongst the works disposed of:—*JOHN GERARDE'S Herbal, or General Historie of Plantes*, first edition 1597, engraved title, with autograph signature of DAINES BARRINGTON, £3 5s. (SOTHERAN); *J. PARKINSON'S Paradise in Solo, Paradise Terrestre, or a Garden of All Sorts of Rarest Flowers*, with numerous woodcuts, 1656, £6 (EDWARDS); *F. SANDER'S Reichenbachia; Orchids Illustrated and Described*, 192 coloured plates, mounted on black boards, 1888-94, £18 10s. (EDWARDS); *MRS. A. GATTY'S British Sea Weeds*, 2 vols., 1872; *E. J. LOWE'S Beautiful Eaved Plants*, 1872, and *LOWE'S Our Native*

Ferns, 2 vols., 1865, 9s. (HILL); *J. C. LONDON'S Arboretum et Frutetium Britannicum, or the Trees and Shrubs of Britain*, 8 vols., 1865, 5s. (HERMAN); *J. SEBOTH'S Alpine Plants, Painted from Nature*, text by F. GRAF, 4 vols., and F. BOYLE'S *About Orchids*, 1893, and others (8 vols. in all), £2 16s. (JAMES); *J. SOWERBY'S English Botany*, 3rd edition, enlarged, 12 vols., 1877-86, £13 (HOPKINS); *J. SOWERBY'S Grasses of Great Britain*, E. J. LOWE'S *Natural History of New and Rare Ferns*, 1871, and Rev. M. J. BERKELEY'S *Handbook of British Mosses*, 1863, £1 2s. (THORP); *J. BATEMAN'S A Second Century of Orchidaceous Plants*, with numerous coloured plates, 1867, 11s. (BROWN); *LA MAOUT'S and DECAISNE'S General System of Botany*, translated by Mrs. HOOKER, with numerous illustrations, 1876, £1 15s.; *Botanic Garden: Representations of Hardy Ornamental Flowering Plants*, by B. MAUND, 8 vols., 1825, 16s. (THORP); *Illustrated Dictionary of Gardening*, by G. NICHOLSON, 4 vols. in 2, 1885-7, £1 10s. (HILL); *The Rhododendrons of Sikkim-Himalaya*, by J. D. HOOKER, with fine coloured plates, 1849, £2 (WELDON) and *Indigenous Flowers of the Hawaiian Islands*, by Mrs. F. SINCLAIR, with coloured plates, 1885, 12s. (HILL).

A NEW SPRAY FLUID.—Dr. MAX ISSLEIB, writing in *Möllers Deutsche Gärtner-Zeitung*, suggests the use of the jelly-like matter produced by boiling certain algae in water for the purpose of a spray fluid. He points out that when certain marine algae (*Chondrus crispus* and *Gigartina mamillifera*) are heated with water, 2.52 parts of the former with 100 of the latter, a gelatine-like fluid is produced which, sprayed on plants, sets to form a thin skin, in which insect pests are entangled and destroyed. It may be mixed with 5 or 10 per cent. petroleum or paraffin. The substance recommended is one which has many applications. We ourselves have it in common use for the stiffening of jellies and the like, and its properties are indeed remarkable. The fisherfolk of Brittany collect the red seaweed *Chondrus crispus*, expose it on the grass to dry and bleach, and send it to Germany, where, as we are told, it is used to give body for jam. The consistency of the jelly which it makes is, of course, determined by the amount of water which is added to the dry seaweed. In our household about as much as may be held in a teaspoon serves to make the "body" of a large dish of jelly. The proposal to use this simple specific is one which certainly deserves attention, but whether its powers of adhesion are better than those of the substances in general use remains to be determined. An objection which occurs to the mind is the general one that in wet weather the jelly-like skin formed when the stuff is sprayed on the plant would swell and wash off. As, of course, is well known, this property of many seaweeds to form with boiling water a gelatine-like jelly is utilised in many ways in medicine, commerce and in science. Thus the stalks of *Laminaria* are used in surgery, and a Japanese seaweed supplies the source of agar-agar, the medium so much used in cultivating bacteria in the laboratory.

"THE BOTANICAL MAGAZINE."—The issue for April contains illustrations and descriptions of the following plants:—

HIBISCUS WAIMEAE, tab. 8,547.—Those who cultivate the beautiful *Hibiscus Rosa-sinensis* and its allies will appreciate this large-flowered species, with its conspicuous, pink-coloured column of anthers, some 5 or 6 inches long, and broad white petals. The species is a native of the Hawaiian Archipelago and has been grown under the name of *H. Arnottianus*, which has been given to three distinct plants. *H. Waimeae* forms a tree of 25 feet high, but specimens in the Mexican house at Kew have flowered when 8 feet in height, so that the species may be suitable for cultivation indoors if growth is

restricted by pruning. The requirements as to soil and temperature are the same as those for *H. Rosa-sinensis*.

GLADIOLUS MASONIORUM, tab. 8,548.—This beautiful, creamy-yellow flowered *Gladiolus* promises to provide a valuable plant. The species was discovered in Tembuland in 1910 by Canon G. E. MASON and his sister, hence the specific name. Specimens at Kew have withstood 11 degrees of frost, but it is not certain whether the plant is perfectly hardy in this country, as the situation at Kew was a very sheltered one. However, it is the practice of many to lift *Gladioli* at the end of the season, and the question of its hardiness need not stand in the way of its use as a summer-flowering plant for the pleasure garden.

BERBERIS PRATTII, tab. 8,549.—This new Chinese species has, like the new *B. Wilsonae*, very attractive berries and will be valued for the shrubbery, as the flowers are more beautiful than most of the Chinese species, whilst the bunches of salmon-red fruits will provide pleasing colouring in September, when the gardens are beginning to lose something of their summer beauty. The plant forms a shrub some 6 to 10 feet high and is perfectly hardy.

OLEARIA SEMIDENTATA, tab. 8,550.—This species is very closely allied to *O. chathamica*, figured in *Gardeners' Chronicle*, May 31, 1913, p. 363. The flower-heads are solitary and measure about 2 inches across; the ray florets are purple, being white on the reverse side. The two species grow intermixed in the Chatham Islands, and Dr. L. COCKAYNE observed wild plants of distinct appearances, which were probably hybrids between the two. It is not certain whether either of these *Olearias* would survive the cold of our winters, but *O. chathamica* has flowered out-of-doors in the Rev. A. T. BOSCAWEN'S garden at Ludgvan.

EPIDENDRON PROFUSUM, tab. 8,551.—This densely-flowered species has been confused with *E. ambiguum*, but it has a more dense panicle, shorter and broader sepals and petals, and does not possess the strongly crispate margin in the lip characteristic of *E. ambiguum*. The flowers are very fragrant, of pale yellowish-green colour, and measure 1½ inches across.

PUBLICATIONS RECEIVED.—*Annual Report of the Rothamsted Experimental Station, Harpenden, for 1913*. Secretary, Mr. G. T. Dunkley, Rothamsted Experimental Station, Harpenden.—*Successful Gardens for Every Amateur, and Economical Fertilisers for the Garden*. The Chilean Nitrate Committee, Friars House, New Broad Street, London.—*Bulletin du Jardin Botanique de l'Etat a Bruxelles*. Vol. IV.; and *Bulletin de la Societe Royale de Botanique de Belgique*. Tome LII. (Bruxelles: Jardin Botanique de l'Etat.)

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

WINTER-FLOWERING STOCKS.—In your issue of April 4 we read with much interest a note on winter-flowering Stocks, from the pen of Mr. Alexander Reid, of Cheswardine Hall Gardens, in which he states that, in his opinion, the following are the best varieties to grow:—*Beauty of Nice* (mauve and salmon-pink), *Riviera Market* (white and rose) and *All the Year Round*. It may interest your readers to know that we had the pleasure of introducing *All the Year Round Stock* in 1897 and *Riviera Market* (white and rose) in 1905, while in 1909 and 1912 we added further varieties to the *Beauty of Nice* section. Mr. Reid mentions that he was successful in obtaining from 70 to 80 per cent. double flowers, and we may add that in our experimental grounds at Reading the *All the Year Round* variety has consistently given over 90 per cent. of doubles. *Sutton and Sons, Reading*.

RAINFALL.—The amount of rainfall at my station is much less than in the South. I give you my readings for a comparison:—Year 1914.

—January, 112 tons to the acre, or 1.12 inch; rain on 14 days. February, 89 tons to the acre, .89 inch; rain on 18 days. March, 189 tons to the acre, 1.89 inch; rain 22 days—or less than 4 inches in three months. Ernest Horsley, Langford Hall Gardens, Newark-on-Trent.

GARDENERS AND THE B.G.A.—I am instructed by my branch to forward you the enclosed resolution, and to ask you to be good enough to give it publicity:—"The London Branch of the B.G.A. desires to express its strong disapproval of the statements of Mr. T. Smith on p. 224, regarding his opinion of the type of man the B.G.A. would consist of. One would associate any remarks by Mr. T. Smith as being more or less up to date, but if this truly represents his views at the present moment he is woefully behind the times. A single glance at the B.G.A. list of members would show Mr. Smith that if he wishes to remain with the cream of the profession he will quickly have to join the body of men who are quietly but none the less effectively improving the conditions under which gardeners in the past have been labouring." Wm. H. North, Secretary, London Branch of the B.G.A.

OPENINGS FOR EMPLOYMENT IN THE NURSERY TRADE.—If favourable chances are so few for young men in private gardens endeavouring to reach the top of the ladder, as the recent correspondence would go to show, why do not some of them turn to the trade side of the profession? There are many good openings and capable men are scarce. I have advertised in three trade papers and in other mediums, but cannot obtain a good improver or grower, and the wages offered in the latter case were quite equal to those many head gardeners receive. The majority of the men out at the present time seem to just want employment for a few months and then to move. I am speaking from my own experience. No doubt others will have had the same trouble in obtaining suitable men. F. Smith, Ulceby Nurseries, Lincolnshire.

MISTLETO ON THE COMMON HAZEL.—Replying to your correspondent, Mr. W. Crump, in the issue of April 4 (see pp. 240, 272), I have to say that in the *Quarterly Journal of Forestry* for January of this year, p. 21, there is a record of Mistletoe occurring on the Hazel at Cliveden, Buckinghamshire. William Somerville, School of Rural Economy, University of Oxford.

ISLE OF WIGHT BEE DISEASE.—This disease, which has wrought so much havoc among the bees of this country, appears to affect the bees of different countries to very different degrees. Thus it is said that the bees of Holland, although not entirely immune, take the disease, when they contract it at all, in a mild form. Advantage is being taken of this fact by Mr. J. B. Mason and another apiarist, who, according to a report in the *Times*, are importing 500 colonies of Dutch bees into this country. It is hoped that the imported bees may retain their relative immunity and confer it on their offspring. The attempt is well worth making, but I am inclined to think that it will have a better chance of success if the experiment be carried out along somewhat rigid lines. It is to be observed, for example, that in the only cases in which inheritance of disease resistance has been worked out thoroughly, the result of crossing an immune with a susceptible organism is that the offspring of the first generation are susceptible. Should this prove to be the case in the present instance there is little prospect of the experiment being carried to a successful issue, for susceptibility is likely to mean that the disease will attack and prove mortal to the cross-bred Dutch and British bees. Wherefore every attempt should be made to secure that some at least of the first generation of the cross shall escape this fate. If they do, and if they can be used to fertilise queens of the Dutch race, there is a prospect that some of the descendants will be immune. It is to be hoped also that, side by side with this experiment; observations will be made on the degree of immunity of the several imported colonies. It may not be possible to obtain statistics of mortality in the 500 hives, but it will not be difficult to discover which, if any, show the highest degree of resistance. A. B.

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 21.—A meeting of the committees was held in the Vincent Square Hall, Westminster, on Tuesday last, the third meeting and exhibition in three consecutive weeks. The occasion was also the annual exhibition of the National Auricula and Primula Society, a report of which is given on p. 290. The outstanding feature of the show was a collection of 200 varieties of Hippeastrums from Sir Geo. HOLFORD's collection at Westonbirt, the exhibit being awarded a Gold Flora Medal. The Floral Committee recommended seven Awards of Merit to new plants.

The Orchid Committee awarded ten Medals to

Chas. E. Pearson, John Dickson, C. R. Fielder, J. W. Moorman, Wm. Howe, W. H. Page, J. Jennings, Jas. Hudson, T. Stevenson, Geo. Gordon, R. C. Notcutt, A. A. Dorrien-Smith, W. G. Baker, W. A. Bilney, F. W. Horney, Geo. Paul, E. H. Jenkins, W. P. Thomson, and R. Hooper Pearson.

AWARDS OF MERIT.

Campanula cenisia alba.—A pure white form of a charming little Alpine plant. The unopened buds spread prostrate on inch-long stems to be held erect as they open above small rosettes of grey-green ovate minutely-downy leaves. The corolla is an open cup with the lobes cut deeply to within a third of the centre. (Shown by Messrs. R. TUCKER AND SONS.)

Arabis aubrietioides Trevor Seedling.—This is the brightest coloured form that we know of



FIG. 127.—CLEMATIS MONTANA SUPERBA: FLOWERS WHITE.
(See Awards of Merit.)

collections and recommended one First-class Certificate and one Award of Merit to novelties.

Exhibits before the Narcissus Committee were fewer than at the two previous meetings, but four varieties of Narcissus and three of Tulips were granted Awards of Merit.

Only one exhibit was forthcoming in the fruit and vegetable section, and no novelties were submitted for award.

At the 3 o'clock meeting in the Lecture Room the Rev. Professor GEO. HENSLOW delivered an address on "The Probable Origin of Existing Flowering Plants."

Floral Committee.

Present: H. B. May, Esq. (chairman), Messrs. Chas. T. Druery, C. Blick, C. E. Shea, H. J. Jones, Arthur Turner, John Green, C. Dixon,

this "pink" Arabis, of which the type itself deserves to be much better known. The flowers are bright mauve (shade 1 of the reddish-violet of the *Répertoire des Couleurs*). The habit is neat, much resembling that of the common single white Arabis, but smaller and neater, the greyish leaves being about an inch in length by 1/4 in. in breadth, and the lower ones on long stalks. The flowers are half an inch in diameter, and the stamens exerted. (Shown by Mrs. LLOYD EDWARDS.)

Clematis montana superba (see fig. 127).—This variety differs from the type in its much larger flowers, the largest of which exceed three inches in diameter. There are only four perianth segments, which are borne in the form of a cross, and the variety seems as profuse in flowering as

the type. (Shown by Messrs. JACKMAN AND SONS.)

Pyrus Malus floribunda purpurea.—This is one of the most distinct of the flowering Crabs, on account of its bronzed foliage, and its purplish rose flowers, which are of such a depth of colour that the open petals hardly differ from the common buds, and the general effect is therefore more of a self colour than in the better-known varieties. The flowers have more substance and size than those of *atrosanguinea*, which is perhaps nearest to it in colour. A very distinct feature is the bronze foliage and the purple young wood, given by the purple sap which is at once seen in a cross section of a branch. In this respect it resembles *P. Niedzwetzkyana*, but that variety flowers much less freely. (Shown by Mr. R. C. NORCUTT.)

Antirrhinum Nelrose.—From the large number of florists' Snapdragons grown by Americans for their value as cut flowers, Mr. Wells in his last visit to the United States singled out this variety as the most distinct and pleasing. It is perpetual flowering, makes yard-long growths which branch freely, and the flower-colour may be described as a pleasing shade of rose-pink, or more accurately as shade 1 of the lilac-rose of the *Répertoire des Couleurs*. Good spikes of it were shown in proof of its freedom, and it is said to be an extraordinarily vigorous doer. (Shown by Messrs. W. WELLS AND SON.)

Polyanthus Orange King.—This variety received the Award for its fine colour, a golden orange petal with a rich coppery orange reverse. It seemed uniformly six-petaled, and the segments were broad and overlapping, incurving slightly at the edges to give a hint of the darker colour of the reverse. (Shown by Mrs. ELLIS, Lincoln.)

Hydrangea Lillie Mouillière.—A large-flowered variety of a very beautiful rose-pink colour a little paler towards the margin. The stamens are pale-blue, and their development introduces a shade which to some is displeasing, but the general colouring of the truss is unusually rich and handsome. (Shown by Messrs. LOW AND CO.)

GENERAL EXHIBITS.

A magnificent collection of *Hippeastrums* (*Amaryllis*) was shown by Lieut.-Col. Sir GEORGE HOLFORD, Westonbirt, Tetbury (gr. Mr. Chapman). There were more than two hundred plants in almost as many varieties, and all had been raised at Westonbirt. Most of the specimens had two and some even three inflorescences, four blooms on a spike being common. The pick of the crimson sorts were *Macbeth*, *The Doge*, *Robin Hood*, *Rustan*, *Red Knight*, *Phoebus*, *Vulcan* and *Brian Boru*; fine rose or pink-coloured flowers were seen in *Morning Glow*, *Cardinal Wolsey*, *Paragon*, *Boreas*, *Lucretia* and *Rose Queen*; shades of orange and scarlet were represented by such varieties as *Shelley*, *Firelight*, *Hilary*, *Lord Dalhousie* and *Gereant*; whilst of whites *Bridesmaid*, *Snowdrift*, *The Moon*, *Houri*, *Lapwing* and *Winter Queen* were all of outstanding merit. The pick of the collection was *Cardinal York*, the perfectly-shaped blooms being rose-madder in colour. (Gold Flora Medal.)

Messrs. SUTTON AND SONS, Reading, showed a strain of greenhouse *Cinerarias* as a flat group, with *Adiantum* Ferns separating the various colours. At the back was a broad band of plants with flowers of pink shades, and in front were clumps of blue, pale pink, rose, white, crimson and other varieties. (Silver Banksian Medal.)

Messrs. ED. WEBB AND SONS, Stourbridge, were awarded a Silver Banksian Medal for a floor group of greenhouse *Cinerarias*. The plants were well grown and splendidly flowered.

R. MCCONNELL, Esq., Greystones, Bromley (gr. Mr. H. Page), showed large, bushy plants of a blue-flowered variety of *Star Cineraria*. (Silver Banksian Medal.)

Messrs. JAMES VEITCH AND SONS, LTD., Chelsea, showed well-flowered *Azaleas*, *Rhododendron Veitchianum*, *R. fragrantissimum* and *Hippeastrums*, for which a Silver Flora Medal was awarded. Much the best *Hippeastrum* was the beautiful orange-scarlet coloured *Homer*.

Messrs. H. B. MAY AND SONS, Edmonton, were awarded a Silver Flora Medal for *Roses*, *Clematis*, *Verbenas*, *Marguerite Mrs. F. Sander*, *Hydrangeas*, *Pansies* and *Violas*.

Messrs. W. CUTBUSH AND SON, Highgate, showed *Roses*, *Carnations* and *Alpines*, for which a Silver Flora Medal was awarded. The *Roses* included excellent plants in pots of the dwarf polyantha varieties *Jessie*, *Baby Tausendschön*, *White Pet* and *Mrs. W. Cutbush*. There were also taller specimens of *Excelsa* (known as *Red Dorothy Perkins*) and the new *Mme. Turbat*, with pink flowers like those of *Tausendschön*.

Mr. R. C. NORCUTT, Woodbridge, showed shrubs in flower, including beautiful double-flowered *Cherries* from Japan, *Amelanchier canadensis*, *Spiraea arguta*, *Prunus triloba* and double-flowered *Peaches*.

Messrs. WILLS AND SEGAR, South Kensington, exhibited *Heaths*, *Mignonette*, and, in the centre, a bank of blue-flowered *Hydrangeas*. (Silver Banksian Medal.)

Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, arranged a pretty bank of flowering plants, consisting of the *Bottle Brush*, *Meterosideros floribunda*, species of *Acacia*, *Boronias* in variety, *Daphne Cneorum* and *Eriostemon nerifolia*. This firm also showed varieties of *Perpetual-flowering Carnations*. (Silver Flora Medal.)

Messrs. J. CHEAL AND SONS, Crawley, exhibited an imposing group of flowering trees and shrubs relieved with ornamental-leaved *Maples*.

Mr. L. R. RUSSELL, Richmond, showed Japanese *Maples* and flowering sprays of *Clianthus puniceus*.

Mr. CHAS. TURNER, Slough, showed standard *Lilacs* with a frontage of *Hydrangea hortensis* in pots. (Silver Banksian Medal.)

Messrs. R. GILL AND SONS, Falmouth, again showed trusses of *Rhododendrons*, the handsome *R. Falconeri* being prominent in the collection. They also exhibited the scarlet-flowered *Embothrium coccineum* and *Myosotidium mobile*.

Col. LOCKWOOD, M.P., Bishop's Hall, Romford (gr. Mr. G. Craddock), again showed plants of *Gardenias* trained as standards, this time in association with *Schizanthus*. (Bronze Flora Medal.)

Messrs. B. R. CANT AND SONS, Colchester, staged beautifully fresh *Roses*, with fine plants of pillar varieties at the back, *Tausendschön* and *American Pillar* being especially good. (Silver Flora Medal.)

Messrs. ALLWOOD BROS., Wivelsfield, Haywards Heath, showed vases of *Carnations*, for which a Silver Banksian Medal was awarded. Their novelties, *Wivelsfield Wonder* and *Wivelsfield White*, were well displayed.

Carnations were also exhibited by Mr. C. ENGELMANN, Saffron Walden (Silver Banksian Medal), and Mr. H. BURNETT, Guernsey. (Silver Banksian Medal.)

Mr. PHILIP LADD, Swanley, Kent, arranged a floor group of *Hydrangeas*, *Heliotropiums* and *Ericas*.

Messrs. H. CANNELL AND SONS, Eynsford, Kent, exhibited varieties of zonal-leaved *Pelargoniums* in a collection of other flowering plants.

Zonal *Pelargoniums* were also shown by Messrs. A. H. COLE, LTD., Swanley; Messrs. H. J. JONES, LTD., Hither Green, Lewisham; and Mr. VINCENT SLADE, Taunton.

Messrs. CARTER, PAGE AND CO., London Wall, showed *Violas* and hardy annuals.

Messrs. PIPER AND SONS, Bayswater, again surpassed all other exhibits of rock-gardens in their display, which was staged in the same place as at the last two meetings. (Silver Flora Medal.)

Messrs. R. WALLACE AND CO., Colchester, exhibited an interesting collection of hardy flowers, principally of bulbous kinds. There were numerous species of *Fritillaria*, *Tulipa Greigii*, *T. G. aurea*, the new *T. stellata*, *Iris Pumila* crosses and *Primula Juliae*.

Mr. JAMES BOX, Haywards Heath, arranged, in the same corner as at the last two meetings, a rockery, and planted it with a great variety of subjects. (Silver Flora Medal.)

Messrs. WATERER, SONS, AND CRISP, LTD., Twyford, planted a rockery with *Alpines* and dwarf shrubs. They showed a compact, free-flowering variety of *Phlox subulata* named *B. E. C. Chambers*; a batch of the mauve-flowered *Primula frondosa* and red-flowered *Saxifragas*, including *S. bathoniensis*. (Silver Banksian Medal.)

Messrs. BARR AND SONS, Covent Garden, exhibited a rockery planted with bulbous flowers and *Alpines*.

Messrs. BUNYARD AND CO., LTD., Maidstone, made a feature with varieties of *Primula Sieboldii* in their rock-garden exhibit, for which a Bronze Banksian Medal was awarded.

Messrs. R. TUCKER AND SONS, Oxford, were awarded a Bronze Flora Medal for a rock-garden, prominent plants being *Helichrysum bellidioides*, *Campanula cenisia* and its white form, which received an Award of Merit.

The Misses HOPKINS, Shepperton, exhibited a rockery planted with seasonable *Alpines* and hardy flowers. (Bronze Banksian Medal.)

Messrs. T. S. WARE, LTD., Feltham, were awarded a Silver Banksian Medal for hardy flowers. The pale blue *Anemone Robinsonianum* was charming, and there were many beautiful varieties of *Anbrietia*.

The feature in the exhibit of hardy flowers shown by the BURTON HARDY PLANT NURSERY was a mass of the pink-flowered *Daphne Cneorum* major.

Mr. G. REUTHE, Keston, Kent, exhibited *Rhododendrons* and *Alpines*, for which a Silver Banksian Medal was awarded. There were splendid pans of *Narcissus bulbocodium conspicuum*; the tiny white-flowered *Pyxidanthera barbulate*, and a new *Rhododendron*—*R. Searisae*, in the way of *R. yunnanense*, but with a bolder truss.

Messrs. THOMPSON AND CHARMAN, Bushey, Hertfordshire, exhibited hardy flowers, in which were observed fine specimens of *Iris Susiana* and the pretty pink-flowered *Phlox Vivid*.

Messrs. J. AND A. CLARK, LTD., Dover, exhibited a large batch of *Polyanthus Cloth of Gold* in a collection of hardy flowers. (Bronze Flora Medal.)

Mr. MAURICE PRICHARD, Christchurch, was awarded a Silver Banksian Medal for *Alpines* arranged on a rockery.

Mrs. E. LLOYD EDWARDS, Bryn Oerog, near Llangollen, was the exhibitor of seedling *Saxifragas* and *Viola gracilis*, which were awarded a Silver Banksian Medal.

Hardy flowers were also exhibited by Messrs. WHITELEGG AND PAGE, Chislehurst; THE GULDFORD HARDY PLANT NURSERY; Messrs. PHILLIPS AND TAYLOR, Bracknell (Silver Banksian Medal), Mr. REGINALD PRICHARD, West Moors, Wimborne (Bronze Flora Medal); and Messrs. G. JACKMAN AND SON, Woking (Bronze Flora Medal).

Mr. GEO. KERSWILL, Exeter, showed bunches of the beautiful *Gentiana acaulis* and varieties of *Saxifraga*.

Messrs. REAMSBOTTOM AND CO., Geashill, Ireland, again showed their showy *St Brigid Anemones*, for which a Bronze Banksian Medal was awarded.

Mr. JOHN CROOK, Camberley, Surrey, exhibited a strain of *Polyanthuses*, which included many beautiful bronze and red-flowered varieties.

Orchid Committee.

Present: J. Gurney Fowler, Esq., in the chair, and Messrs. Jas. O'Brien (hon. secretary), W. Bolton, Gurney Wilson, De B. Crawshaw, W. H. White, A. Dye, W. H. Hatcher, H. G. Alexander, J. Cypher, J. Charlesworth, W. Cobb, F. M. Ogilvie, F. J. Hanbury, T. Armstrong, R. G. Thwaites, Stuart Low, R. A. Rolfe, S. W. Flory and Sir Jeremiah Colman, Bart.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontoglossum Mirabeau var. Mastiff (*mirum* × *Lambeaunium*) (see fig. 123), from J. AND A. McBEAN, Cooksbridge. This is a grand flower, one of the largest and darkest in colour, the massive blooms having a clear white ground so heavily blotched with deep maroon-purple that the white only shows at the margins and slightly between the large blotches. *O. crispum*, *O. Pescatorei*, *O. luteo-purpureum* and *O. Harryanum* are all in its composition, and the result is highly satisfactory.

AWARD OF MERIT.

Oncidiada Cooksoniae Grenadier (*O. Noezliana* × *O. macranthum hastiferum*), from PANTIA RALLI, Esq., Ashted Park, Surrey. *Grenadier* is the darkest of the four varieties which have

received Awards at the Royal Horticultural Society. Flowers circular in outline, equal in size to *O. macranthum*, bright scarlet, with a ruby-red tint.

CULTURAL COMMENDATION.

To Mr. BALMFORTH (gr. to F. Menteith Ogilvie, Esq., The Shrubbery, Oxford) for a fine specimen of the handsome *Odontioda* Mrs. F. M. Ogilvie (F. C. C., May 22, 1912), now bearing a branched spike of 60 beautiful flowers.

To Mr. BALMFORTH for a grand specimen of the deep red *Odontioda* Diana, with several spikes, bearing together 177 blooms.

To Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, for a gigantic plant of *Coelogyne pandurata* Orchidhurst variety, grown from a single bulb. The spike, which was 3 feet in length, bore thirteen pale-green flowers, with black markings on the lip each at the widest expansion 6 inches across.

To Messrs. SANDER AND SONS, St. Albans, for a large and finely-flowered specimen of *Phaius Sanderianus*, with several stout spikes over 5 feet in height.

GENERAL EXHIBITS.

Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O. (gr. Mr. H. G. Alexander), sent *Odontoglossum crispum* Iolanthe, a charming pure white form with violet-coloured spots in the centre of the sepals; the finely-grown plant bore a spike of ten blooms; *Sophro-Cattleya Thwaitesii* (S. grandiflora × C. Mendelii), which secured a First-class Certificate in 1909, and is still one of the best *Sophro-Cattleyas*, its bright dark-red colour and yellow lip with ruby margin and front being very attractive.

F. MENTEITH OGILVIE, Esq., Oxford (gr. Mr. Balmforth), staged a collection of thirteen superbly grown *Odontiodas* giving a mass of bright-red flowers, with *Brasso-Laelio Cattleya Veitchii* of fine colour, and for which a Silver Flora Medal was awarded.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), staged a very interesting group of *Odontoglossums*, *Odontiodas* and *Cypripediums*. Specially noteworthy were *Chondrorhyncha Chestertonii*, varieties of *Miltonia vexillaria*, *Bulbophyllum galbinum* and other *Bulbophyllums*; some fine *Cattleya Schröderae*, *Brasso-Cattleya William Pitt*, a good selection of *Laelio-Cattleyas*, and seedling *Odontoglossums*. (Silver Flora Medal.)

Messrs. STUART LOW AND Co., Jarvisbrook, Sussex, had a very fine group specially rich in showy *Dendrobiums*, which included the blue *Victoria Regina*, white forms of *crystallinum* and noble, *thyrsiflorum*, *Devonianum*, *Jamesianum*, *suavissimum*, *Wardianum* and hybrids. With them were good *Odontoglossums*, *Brasso-Cattleyas*, *Renanthera Imschootiana*, *Phalaenopsis Rimestadiana*, etc. (Silver Flora Medal.)

Messrs. J. AND A. McBEAN, Cooksbridge, staged a group remarkable for the fine growth and good flowering of forms of *Cattleya Mossiae*, C. Mendelii, C. Schröderae, the enormous size of the pseudo-bulbs being evident throughout. *Cattleya Lawrenceana* bore a spike of nine flowers; *Laelio-Cattleya* G. S. Ball, and two good L.-C. Ganymede, some good *Odontoglossums*, *Odontiodas* and *Miltonias* were also noted. (Silver Flora Medal.)

Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate (gr. Mr. Collier), showed the F. C. C. variety of *Odontioda Vuylstekeae* Lady Colman of brilliant colour; *Dendrobium Brymerianum* Gatton Park variety, *D. Nestor*, two fine forms of *Coelogyne Lawrenceana*, and the singular *Luisia Cantharis*.

Messrs. CHARLESWORTH AND Co., Haywards Heath, showed a select group in which were *Odontoglossum percultum*, of a fine violet colour; *O. Pescatorei Charlesworthii*, large and prettily blotched with purple; *Miltonia vexillaria* Empress Augusta Victoria, with four spikes of fine rose-coloured flowers; *Sophro-Laelio-Cattleya heatonensis*, and S.-L.-C. Niobe, *Laelio-Cattleyas*, etc. A pretty novelty in this group was *Odontioda Elsie* (*Cochlioda Noezliana* × *Odontioda Charlesworthii*), a good broad red flower.

R. G. THWAITES, Esq., Chessington, Streatham, showed a small group of interesting hybrids, including *Odontiodas* and *Dendrobiums*.

Dendrobium Frederickii (*fimbriatum* × *Thwaitesiae*) was a singular hybrid, with a raceme of yellow flowers; *Odontoglossum Edna* (*Rossii rubescens* × *ardentissimum*), a pretty lilac flower with dark spotting; and *Brasso-Cattleya* Mrs. J. Leemann. (Silver Banksian Medal.)

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, showed a good group, principally hybrids, the *Brasso-Cattleya Digbyano-Mossiae splendens* and other hybrids of B. Digbyana being prominent; *Miltonia* St. Andre, *Cypripedium Venus Orchidhurst* variety; a good blotched *Odontoglossum crispum* with a spike of thirty-three flowers; and other showy *Odontoglossums*, *Coelogyne pandurata* and *Bulbophyllum barbigerrum*. (Silver Banksian Medal.)

Messrs. FLORY AND BLACK, Slough, staged an attractive group, the setting of which was of good *Cattleya-Schröderae* and *Laelio-Cattleyas*, among which L.-C. Violetta, L.-C. Medina,

delii, *Oncidium Marshallianum*, *O. concolor*, *Miltonia Bleuana splendens*, *Dendrobium Jamesianum*, *D. fimbriatum oculatum*, *Masdevallia Shuttleworthii*, *M. Heathii*, *Oncidium concolor*, etc. (Silver Banksian Medal.)

Messrs. W. BAYLOR HARTLAND, Cork, showed a selection of *Cattleyas*, *Cymbidiums*, *Cypripediums* and *Brasso-Cattleyas*. (Bronze Banksian Medal.)

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), sent good examples of *Odontoglossum harvengtense* (*crispum* × *triumphans*), *O. Titania* (*Queen Alexandra* × *crispum*), and *O. Leonidas* (*Hallio-crispum* × *triumphans*).

Messrs. HASSALL AND Co., Southgate, showed a very fine white *Cattleya Dusseldorfei* Undine, the front of the lip being unusually broad and well developed.

C. KIRCH, Esq., Uplands Road, Hornsey, showed a very good specimen of *Coelogyne pandurata*.

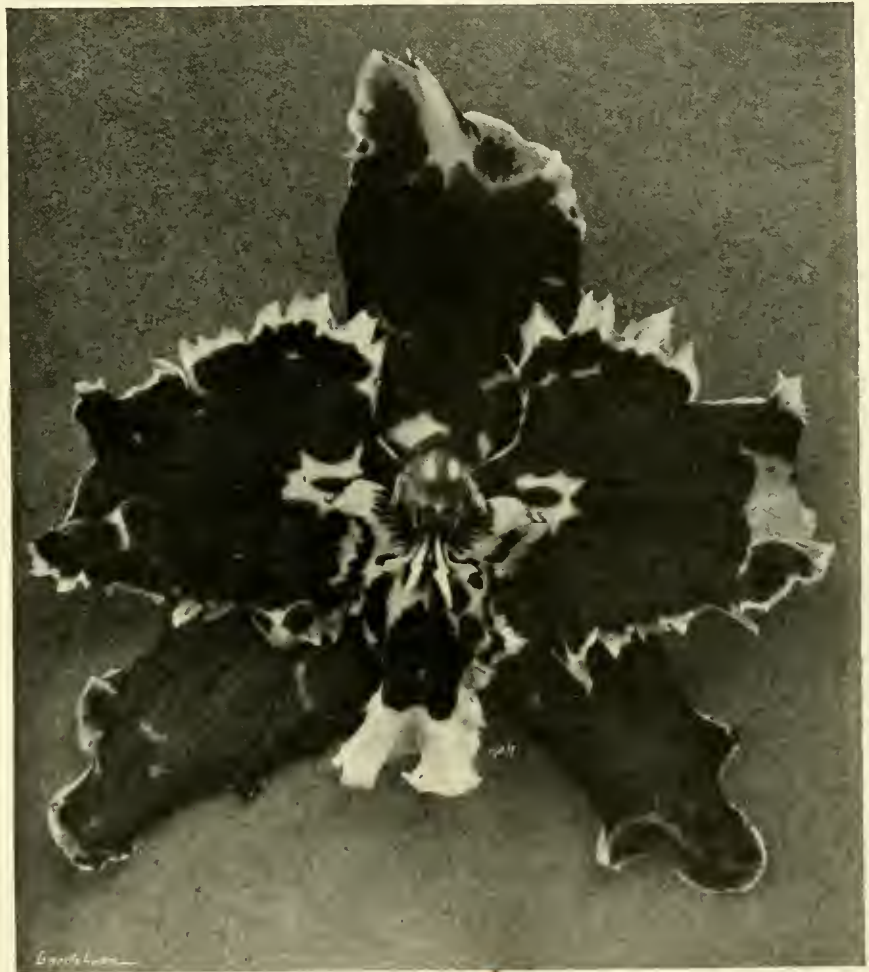


FIG. 128.—*ODONTOGLOSSUM MIRABEAU*, VAR. *MASTIFF*; PETALS AND SEPALS COLOURED MAROON-PURPLE, WITH WHITE MARGINS.

(R.H.S. Award of Merit on Tuesday last; see p. 288.)

L.-C. Myra, and some unnamed hybrids were noted. *Brasso-Cattleya Madame Chas. Maron* × C. Mendelii was an attractive white flower, with fringed lip having a rose-coloured blotch; a very large-flowered *Odontoglossum Pescatorei*, *Coelogyne Lawrenceana*, *Masdevallia Bocking Hybrid*, *Epidendrum aurantiacum*, *Cattleya intermedia alba*, *Laelia anceps alba*, and the rare *Disa polygonoides*. (Silver Banksian Medal.)

Messrs. SANDER AND SONS, St. Albans, had an extensive group in which were many showy *Dendrobiums*. *D. densiflorum superbum* was probably the finest yet shown. Some new hybrids, *Laelio-Cattleyas*, *Vanda suavis* with two spikes, *Acanthophippium sylhetense*, *Masdevallia Schlimii* and other *Masdevallias*, *Vanda coerulea*, the white *Trichopilia Hennisii*, *T. suavis*, *Bifrenaria Harrisoniae pubigera* and other species were also well shown. (Silver Banksian Medal.)

Messrs. J. CYPHER AND SONS, Cheltenham, arranged a group of *Cattleya Schröderae*, C. Men-

Narcissus and Tulip Committee.

Present: E. H. Bowles, Esq. (in the chair), Miss E. Willmott, Rev. Joseph Jacobs, Messrs. J. T. Bennett-Poë, W. F. M. Copeland, A. D. Hall, J. Duncan Pearson, J. S. Dickins, P. Rudolph Barr, Charles T. Digby, W. A. Milner, R. W. Wallace, Harold A. Denison, C. Lemesle Adams, Jan de Graaff, and Chas. H. Curtis (hon. sec.).

AWARDS OF MERIT.

Narcissus Horace (for the garden and cutting).—One of the best of the recent *Poeticus* varieties, which possesses in a marked degree the desired round, glistening perianth and entirely scarlet corona.

N. Cleopatra (for the garden).—A very large, rich yellow Trumpet Daffodil, having a broad, overlapping perianth and very long trumpet.

N. Bodouin (for the garden and cutting).—A most beautiful *Incomparabilis* variety; the over-

lapping perianth segments are white, and the small orange-coloured corona is attractively tipped with a darker shade of the same. This and the foregoing varieties were shown by Messrs. BARR AND SONS.

Narcissus Josine (for the garden).—A trumpet variety of the type of Mme. de Graaff, the pale primrose coloured trumpet being set off by a white perianth. Shown by Messrs. E. H. KRE-LAGE AND SON, Haarlem, Holland.

Tulip Pelican.—A large, handsome variety of perfect form. The deep rose colour is relieved and enhanced by the lighter tips of the perianth segments.

Tulip Ibis.—A pure white Tulip of large size and perfect shape. Both Tulips were shown by Messrs. VAN WAVEREN AND KRUIFF, Sassenheim, Holland.

Tulipa stellata.—A dainty species of much the general appearance of *T. Clusiana*, but which has more obtuse perianth segments. The outer segments are flushed with chestnut-red, which, as the three inner segments are white, give the flowers a striped appearance. The plants shown were about nine inches high, and appear adapted for cultivation either in small pots or in the rock garden. This species was introduced from the Himalayas in 1827, and is figured in *Bot. Mag.* tab. 2,672. Shown by Messrs. BARR AND SONS.

GENERAL EXHIBITS.

MESSRS. BARR AND SONS, Covent Garden, London, included a large number of mid-season Poeticus Narcissi in their exhibit. Such varieties as *Hérace*, *Ibis*, *Cassandra*, *The Bride*, *Ruskin*, *Socrates* and *Herrick* were all noteworthy for the purity of their perianth segments and the brightness of the small, compact coronas. Of the Trumpet Daffodils Earl Goodwin, a pale primrose and golden yellow bicolor, and *Etheldreda*, a pale lemon self, and both bold, showy flowers, were admirable; whilst *Major Spurrell*, a *Barrii* bloom, possessing a clear white perianth and very bright corona, was conspicuous. (Silver-gilt Flora Medal.)

Mr. C. BOURNE, Simpson, Bletchley, arranged a smaller collection of Daffodils in the annexe, where we noticed *Queen of the North* (Leedsii), *Whitewell* (Incomparabilis), *Incognita*, and *Imperialist* (Barrii), and Rev. Chas. Digby (Triandrus) in splendid form. At one end of the Daffodils a collection of Tulips included large blooms of *The Bishop*, *The Fawn*, *Glow* and *Mrs. Farncombe Sanders*. (Silver Flora Medal.)

MESSRS. W. B. HARTLAND AND SONS, Ardcairn, Ballintemple, Cork, had a good display in which *Epic* (Poeticus), *Rosa Bedford* (Barrii), *Maud West* and *Evangeline* (Leedsii) were very prominent.

Mr. ALFRED DAWKINS, King's Road, Chelsea, displayed a large number of valuable Narcissi, chiefly of *Barrii* and *Leedsii* varieties.

Fruit and Vegetable Committee.

Present: J. Cheal, Esq. (in the chair), Messrs. J. Willard, Edwin Beckett, John Harrison, G. Reynolds, P. C. M. Veitch, H. H. Williams, Owen Thomas, C. G. A. Nix and Geo. Kelf.

The Marquis of SALISBURY, Hatfield House, Hertfordshire (gr. Mr. H. Prime), showed fruiting plants and gathered berries of Strawberries, for which a Silver-gilt Knightian Medal was awarded. The fruits were large in size and well coloured. The varieties were *King George V.*, *Royal Sovereign*, *Utility* and *The Queen*.

NATIONAL SWEET PEA.

APRIL 20.—A special general meeting of this Society was held on Monday last in the Hotel Windsor, Westminster, to consider the alteration of rules as proposed at the annual meeting on October 20, 1913. There were about forty present, and the chair was taken by Mr. F. W. Harvey.

The following were the proposed new rules:—

ELECTION OF FLORAL COMMITTEE.

(3) The Floral Committee shall be elected annually from the Members of the Society by the Members present at the Annual General Meeting, by ballot. Written nominations from Members must be sent to the Secretary of the Society at least seven days before the Annual General Meeting.

(9) The Floral Committee shall consist of sixteen (16) Members, irrespective of whether they be amateurs or traders, but there shall not be less than six (6) amateurs. The complete Floral Committee shall serve as an Advisory Committee. The awards shall be made by an

Awards Sub-Committee of not more than nine (9) and not fewer than six (6) Members, who shall be Members of the Floral Committee, shall be amateurs, and shall have no interest in anything at the Trials.

(10) The Floral Committee shall elect one of its own Members, being an amateur and having no interest in anything at the Trials, annually as its Chairman.

(11) The Floral Committee shall visit the Society's Trials once or twice annually, as may be deemed necessary, the visits to be made before the visit of the general body of Members.

(12) No Member of the Society shall visit the Society's Trials until the Floral Committee has completed its task, unless instructed or authorised to do so by the General Committee.

(13) The Secretary of the Society, after consultation with the Trials Superintendents, shall convene the Floral Committee, and shall give five (5) clear days' notice to the Members.

(14) The Awards of Merit or First Class Certificates shall be decided on show of hands by a bare majority of the Awards Sub-Committee, but the award of a Medal shall be by the unanimous vote of the Awards Sub-Committee. The variety which at the time appears worthy of the distinction shall be finally awarded the Medal the following season at or before the London Exhibition (if possible), if the variety has kept true to type and colour.

(15) A numerical register of the varieties at the Society's Trials shall be prepared for the use of the Floral Committee, and it shall be the duty of the Chairman, or the Secretary, to enter the remarks of the Members of his Committee therein.

(16) The Floral Committee shall prepare a list of Too-much-alike varieties, irrespective of whether these have, or have not, been grown at the Trials.

(17) The Awards Sub-Committee, after consultation with the Floral Committee, shall constitute a Selection and Nomenclature Committee. It shall indicate the three varieties which it considers the best in each colour class, with their synonyms, and place them in order of merit. It shall settle all questions of nomenclature.

It was agreed, on the proposition of Mr. Thomas Stevenson, seconded by Mr. Brunton, that in the event of any of these new rules or amendments being adopted the same should not become operative until September 1, 1914. This was to enable the rules to become operative in time for nominations to be made before the next annual general meeting.

The chairman then formally moved the adoption of the new rules, and the motion was seconded by Mr. C. H. Curtis.

Mr. S. B. Dicks asked if the rules were to be taken *en bloc*, and the chairman replied that they would be, for reasons which would be apparent later.

Mr. Andrew Ireland then proposed as an amendment that the meeting do not adopt any of the proposed new rules. He could never understand why the Committee recommended the alterations, seeing that the existing rules made every necessary provision.

Mr. Dicks saw no reason for altering the rules, which had worked well in the past. He bore evidence to the honour and integrity of the members of the Floral Committee, of which he was formerly a member. He considered the proposals a stab in the back for the members of the trade, and that they implied dishonourable conduct. He had pleasure in supporting Mr. Ireland's amendment, as he considered that the change would not further the best interests of the Society.

Mr. John Green also supported the amendment, and he asked for the opinion of the Committee on the question.

Mr. Baker (Wolverhampton) was in favour of discussing the new rules, as some change was necessary, seeing that the Society had to a great extent lost the confidence of the general public. If the question of awards to novelties were considered it would be found that some varieties that had received awards were not regarded as first-rate, whilst others not awarded were in the front rank. He considered that they could improve the rules and in doing so gain greater public confidence.

The chairman remarked that there was no evidence that the public was displeased, seeing that 101 new members and 18 affiliated societies had joined the Society since last October.

Mr. Brunton, in supporting the amendment, considered that it would be better to bring the matter up at the next general meeting.

Mr. Vernon Hill considered that the whole trouble was due to persons who were disappointed at their varieties not getting awards at the trials. He suggested that the votes of the Floral Committee should be recorded and published.

Mr. E. W. King said he would like to support the amendment, but he thought that if it were carried it would defeat the object for which the meeting was convened.

It was pointed out by the chairman that in that case the resolutions would not be lost, but could be brought up again at the next annual meeting.

On a show of hands the amendment was declared to be carried by 26 votes to 6; and, being put as a substantive motion, was adopted by 23 votes to 5.

NATIONAL AURICULA AND PRIMULA.

(SOUTHERN SECTION.)

APRIL 21.—The thirty-eighth annual show, which was held at Vincent Square, London, in conjunction with the fortnightly meeting of the Royal Horticultural Society, will rank, as regards the quality of the exhibits, as one of the finest ever held in the South of England, but owing to the vagaries of the season the entries were not so numerous as usual. In the esteem of the majority of the visitors, who do not seem to appreciate the "points" of the show and fancy varieties, the Alpine Auriculas were the best. Primroses and Polyanthus were splendid, but the three *Primula* classes did not induce much competition, although Messrs. PHILLIPS AND TAYLOR exhibited a very attractive collection in Class 26.

Twelve Auriculas, dissimilar.—The premier class was responsible for three exhibits, of which the best was shown by Mr. J. DOUGLAS, Edenside, Great Bookham, whose principal plants were *Fingo* (rich dark maroon), *Favourite* (purple self), *Harrison Weir* (rich crimson self) and *Edenside* (large green edge), which was adjudged the premier show variety; 2nd, Messrs. PHILLIPS AND TAYLOR, Bracknell, Berkshire, whose trusses were a trifle smaller, but bore bright and fresh blooms of good quality; 3rd, Mr. W. M. SHIPMAN.

Six Auriculas, dissimilar.—Mr. DOUGLAS won the first prize in this class with a rather uneven set of plants, but perhaps the excellence of *Favourite* and *Harrison Weir* compensated for this defect; 2nd, Messrs. PHILLIPS AND TAYLOR; 3rd, Mr. W. M. SHIPMAN.

Four Auriculas, dissimilar.—This class was well contested, and Mr. F. W. PRICE, Beckenham, won the chief award with plants which bore the stamp of skilful cultivation; *Harrison Weir*, *Olympus* (large grey edge) and *Mrs. Henwood* (green-edge) were very good. Mr. H. R. TAYLOR, Cheam, was a close second, and his plants of *Heatherbelle* (white-edge) and *Harrison Weir* were very pleasing; 3rd, Mr. W. G. LANGLANDS.

Two Auriculas, dissimilar.—Mr. F. W. PRICE won the 1st prize with moderate examples of *Mrs. Henwood* and *Lancashire Hero*; 2nd, Mr. W. G. LANGLANDS.

In the class for amateurs the best four show Auriculas were staged by Mr. J. L. GIBSON, Belmont, and Mr. Morton's Silver Medal, offered for the best similar exhibit by tyros, was won by Mr. H. W. MASON, Banstead, with a particularly good collection.

Single Specimens.—Mr. J. DOUGLAS, showing *Prince Charming* (green-edge), *George Lightbody* (grey-edge), *Mrs. J. Eighteen* (white-edge) and *Black Eagle* (self), won the first prizes offered for single specimens.

Seedlings, not previously exhibited.—Mr. W. M. SHIPMAN won four first prizes in these classes, his plants of green-edged, white-edged and self (a beautiful royal purple) varieties being especially promising.

ALPINE AURICULAS.

Twenty-four Varieties, dissimilar.—Messrs. PHILLIPS AND TAYLOR showed an exceedingly bright collection of well-grown plants, which bore large, full spikes of bloom and deservedly won the 1st prize. This noteworthy collection was particularly strong in the gold-centre varieties, of which *Her Grace*, *Majestic*, *Sunbeam* and *Charmer* are typical varieties. *Antarctic* and *Phyllis Douglas* (white centre) were also unusually good; 2nd, Mr. W. M. SHIPMAN, Altrincham, who showed a good selection, but inferior in quality.

Twelve Varieties, dissimilar.—This was a particularly strong class. The 1st prize was won by Mr. J. L. GIBSON, Belmont, who staged a magnificent collection, in which *Blue Jay*, *Argus*, *Roxborough* (white centres) and *Golden Dustman*, *Claud Halcro* and *Jacoby* (gold centres) were

especially fine; 2nd, Messrs. PHILLIPS AND TAYLOR, who had good examples of *Daphne*, Antonio, Phyllis Douglas and a gold-centre seedling; 3rd, Mr. F. M. SHIPMAN.

Six Varieties, dissimilar.—Mr. F. W. PRICE, showing such varieties as Argus, Phyllis Douglas and Golden Douglas, won the 1st prize; 2nd, Mr. J. J. KEEN, Southampton, who had an excellent plant of Argus; 3rd, Mr. J. T. BENNETT-POE.

Four Varieties, dissimilar.—The 1st prize exhibit of Mr. F. W. PRICE was very attractive in the compact trusses of large blooms, Prime Minister and Argus being particularly fine; Mr. J. J. KEEN was a very good 2nd; and Mr. W. G. LANGLANDS 3rd.

Single Specimens.—The best gold-centre plant was Muriel, the best white or cream centre Alpine Auricula, Roxborough; both shown by Mr. DOUGLAS.

Seedlings.—The Silver Medal of the R.H.S. offered for the best four seedling plants of Alpine Auriculas was won by Mr. W. M. SHIPMAN, who showed several pretty seedlings.

Mr. JAS. DOUGLAS, who showed typical specimens, was awarded the 1st prize in the class for twelve fancy Auriculas.

PREMIER PLANTS.

Show.—*Edenside*, by Mr. DOUGLAS.

Alpine.—*Muriel*, by Mr. DOUGLAS.

FIRST-CLASS CERTIFICATES.

Auricula Edenside.—Green-edge show Auricula. A. Mrs. John Eighteen.—White-edge show Auricula. Both shown by Mr. DOUGLAS.

A. *Climax.*—Grey-edge show Auricula. Shown by Messrs. PHILLIPS AND TAYLOR.

A. *Hector.*—Gold-centre Alpine. Shown by Mr. J. J. KEEN.

PRIMROSES AND POLYANTHUSES.

Mr. S. MORTIMER won the 1st prizes for groups of Primroses and of Polyanthuses showing, in both instances, splendid, very floriferous plants; the 2nd prize Polyanthuses, staged by Mr. J. G. BAXTER, were very good, but were overshadowed by the excellence of the 1st prize collection. Mr. W. G. LANGLANDS was awarded the Silver Medal for six pots of Polyanthuses; 2nd, Mrs. ELLIS.

Messrs. COCKER AND SONS, Aberdeen, were awarded the 1st prizes for twelve single Primroses and for six double Primroses with excellent sets of plants. Mr. H. J. BARTLEET, Shooters Hill, showed the best single specimen Primrose, and Mr. S. MORTIMER won the 1st prize for a specimen Polyanthus.

FIRST-CLASS CERTIFICATES.

Primula denticulata superba.—A greatly improved variety, which is more floriferous and more richly coloured than the type. Shown by Messrs. COCKER AND SONS.

Polyanthus Orange King.—A very distinct and beautiful variety; the orange-coloured flowers have bronze reverses and are borne on stout stalks. Shown by Mrs. ELLIS.

Double Primroses, Bon Accord Varieties.—Nine certificates were awarded to Messrs. COCKER AND SONS for different double Primroses, which were of compact and floriferous habit; those named Primrose Prince and Star were pretty.

MEDALS.

The James Douglas Memorial Cup and Medal were awarded to Mr. J. L. GIBSON, who also won the Silver-gilt Aggregate Medal. The Silver Medal offered in the smaller classes was won by Mr. F. W. PRICE.

Exhibits of Auriculas not for competition were made by Messrs. JAMES VEITCH AND SONS, Messrs. PHILLIPS AND TAYLOR, Mr. J. DOUGLAS and Messrs. G. and A. CLARK.

SCOTTISH HORTICULTURAL.

APRIL 7.—The monthly meeting of this association was held at 5, St. Andrew Square, Edinburgh on the 7th inst. Mr. King, the president, was in the chair, and there was an attendance of 80 members.

Mr. C. W. B. WRIGHT, of the Edinburgh and East of Scotland College of Agriculture,

delivered a lecture, illustrated by lantern slides, on "The Controlling of Fungous Diseases by Spraying." The lecturer stated that while many fungi live entirely in the interior of the plant, others live on the surface of it, and could, therefore, be controlled by spraying. He dealt only with the latter group, as it was obvious that fungi which lived inside plants could not be controlled by this means. He proceeded to demonstrate how several of the most common fungicides were prepared, and suggested suitable methods of applying them. He laid special emphasis on the fact that the spray should be of a fine, mist-like consistency. He then dealt with three common diseases—American Gooseberry mildew, black scab of Apples, and Celery blight, and he explained how these diseases, which may to a great extent ruin a crop of Gooseberries, Apples or Celery, might be satisfactorily controlled. Great stress was laid throughout the lecture on the necessity for spraying from an economic point of view.

The exhibits included the following:—Rhododendron Grievii, exhibited by Mr. WM. SMALE, Blackford Park Gardens, Edinburgh; Aralia Sieboldii in fruit, exhibited by Mr. JOHN PHILLIPS, Edinburgh; Seedling Myosotis, exhibited by Mr. PETER ROBERTSON, Ancrum; Polyanthus, exhibited by Mr. JAMES W. SCARLETT, Sweethope, Musselburgh; early variety of Rhubarb, exhibited by Mr. GEORGE BALMER, Edinburgh; and Fusarium on tubers of Potato, exhibited by Mr. W. G. PIRIE, Dalhousie Castle, Bonnyrigg.

At the meeting on May 5, Mr. ROBERT FIFE will give a paper, with lantern illustrations, on "Manurial Experiments with Sweet Peas."

KENT, SURREY, AND SUSSEX DAFFODIL

APRIL 17.—The above society, having held its exhibitions previously at Tunbridge Wells, decided upon a change of venue, owing to the lack of public interest at Tunbridge. This year's exhibition, therefore, was held at Horsham, where the Olympia Skating Rink proved an ideal place, from its suitable position, its large space and excellent arrangements for light. Thus visitors found it easy to inspect with comfort the various exhibits.

The most important competitive class was for collections of Daffodils, consisting of six varieties of each of the five divisions—Trumpet, Incomparabilis, Leedsii, Barrii and Poeticus, one vase only of each variety, with three stems of bloom. In this competition the 1st prize and Silver Challenge Cup, to be held for one year, was won by C. J. A. NIX, Esq., Tilgate Lodge, Crawley, for an excellent collection, comprising good blooms of Mrs. G. H. Barr, Monarch, Glory of Leiden, and Lord Roberts representing the Trumpets; Lady M. Boscawen, Chancellor, Orangeman and Gloria Mundi, the Incomparabilis; Mermaid, White Queen, Maid of Athens and Fairy Queen, the Leedsii; White Slave, Fair Maiden, Sunrise, Incognita, the Barrii; and Virgil, Horace, Chaucer and Lycidas, those of the Poeticus. J. A. NIX, Esq., Crawley, won the 2nd prize. For twelve distinct varieties as above, Miss A. NIX, Tunbridge Wells, took the premier place, showing fine blooms of Lady M. Boscawen, Bedouin, Peter Barr, Evangeline, Weardale Perfection, Sunrise and Virgil. 2nd, Mrs. WADE-BROWN, Colgate. Mr. G. BANKS, Crawley, won premier honours in the classes for six varieties of Trumpet Daffodils, six varieties of Incomparabilis and six varieties of Barrii. F. BARCHARD, Esq., Uckfield, led for six distinct varieties of Leedsii Daffodils with Mrs. Langtry, Evangeline, Duchess of Westminster, Mlle. M. de Graaff and other varieties. W. C. BULL, Esq., Ramsgate, was 2nd. F. BARCHARD, Esq., was also successful for six distinct single varieties of true Poet's Narcissi, Mr. G. BANKS being 2nd. Miss WARREN was successful in the class for seedling Narcissi in three distinct varieties not yet in commerce, showing three lovely blooms of Secretary, Sophonisba and Kent, also for the finest single bloom of Trumpet Daffodil with Tommy Atkins. The finest single bloom of Incomparabilis Daffodil was shown by C. J. A. NIX, Esq., in Bernardino, and of Barrii Daffodil in Equinox. The finest single bloom of Leedsii Daffodil was Lord Kitchener, shown by Miss A. L.

NIX. F. BARCHARD, Esq., won the premier award for the finest single bloom of true Poet's Narcissus with a numbered seedling. The premier award for a collection of hardy cut flowering shrubs (grown in the open) was awarded to Sir EDMUND LODER, Bt., Leonard'slea, J. A. NIX, Esq., and Col. S. R. CLARKE, Cuckfield, being 2nd and 3rd respectively.

HUNTS SPRING FLOWER SHOW.

APRIL 17.—The ninth show of this society was held in glorious weather on the 17th inst. Fine breadths of Daffodils were shown by Messrs. J. AND R. PEARSON, R. H. BATH, LTD., C. BOURNE and J. MALLENDER, Bantry. The principal class for 20 varieties was won by S. F. STAFFURTH, Esq., J. CATOR, Esq., M.P., being second. Mr. Bourne's prize for the best single flower in the show was won by J. CATOR, Esq., M.P., with the variety Bedouin. The various competitive classes were well patronised and the competition was keen.

TORQUAY DISTRICT GARDENERS'.

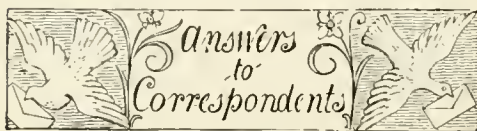
APRIL 2.—The spring show of the above association, which took place in the new Town Hall, was one of the best held by the society. Entries were numerous, and the competition was very keen. The large hall showed off the exhibits to perfection, and the lighting was far better than in the Bath Saloons, where the shows have been held previously. The Silver Challenge Cup offered for Amaryllis was won outright by Mrs. J. LYON, who has now secured it on three occasions. As an honorary exhibit a fine Orange Tree was shown by Mrs. NICKSON, of Cary Castle, and a perfect and very large plant of Cyclamen by Mr. H. GORDON CUMMING. Nurserymen added much to the attractions of the show, the centre of the hall being devoted to their displays. Colonel CARY showed a very excellent group of Palms and Ferns, and a splendid specimen Palm, which won the 1st prize in the class for these plants. He was also successful in the classes for six flowering plants, six foliage plants, specimen Azalea, and group of greenhouse and stove plants. The Amaryllis plants that won the Challenge Cup were exceedingly beautiful, and gave evidence of the most careful cultivation. Cyclamen were very good, the 1st prize being won by Mrs. HASSALL. The prize for twelve pots of Hyacinths gained by Mr. F. PERSHOUSE was well won; and the six pots of Freesias that won the 1st prize for Mr. H. GORDON CUMMING were very fine. Colonel BURN, M.P., won the 1st prize for six pots of Tulips with excellent plants. Good culture was evident in the premier exhibit of six pots of Schizanthus shown by Mr. F. PERSHOUSE; and in the twelve pots of Polyanthus shown by Mr. H. E. BOWRING, who was awarded the 1st prize. Messrs. Sutton and Sons offered a special prize for twelve pots of Cineraria stellata, and it was won by Mr. F. PERSHOUSE. In the two vegetable classes Colonel CARY won both the 1st prizes, and there were also classes for perennes of flowers, and for table decorations.

Obituary.

HENRY LITTLE.—This much-respected amateur horticulturist passed away at his residence, Baronshalt, Twickenham, on Tuesday, the 14th inst., aged 81. Mr. Little was of the old school of garden lovers, and for many years a well-known figure at the meetings of the Royal Horticultural Society; he served for some time as a member of the Orchid Committee. Orchids were his favourite plants, and he possessed one of the best-grown collections of large-flowered Cattleyas, Laelias, Lycastes and other showy species. In recent years he added some hybrids to his collection, which he sold two or three years ago because he was no longer able to pass that time in the plant houses which he was in the habit of enjoying. Laelia purpurata of the best procurable varieties and Laelio-Cattleya elegans were special favourites, and as long ago as 1885

he gained awards for these plants at the Royal Horticultural Society. Deceased was a business man, and he took an active part in local affairs. He enjoyed robust health until the last few years, when heart trouble affected him.

EDWARD WALDRON GRIFFITHS.—The South African mail brings news of the death at Johannesburg on Tuesday, March 24, of Mr. Edward Waldron Griffiths, editor of *South African Gardening*, aged 37 years. Mr. Griffiths was a native of Cirencester, Gloucestershire, and went out to the Transvaal nine years ago in connection with the Government Agricultural Department of that Colony. Three years since Mr. Griffiths founded the paper, *South African Gardening*, which he edited with ability. He leaves a widow and a daughter.



ARRANGEMENT OF A SMALL POND: E. A. C.

Assuming that the bottom and sides of the pond are formed of concrete, with provision for draining off the water when necessary, there should be no difficulty in getting suitable plants to thrive. Your proposal to form "pockets" at the bottom of the pond has certain disadvantages in that the water would enter them and become stagnant, which even for water plants is not desirable. Rather than make pockets it would be better to build up loosely, or with slight connection by means of cement, cavities for holding soil, bordered with small pieces of stone or clinkers through which the water could percolate easily. With respect to the "pockets" above the water level, two different plans may be adopted: (1) Planting semi-aquatics with their roots in the water; (2) planting subjects that associate well with aquatics, yet do not require to be grown in moisture. For all of these purposes the soil should be sweet and fresh; good, tough turfy loam, mixed with road grit and decayed leaves will answer the purpose well. The following is a selection of plants:—Water plants: *Nymphaeas* of moderate growth, such as *N. ignea*, *N. Robinsonii*, *N. Leydekeri rosea*, *N. odorata*, *N. odorata rosea*, *N. sanguinea*, *N. virginialis*, and *N. pygmaea-helvetica*; *Aponogeton distachyum*. Both the *Nymphaeas* and the *Aponogeton* will cover the surface of the water with their leaves and flowers, and may be set in the deeper parts. For the margins, yet with roots growing in the water, you may plant *Zizania aquatica*, *Cyperus longus*, *Caltha polypetala*, *Glyceria aquatica*, *Alisma plantago*, *Butomus umbellatus*, *Menyanthes trifoliata*, *Richardia africana*, *Typha latifolia*, and *Myosotis palustris*. Outside of the pond proper provision may be made for the newer Astilbes, including *A. Ceres*, *A. Venus*, *A. rubella* (all with pinkish flowers), *A. Moorheimii* (white flowers), *Lythrum roseum*, *Epilobium angustifolium*, *Gunnera manicata*, *G. scabra* (of smaller growth than the last), English Irises, and *Gynerium argenteum*. For the centre of the islet one of the very best plants to use is *Senecio clivorum*, which is of handsome growth, and has beautiful trusses of yellow flowers in August. It is not advisable to plant *Arundo variegata* in such a position; as alternatives to *Senecio clivorum*, *Catha polypetala* or *Cyperus longus* would be suitable.

BEES INFESTING LAWNS: F. W. The bees are probably a species of *Andrena*; but as you did not send specimens we cannot say for certain. We know of nothing that will destroy the insects in their burrows; but the bees cause little or no injury to the turf, and they will disappear, for a season, in the course of a week or so.

BESCHORNERIA YUCCOIDES: B. L. *Beschorneria yuccoides* is a native of Mexico. It is a Yucca-like plant, with leaves 1 to 2 feet long. The inflorescence grows about 4 feet high, and bears bright-green, pendant flowers, with rosy-red bracts in summer.

BLUE HYDRANGEAS: A. B. A correspondent, writing in the issue for June 28, 1913, states that he used sulphate of ammonia freely when watering these plants, and without exception all the flowers became quite blue. The soil was of a peaty nature, but the roots had occasional dressings of Peruvian guano. The loam was free from lime, and the plants were potted in loam mixed with a little leaf-mould. See also the editorial note on this subject published in the issue for June 21, 1913.

CATERPILLARS ATTACKING RIBES: J. E. The injury is caused by the larvae of the common Magpie Moth, *Abraxas grossulariata*. The caterpillars may be readily collected by tapping the branches with the hand over an inverted umbrella or tray.

CRICKETS IN PLANT HOUSES: G. H. W. These pests are extremely difficult to eradicate from plant houses, and it will require persistent efforts to get rid of them, for their habits are nocturnal. They are particularly fond of heat, and are found in the greatest abundance near to stoveholes and in the vicinity of hot-water pipes, usually hiding in the crevices and holes in the walls during the daytime, and emerging as soon as it is dark. Crickets feed principally on vegetable matter, but are also fond of meat. Despite their timidity, they are combative in no small degree, and if two males are confined in a box they will fight until one is killed, and the victor then proceeds to eat the vanquished. They are particularly fond of the young, succulent shoots of seedlings, also the petals of many flowers. The following is a simple and effective method of exterminating these pests: Place a mixture of fresh beer and treacle in the bottom of a glass jam-jar to the depth of about 1 inch, and plunge the jar to the neck on a level with the border or walk; as an alternative use a small quantity of sweet oil. Frequently change the treacle-beer and the oil, as neither is attractive to the insects when rancid. In stoveholes and places not frequented by children or animals, you may employ a mixture of bread and white arsenic, using 1 ounce of the latter to 1 pound of the former. The poisoned bait may be sprinkled about the haunts of the crickets. It is advisable to adopt all three methods, and if you persist the crickets will in time be exterminated.

ERECTION AND HEATING OF VINERY: W. M. Allow a space of 12 feet between the floor-line and the bottom of ridge of the proposed three-quarter span vinery, and 16 feet between the front and back walls, with front ventilating sashes 1½ feet high, resting on 2 feet high 9-inch brick wall. The additional height of 2 feet between the floor and ridge will admit of longer rafters being used, and therefore afford greater scope to the vines to extend sufficient growth to maintain them in a vigorous and healthy condition. You will require three-flow 4-inch water pipes fixed at 1 foot from the front wall on piers about 1 foot above the surface of the border, and two returns running alongside the pathway about 3½ feet from the back wall. Thus arranged you will require about 380 feet of piping in addition to the necessary connections, including three-way and two-way outlet syphons and valves to regulate the heat in both flows and returns in each division. There being a rise of 4 feet in the ground on which you propose erecting your house the pipes can be fixed at the same distance from the wall plate the full length of the house. Either socketed pipes with joints made of a few rounds of yarn and cement to finish off with, or plain-end pipes connected by indiarubber joints may be used. Both are effective and easily-made joints; the indiarubber joints are a little more expensive, but as easy to take apart as put together, which circumstance is an advantage. You propose making your house in three divisions. Make the section nearest to the boiler the plant house; No. 2 your early vinery; and No. 3 your late vinery. Thus arranged you will be able to economise and control the artificial heat to advantage. A No. 7 B "Junior Robin Hood" sectional boiler, capable of heating 480 feet of 4-inch piping, would answer your purpose.

NAMES OF FRUITS: Ponica. Apple Northern Spy.—*D. K. S.* Apple D'Arcy Spice.
NAMES OF PLANTS: T. G. S., Wales. *Solanum jasminoides*.—*T. and S.* *Sparmannia africana*.—*F. R.* 1, *Petasites officinalis*; 2, *Veronica Traversii*; 3, *Juniperus communis*; 4, *Prunus cerasifera atropurpurea* (*Pissartii*); 5, *Spiraea prunifolia flore pleno*; 6, *Ligustrum coriaceum*.—*L. Pulkinghorne.* *Pittosporum tenuifolium*.—*D. Rose.* 1, *Spiraea prunifolia flore pleno*; 2, *Rubus spectabilis*; 3, Please send when in flower; 4, A Gourd, a form of *Cucurbita Pepo*. Seeds should be sown at once in heat and the young plants grown on indoors until the middle of June, when they should be planted out of doors in a sunny position and trained to stakes or trellises.—*W. S., Lincoln.* *Corydalis hulsosa* (the tubers can be purchased from nurserymen).—*W. K. T. L.* 1, *Magnolia conspicua*; 2, *Isoloma hirsuta*; 3, *Acalypha musaica*; 4 and 5 are apparently garden forms of *Bouvardia*, but we cannot help you with specimens of this kind unless they are in flower.—*G. W. H.* Probably *Eryngium pandanifolium*. Send flowers with leaves later.—*F. T.* 1, *Oncidium varicosum*; 2, *Oncidium pubes*; 3, *Ada aurantica*.—*Catford Gardener.* *Eriobotrya japonica*.

NURSERY MANAGER'S NOTICE: Moreover. The length of notice which should be given to the manager of a nursery business residing on the premises is a matter of trade custom, and the general opinion in the trade appears to be that one month's notice, expiring at any time of the year, would be the customary period.

PRIMROSES: Finborough. The common Primrose succeeds best in a deep soil that is uniformly moist and contains a fair proportion of humus. If the situation is fully exposed the climate should be cool and moist. When grown in partial shade, such as in a thinly planted coppice, a dry period will not cause the plants much injury. Were your plants moved at a suitable time? November and the three following months are the best in which to transplant Primroses. The Oxlips and "Five Fingers" have come from seed, and have nothing to do with the Primroses.

PRIMULA FORRESTII: Dorset Gardener. *Primula Forrestii* grows wild in crevices of limestone rocks, and may be cultivated as a creviced plant in the rock garden, planted in loamy soil. The plant requires protection during the winter.

VINES: A. G., Polegate. If your vine rods are not more than three feet apart there will only be space for two leaves beyond the bunch by the time the shoots have expanded to their full length, supposing they are fairly vigorous. All sub-laterals should have been removed as they appeared, excepting the one nearest to the main rod, and that should be kept pinched to one leaf. You may now remove them gradually, not too many at one time. If the rods are four feet apart four leaves should be left beyond the bunch, and should the shoots have been already stopped too severely an extension may be allowed, it matters not whether it is on the main shoot or terminal sub-lateral, the object being to have as many leaves as can be exposed fully to the light. If there is room for the leader to extend, and provided the laterals at the base of the rod are of equal strength with those of the top, extension may be allowed; but in opposite conditions the leader and uppermost laterals might be stopped with a view to increasing the strength of the lateral below them. All the side-shoots may be allowed to make one leaf each on the extension of the main rod. Should the space be already filled, the end shoot should be treated similarly to those on each side of the rod.

Communications Received.—*J. S., Henley.*—*G. D. A., R. A. M., W. M., Italy.*—*E. B., T. S. H. D.*—*T. A. W., Massachusetts.*—*W. A. C., F. W. B.*—*R. L. H., Edinburgh.*—*R. O. W., W. W., W. I., C. T. D.*—*T. E. W., F. T., E. J. E., F. A. K., Williamsville, N.Y.*—*F. J. McL., D. M., W. H., C. W. G., H. B., P. A., E. G. W., C. T. K., Shanghai.*—*T. D. S., H. T., Ireland.*—*J. W., Lanes.*—*Nimrod.*—*W. H. N., G. H., A. S., J. C., J. S., W. K., A. T. H., A. E. U., C. S., W. L. L., H. W. R., E. P. S., R. P. B.*



THE
Gardeners' Chronicle

No. 1427.—SATURDAY, MAY 2, 1914

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Spring flowers at Belvoir Castle. (Supplementary Illustration.)

THE HISTORY OF CULTIVATED FRUITS

AS TOLD IN THE LIVES OF GREAT POMOLOGISTS.

IV.—DUHAMEL DU MONCEAU.

IT is no exaggeration of language to say that the science of pomology dates from 1768, the year of publication of the classic work of Duhamel du Monceau entitled *Traité des Arbres Fruitiérs*. To appreciate in what way it represented an advance on all previous treatises it is necessary to review briefly the literature of pomology up to that date.

In France there had been no lack of books upon the culture of fruit, but while the two outstanding authors—Olivier de Serres and De la Quintinye—had treated in great detail all cultural matters, the descriptions of fruits were very incomplete. Quintinye, it is true, occasionally devoted some lines to the description of a fruit, but dismissed others with a few words. Germany did not produce any great pomologists until 1776, when Mayer published his *Pomona Franconia*. Before this date his countrymen drew very largely upon French authors for their matter, and it was not till the end of the eighteenth and the beginning of the nineteenth centuries that Christ, Diel, Sickler, and others laid the foundations of the great German school of pomology. The *Pomologia* of

Knoop, published in Holland in 1763, was in many respects a great advance. The coloured plates, though somewhat crude to modern eyes, must have caused something of a sensation at the time. We cannot, however, claim for Knoop a prominent position in the line of descriptive pomologists, as the few words he devotes to each fruit leave much of importance unaid. In England the only work of real merit, apart from cultural value, was the *Pomona* of Batty Langley. This folio, published in 1729, contains short descriptions and outline drawings of considerable merit. All these works, however, confine themselves to descriptions of the fruit. It was Duhamel's great merit to add to this a careful description of the tree in all its parts. Even now the great importance of these full descriptions for accurate identification is not fully recognised. The written description alone, at its best, is often a frail support, and when confined to the fruit only it is frequently hazardous to rely upon it.



HENRI LOUIS DUHAMEL DU MONCEAU.

It is remarkable that the development of pomology has followed, in many respects, that of botany in its disregard at first of the plant as a living entity. The older school of botanists, with its sheets of dried specimens, is strongly suggested by the pomologist in his fruit room studying fruits and disregarding the living tree with its strong individualities. The study of fruits as museum specimens has led to many errors which a knowledge of tree characters would have prevented.

We owe, therefore, to Duhamel the introduction of a botanical exactness into the study of pomology, and for this reason systematic pomology may be said to date from this day.

The family of Duhamel was of Dutch origin, but his parents had settled in Paris before he was born. His student days were not remarkable for close application to work. His interest was given to so many subjects that it is not surprising that his knowledge was wide rather than deep. Botany, however, attracted him from early days, and on leaving college

he lodged near the King's Garden at Paris, now the Jardin des Plantes. Here he made the acquaintance of the chief botanists of the day—Dufay, Geoffroy, Jussieu, Vaillant, and others of the talented group which Royal patronage had brought together. He rapidly gained the good opinion of those in power, and when twenty-eight years of age he was selected by the Académie Française to examine a disease which was causing damage to the important Saffron crop. The satisfactory result of his investigations gained him membership of the Academy, and from this date he produced a variety of books upon technical subjects. His versatility and curiosity seem to have been endless. Some forty-two works were written by or attributed to him on such diverse subjects as tobacco pipes, wax-making, refining sugar, the manufacture of Turkey carpets, ship-building, brick-making, etc. Added to this, he held the office of Inspector-General of Marine. It is, therefore, rather doubtful how far the above-mentioned books can be considered as the result of his own observations and pen. In the case of the *Traité des Arbres Fruitiérs*, it is known that he received considerable help from several persons. Chief among these was his brother Denainvilliers, who spent his country retirement in a study of fruits. Living near to Duhamel's country house, opportunities for collaboration, no doubt, occurred frequently; but we may be pardoned, knowing the great activity of Duhamel's life, if we consider that his share in the work was probably not the largest. Valuable aid, too, was given by Le Berriays, without whose enthusiasm the book might never have been written; by M. Richard, the famous gardener at the still more famous gardens of the Trianon; and, lastly, by M. Hervey, head gardener to the Chartreux Frères at Paris, to whom we owe the preservation of so many old varieties of fruits, and whose nursery was then one of the few places in Europe where purchasers might be certain of correct nomenclature.

There is, however, but little doubt that Duhamel's botanical training is reflected in the minute descriptions of fruit, wood, leaf, and flower, which mark out this work as setting a new standard. In an interesting preface he discusses with much acuteness those characters which are sufficiently constant to be selected as recognition marks. Special stress is laid upon the fruit bud, its form and colour; the spur leaves, especially with reference to the margin, if crenate or serrate, etc.; and on the flowers, in respect of form and colour. The variation of the fruits from local causes is recognised, and the need for an examination of the character of the flesh and seeds is emphasised. The chief subject for regret is that no historical details of the fruits are given. Coming, as Duhamel did, before the great outpouring of new fruits by Van Mons, Esperen, Knight, and other raisers, his material was chiefly what may be called the classic fruits of France, and particulars of origin would have been of the greatest value. However, with so much that is valuable and new, it is perhaps churlish

to criticise this deficiency. The selection of varieties is mainly limited to what we now call dessert fruits, and breaks away from Quininye, whose lists up to this date had an authority almost pontifical in France and elsewhere.

The two volumes in which this work was published are notable for fine printing, and the plates are of the greatest value. Unlike many works, before and after, they combine excellence of execution with exact pomological detail. As an example may be mentioned the leaves of the Apples. The differing forms of marginal division are most accurately depicted, a quality to which few pomological drawings can lay claim.

This work was used as the basis of a fine work in two folio volumes with coloured plates by Redouté and Bessa, and edited by Mirbel, Poirét, and Loiseleur Deslongchamps. This passed through three editions, each of which was extended, and the last—by Poiteau and Turpin—is perhaps the most beautiful and complete work upon fruit ever published.

The name of Duhamel has been commemorated in botany by the name of Hamelia, given to a South American plant, but to pomologists he will always be remembered as a pioneer in that descriptive exactitude, by which alone the study of systematic pomology can be advanced. *E. A. Bunyard.*

NEW OR NOTEWORTHY PLANTS.

WHAT IS PYRUS CORONARIA LINN.?

In the concluding part of the second volume of Prof. Sargent's valuable publication, *Trees and Shrubs*, issued recently from the Arnold Arboretum, Mr. Alfred Rehder reviews the species belonging to the Coronariae section of Malus, which, following Miller, is here kept distinct from the genus Pyrus. This is an arrangement which no doubt has much to recommend it, but it is to be regretted that the author should have considered it necessary to discard the name Malus (or Pyrus coronaria Linn.) in favour of Malus fragrans Rehder, a piece of name-juggling which, after careful investigation of the facts, appears to be wholly unnecessary. Miller's Malus coronaria is, of course, based on the Pyrus coronaria of Linnaeus, which he described in *Species Plantarum*, ed. I., p. 480 (1753). It so happens that Linnaeus cites Gronovius' Malus "Sylvestris floribus odoratis," Flora Virginica, as a synonym of the species. The latter work, first published in 1739, is a description of the plants collected by John Clayton in Virginia; and Clayton's specimen, labelled Pyrus coronaria, in the British Museum herbarium, proves on examination to be the same plant as that described subsequently by Aiton in the *Hortus Kewensis*, II., p. 176 (1789), as P. angustifolia. Mr. Rehder makes this an excuse for transferring the name Pyrus coronaria to Aiton's plant and giving a new name to the Crab tree, which has been grown for so long in English gardens under the latter name. Such a change can only result in confusion and has nothing to recommend it; there is, indeed, no evidence to support it. Mr. Rehder has overlooked the fact that there is in the Linnean herbarium a specimen labelled Pyrus coronaria in Linnaeus' handwriting. This was collected by Kalm in North America, and, although a mere scrap, is sufficiently characteristic to enable us to decide what he meant by his Pyrus coronaria, for it answers the description "Foliis serratis angulosis," which Clayton's plant does not; in the latter specimen the leaves are not angularly serrate, but have small crenate serrations. I have fortunately been able to ascertain the history of the Linnean specimen through the kindness of Dr. B. Daydon Jackson, who says that "Kalm arrived in Stockholm in June, 1751, and brought with him the actual

specimen now in Herb. Linn. There was therefore abundant time for Linné to write his diagnosis with Kalm's plant before him. The scrap which was all that Kalm brought to his old professor with his account of it was surely enough to constitute what the Americans call a 'Holotype'—the one specimen upon which the species was described." Linnaeus very possibly remembered Clayton's specimen, but no doubt regarded it as the same as that from Kalm in his herbarium, and upon which he based his description. That this was so is evident on turning to *Species Plantarum*, ed. II., p. 687 (1763), where he amplifies his previous description and gives a reference to Kalm's plant as well as to the Flora Virginica. That the plant in the Clayton herbarium does not agree with the description in *Species Plantarum* may be explained by the fact that Linnaeus had not seen the specimen for some years. Moreover, it is well known that references quoted by him as synonyms under a particular species often turned out to be distinct plants.

Again, there is nothing to support Mr. Rehder's views that Miller's Malus coronaria is synonymous with Pyrus angustifolia Aiton. The account in the dictionary is absolutely against it, and points altogether to the fact that it was the same as Kalm's plant. To begin with, Miller quotes as a synonym "Malus sylvestris virginiana floribus odoratis," from the *Catalogue of Trees, Shrubs and Plants (Cultivated)*, published in 1730, at which time, as Mr. Rehder himself states, "P. angustifolia had not been introduced into cultivation." As a matter of fact, it was not introduced until twenty years later, so it is most unlikely that his "Malus sylvestris virginica" can have referred to this tree. Also, it is misleading to say that Miller gives no description of the tree. In the *Dictionary* he says: "The leaves of this are longer and narrower than any of the other sorts and are cut into two acute angles on their sides,"

which is entirely characteristic of Pyrus coronaria as hitherto understood by botanists. Mr. Rehder says that Miller speaks of his Malus coronaria as a plant tender in England, and considers this to indicate that he refers to P. angustifolia, which is known to be more tender than P. coronaria. I do not find any such statement in the *Dictionary*. On the contrary, in the 1730 catalogue referred to above Miller distinctly implies that the tree is hardy, for, according to the second title-page, which Mr. Rehder seems to have missed, the plants described therein are, to use Miller's own words, "hardy enough to bear the cold of our climate in the open air." I think I have discussed the matter at sufficient length to show that Malus fragrans Rehder must be rejected, and that the names in use for these two trees during the last 160 years are perfectly valid. The citations set out below show the correct nomenclature for the species in question:—

Pyrus coronaria Linn., *Sp. Pl.*, I., p. 480 (1753). Malus; sylvestris virginiana, floribus odoratis. Miller. *Cat. Trees and Shrubs*, 47 (1730). Malus coronaria. Miller. *Dict.*, ed. 8, No. 2 (1768). Malus fragrans Rehder. Sargent. *Trees and Shrubs*, Vol. II., part 4, 228 (1913).

Pyrus angustifolia Aiton, *Hort. Kew.*, II., 176 (1789). Sargent, *Silva*, N. Am., IV., 75 t. 169 (1892). Pyrus coronaria var. angustifolia, *Wenzig in Linnaea*, XXVIII., 41 (1874). Malus angustifolia Michaux, *Fl. Bor. Am.*, I., 292 (1803). Malus coronaria Rehder. Sargent, *Trees and Shrubs*, Vol. II., part 4, 229 (1913), non Miller. *A. Bruce Jackson.*

ORCHID NOTES AND CLEANINGS.

HYBRID ORCHIDS.

(Continued from March 21, p. 201.)

Hybrid.	Parentage.	Exhibitor.
Brasso-Cattleya Massangeana	C. Trianae × B.-C. Mrs. J. Leemann	M. Theodore Pauwels.
Brasso-Cattleya Princess Elizabeth	B.-C. Digbyano-Mendelii × C. Mossiae	Charlesworth and Co.
Brasso-Laelia Galba	B.-L. Digbyano-purpurata × L. splendens	Flory and Black.
Brasso-Laelio-Cattleya Anreole	B.-L. Mrs. Gratix × L.-C. lumbosa	W. H. St. Quintin, Esq.
Brasso-Laelio-Cattleya Taurus	L.-C. Canhamiana f. sa × B. Digbyana	Armstrong and Brown.
Cattleya Gravesiana	Mossiae × Luddeamiana	Sander and Sons.
Cypripedium Jezebel	Arthurianum pulchellum × Mrs. Wm. Mostyn	Lt.-Col. Sir G. L. Holford, K.C.V.O.
Cypripedium Redwing	G. F. Moore × nitens-Lecanum Hannibal	Lt.-Col. Sir G. L. Holford, K.C.V.O.
Cypripedium Royal Emblem	concolor × aureum Oedippe	Sander and Sons.
Cypripedium Wiusum	callosum Sanderæ × Winifred Hollington	F. M. Ogilvie, Esq.
Dendrobium Bassetti	Rolfæe × melanodiscus	Mrs. Haywood.
Dendrobium Frederickii	fimbriatum × Thwaitesiae	R. G. Thwaites, Esq.
Laelio-Cattleya amabilis Fascinator	L.-C. Fascinator albens × C. Luddeamiana Stanleyi	Charlesworth and Co.
Laelio-Cattleya Avoca	L. Latona × C. Trianae	H. T. Pitt, Esq.
Laelio-Cattleya Azora	Ophir × Charlesworthii	Stuart Low and Co.
Laelio-Cattleya Decius	L.-C. Hippolyta × L. pumila	Flory and Black.
Laelio-Cattleya Flavius	L.-C. G. S. Ball × L. flava	Flory and Black.
Laelio-Cattleya Geta	L.-C. Picams × C. Schröderæ	Flory and Black.
Laelio-Cattleya Goldilocks	C. Harrisoniana × L. Cowanii	O. O. Wrigley, Esq.
Laelio-Cattleya Latoglossa	L. Latona × L.-C. callistoglossa	Stuart Low and Co.
Laelio-Cattleya Juncuda	C. Perjevaliana × L.-C. Edwardii	Sander and Sons.
Laelio-Cattleya Ossian	L.-C. highbriensis × L.-C. Pallas	Flory and Black.
Laelio-Cattleya Tigris	L. Cowanii × L.-C. Dominiana	Lt.-Col. Sir G. L. Holford, K.C.V.O.
Laelio-Cattleya Tobina	C. Trianae × L. Boothiana	Enstace F. Clark, Esq.
Laelio-Cattleya Vincent	C. Trianae × L.-C. Doris	Sander and Sons.
Odontioda Arthur	Oda. Bradshawiae × Odm. ardentissimum	Mrs. N. Cookson.
Odontioda Brackenhurst	Oda. Charlesworthii × Odm. eximium	J. Gurney Fowler, Esq.
Odontioda Brunette	Oda. Bohnhoffiae × Odm. Harryanum	J. Gurney Fowler, Esq., and Messrs. Charlesworth.
Odontioda Elsie	Oda. Charlesworthii × Cochlioda Noezliana	Charlesworth and Co.
Odontioda Graireana	Cochlioda Noezliana × Odm. Rossii	M. H. Graire.
Odontioda Joan	Odm. Charlesworthii × Odm. ardentissimum	Charlesworth and Co.
Odontioda Mrs. R. le Doux	Oda. Bradshawiae × Odm. Wilkeanum	R. le Doux, Esq.
Odontioda oakwoodense	Oda. Bradshawiae × Odm. percutum	Mrs. N. Cookson.
Odontioda Zenobia	Oda. Charlesworthii × Odm. percutum	F. M. Ogilvie, Esq.
Odontoglossum ardentillium	ardentissimum × illustrissimum	Armstrong and Brown.
Odontoglossum eximium	eximium × illustrissimum	Armstrong and Brown.
Odontoglossum Megui	Parentage unrecorded. oakwoodense × ardentissimum (Canary) incorrect.	Sir G. L. Holford, K.C.V.O.
Odontoglossum Newlingii	Ossulstonii × cirrhosum	R. G. Thwaites, Esq.
Odontoglossum Rolosa	Rolfæe × Ossulstonii	De B. Crawshaw, Esq.
Odontoglossum Royal Purple	Edwardii × illustrissimum	Armstrong and Brown.
Odontoglossum Ulysses	excellens × Lambeanianum	Armstrong and Brown.
Odontoglossum Uranosa	Urania × Ossulstonii	De B. Crawshaw, Esq.
Odontoglossum Vuleirra	Vuystekei × cirrhosum	R. G. Thwaites, Esq.
Odontoglossum Vulperilla	Vuystekei × percutum	R. G. Thwaites, Esq.
Odontoglossum Zena	Sceptrum × Harryanum	De B. Crawshaw, Esq., and Lord Grantley.
Odontoglossum Edna	Rossii rubescens × ardentissimum	R. G. Thwaites, Esq.
Odontoglossum Leonidas	Hallo-erisum × triumphant	De B. Crawshaw, Esq.
Odontoglossum Mirabeau var. Mastiff	mirum × Lambeanianum	J. and A. McBean.
Odontoglossum Titania	Queen Alexandra × crispum	De B. Crawshaw, Esq.
Sophro-Laelio-Cattleya Sunloch	L.-C. Goldfinch × S.-L.-C. Danaë	Lt.-Col. Sir G. L. Holford, K.C.V.O.

ODONTOGLOSSUM MOGUL.

At the meeting of the R.H.S. Orchid Committee on April 7 last Lieut.-Colonel Sir Geo. L. Holford, K.C.V.O., Westonbirt, Tetbury (gr. Mr. H. G. Alexander), showed *Odontoglossum Mogul*. This hybrid, which received a First-class Certificate, furnishes an instance of a recorded parentage proving to be inaccurate, for it was said to have been derived from *O. oakwoodense* × *O. ardentissimum*. It required but a glance at the illustration of *O. Canary* (*oakwoodense* × *ardentissimum*), in the *Gardeners' Chronicle*, January 17, 1914, and the accompanying note of that pretty yellow variety, to show that a mistake had been made.

O. Mogul (parentage unrecorded) is one of those beautiful but puzzling variations which the hybridist is delighted to welcome. That *O.*

period of any flowering climber, commencing to expand its blossoms towards the end of April, flowering in ever-increasing profusion through the summer months, and reaching the zenith of its display in September, when it forms a sheet of snowy blossoms, while it often retains some at least until Christmas.

Lapagerias succeed admirably on a north or north-west wall in the open in Devon and Cornwall, and long trails of waxy-petalled, tubular blooms, white and red, may often be cut so late as November. The white-flowered *Physianthus albens* will also grow freely, spreading widely over a wall or sheltered cliff face. It also bears numbers of its great, corrugated seed-pods. *Stauntonia latifolia*, although bearing somewhat inconspicuous flowers among its leathery leaves, is valuable on account of the exquisite fragrance emitted by its clustering blooms in the early

bloom appeared in these columns a few months ago (fig. 73, Sept. 20, 1913). In specially sheltered sites there are three other beautiful flowering climbers which may be grown on warm-south walls. The first of these is *Plumbago capensis*, which bears pale blue flowers. A plant of this growing at the foot of a lofty cliff, by which it is protected on the north and east, has passed through several winters without any artificial sheltering, and in the early autumn is a sheet of palest blue. The second is *Mandevilla suaveolens*, a native of Buenos Ayres, a handsome greenhouse climber, bearing in great abundance clusters of large, deliciously scented white blossoms. In many gardens this grows well and flowers profusely in the open. The third is the Ivy-leaved *Pelargonium*, which in the south-west is largely used as a wall-climber. *Abutilon megapotamicum*, from Rio Grande, although not

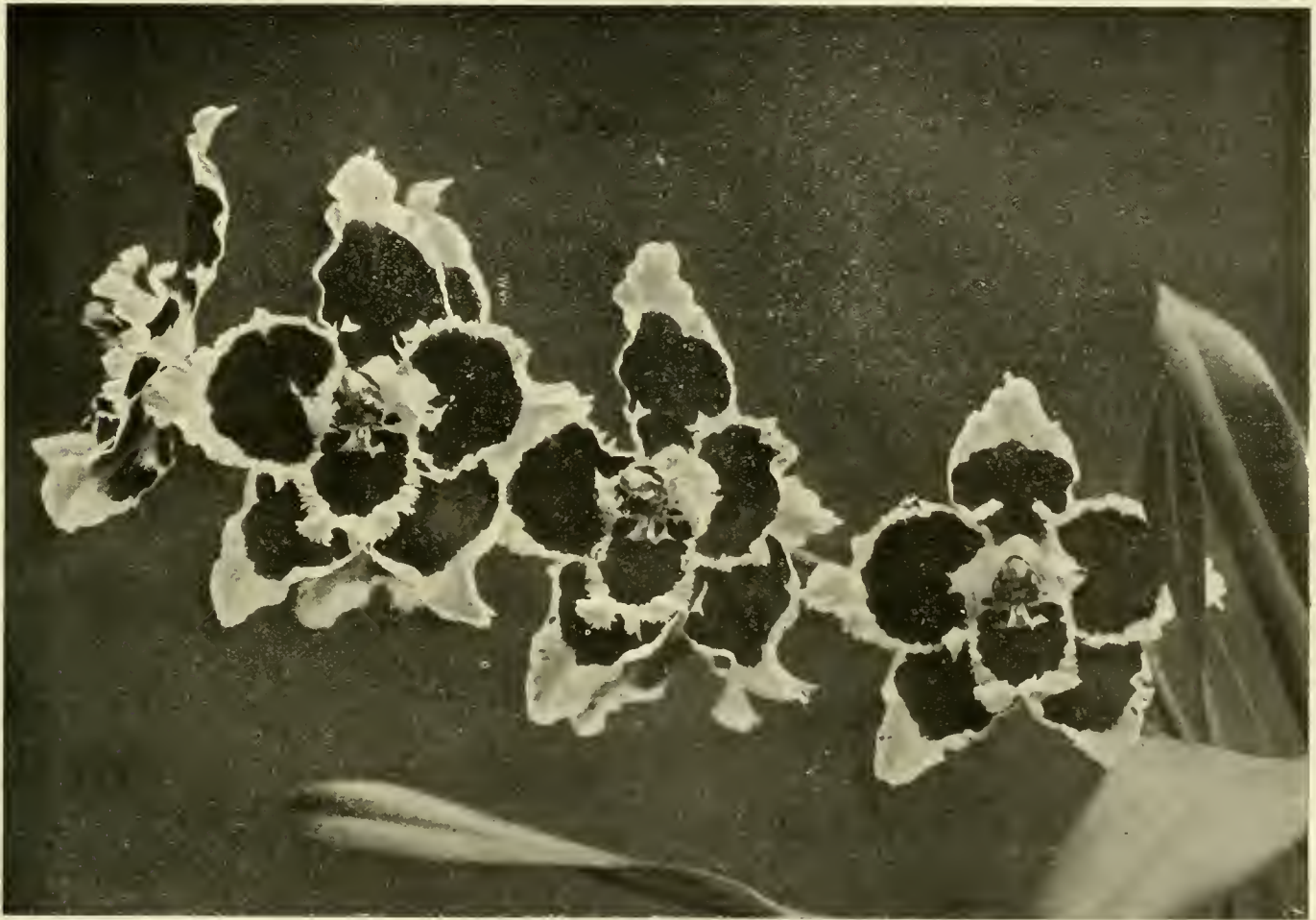


FIG. 129.—ODONTOGLOSSUM MOGUL: PETALS AND SEPALS BLOTCHED WITH CLARET-PURPLE. (R.H.S. First-class Certificate on April 7, 1914.)

ardentissimum may be one parent is possible, for *O. Pescatorei* seems well indicated in the whiteness of the ground colour and form. The colour of the blotches is claret-purple, with a ruby-red tint on the central part.

TENDER CLIMBERS FOR FAVOURED LOCALITIES.

THE best of half-hardy flowering climbers is, without doubt, *Solanum jasminoides*, the attractive qualities of which are widely recognised in Devon and Cornwall, where it is largely grown by rich and poor alike. Its white flower-clusters are extremely beautiful, and were these borne merely for the space of a month or six weeks, would entitle the plant to a foremost place among climbers. As a matter of fact, however, the *Solanum* enjoys the most extended blooming

spring. In the autumn the long, sausage-shaped seed-pods, dull crimson in hue, are freely produced. The great Burmese Honeysuckle, *Lonicera Hildebrandiana*, is a glorious plant bearing hundreds of large flowers 6 inches in length and 5 inches across the open lip. These are at first white, but turn to deep orange, and their fragrance is unrivalled. This year the plant bore dozens of seed-pods. Two *Tacsonias*, *T. quitensis* and *T. mollissima*, both natives of Quito, do well in the south-west. The first bears flesh-coloured flowers, and the second reddish pink. The New Zealand Clematis, *C. indivisa lobata*, is, when in full flower, one of the loveliest plants it is possible to imagine. It grows well in the open in Devon and Cornwall, and when a wall 40 feet in length and 8 feet in height is entirely covered with thousands of its large white flowers, the effect is indescribably beautiful. An illustration of a plant in full

strictly speaking a climber, may be grown against a wall with its main growths trained in, when its arching flower-laden shoots bend outwards gracefully, studded along their length with their crimson and yellow blooms, which are borne in quantity throughout the whole summer and autumn and well into the winter months. *Manettia bicolor* is a pretty climber, bearing tubular red and yellow flowers for many months. It does well in many gardens. *Akebia quinata* is a perennial flowering climber bearing sweetly-scented flowers of maroon colour. This note is far from exhausting the list of charming half-hardy flowering climbers and other plants that may be utilised for beautifying wall and trellis in the warmer districts of our islands, but sufficient have been mentioned to give an idea of the scope afforded by this branch of gardening in specially favoured localities. *Wyndham Fitzherbert.*

BELVOIR IN SPRING.

(See Figs. 130, 131, 132, 133, and Supplementary Illustration.)

THE paragraph inserted in these pages last week announcing the fact that the spring flowers at Belvoir Castle, the ancient home of the

completion, a large portion was destroyed by fire. The building, however, proceeded, and the destroyed portion was rebuilt with different stone, consequently the appearance to-day would lead the visitor to imagine that one portion was very much older than the other, which is not the case. On the south side are some very fine terrace walls,

ally from the late Sir Thomas Hanbury's garden at La Mortala; *Ozothamnus rosmarinifolius*, *Clerodendron foetidum* and *C. trichotomum*, and *Indigofera Gerrardiana*. On the next wall above were noticed a fine plant of *Azara merophylla*, *Magnolia Soulangiana* in full bloom (see fig. 131) and *M. grandiflora*, *Chimonanthus fragrans*, *Calycanthus occidentalis* and *C. floridus*; Lilacs and *Olearias*. The next terrace above is called the flower-garden terrace. At the east end a fine plant of *Photinia serrulata* grows against the wall to a height of 20ft., *Fabiana imbricata*, *Lonicera fragrantissima*, *Punica granatum*, and a large Banksian Rose 23ft. high and 40ft. wide at the top. There is yet another terrace at the back of this high wall, which is only about 3ft. below the top. It is believed that these beautiful walls were built at about the same time as the castle. From the uppermost terrace the view is one of extreme beauty, contributed to by the elevation and also by the magnificent trees, for Belvoir is specially fortunate in possessing a wondrous collection of handsome specimens. The N.-E. side provides a view of the surrounding country extending for miles.

The "Castle Flower Garden" is a triangular piece of ground near the carriage approach to the castle. In the centre is a large plant of the North American *Magnolia umbrella*, a species that produces greenish-white flowers early in June and very fine foliage. Around this tree there are several beds that used to form part of the spring bedding, but several years ago this garden was altered to the formal style. A stone wall now encircles the *Magnolia*, the paths are paved with flags, and the beds contain low hedges of Lavender, Paeonies, etc., with the usual bay trees in tubs and statuary and objects of art that the present Duchess has gathered together from remote places abroad, whilst a small tank in the shape of a half-moon contains choice Water Lilies.



FIG. 130.—VIEW IN THE "DUCHESS' GARDEN" AT BELVOIR CASTLE.

Dukes of Rutland, were now at their best, was doubtless read by many who would like to benefit from the intelligence thus given, but are unable to do so. This seems the more probable, because a quarter of a century has elapsed since the present writer first indulged hopes of making the Belvoir visit, yet so long is hope sometimes deferred that not until Friday in last week were his wishes fulfilled. It is likely, therefore, that certain impressions of Belvoir, gained as the result of the visit, may be of interest to many readers of these pages. From Bottesford Railway Station, on the Great Northern Railway, the castle is reached after a drive of five miles, and as one approaches the estate it becomes evident that the last mile will be a gradual ascent from the level country behind to the hill on which the castle is situated. The hill rises to a height of 456 feet, and at its foot the meadows are covered with the yellow bells of the Cowslips, showing that the land is heavy and damp; in point of fact, two, and sometimes three, horses are required to the plough. The depth of the clay subsoil has not been determined, though borings to a considerable depth have been made for the purpose. The present castle, which is seen above the trees in fig. 132, was commenced in the year 1801 by John Henry, fifth Duke of Rutland, but in 1816, when nearing

dropping down one under the other to the base of the first hill. On the lowest wall there are many



FIG. 131.—MAGNOLIA SOULANGIANA ON TERRACE WALL AT BELVOIR.

interesting plants, such as *Abutilon vitifolium*, *Prunus triloba*, *Berberidopsis corallina*, a single yellow Banksian Rose, that came origin-

The statuary garden, on the west side of the garden, was illustrated in a supplement to *Gardeners' Chronicle*, March 7, 1903, and calls

for no remark now, except that it was formed in its present position in 1847 by Mr. Challis, who was head gardener at Belvoir for a short period.

view was from above. Here also are Himalayan Rhododendrons—*H. Thompsonii*, for example—covered with blossoms, enhancing the effect produced by the *Acer*; plants of *Kerria*

Rising from the hollow and pushing their way up through the various forms of vegetation, are the tall columns of *Cupressus Lawsoniana*, relieved by magnificent groups of Bamboos, whose graceful stems lend an aerial brightness to the somewhat gloomy limbs of the *Cupressus*. Some of the most effective of the Bamboos are *Arundinaria japonica*, *A. falcata* (14ft. high by 21ft. through the branches, planted in 1882), *A. Simonii* (14ft. high), *Bambusa viride glaucescens* (11ft. by 17ft.), the dwarf *B. tessellata*, growing at the side of the pathway, and *B. Fortunii variegata*.

Gratifying success has been attained in this garden with more or less tender plants, considering the locality, and the following are all to be seen, represented by good specimens:—*Daphniphyllum glaucescens*, *Trachycarpus excelsa*, *Azara microphylla*, *Staphylea colchica* (16½ft. by 17½ft.), *Halesia tetraptera*, *Paulownia imperialis* (planted in 1903), *Azalea amoena*, *A. balsamiflora*, *Andromeda ovalifolia*, *A. floribunda* and *japonica*, *Eucryphia pinnatifolia* (25ft. high) and *Embothrium coccineum*.

THE SPRING FLOWERS.

In the glorious setting provided by the Duchess' garden, the spring flower garden at Belvoir has everything in its favour. The late Mr. William Ingram, who, with Mr. Wildsmith, of Heckfield, was amongst the first to develop this form of gardening, may be credited with having realised this fact at the



FIG. 132.—BORDER OF HARDY PERENNIALS AT BELVOIR CASTLE.

THE DUCHESS' GARDEN.

The Duchess' garden, lying to the west of the castle, is named after the Duchess Elizabeth, wife of the fifth Duke, who first chose the site. It occupies a natural hollow on the side of a hill, about half a mile from the castle. The area is eight acres. In shape it resembles a horseshoe, with the open part of the shoe facing south-east. The character of the hollow will be understood when it is realised that the fall from the highest to the lowest point is something like a hundred feet. The whole of this garden is sheltered by tall forest trees, which completely encircle it, whilst the sloping banks provide excellent situations for many tender shrubs, both foliage and flowering, which would not be capable of existing here were it not for the shelter, first of the slopes, and secondly of the trees already mentioned.

It would be difficult to imagine a more beautiful scene than that presented by this valley, densely covered as it is with choice and luxuriant vegetation, the trees ranging from 150ft. giants down to the dwarf undershrubs. Beds filled with lovely spring flowers are placed in the most effective positions, as, for instance, on the higher grassy slopes or level tracts near the bottom of the glen. The scenery reminds one of some favoured chine—Shanklin, for example—but it is superior in every respect. The visitor may walk round this valley on a path formed at the top of the slopes, and thus command a view of the whole. Seen from above, the garden presents to the eye a wealth of green growth of all kinds, varied and relieved by occasional patches of vivid colour. One of these latter is provided by a plant of *Acer japonicum septemlobum*, an extraordinarily fine specimen, and probably one of the first to be planted out-of-doors in this country. It is upwards of 20ft. high, and measures 30ft. through the branches. Readers may imagine the magnificent effect of the clear April sunshine lighting up the brown-red colour of this eastern Maple, the effect being all the better because the

japonica flore plena, with rich, orange-coloured flowers; tall, thick bushes of *Camellias*, in excellent health and in full bloom, planted thirty

years ago, both red and white varieties; *Rhododendron Falconeri*, with its sulphur-coloured flowers, and other Himalayan species of *Rhododendron* could be seen on the slopes of the dell.



FIG. 133.—WISTARIA SINENSIS AT BELVOIR CASTLE. Portions of the plant have been detached from the wall and trained to poles the better to display the flowers.

outset, namely, that it was extremely well suited to the surroundings. Mr. Ingram was gardener at Belvoir for the long period of 40 years, and his successor, Mr. W. H. Divers, who has held

years ago, both red and white varieties; *Rhododendron Falconeri*, with its sulphur-coloured flowers, and other Himalayan species of *Rhododendron* could be seen on the slopes of the dell.

the position for the past 20 years, has developed the system, so that for upwards of half a century spring flowers have been a speciality at Belvoir. The example of Belvoir has had its effect over the country, insomuch that it is difficult for the younger generation of gardeners to imagine the great development that has taken place, and to realise that before a few resourceful men turned their attention to the subject and studied the plants that seemed to possess the necessary qualities for winter and spring decoration the beds in most gardens were often allowed to remain bare through the long winter and spring seasons. This is rarely the case nowadays in gardens of any pretension, and the modern visitor to Belvoir, therefore, when he beholds the splendid displays of colour, recognises that here is indeed the classic example from whence this and that feature have been copied in countless instances. Such being the case, it could hardly be expected that the beds should have the same stamp of novelty that belonged to them in former years; indeed, the chief points about them are (1) that they are more favourably situated than probably any others in the country; (2) that greater attention is paid to detail, with the result that the plants are more successful; and (3) that the experience of so many years enables Mr. Divers to obtain perfect colour effects. The system of massing is just the same as in summer bedding, as will be seen in the illustration (fig. 130). There are ribbon borders, with some design occasionally running through them, and beds planted wholly with one colour, just as they used to be in the summer, with selected varieties of zonal Pelargoniums or Calceolarias. This year, for instance, the most effective design is planted as follows, the various subjects forming straight or zig-zag lines or panels of various shapes. At the top, Wallflower Ruby Gem, with double Daisies under them; then Aubrietia deltoides (mauve); next Wallflower Salmon Queen, followed by Aubrietia Hendersonii, with red Hyacinths amongst the Aubrietias; tall double-flowered Wallflowers, with broad bands of pale-blue Forget-me-nots at the base, and blue Hyacinths mixed with them. The larger beds are each massed with one variety, and in one of them Wallflower Fire King, edged with yellow Polyanthus, is uncommonly effective. Wallflower Fire King is peculiarly bright, and those who have not cultivated this somewhat new variety are recommended to make a trial of it. April was too early for many of the Tulips to be in flower, as it was for many other plants in Mr. Divers's select list, but of Daffodils there appeared to be millions, growing in every conceivable situation, and succeeding in the grass no less well than in the beds. Mr. Divers contrives very cleverly to get drifts of Daffodils in just the form and situation to produce effects that please the artist, for they appear as if Nature herself had distributed the bulbs. Many have succeeded in the grass for a period of thirty years, and their strength of flower and foliage is indeed remarkable. In the kitchen garden, which covers an area of seven acres, there are great breadths of Daffodils on the borders, and in the plantations and pleasure grounds generally they light up countless situations between the shrubs.

These notes can only attempt to give the reader some imperfect idea of the glories of Belvoir in spring, for there are many other features that might be remarked upon did space permit, the herbaceous flower garden, for instance, a border of which is illustrated in fig. 132. The general condition of the place is exceedingly good, and highly creditable to Mr. Divers, who has cared for it so many years.

For the information of readers who may like to study the subject of spring gardening in greater detail, it may be mentioned that Mr. Divers has recently published a book* on the subject of

very great value to those engaged in the same kind of work, and figs. 130, 131, and 132 are reproduced from that interesting volume. In conclusion, we reproduce from the same work the following list of spring flowers, showing-how and when the various plants are propagated:—

CLASS I.—PLANTS RAISED FROM DIV. OF STOCK IN MARCH.

Arabis alpina flore pleno	Helleborus atrorubens, H.
Aubrietias, all varieties	caucasicus, and other
Erica carnea	varieties
E. c. alba	Iris foetidissima varie-
Festuca glauca	gata
	I. pallida variegata

CLASS II.—PLANTS RAISED FROM DIV. OF STOCK IN MAY.

Arabis alba	Phlox subulata Sprite
Alyssum saxatile nana	P. s. Vivid
Auriculas, alpine vars.	P. Newry Seedling.
Carex riparia variegata	Polyanthus, all vars.
Daisy, all vars.	Primroses, all vars.
Dononium austriacum	Scrophularia Scordonia
D. excelsum	variegata
Hemerocallis fulva varie-	Saxifraga Camposii
gata	S. cordifolia purpurea
Heuchera hispida	S. ligulata
syn. H. Richardsonii	S. moschata atropurpurea
Holcus mollis variegata	S. m. Guildford Seedling
Luzula sylvatica	S. m. Rhei
Phalaris arundinacea	S. purpurascens
variegata	Symphytum officinale
P. a. elegans	variegata
Phlox subulata Bright-	Violas, all vars.
ness	Violets, single and double
P. s. Nelsonii	Waldsteinia trifolia

CLASS III.—PLANTS RAISED FROM SEEDS SOWN IN THE YEAR PREVIOUS TO FLOWERING, WITH THE MONTH OF SOWING.

Alyssum saxatile nana ...	March
Daisy (Bellis perennis),	June
all vars. except Alice ...	June, first week
Erysimum compactum ...	June, first week
Golden Feather (Pyreth-	July
rum aureum) ...	March
Honesty, variegated ...	June
Myosotis alpestris Queen	"
Victoria ...	"
M. a. Royal Blue ...	"
M. dissitiflora ...	"
M. d. alba ...	"
Onopordon acanthium ...	March
Polyanthus, all vars. ...	Feb., 1st week, under glass
Primroses, all vars. ...	"
Stock, Empress Elizabeth	June, 1st week " "
Wallflower, Earliest of	"
All ...	May, 1st week
Wallflower, Phoenix ...	"
Wallflower, Belvoir Cas-	"
tle Yellow ...	June, 1st week
Wallflower, Dark Red ...	"
Wallflower, Double German	"
Wallflower, Ruby Gem ...	"
Wallflower, Salmon Queen	"

CLASS IV.—PLANTS RAISED FROM SEEDS SOWN TWO OR MORE YEARS BEFORE REQUIRED FOR FLOWERING.

Auriculas, alpine vars ...	March, 2 years before
Helleborus foetidus ...	August, 3 years before
H. atrorubens, H. caucasicus, H. olympicus, and others ...	"

CLASS V.—PLANTS RAISED FROM CUTTINGS UNDER GLASS IN MAY.

Arabis alpina flore pleno	Wallflower, double yellow
Phlox divaricata	Wallflower, double Har-
Wallflower, Double Dark	pur Crewe
Red	

CLASS VI.—PLANTS RAISED FROM CUTTINGS IN SEPTEMBER.

Myosotis dissitiflora	Wallflower, double dark
M. d. alba	red
M. d. Dyeræ	Wallflower, double yellow
Violas, all vars.	Wallflower, double Har-
	pur Crewe

THE TIMBER IN WESTMINSTER HALL.—

The causes of the decay in the wonderful timber roof of Westminster Hall, built by Richard II., have been found to be dry rot, "surface decay," whatever that may mean, and the ravages of the goat moth and of a small grub *Nestobium tessellatum*. Mr. WEDGWOOD BENN, in announcing the news that money is to be spent in making good the defects, stated that a committee of experts is engaged in considering the preparation of an effective insecticide to get rid of the agents of destruction. We do not wish to interfere with the work of the committee of experts, but would recommend them to use corrosive sublimate, which with a little ingenuity can be made to penetrate quite deeply into the burrows of "the insect."



The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKSON, Oakwood, Wylam-on-Tyne.

SPRAYING.—Most Cypripediums, the majority of Odontoglossums, and allied Orchids, luxuriate when they are well sprayed overhead, but the amount of syringing should be in accordance with the weather conditions. It is most important that spraying should be practised only when the foliage will become dry again before the temperature drops; it is not safe, until the end of May, to spray after about 1 p.m. Spraying will not only favour growth, but keep insect pests in check, and this is of the utmost importance. Vandas, Aërides, Saccolabiums, and other Orchids that are grown in the warmer houses should have their stems well moistened with the syringe early in the morning, and the spaces between the pots should also be damped two or three times daily when moisture evaporates rapidly. The plants are now in active growth, and humid conditions must be maintained about them.

PHAIO-CALANTHES.—From my experience it is best to re-pot these plants annually, and now is a suitable time to undertake the work. Remove the old compost entirely, and re-pot the plants in a compost composed of equal portions of turfy loam, peat and broken leaves, intermixed with sufficient sand, charcoal and broken crocks to render the material porous. Phaiocalanthes should be treated in practically the same manner as Calanthes, with the exception that, being semi-deciduous, little water is necessary during the whole of the resting period. It is best to treat the plants liberally until the flowering season is over, for they do not require anything like so severe a rest as Calanthes.

PHAIO-CYMBIDIUM CHARDWARDENSE.—This distinct and desirable plant will grow well if treated in every respect as advised for Phaius hybrids. The plants, as a rule, produce their growth later than Phaius, and should not be re-potted until the new growths are an inch or two long, when new roots develop. Shade the plants carefully from strong light after they are re-potted, and afford them only sufficient water to keep the shoots plump.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, E.C.M.G., Madresfield Court, Worcestershire.

FLOWERING SHRUBS.—As soon as Jasminum nudiflorum, Forsythias, Ribes, and other early-flowering shrubs have finished blooming, thin out the weak spray growths, and shorten the leading branches fairly hard. The degree of pruning should be in accordance with the vigour of the plant, the object being to obtain strong breaks with stout lateral branches, for it is these that will give the finest flowers next season. There are many beautiful shrubs that have been introduced in recent years from China, and although many of them have not yet been tried in gardens, a great number have proved valuable additions. Taking the older kinds, the following represents a selection suitable for planting in groups or growing as single specimens in both large and small gardens. *Abutilon vitifolium*, *Abelia rupestris*, *Pyrus (Aronia) floribunda* (the leaves of this plant assume beautiful tints in the autumn), *Caryopteris Mastacanthus*, *Choisya ternata*, *Olearia Haastii*, *Veronica Traversii*, *V. salicifolia*, and the variety *Autumn Glory*; *Pyrus Malus Senei-deckeri*, *Carpenteria californica*, *Halesia tetraptera*, *Tamarix hispida aestivalis*, and the newer varieties of both *Deutzia* and *Philadelphus*. A mass of the beautiful *Hydrangea arborescens grandiflora* or its variety *rosea* makes a good effect in the flower garden. *Veronicas*, too, although not quite hardy, are splendid summer bloomers. The plants may be lifted and placed in tubs to be sheltered in a cold pit during very severe weather; the finest varieties are *La Séduisante*, *Imperial Red*.

* Longmans, Green and Co. Price 5s.

Blue Gem, Purple Queen, Madame A. Véronique, and Hulkeana. Plants of *Romneya Coulteri* should be cut down annually to the ground level. If it is desired to increase the stock of this plant, now is a suitable time to take up the roots and divide them. This plant may easily be propagated from seed sown as soon as it is ripe.

HOLLIES AND EVERGREEN OAKS.—April and May are considered the best months for transplanting these evergreen trees. Fairly large specimens may be transplanted with success if precaution is taken to retain a good ball of earth about the roots. First prepare the stations so that the roots may be exposed for the least possible time. In planting ram the soil carefully on the under side of the ball and make it thoroughly firm all around the roots. When the planting is completed water the soil copiously so that the ground may settle closely, and finish with a mulch of animal manure. Hollies are specially adapted for growing as specimen plants on lawns; indeed, they never look better than when arranged in groups on grass. They should be planted sufficiently far apart to stand clear of each other, and even when employed in the mixed shrubbery it is advisable for Hollies to stand clear of all surrounding vegetation. The majority of Hollies form evenly-balanced specimens with very little attention to training or pruning, and, being evergreen, are attractive the whole year round. The little pruning required consists in shortening any extra vigorous shoots that would be likely to upset the proper shape and contour of the plant. A few of the best varieties and species are *Ilex Aquifolium*, *camelliaefolia*, *Hodginsii*, *Mundyi*, and *I. Wilsonii*. *Perry's Weeping*, *Gold Queen*, *Gold King*, *Watereri*, *Shepherdii*, *Silver Hedgehog* and *Ilex Pernyi*. Hollies are sometimes clipped into conical and other shapes as topiary objects, which I consider an abomination and an outrage upon nature. Holly hedges alone should be cut with shears.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

FIGS.—Trees with fruit ripening should be grown in a drier and more bracing atmosphere than hitherto, as these conditions cause the fruits to be better flavoured. In houses where the fruit is swelling, maintain a close, moist warm atmosphere. With fire heat the temperature should not exceed 70° at night, but when the sun shines it may rise to 90° or even 100° with benefit to the trees. Syringe frequently to keep down attacks of red spider. Pinch the points of the young shoots when they are about 3 inches long. Pot trees may be stopped even more closely. Top-dress Figs growing in pots with a mixture consisting of one-half cow or sheep manure, and one-half rich loam.

VINES.—The temperature may be lowered in early vineries when the berries have finished colouring; little fire heat need be employed excepting in dull, cloudy weather, and then merely to keep the atmosphere moving and sweet. Let there be a brisk heat with plenty of air in other houses where the bunches are beginning to colour. Maintain a hountiful supply of heat and moisture in houses in which vines are swelling off their crop. Thin the bunches and berries of other vines as may be required, and do the work thoroughly, as heavy cropping is one of the greatest evils in vine culture. Hasten the forcing of *Lady Downe's* and other late varieties, relying as much as possible on the sun's heat, and closing the house early in the afternoons of bright, sunny days. See that there is no lack of moisture in the houses, and keep the evaporating troughs filled with manure water.

MELONS.—The earliest fruits are approaching maturity, and the plants must be watered with extra care, as an excess of moisture would cause the fruits to crack. A mulch of manure from a spent Mushroom bed will prove beneficial and obviate frequent waterings. But the soil must never be allowed to become dry, for if this be permitted red spider will spread rapidly and spoil the fruit. It is a mistake to suppose that

Melons in their final stages require to be grown in a dry border or very hot atmosphere. Attend carefully to the work of tying and training the shoots of succession plants, and air the house freely on all favourable occasions. A steady but not gross growth is the most fruitful. Never shade from the brightest sunshine, but see that sufficient atmospheric moisture is present on such occasions. Plants growing in frames should be well covered up at night to equalise somewhat the fluctuating temperatures of day and night usually experienced at this time of the year. The moisture arising from the bed is usually more than sufficient for the full requirements of the plants, therefore do not syringe overhead too frequently nor during cloudy days. As soon as the lateral growths show fruit, pinch at one joint beyond it, and impregnate the strongest and largest blooms.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

YOUNG TREES.—In training very young trees, endeavour to build up well-furnished specimens, and as there will be plenty of space for extension, many more shoots can be retained than would be advisable in the case of older trees, but in neither case should the young shoots be trained so thickly as to cause overcrowding. Do not allow a central upright shoot to take the lead; this should always be removed at once, and the side-shoots trained in a regular fan-shape.

PEACH BLISTER OR LEAF CURL.—This disease is often a source of much trouble in the cultivation of Peaches out-of-doors, attacks following spells of cold, east winds, while growth is tender and therefore susceptible to injury. All infected leaves should be picked off and burnt, and the shoots cut back as far as they are infected; usually the trees will then grow out of the disease as the weather improves. After the fruits are set, spray the trees with an insecticide to destroy green fly and other insect pests.

MULCHING TRANSPLANTED FRUIT-TREES.—Following the heavy rains of March, we have experienced very dry weather for April, showers being rare. Heavy soils are cracking badly through drought, and trees that were planted late in the season may suffer injury unless measures are taken to counteract the drought. Break up the caked surface, and if a mulch of manure was not applied as recommended at the time of planting, spread a layer of light litter, such as manure from an old Mushroom bed, over the roots. If the drought is prolonged the transplanted trees may require watering. Syringings overhead in the afternoons of hot days are of great benefit, and may save many trees, which otherwise might fail to start into satisfactory growth.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of Derby, Knowsley Hall, Lancashire.

ANTHURIUM.—The plants have rooted in the fresh moss on the surface, and the stems may be partially severed just below the part where the moss was placed. In the course of a week the stem may be completely severed, and the plants potted afresh in a compost composed of equal parts of peat and very fibrous loam, from which the fine soil has been removed, three parts of Sphagnum-moss, a good sprinkling of lumpy charcoal, broken pot-sherds and sharp-sand. Make the material moderately firm, and surface the pots with a layer of clean moss. Soak the soil with water and syringe the plants freely.

EUPHORBIA (POINSETTIA) PULCHERRIMA.—The old plants, having been rested, are starting into growth afresh and will furnish a supply of cuttings. A good position in which to grow the plants is near to the front ventilators of a Peach house, or in a pit where the atmosphere is not too humid. Shoots 2 to 3 inches long should be taken off with a heel of old wood attached and inserted singly in 2-inch pots. Plunge the pots to their rims in coco-nut fibre in a propagating case with bottom heat of 80° to 85°. Shift the plants into 60-sized pots as soon as roots develop,

but replace in bottom heat for a few days and then grow them on a shelf near to the root-glass. Young plants may also be raised from "eyes." Cut hard, well-ripened shoots into short pieces, each containing a good bud, and dibble them into pans filled with peaty soil and treat as for cuttings. Old plants not required for stock purposes may be cut down to two buds and encouraged to make strong shoots by syringing frequently. When the new growths are 1 inch long shake the old soil from the roots and put into receptacles just large enough to contain the roots and a little compost. Spraying overhead will afford sufficient moisture until the roots become active.

CALADIUM.—The roots of plants that were re-potted are re-established, and from now onwards thinner shading should be employed. Light tiffany may be spread over the roof-glass about midday, when the sun is strongest, and removed early in the afternoon. Close the house immediately after syringing, and promote a moist atmosphere by damping the floors and stagings between the pots. Specimens intended for use as table decorations should not be too closely shaded, as the light will bring out the bright colours, besides making the stems stiff and the leaves last longer in rooms. As the plants become pot-bound feed the roots with weak liquid manure. Remove all flower spikes as they appear.

VIOLETS.—Plants raised from cuttings rooted in frames last autumn are ready for planting on a border that is shaded by a wall or in the partial shade of trees. The ground should be well dug and enriched with soot and manure from a spent Mushroom bed. Fork these materials into the soil and make the latter firm. Lift the plants carefully and set the double varieties 10 to 12 inches apart, but allow a space of 16 inches for singles. If the weather proves dry, water the plants and spray them daily at about 2 p.m. until the roots are re-established. Syringe the foliage with *Quassia* extract at intervals to keep red spider and green fly in check. Cuttings or runners may be taken from plants growing in pots or frames, and treated much in the same manner as autumn-rooted plants, but the latter are best for frame and pot culture, as they are earlier by several months.

THE KITCHEN GARDEN.

By R. P. BROTHERTON, Gardener to the Earl of Haddington, Tynninghame, East Lothian.

POTATOS.—A sharp outlook must be observed for pushing shoots of the later early varieties, and a little soil drawn over each shoot as a protection against morning frosts. If the ground can be safely stirred between the rows that also will afford a certain amount of protection, for the air-dried soil is, to a certain extent, proof against slight frosts.

CARROTS.—Long-rooted varieties may be sown in deeply-trenched ground, allowing rather more space than for stump-rooted sorts. Where there are annual losses from the Carrot maggot, try sowing deeply, leaving part of the drill to be filled with sand later. Some recommend sand that has been impregnated with petroleum as a protective, and one successful grower I knew used sulphur, not on the plants, but dug into the ground. The seeds are most easily manipulated when thoroughly mixed with dry soil or sand. Thin seeding, to obviate the seedlings growing close together, is a great advantage.

AUTUMN-GIANT CAULIFLOWER.—Unless this variety is afforded a long season of growth it is of very little value. Plants raised from seeds sown three months ago and growing in frames are sufficiently advanced to transplant. Deeply-trenched, very fertile soil is almost essential, and the plants should be set 3 feet by 3 feet apart. Lift the roots carefully in order to preserve as much ball as possible, and plant rather deeply. Choose the latter part of the afternoon for the operation, and water effectively; the next morning partially fill the holes in order to conserve the moisture. Should hot, dry weather follow, water must be applied till the plants are re-established or rain necessitates no further applications. Hoe the soil after waterings or rain, and this in time will fill the holes left at planting.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 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.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MAY 5—

Roy. Hort. Soc. Coms. meet. and Nat. Tulip Soc. Show. (Lecture at 3 p.m. on "The Value to Gardens of some of Mr. Wilson's Introductions from China.") Hort. Club dinner, 6.30 p.m. (Lecture on "Indian Garden Craft," by Mrs. Patrick Villiers-Stuart.) Scottish Hort. Assoc. meet.

WEDNESDAY, MAY 6—

B.G.A. Ex. Council meet.

THURSDAY, MAY 7—

Linnean Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 50.3°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, April 29 (6 p.m.): Max. 70°. Min. 46°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, April 30 (10 a.m.): Bar. 29.5°; Temp. 55°. Weather—Dull.

PROVINCES, Wednesday, April 29; Max. 65°, Dorchester; Min. 40°, Darlington.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Hardy Bulbs and Tubers, at 12; Japanese Lilliums in cases, and miscellaneous Bulbs, at 3.30; Palms, Bays, and Greenhouse Plants, at 5. By Protheroe and Morris.

FRIDAY—

Orchids at Wilderspool, Warrington, by order of W. Bolton, Esq. By Protheroe and Morris, at 1 o'clock.

Californian Plants.

A report in the *Transactions* of the third Annual Meeting of the California Association

of Nurserymen calls attention to the decorative value of Californian shrubs. Mr. Payne, the chairman of the committee which presented the report, enumerates the following as desirable garden subjects:—

Carpenteria californica, which grows successfully in Devonshire, Cornwall, and elsewhere in this country. The pure white flowers of the *Carpenteria* are well set off by the yellow Tree Poppy, *Dendromecon rigidum*, which grows from 4 to 8 feet and has graceful foliage.

Fremontia californica grows from 4 to 15 feet, and in early summer bears masses of golden yellow flowers, each 2 to 3 inches across. Though cultivated in Europe, it is not so well known as it deserves to be.

Common on the foothills of California is the Fuchsia-flowered *Ribes*, *R. speciosum*. It is propagated readily by cuttings and bears cardinal-red flowers about an inch long. It has the further merit that its leaves take a beautiful shade of red and brown in early summer. Other Californian *Ribes* of proved horticultural value are *R. tenuiflorum* (yellow flowered), *R. malvaceum* (pink) and *R. glutinosum*, with long racemes of bright pink flowers.

Trichostema lanatum is a deep blue-flowered plant for dry situations with rosemary-like foliage and with buds and flower-stems covered with a thick purple wool.

Of *Arctostaphylos*, *A. tomentosa* is the commonest in South California, *A. Manzanita*, one of the most beautiful of the shrubs of that part of the world, and *A. glauca* and *A. patula* are among other desirable species. *A. Manzanita* may, it appears, be propagated by layering.

The Smoke Tree (*Dalea spinosa*) is remarkable not only for its profuse dark blue Pea-shaped flowers, which are produced in May, but also on account of its variable size. Sometimes it forms a shrub 4 to 5 feet and at others it occurs as a tree 25 feet high. To its ashy grey colour this *Dalea* owes its popular name.

Chilopsis saligna is a Bignoniaceous shrub or small tree commonly known as the Desert Willow. Its leaves are deciduous and Willow-like, and its flowers are white and purple, blotched with yellow in the throat.

Of *Garryas*, besides *G. elliptica*, well known in Europe, mention is made of *G. Veitchii* Palmeri. *Eriodictyon tomentosum* and *E. Parryi* are interesting shrubby flowering plants found in dry situations, the former with grey woolly leaves and stems and violet-blue Heliotrope-like flowers, the latter with handsome foliage and long spikes of rich blue flowers.

Beside the typical *Rosa californica*, a variety (var. *glabrata*) occurs in the San Bernardino mountains, and its bright pink flowers are produced more lavishly than are those of the type.

Encelia californica, a common plant of the foothills, bears plentiful yellow Sunflower-like blossoms. *E. farinosa*, found on the edge of the desert, is a yet better plant—a compact bush with long-stemmed bright yellow flowers.

Berberis Nevinii is a rare shrub and forms a compact handsome bush with prickly foliage and long sprays of yellow flowers which appear in February.

The Malvaceae provide *Malvastrum fasciculatum*, a pretty shrub found in dry sandy places and bearing pale pink fragrant flowers in long wand-like branches. *Malvastrum Davidsonii* has larger flowers of a rare purple shade.

Fraxinus dipetala, the flowering Ash, is deciduous, grows from 5 to 15 feet, and bears light green foliage and white flowers.

Among other shrubs or shrubby plants which are recommended to Californians for cultivation are *Holodiscus discolor*, *Symphoricarpos mollis*, *Lotus glabra*, *Lepidospartum squamatum*, and *Salvia carduacea*, bearing a blossom as large as a croquet ball, with stems which grow out of the ball and bear other blossoms.

Roadside Beauty.

The powerful appeal made by Lord William Cecil in a recent letter to the *Times* will evoke the sympathy of all who love the natural and unique beauty of the English countryside. He speaks for Hertfordshire, and condemns the ruthless manner in which the roadside verge and bank are being denuded of tree and hedge and flower. Lord William arraigns the plant collector,

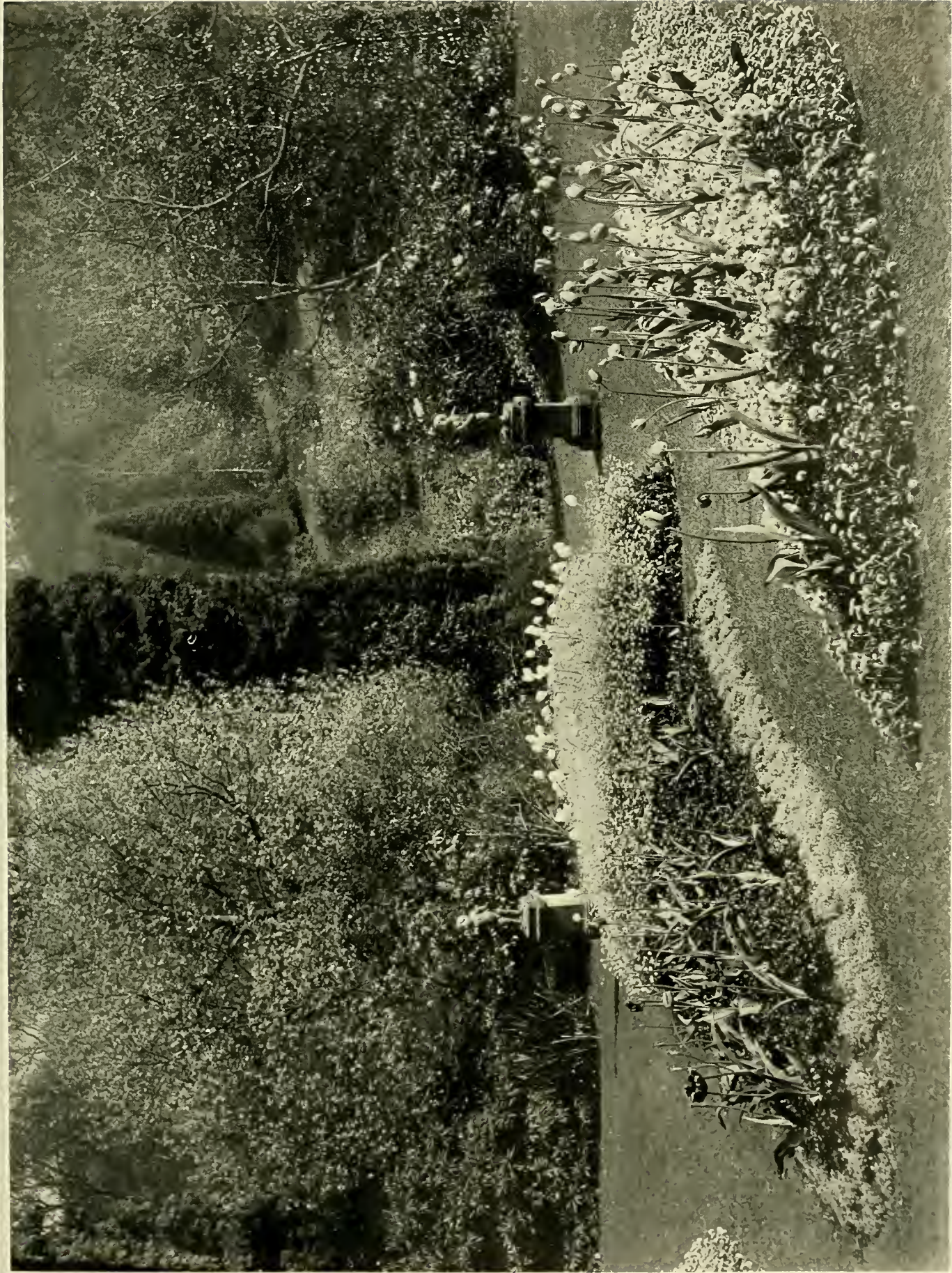
the up-to-date agriculturist and the county council.

We know not to what authority appeal must be made, but we join with Lord William Cecil in deploring this present destruction of what is most beautiful in the frequented parts of England.

It is evident that a commission of common-sense folk is required to investigate the present state of affairs. If such a commission were established, with powers to hear the several interested parties, rules for the guidance of well-meaning but necessarily ignorant county councils, road surveyors and the like might be laid down.

The road surveyor is, we fancy, one of the chief offenders. He, if he is enterprising, smears his main roads with tar, and by so doing lays down poison for the trees and shrubs which adjoin the road. Those responsible for the safety of the traffic of the road welcome the destruction or severe cutting back of hedges. They seek to make of lanes which embower peace straight cuts for people who are in a hurry to escape from the boredom which pursues their flying wheels as a pillar of cloud and a swift shadow.

The farmer is to blame likewise. After years of neglect of his hedgerows—neglect which has led to the growth of greedy thickets of Hawthorn and other hedge plants—he has awakened to the fact that these hedges, once the pride of the countryside, are cumberers of the ground. In his zeal for newly-discovered economics he is beginning to cut them down, forgetful of the fact that the hedges guard his ditches, protect his cattle from the wind and from contagion and from loss. The people who deal in plant pathology are also to blame. They discover that certain weeds may harbour the spores of pathogenic fungi which may infect the crops. They advocate, therefore, the clearing out of hedgerow plants, and the innocent must suffer with the guilty. The roadside is indicted as a harbourer of pestilent farm weeds, the seeds of which, borne by the wayside, invade the field. That this is so is true; but of the roadside herbs few are indeed the enemy of the farmer, and those who keep their own land clean have not much to fear from such invasions. It is not likely, with the present intricacy of local government, that much good will be done by appealing to this body or to that. What would do good would be a demonstration, on the part of those who have the land to spare, of the most economical and effective type of hedge and of the best mode of treatment of the grassy margin which makes our roadsides lovely. It is evident that an ideal hedge is one that roots deeply and does not plunder the cultivated ground or choke the ditches. It is also evident that Thistles and the like may be kept from seeding without destroying all the wild flowers which carpet the hedge banks. It may prove hard to strike a balance between the charms of beauty and utility, but it is not to be believed that raw and partial knowledge and uninformed zeal should be allowed to lay desolate the wild gardens of England which bloom by the waysides.



SPRING FLOWERS AT BELVOIR CASTLE, GRANTHAM, THE RESIDENCE OF THE DUKE OF RUTLAND.
[Photograph by H. N. King.]

Coloured Supplement.—The subject of the Coloured Plate to be published with the issue for next week is *Nepenthes ventricosa* and *N. × Sir W. T. Thiselton-Dyer*.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the committees will take place in the Vincent Square Hall, Westminster, on Tuesday, the 5th inst. At three o'clock in the Lecture Room Mr. W. J. BEAN will deliver an address on "The Value to Gardens of Some of Mr. Wilson's Introductions from China."

HORTICULTURAL CLUB.—A house dinner of the Horticultural Club will take place on Tuesday, the 5th inst., at the Hotel Windsor, Victoria Street, Westminster, when Mrs. PATRICK VILLIERS-STUART (author of "Gardens of the Great Mughals") will deliver a lecture on "Indian Garden Craft," illustrated with lantern slides.

R.H.S. TULIP SHOW.—For the Royal Horticultural Society's meeting on the 5th inst. the Council invites collections of Darwin, May-flowering and cottage Tulips. The exhibits will be considered by a special jury, and the Council will make awards according to merit on their recommendation. At the same meeting six classes have been arranged by the Royal National Tulip Society, who will award prizes, and this Society will welcome exhibits of Tulip species to which suitable awards will be made if of sufficient merit.

R.H.S. GARDENS CLUB.—The annual outing of the members of the R.H.S. Gardens Club will take place on Saturday, July 13, when visits will be made to the Royal Botanic Gardens, Kew, and Mr. LEOPOLD DE ROTHSCHILD'S Gardens at Gunnersbury.

THE ORCHID COLLECTION OF THE LATE SIR J. J. TREVOR LAWRENCE.—When the late Sir J. J. TREVOR LAWRENCE, Bart., died an announcement was made that his well-known Orchid collection at Burford had been bequeathed to Lady LAWRENCE with an expression of his wish that such of the plants as were especially of botanical interest should be presented to the Royal Botanic Gardens, Kew. This gift has now been made to the national Orchid collection there, which has received from Lady LAWRENCE a large selection, consisting of 580 plants, belonging to 89 genera and representing 350 species, mainly, but by no means exclusively, of botanical interest. The character of the collection brought together by Sir TREVOR at Burford during many years was a matter of general knowledge. It was singularly rich in rare and interesting species, owing to the fact that Sir TREVOR at all times paid especial attention to whatever in the natural family was striking or unusual from a morphological standpoint, apart entirely from any decorative value which it might possess. The result of this was that the Burford collection was not only thoroughly representative of the usual showy species and hybrids, and on this account to be reckoned with in the horticultural world, but possessed examples of most of the cultivated genera, some of which are seldom met with, and for this reason was perhaps as important from the scientific as from the gardening standpoint. It included plants from almost every quarter of the globe, demanding the most diverse cultural treatment. The magnificent selection from the collection at Burford now transferred to Kew is rich in such genera as *Bulbophyllum*, *Cirrhopetalum*, *Pleurothallis*, *Maxillaria*, *Epidendrum*, *Eria*, *Angraecum*, *Dendrobium* and *Coelogyne*, and includes many species and a few genera not previously represented at Kew, some of these being rarely seen in cultivation. The genera not previously present in the Kew collection include *Trichoceros*, a high Andine genus very difficult to bring home alive and very difficult to cultivate afterwards; *Nasonia* and *Quekettia*, two small American genera; and *Stereochilus* and *Sigmatogyne*, from Northern India. The collection also includes a number of undetermined species

which have not yet flowered; in a few cases the genus to which these belong is still doubtful. These unknown plants have been derived from various sources; some of them are plants contributed to the Burford collection by Sir TREVOR'S son, Captain C. T. LAWRENCE, by whom they were obtained in West Africa.

ROYAL NATIONAL TULIP SOCIETY.—The annual exhibition of the National Tulip Society will be held during the spring show of the R.H.S. at Chelsea on May 20 and May 21, 1914.

PROFESSOR LEFROY.—We learn with much regret that Professor LEFROY met with a serious motor accident during the general meeting of the Association of Economic Biologists.

FIRE AT MESSRS. ROBINSON BROS.' WORKS, WEST BROMWICH.—A serious fire occurred at Messrs. ROBINSON BROS., LTD.'s premises, West Bromwich, on the 21st ult. This is the second outbreak within the last six months; the damage on this occasion is rather more extensive than on the last, and is estimated at between £1,200 and £1,500. Messrs. ROBINSON inform us there will be no delay in the despatch of plant foods and allied manufactures, as the fire occurred in the tar distillery and in no way affected the fertiliser and insecticide plant.

SALE AT DOVER HOUSE, ROEHAMPTON.—Owing to Mr. PIERPONT MORGAN'S intention to dispose of the Dover House Estate, it has been necessary to sell by auction most of the indoor plants, including the collection of Orchids. The sale took place on Tuesday and Wednesday in last week, the auctioneers being Messrs. PROTHEROE AND MORRIS. It is well known to most of our readers that Dover House has been remarkable for many years past for its splendid collections of plants, including Orchids, Carnations, Nerines and the fine foliage stove species. Consequently there was a good attendance at the sale, and excellent prices were realised for most of the lots. On the first day so many as five hundred lots were easily disposed of in three hours, and a similar number took but little more time. Amongst the purchasers there were representatives of the horticultural trade of this country and the Continent, and many amateurs, whilst considerable purchases were made on behalf of the Royal Gardens, Kew. It was frequently remarked that the various lots were presented for sale in extraordinarily fine condition by Mr. J. F. McLEOD, the steward and gardener, whose success as a cultivator in so many departments of the garden has made the name of Dover House familiar to all gardeners. For the present the gardens will be maintained as usual.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting of the Surveyors' Institution will be held in the Lecture Hall of the Institution on Monday, May 4, when the discussion on Mr. DAWBARN YOUNG'S paper, entitled "Comments on the Land Inquiry Committee's (Urban) Conclusions" will be resumed. The Council has accepted an invitation to hold the next country meeting at York on May 22 and 23.

PEAT FOR FRUIT TREES.—Experiments carried out in Germany, and reported by Mr. A. TRUELLE in *Revue de l'Hortic. Belge* (April 15, 1914), indicate that peat properly employed has a markedly favourable effect on the yield of fruit trees. The peat, which may be employed at the rate of 10 pounds to the square yard, should be divided finely and thoroughly soaked with water before being dug into and mixed with the soil in which the trees are to be planted.

RETIREMENT OF MR. J. F. WABY.—Mr. J. F. WABY, gardener at the Botanic Gardens, Georgetown, British Guiana, has retired from this post after thirty-five years' service in the Colony. Mr. WABY'S colonial experience commenced in

Trinidad in 1873, where he was appointed head gardener to the Botanic Gardens on the recommendation of Kew. In 1879 he was transferred to British Guiana, and has held the post of head gardener at the Botanic Gardens, Georgetown, to their very great advantage since that date. Mr. WABY'S retirement was made the occasion for the presentation of a testimonial by Professor J. B. HARRISON on behalf of the Board of Agriculture and the Staff of the department, and the Governor, in appreciation of the valuable services rendered to the Colony by Mr. WABY, has been pleased to appoint him an honorary member of the Board of Agriculture.

APPOINTMENT FROM KEW.—Mr. F. G. COUSINS, formerly a member of the gardening staff of the Royal Botanic Gardens, has been appointed a Sub-Inspector for the purposes of the Destructive Insects and Pests Acts under the Board of Agriculture and Fisheries.

PRESENTATIONS TO KEW.—We learn from the *Kew Bulletin* that Sir HARRY J. VEITCH has presented to the Royal Botanic Gardens, Kew, the important collection of Conifer cones which for many years has formed so interesting a feature of the Veitchian establishment at Chelsea. It consists of 170 species, including upwards of 60 Pines, 26 Firs, and a similar number of Spruces. The collection is of historical as well as of botanical interest, for, in the main, it comprises the specimens contributed by Messrs. Veitch's collectors in North and South America, China, Japan, and other countries between 1840 and the present date. The Hon. ARTHUR F. G. LEVESON-GOWER has presented two relics in the form of two keys of an old pattern, one of them inscribed "Botanic Garden V.R."; the other "Kitchen Garden No. 2, W.R." There is no doubt they were used during the period between the accession of William IV. in 1830 and the transference of the Botanic Garden at Kew to the public by Queen Victoria in 1840.

SOILING WILD OATS.—Our contemporary *Horticulture* states that the judge of the Malden (Mass.) Court has adopted the plan of sentencing juvenile offenders to serve for various terms at garden work. They will expiate their sowing of wild oats by the raising of cultivated varieties of vegetables and flowers.

PUBLICATIONS RECEIVED.—*The Studio Year-Book of Decorative Art*. 1914. (London: The Studio, Ltd.) Price 5s. net.—*Quarterly Journal of Forestry*. April, 1914. (London: Laughton and Company, Ltd.)—Price 2s.—*Inventory of Seeds and Plants Imported by the Office of Foreign Seed and Plant Introduction from April to June 30, 1912*. (Washington: U.S. Department of Agriculture.)—*Sugar-Cane Experiments in the Leeward Islands*. (Barbados: Imperial Department of Agriculture for the West Indies.) Price 1s.—*Pot-Pourri Mixed By Two*. By Mrs. C. W. Earle and Mrs. Ethel Case. (London: Smith, Elder and Co.) Price 7s. 6d. net.—*The Cambridge British Flora*. Vol. II. By C. E. Moss, D.Sc. Illustrated from drawings by F. W. Hunnlybun. (Cambridge: University Press.) Price £2 10s.—*Gardens of Delight*. By James Kelway. Published by Messrs. Kelway and Son, Langport, Somerset. Price 9d.—*Plantae Wilsonianae*. Edited by Charles Sprague Sargent. Part IV. Published by the Arnold Arboretum, Harvard University, Jamaica Plain, Massachusetts. Price \$2.50.—*Annals of the Missouri Botanical Garden*. Vol. 1, No. 1. Published at the Missouri Botanical Garden, St. Louis, Missouri, U.S.A. Price \$3.00 per volume of four numbers.—*Returns of Produce of Crops in England and Wales*. (London: Board of Agriculture and Fisheries.) Price 3½d.—*Better Housing in Canada. "The Ontario Plan."* First annual report of the Toronto Housing Company, Limited. Secretary, W. S. B. Armstrong, Continental Life Building, Toronto.—*Lawns*. By Sutton and Sons, Reading. Price 1s.

HOME CORRESPONDENCE.

CYANIDING TO DESTROY MEALY BUG.—Mr. Fulton (p. 256) evidently does not approve of the use of sodium cyanide 130 per cent., but if it kills all insect pests what more would he wish? I shall, however, have much pleasure in putting his question to a qualified analytical chemist when the opportunity occurs. I am somewhat puzzled by Mr. Fulton's remarks about his intelligent amateur friend, who had evidently had some success with inferior materials, and yet found it necessary to treble the dose of cyanide—for a conservatory—when he had Mr. Fulton's stronger sulphuric. The result was "success" indeed, and is just what I would have expected, so far as can be judged from the details given. I have now obtained potassium cyanide of 98° to 100° strength, but must wait some time before I can use it, as all growth is now young and soft. I was indeed surprised to find that those who had made a study of cyaniding, and, to judge by their letters, could fumigate practically everything with impunity, should find it necessary to keep using the gas for so many years. I am certainly the first to admit that it is next to impossible to exterminate mealy bug in a house of mixed plants without injuring the plants likewise. Private letters from expert cyanidists confirm me in this belief. I am more or less in agreement with Mr. Fulton in his remarks that sealing over the holes and cracks is likely to be a doubtful success, and, in fact, I did not try it, but instead gave the vine rods a dressing with Arboline, which the makers strongly recommend for the destruction of mealy bug, and after using it I am convinced that they have good grounds for doing so. I used it in two houses that had been cyanided before and after cleaning, when all visible insects were killed, but shortly afterwards small bugs made their appearance. The Arboline was carefully applied with a painter's brush about six or eight weeks ago, and now when the vine shoots are being tied down we have not found more than two bugs in as many houses. Therefore if the dormant rods are well cleaned, and gone over twice, so that no hole or crevice escapes, I believe this specific will do much to rid us of the pest. Care should be taken not to exceed the maker's proportions as it is somewhat caustic. I applied the specific to a Peach tree trained against a back wall, when the flower buds were just showing colour, and thought for a time that the crop was ruined for the season, but I find there are enough fruits and to spare, and the tree clean and healthy. *A. Shakelton, Forde Abbey Gardens, Chard.*

THE LESSER NARCISSUS FLY (EUMERUS LUNULATUS) (see pp. 240, 272).—It is not desirable that in attempting to arrive at a really scientific conclusion the method known as deductive reasoning should lead to the substitution of purely imaginary surmises for specific facts, but this, it appears to me, is exactly what Mr. Bliss in his latest letter (p. 272) has been doing. Having to support the "scavenger" theory Mr. Bliss has to marshal his so-called facts, and so has to kill—on paper—the bulb of Glory of Noordwyk in the year 1913; and, to effect this, the assistance of Fusarium is called in. But there was and is no Fusarium in the whole border in which this bulb was situated. In fact I have only had that fungus in two bulbs, both acquired last season and since lifted, and, with the adjacent soil, burned in a greenhouse stove, and so Fusarium is "out of it." The bulb in question was the only defaulter in a section of the border containing some hundreds of bulbs. And next, Mr. Bliss remarks that the grubs found in this bulb "must have come from eggs laid in the second or a still later brood." But, except to support the "scavenger" theory, why? Every bulb in my special borders is carefully inspected, not once but many times when the "dates of flowering" are being taken, and in every case where there appears to be the slightest sign of questionable health a "danger signal" is set up in the shape of a label on a wire well up over the bed. There was no sign of indisposition about this particular bulb, and when the foliage had died down and had been removed the whole beds were very carefully raked over. And yet the Eumerus fly is supposed to

have dropped its eggs into an imaginary hole, or on the raked earth just above the bulb. Clever fly! It seems to me that where so little is really known about the matter there is a better guide than mere surmise, and that is the guidance furnished by what is called analogy, and in this case, as the Merodon and Eumerus are so closely allied, it appears the more likely that the latter does what the former unquestionably does—namely, deposit its eggs in the lower portion of the foliage of a living and perfectly healthy bulb. But all this would not be worth discussing were it not that the idea that the fly simply does scavenger work may lead some people to defer the remedy until the contrary is proved. We can possess our minds in patience until the life history of the fly has been worked out on other than speculative lines, and several are now engaged upon this work, as I know from the number of applications which I have received for specimens of the grub. To the last enquiry I had to reply "stock exhausted for the season," but I hear that Mr. Chittenden at Wisley would like a few more grubs. Can Mr. Bliss supply some from his obviously well-stocked menagerie? *Charles E. Shea.*

CRICKETS IN PLANT HOUSES (see p. 292).—As a further means of ridding a house of crickets I would recommend the use of the "V. T. H." slug traps, which I see are advertised in the last issue of *Gardeners' Chronicle*. It may interest readers generally to know that last year I used them with splendid results for slugs, but it was quite by accident that I found they were so effective for crickets. I put some in a cucumber frame for the purpose of trapping slugs, and was agreeably surprised next day to find that one of them contained no fewer than 67 crickets. They were baited with bran, and the bottom filled with salt water as advised. As we were greatly troubled with crickets this discovery has made the "V. T. H." traps very valuable to me. I do not think the vendors even realise their value in this connection, for I have not seen it mentioned in their advertisements or leaflets. We have now practically got rid of crickets, and this year no harm has been done by them, and we very seldom hear any chirping. *William F. Roweles, Ellisfield Manor Gardens, Basingstoke.*

GLADIOLUS MASONIORUM.—In your report of the current issue of the *Botanical Magazine*, tab. 8,548, it is stated that *Gladiolus Masoniorum* had withstood 11° of frost at Kew. The plant was sent to Mr. Lynch, and it was at Cambridge, and not at Kew, that this plant was experimented with, as to its hardiness. *G. H. Banks, The Botanic Garden, Cambridge.*

WASPS.—I have been informed by a gardener in this locality that he caught more than 50 queen wasps last week by hanging up some glass jam jars in the pear trees. The jars were half-filled with ale and sugar. Every queen wasp caught now will mean one nest fewer later. *Jas. Husey, Rydens Grove, Hershams, Walton-on-Thames, April 22.*

—On Monday, April 27, I discovered under an old Rose bush in these gardens a wasp nest, complete with comb and live grub about half developed. It would be most interesting to know if any of your readers have ever had a similar experience on or before this date. *Salcey Lawn Gardens, Northampton.*

[See reply to W. Baker in the "Answers to Correspondents" column, p. 308.—Eds.]

RAINFALL.—The amount of rainfall on the West Coast of Scotland for the month of February was 11.21 inches, and for March 5.96 inches. Rain fell on twenty-seven days in February, and twenty-five days in March. Our gauge is about 40 feet above the sea level. *George Haigh, Barcalidne Gardens, Ledaig, Argyllshire.*

OFFSETS OF HIPPEASTRUM.—In your notice of my lecture on "Hippeastrums" (see p. 270), your correspondent refers to my remark that I could not remember having seen an offset produced by a bulb which was itself an offset; but the experience of others might be different. Apropos of this, Mr. E. F. Hazelton informed me after the lecture that at Knowsley he grew a variety named Albert Edward which produced offsets freely from bulbs which were themselves offsets. *C. R. Fielder.*

SOCIETIES.

NATIONAL ROSE.

SPRING SHOW AT WESTMINSTER.

APRIL 23.—The second spring show of the above society, which was held at Vincent Square on St. George's Day, was a splendid success. The hall was filled with a beautiful array of Roses. Long before noon great queues of ticket-holders were waiting to enter, and within a few minutes of opening the doors the hall was crowded, and remained so until an unusually late hour. As compared with the first spring show there were double the number of entries, and, except in the class for new Roses, the quality of the blooms was superior. In every case the blooms were as fresh and attractive at seven o'clock as when they were first staged. A welcome feature of the show was the strong competition in the amateurs' classes.

There was no Gold Medal Rose at this show, but a Gold Medal was awarded to Messrs. WM. PAUL AND SON for their fine group of pot Roses.

The Hon. Secretary, Mr. Ed. Mawley, received valuable assistance from Mr. Frank Reader and the other members of the R.H.S. staff.

NURSERYMEN'S CLASSES.

GROUPS OF ROSES.

In Class 1, which provided for pot Roses arranged in a space of 250 square feet, there were six exhibits, and the Society's Gold Medal was awarded to Messrs. WILLIAM PAUL AND SON, Waltham Cross, for a superlative display. Huge pillars, seven to eight feet high, of Excelsa, Rowena, Blush Rambler, Tausendschön and its white variety, all heavily laden with fresh blooms, rose just clear of a charming profusion of such dwarf varieties as Liberty, Richmond, Mme. C. Chambard, Madame C. Lutaud, Prince de Bulgarie, Mrs. C. Hunter, Sunburst, and Juliet. The composition of this group, the high quality of the blooms, and the taste displayed in arrangement all combined to make it a magnificent exhibit.

The Silver-gilt Medal group of Messrs. PAUL AND SON, Cheshunt, contained as a central feature charming plants of the old favourite yellow Banksian Rose. These were surrounded by pillars and weeping standards of such Wichuraiana hybrids as Minnehaha, Excelsa, Lady Godiva, and White Dorothy, rising at intervals above closely arranged dwarf plants. The appropriately named variety Magnolia, bearing plenty of semi-double sulphur-yellow blooms, adjoining Cherry Ripe and J. B. Clark, met with a full meed of admiration. Other sorts shown in good condition were Edward Mawley, Rayon d'Or, Mme. Second Weber, Sunburst, and Mme. Victor Verdier.

The Silver Medal was awarded to Messrs. HOBBIES, LTD., East Dereham, for a group of good plants bearing admirable blooms, but arranged a trifle too formally. An extra prize was awarded Messrs. WM. CURBUSH AND SONS, Highgate, for a very pretty effort composed solely of Wichuraiana and Polyantha Roses. This was so attractive that a class for a group of these varieties, with a clause enjoining lightness of arrangement, would be well worth the Society's consideration.

The class for a group of Pot and Cut Roses placed on the floor in a space of 100 square feet was not so well contested. There were three entries, and the 1st prize exhibit shown by Messrs. A. and J. ALLEN, Norwich, was composed of such magnificent Roses as to completely overshadow those of their competitors. The plants in the premier group bore a surprising profusion of blooms of very rich colours, and were arranged with much skill and good taste. The taller plants were of such varieties as American Pillar, Sodenia, Paul Ploton, Minnehaha, and Lady Gay. In the centre of the groundwork of dwarfs massed vases of gloriously coloured Sunburst contrasted finely with the pink of Juliet and the rich crimson of Edward Mawley. Mr. GEORGE PRINCE, Oxford, won the 2nd prize, and his group was particularly noteworthy for a large central mass of Mme. Edouard Herriot, and well filled stands of Mme. Jean Dupuy, W. R. Smith, White Maman Cochet, and Frau Karl Druschki. The 3rd prize was awarded to

Messrs. BEN R. CANT AND SONS, Colchester, whose collection was composed chiefly of graceful Wichuraiana varieties.

There were only two exhibits of Cut Roses arranged on the staging, and here Messrs. G. MOUNT AND SONS, Canterbury, won the 1st prize with a memorable display. The background of very tall cut sprays of Tausendschön provided a fitting frame for the splendid vases of Richmond, Mrs. J. Laing, Mrs. A. R. Waddell, Lady Hillingdon, Dorothy Page Roberts, and similar varieties. Messrs. B. R. CANT AND SONS, who were awarded the 2nd prize, had a beautiful vase of Fortune's Yellow and a splendid stand of Rose du Barri.

ROSES IN POTS.

Messrs. PAUL AND SON, Cheshunt, were unopposed in the class for 12 Standard Roses, and these were so good as to make us wish for more. The clean-stemmed, well-balanced specimens of such sorts as Caroline Testout, Hugh Dickson, Mrs. John Laing, and Fisher Holmes were all that could be desired.

Messrs. PAUL AND SON were also the only exhibitors of 9 Pillar Roses, and were awarded the 1st prize for equally fine plants of this class of Rose, and they won the 1st prize in the class for 9 Weeping Standards with splendidly grown specimens, of which Ethel, Eisenach, Hiawatha, Excelsa, and Dorothy Perkins were exceedingly floriferous. Mr. C. TURNER, Slough, was awarded the 2nd prize.

The exhibits of 50 Dwarf Polyantha Roses in 6 inch pots were not so attractive; the exhibitors for the most part contented themselves with showing the minimum 5 varieties. The best collection was that of Messrs. WM. PAUL AND SON, who had very good plants of Orleans, Yvonne Rabier, Jessie and Edward VII.; 2nd, Mr. C. TURNER, whose chief sorts were Mignonette and Gloire des Polyantha; 3rd, Messrs. PAUL AND SON, Cheshunt.

EXHIBITION BLOOMS.

The champion class in this section was for 36 blooms in not fewer than 24 varieties and not more than 3 blooms of any one variety. The chief honour was won by Messrs. FRANK CANT AND Co., Colchester, who had a splendid collection of fresh blooms in which the H.T. varieties largely predominated. The varieties were Caroline Testout, Frau Karl Druschki (2), Gustav Grunerwald (2), Peerless, White Killarney, Mrs. Muir MacKean, Maréchal Niel (2), George Dickson (3), Mrs. M. Kennedy, Ulrich Brunner, Lady Ursula, Marquise Litta, Mrs. Foley Hobbs (3), Mrs. J. Laing, Mrs. T. Roosevelt, William Shean, Sunburst (3), Mrs. George Shawyer, Hugh Dickson (3), Lady Alice Stanley, Souv. de Gustave Prat, Gloire de Chédane-Guinoisseau, Mrs. Herbert Stevens, Frau M. Möller, and Lady Ursula; 2nd, Messrs. B. R. CANT AND SONS, Colchester, who showed rather smaller blooms, which, like those in the champion exhibit, were very fresh and of good substance; 3rd, Messrs. G. and W. BURCH.

Messrs. A. DICKSON AND SONS had no competitor in the class for 18 blooms, and received the 1st prize for a magnificent collection, which included Mrs. R. D. McClure, Mrs. Cornwallis West, H. V. Machin and Mrs. Foley Hobbs.

The two exhibits of 12 blooms of Maréchal Niel were splendid, and it would be difficult to imagine better specimens of this deliciously fragrant yellow Rose. There was very little to choose between the exhibits of Mr. A. R. GODWIN, Maidstone, and Mr. C. BENT, Irlam, Manchester, but the former was sufficiently the better to win the 1st prize.

The class for 12 blooms of any other variety contained in Messrs. A. DICKSON AND SONS' blooms of Mrs. Foley Hobbs the best exhibit in the show; Mr. ELISHA HICKS won the 2nd prize with fine blooms of Mrs. George Norwood, a very fragrant, pink H.T. Rose; 3rd, Messrs. G. and W. BURCH, who showed Florence Pemberton.

ROSES IN VASES.

Messrs. G. MOUNT AND SONS were the only exhibitors of 12 Distinct Varieties shown in vases, and were awarded the 1st prize.

Mr. WILL TAYLOR, Hampton, was awarded the 1st prize for 6 Distinct Varieties.

The Baskets of Cut Roses were only moderate in quality. Messrs. G. MOUNT AND SONS were

disqualified for a technical infringement of the schedule, and were awarded a special prize.

NEW SEEDLING ROSES.

SILVER-GILT MEDAL.

Rose Princess Mary (H.T.) (see fig. 135).—A charming single Rose of rich carmine-crimson colour suffused with scarlet. The petals are broad and overlap, making a bold round flower in which the small group of golden stamens intensify the rich colouring. The blooms were fully 4 inches across, and the raiser states that when grown in the open they average quite 6 inches. (Shown by Mr. ELISHA HICKS).

as Mme. Edouard Herriot, and, like that variety, is semi-double, but the petals being rounded at the ends make a more globular flower. (Shown by Mr. HUGH DICKSON.)

Nine Stems of New Roses.—Messrs. ALEX. DICKSON AND SONS were alone in this class, which requires varieties first put into commerce since the beginning of 1911. They were awarded the 1st prize for very good blooms of 'St. Helena, Mevrouw Dora van Tets, Coronation, Mrs. Cornwallis West, Lady Greenall, Duchess of Westminster, Lady Dunleath, Mrs. R. D. McClure and Elhi Hartmann.

Nine Pots of New Roses.—Messrs. A. DICKSON AND SONS were also awarded the 1st prize in this



FIG. 134.—ROSE AUTUMN TINTS: FLOWERS PINK, SUFFUSED WITH ORANGE-SALMON.
(National Rose Society's Card of Commendation on April 23, 1914, see below.)

CARDS OF COMMENDATION.

R. Mrs. S. T. Wright (T.).—A medium-sized bloom set on long, stiff stems of bright, shining leaves. The fragrant flowers are orange-huff, with apricot-coloured centres. (Shown by Messrs. ALEX. DICKSON AND SONS.)

R. Autumn Tints (H.T.) (see fig. 134).—An exceedingly-attractive variety rather suggestive of the popular Lyons Rose—the deep flesh-pink is suffused with a sheen of orange-salmon. The blooms are large and well formed, and the foliage is good. (Shown by Messrs. B. R. CANT AND SONS.)

R. Prince Charming (H.T.).—This beautifully coloured Rose is of the same elusive shades

class, where their best varieties were Sachsen-gruss, Coronation and George Dickson.

AMATEURS' CLASSES.

There was no exhibit in this section of a group of Pot Roses placed on the floor, but the groups of Cut Roses arranged on staging space of 5ft. by 3ft. were exceedingly attractive, and the 1st prize group of Mr. E. GORDON CLARK, Leatherhead, contained a good variety. The Polyanthas were especially meritorious, as also were the vases of Sunburst and Frau Karl Druschki; 2nd, Mr. E. J. HOLLAND, Sutton, who had fine examples of Mrs. W. J. Grant, Lady Faire and Mme. Mélanie Soupert; 3rd, Mr. H. R. DARLINGTON, Potters Bar.

Only two exhibitors contested the class for 12 Blooms in Exhibition Boxes, and here Mr. J. HOLLAND, showing beautiful specimens of such varieties as Wm. Shean, Nita Weldon, and Caroline Testout, won the 1st prize; 2nd, Mr. G. A. HAMMOND, Burgess Hill, who had a fine bloom of Souv. de P. Notting, and could not have been many points behind the former.

The 6 Blooms in not fewer than four varieties were only a moderate class, and the chief prize fell to Mr. F. H. FIELDGATE, Colchester, in whose stand a wonderfully fine bloom of Lyons Rose attracted admiration; 2nd, Mr. P. T. DAVIS, Burgess Hill.

Six Blooms of the variety Wm. Shean, shown by Mr. E. J. HOLLAND, were decidedly the best in the Any Variety Class, where the 2nd prize

the bright red Richmond, a variety which was used by two other exhibitors. Shown also by Mrs. E. WILLIAMSON, Canterbury, it won the 1st prize in the class for a Vase of Cut Roses, where Mrs. COURTENAY PAGE was 2nd with Sunburst.

MIDLAND DAFFODIL.

APRIL 23, 24.—The sixteenth annual exhibition of Daffodils held under the auspices of the above society on these dates at the Botanical Gardens, Edgbaston, pleasantly situated on the west side of Birmingham, was a great success. Nearly all the best raisers and growers of Daffodils were represented, and many new varieties of high quality were exhibited.

to work satisfactorily. Owing to the death of Mr. Robert Sydenham, founder of the society, the annual dinner, which always formed such a pleasant adjunct to the Birmingham gathering, was omitted on the present occasion. At an informal meeting held at the Grand Hotel on the evening of the first day of the show Mr. P. D. Williams (president) in the chair, supported by a representative gathering of members, it was unanimously decided to have a dinner in 1915, but with a shorter toast list than formerly. The rest of the evening will then be given up to Daffodil chat.

The non-competitive exhibits from the Rev. G. H. ENGLEHEART, Mr. A. M. WILSON, Mr. W. T. WARE, MESSRS. BARR AND SONS, MESSRS. J. R. PEARSON AND SONS, and others contained many novelties.

DAFFODILS.

CUT FLOWERS (OPEN CLASSES).

The biggest class was one for a collection of fifty varieties, representing so far as possible the sections into which the Daffodil is divided. One vase of each variety containing three stems with Daffodil foliage for effect was required. There were six exhibits. The 1st prize was won by MESSRS. CARTWRIGHT AND GOODWIN, Kidderminster, whose flowers consisted largely of the small flowered varieties, were of surprisingly good quality, beautifully fresh, and effectively staged. The principal varieties exhibited were The Doctor, Cornelia, Mrs. H. J. Veitch, Acme, Horace, Kestral, Matthew Arnold, Mrs. Robert Sydenham, Moorfoot, Dorothy Kingsmill, Mrs. Ernest Crawford, Loch Fyne, Silver Swan, Dorothy, Cassiopoea, White Rose, Aquarius, Whitewell, Felspar, and Jaune à Merveille. 2nd, Mr. C. BOURNE, Bletchley, who also relied very largely upon small flowered varieties, had splendid examples of Elgar, Barcarolle, Kingsley, Incognita, Moonbeam, Queen of the North, and Seville. 3rd, Rev. JOSEPH JACOB, Whitchurch.

The next class was one for a decorative exhibit of cut Narcissi, arranged on a space of 9 feet by 4 feet against a wall. Exhibitors had the option of introducing any kind or style of decoration, but it was a *sine qua non* that all flower stems should be in water, wet sand, or moss. The schedule imposed no restriction as to the number of varieties, quantity, or quality of flowers, as the class was judged from a purely decorative point. The 1st prize was won by Mr. C. BOURNE—last year's winner—whose flowers, mostly of the poeticus type, were displayed in dark basket-covered vases, jars, and tall Bamboo stands interspersed with plants of *Cyperus alternifolius* and Ferns against a brown-draped background. A square "knee-cap" piece of brown material occupied the forefront of the group, which, instead of adding to, detracted from the general effect. The 2nd prize was awarded to the Rev. JOSEPH JACOB for a well conceived and artistically arranged group. But for the inclusion of a bright yellow muslin base the effect would have been most pleasing, and in all probability the awards would have been reversed. The centre piece consisted of a large vase set on a pedestal beautifully decorated with pale coloured Daffodils and sprays of Asparagus. 3rd, J. A. KENRICK, Esq., Harborne (gr. Mr. R. Usher).

It was compulsory to exhibit three stems of each variety in the following eleven classes:—In a class for six varieties of yellow Trumpet Daffodils Messrs. E. H. KRELAGE AND SON, Harlem, won 1st prize with unusually large, substantial flowers of Hope of Holland and five unnamed seedlings. 2nd, Mr. JOHN POPE, King's Norton, who had excellent blooms of Mrs. H. J. Veitch. 3rd, Mr. J. MALLENDER, Scrooby.

In a similar class, but for white Trumpet Daffodils, Messrs. E. H. KRELAGE AND SON were again placed 1st with delightfully fresh, shapely specimens which unfortunately contained a decidedly yellow Trumpet seedling No. 87. After a protest had been upheld Mr. J. MALLENDER, who had been awarded 2nd prize, was given the leading position with meritorious flowers of Dromina, Marotz, St. Elmo, Catherine H. Pugham, Alina Skelton, and Sybil Forster.

Mr. JOHN POPE and Mr. J. MALLENDER were the only exhibitors in a class for six varieties



FIG. 135.—ROSE PRINCESS MARY: COLOUR, CARMINE-CRIMSON WITH A SUFFUSION OF SCARLET. (Awarded the National Rose Society's Silver-gilt Medal on April 23, 1914; see p. 303.)

was won by Mr. F. H. FIELDGATE with a good half dozen of Frau Karl Druschki.

The exhibits of 5 Distinct Varieties in Vases were very meritorious, and the 1st prize collection of Mr. G. A. HAMMOND included very good vases of Mrs. W. J. Grant and Mme. Mélanie Soupert; 2nd, Mr. F. H. FIELDGATE.

DECORATIVE CLASSES.

There were nine tables decorated with Roses. The 1st prize arrangement consisted of the saffron-yellow H.T. Rose Melody, with Rose foliage and a few trails of Asparagus plumosus, by Mrs. COURTENAY PAGE, Enfield, was exceedingly good. Mrs. ROBINSON, Carshalton, won the 2nd prize with a pleasing table of Joseph Hill; and Mrs. TISDALL, Woodford Green, was 3rd with

Competition in many of the classes was better than at any of the society's previous exhibitions, and considering the very hot weather experienced for about eight to ten days prior to the show the all-round quality of the flowers was surprisingly good. Owing to the trying season there were fewer large Trumpet varieties than usual, but there was a great increase in the number of smaller flowered white or light coloured varieties.

The weather on the first day of the show was hot, but on the second day the conditions were more favourable. The Floral Committee recommended awards to three varieties of Daffodils, descriptions of which will be found below. The R.H.S. (1913) classification of Daffodils was adopted at this show, and the experiment seemed

of bicolor Trumpet Daffodils. The first-named competitor led with handsome, well set-up flowers of Weardale Perfection, and fine unnamed seedlings.

The only exhibit of six varieties of yellow-shaded *Incomparabilis* Daffodils came from Mr. C. BOURNE, who showed Redcap, Solfatare, Gloria Mundi, Coeur de Lion, Marina, and Giraffe.

In a corresponding class to the last-named, but with flowers having a white or whitish perianth and self-yellow, red stained or red cup, the Rev. JOSEPH JACOB led with exquisite flowers of The President, Warden, Lady Moore, Sophy Primrose, Lady Jellicoe, and Whitewell. 2nd, Mr. C. BOURNE, whose best flowers were Whitewell, Desoris, and Victory.

The best exhibit of six varieties of *Barrii* Daffodils came from the last-named exhibitor, who had refined flowers of Yellow Pet, Occident, Castile, Jaspas, Merryman, and Torchlight. 2nd, Mr. W. A. WATTS, St. Asaph, who showed Occident and a promising seedling numbered 668.

In a companion class to the last-named, but with flowers possessing a white or whitish perianth and self-yellow, red stained or red cup, Mr. C. BOURNE again scored with Ethelbert, Imperialist, Queen of Hearts, Red Chief, Egret and Cossack. 2nd, The Rev. JOSEPH JACOB, who had Whisper and a very good unnamed seedling.

The 1st prize in a class for twelve varieties of *Leedsii* Daffodils was won by the last-named exhibitor, whose best flowers were Easter, Norah Pearson, H. C. Bowles, Hon. Mrs. Francklin, Sister, Penguin, and Endurance. The 2nd prize, which came from Mr. C. BOURNE, contained good flowers of Queen of the North, Easter, Hypatia, St. Olaf, and Bianca.

The class for three varieties of *Triandrus* hybrids contained many flowers of superior merit. The 1st prize was awarded to Mr. F. H. CHAPMAN, who had choice specimens of White Witch, Minstrel, and Alabaster. 2nd, Rev. JOSEPH JACOB, whose best variety was Winter Snow. 3rd, Mr. W. A. WATTS.

Although there were only two entries in the class for six varieties of *Tazetta* and *Tazetta* hybrid Daffodils, the quality of the flowers in each case was superb, especially in Messrs. CARTWRIGHT AND GOODWIN'S 1st prize stand, which included Klondyke, Orient, Jaune à Merveille, Aspasia, Sunset, and Admiration. The other exhibitor was the Rev. JOSEPH JACOB.

The flowers in the class for nine varieties of *True poeticus* exhibited by Mr. E. M. CROSFIELD, Cossington, Bridgwater, were the best poeticus varieties in the show. The flowers were particularly large and substantial, borne on very strong stems and well displayed. The varieties exhibited were Ashgard, Glaucus, Sarchedon, Ring Dove, Lovelace, Athenian, Iliad, Socrates, and Sonata. 2nd, Mr. F. H. CHAPMAN. 3rd, Mr. C. BOURNE.

SINGLE BLOOM CLASSES (OPEN).

Mr. R. BRUCE WAITE, Harborne, had the best yellow Trumpet Daffodil in Monarch, as well as the leading *Tazetta* or *Tazetta* hybrid Daffodil in Jaune à Merveille. The winning flower in a class for a white Trumpet Daffodil was a handsome specimen of the new Mrs. Ernest Krelage, exhibited by Messrs. E. H. KRELAGE AND SON. The best bicolor Trumpet Daffodil was Diogenes. It came from Mrs. RIDLEY, of Wincanton, who also excelled in a class for a *Barrii* Daffodil possessing a white or whitish perianth with Ceres. Mr. A. M. WILSON showed the best *Incomparabilis* bloom (Division 2A) as well as the best *Leedsii* variety. From Mr. E. M. CROSFIELD came the most perfect *Incomparabilis* Daffodil with a white or whitish perianth in Aladdin. The same exhibitor also had the best *Jonquilla* hybrid in Zephyr. Mr. W. WELCHMAN'S King Cyrus was adjudged the best yellow-shaded *Barrii* Daffodil (Division 3A). The best *Poeticus* variety was Raeburn, a large, round-petalled flower exhibited by Mr. C. BOURNE.

SEEDLINGS AND NEW VARIETIES.

Seedlings and new varieties were largely and well shown. The Bourne Challenge Cup perpetuates the name of a gentleman who worked assiduously for many years to popularise the Daffodil both as a garden and exhibition flower.

On the present occasion it was offered for twelve varieties raised by the exhibitor. The Cup, which is held for one year is accompanied by a Gold Medal, and was again won by the redoubtable Mr. E. M. CROSFIELD, who beat four contestants with a magnificent stand of the following varieties:—Orbit, Dell, Ring Dove, 192s, Charles Surface, Touchstone, Dulce, Orb, Sybarite, 451s, Anchorite, and Mowgli. 2nd, Mr. P. D. WILLIAMS, St. Keverne. 3rd, Mr. W. WELCHMAN, Wisbech.

Mr. A. M. WILSON excelled in a class for six varieties of seedling Daffodils raised by the exhibitor and not yet in commerce. He showed Avalon, Melanie, 339, 660, 65B, and 473. 2nd, Mr. C. H. CAVE, Mangotsfield. 3rd, Mr. JOHN POPE.

In a similar but smaller class to the last there were seven entries. 1st, Dr. N. Y. LOWER, Presteign, with three choice unnamed varieties; 2nd, Mr. C. L. ADAMS, Wolverhampton; 3rd, Rev. T. BUNCOMBE.

The next class was reserved for novices who had never won a 1st prize for seedlings (single blooms excepted). The schedule required three varieties raised by the exhibitor and not in commerce. The 1st prize was a Silver Vase given by Mr. Christopher Bourne, and was won by the Rev. T. BUNCOMBE with a pleasing set of flowers all under numbers; 2nd, Mr. C. L. ADAMS; 3rd, Mr. J. PADLEY, Worksop.

The Cartwright Challenge Cup was offered for twelve varieties that have not been in commerce more than four years. A Gold Medal also accompanied the Cup. The only competitor was Mr. E. M. CROSFIELD, who has secured this award on previous occasions, and showed exquisite blooms of Caesar, Royal Lady, Mowgli, Orb, Dell, Aladdin, Dulce, Charles Surface, Orbit, Sarchedon, Ring Dove, and Anchorite.

In a smaller class for six varieties of new Daffodils there were five competitors. 1st, Mr. C. BOURNE, with shapely flowers of Merryman, 427. Queen of Hearts, Symphony, Golden Idol, and Raeburn; 2nd, Rev. JOSEPH JACOB; 3rd, Messrs. CARTWRIGHT AND GOODWIN.

There were three first-rate exhibits in a class for three seedling Daffodils. 1st, Dr. N. Y. LOWER, with beautifully fresh flowers; 2nd, Mr. J. PADLEY; 3rd, Rev. T. BUNCOMBE.

For the Herbert Chapman Poeticus Trophy, six *Poeticus* varieties that have not been in commerce more than four years, including at least one variety not yet in commerce, Mr. A. M. WILSON was placed 1st with exquisite flowers of Madrigal, Bret Harte, 709, 695, 439, and 706; 2nd, Mr. F. H. CHAPMAN; 3rd, Mr. C. BOURNE.

The Walter Ware Challenge Cup, offered for six varieties of *Triandrus* hybrids, was won by Mr. E. M. CROSFIELD with unnamed varieties; 2nd, Mr. W. A. WATTS.

A piece of plate offered as 1st prize in a class for three varieties of Daffodils, nine stems of each, was won by Mr. F. H. CHAPMAN; 2nd, Mr. JOHN POPE.

A new class was provided for six varieties of white or nearly white Trumpet Daffodils that have not been in commerce more than four years. The 1st prize consisted of a Silver Challenge Cup to be won three times (not necessarily in succession) before becoming the absolute property of the winner, and 20s. 1st, Messrs. E. H. KRELAGE AND SON, whose flowers of Mrs. Ernest Krelage and five unnamed varieties were much admired; 2nd, Mr. W. A. WATTS; 3rd, Mr. J. MALLENDER.

AMATEURS' CLASSES.

Competition in the amateur section was very encouraging, there being nine exhibits in the class for twenty-four varieties. 1st, Mr. S. F. STAFFURTH, Boston, for a very representative collection, which included good quality flowers of Ethelbert, White Lady, Cassandra, Pilgrim, Barcarolle, Noble, Gloria Mundi, Cygnet, Madame de Graaff, Beacon, and Whitewell; 2nd, Mr. E. H. WOOD, Ludlow, whose flowers of Occident, Horace, and White Lady were particularly good; 3rd, Rev. T. BUNCOMBE.

Mr. S. F. STAFFURTH also won 1st prizes in classes for (1) three varieties of *Incomparabilis* Daffodils (Division 2A); (2) three varieties of *Incomparabilis* Daffodils (Division 2B); (3) three varieties of *Barrii* Daffodils (Division 3A);

and (4) three varieties of *Barrii* Daffodils (Division 3B).

Mr. R. BRUCE WAITE was successful in classes for (1) nine varieties of Trumpet Daffodils, (2) six varieties of *Leedsii* Daffodils, and (3) three varieties of *Tazetta* and *Tazetta* hybrid Daffodils.

The Rev. T. BUNCOMBE had the best of ten exhibits in a class for six varieties of true *Poeticus* varieties, closely followed by Mr. S. F. STAFFURTH.

MESSRS. SYDENHAM, LTD., offered prizes for twelve varieties of Daffodils, three stems of each, no variety to cost more than 5s. per dozen bulbs. The 1st prize was awarded to Mr. A. TAYLOR, Olton, whose exhibit included creditable flowers of Leonie, Horner, Glory of Leiden, Grandee, Princess Mary, and Albatross. The same exhibitor also showed the best three varieties of double Daffodils.

Mr. R. S. WAITE beat seven contestants in a class for an arrangement of cut Daffodils on a circular table 2½ feet in diameter.

The Birmingham Botanical and Horticultural Society's Medals were awarded as follows:—Classes 3 to 27: Silver Medal, won by Mr. C. BOURNE with 84 points; Bronze Medal by the Rev. JOSEPH JACOB with 52 points. Classes 14 to 27 and 28 to 33: Silver Medal, won by Mr. E. M. CROSFIELD with 62 points; Bronze Medal by Mr. A. M. WILSON with 49 points. Classes 14 to 27 and 39 to 50: Silver Medal won by Mr. R. BRUCE WAITE with 73 points; Bronze Medal by Mr. S. F. STAFFURTH with 62 points.

The Barr Vase was won by Mr. R. BRUCE WAITE with 80 points.

AWARDS OF MERIT.

Narcissus Idris (for show).—A charming *Incomparabilis* variety, with a broad stout perianth and a rich deep yellow crown or cup. Exhibited by Mr. W. A. WATTS, St. Asaph.

Narcissus Mrs. Ernst Krelage (for show).—A lovely white Trumpet flower of great size and substance. Exhibited by Messrs. E. H. KRELAGE AND SON, Haarlem.

Narcissus Evangeline.—A *Leedsii* variety of great purity, with large, smooth, overlapping petals. Exhibited by Mr. H. D. PHILLIPS, Olton.

ASSOCIATION OF ECONOMIC BIOLOGISTS.

APRIL 17 and 18.—The general meeting of this association was held at the Royal College of Science on the above dates under the presidency of Professor Newstead, F.R.S.

Among the papers read at the meeting the following are of special interest to horticulturists:

OBSERVATIONS ON THE WINTER STAGE OF THE AMERICAN GOOSEBERRY MILDEW.

By Mr. E. S. SALMON.

The author drew attention to the need for investigations to determine the extent to which the winter fruiting stage (perithecial stage) is responsible for the first spring outbreak of the disease. Examination of perithecia in winter shows that many are dead or have failed to mature; such perithecia cannot be the cause of the spring outbreak. Perithecia which were formed earlier in the season do become mature. To prevent infection from this source bushes should be topped as early as possible in autumn, and the pieces should be burned.

In the course of the discussion on Mr. SALMON'S paper, Dr. Pethybridge stated that he had observed the bursting of perithecia in winter.

CELERY LEAF SPOT.

By Mr. F. J. CHITTENDEN.

The author gave an account of the results of his experiments in planting "seed" infected with the leaf-spot fungus (*Septoria petroselinii*) in sterilised soil. The seedlings produced from infected "seed" showed the presence of the disease in the cotyledons; hence it is to be inferred that the seedlings become infected by spores present on the "seed," i.e., on the fruit coats.

Dr. Pethybridge, in commenting on the paper, observed that 90 per cent. of the Celery "seed" in the market is infected with *Septoria*, that

American "seed" is often free from this infection, but that American varieties of Celery are not regarded as suitable for cultivation in this country. It happens not infrequently that although spores are present on the "seed" they are unable to germinate, and Dr. Pethybridge said that in two-year-old seed the spores would probably have all lost their infective powers. Unfortunately the germination of Celery seed falls considerably in its second year.

Treatment with 0.3 per cent. formalin or with hydrogen peroxide (10 or 20 volumes) for three hours is sufficient to kill the fungus without injury to the seed. Spraying with Bordeaux mixture checks the disease.

BACTERIAL ROT OF CELERY.

By Mr. H. WORMALD.

A soft, pulpy rot which sometimes affects Celery is found by Mr. WORMALD to be due—in part, at least—to a bacterium, *B. apivorus*. It is a wound parasite, and gains access to the leaf-stalk through abrasions caused by slugs, etc. Excessive moisture appears to favour the disease. Plants affected should be destroyed.

POTATO DISEASES.

By Mr. A. S. HORNE.

The author pointed out that much uncertainty exists as to the mode in which outbreaks of late blight (*Phytophthora infestans*) originates each year. Another subject which requires investigation is the cause of the high percentage of diseased tubers in crops the foliage of which has apparently been free from the disease.

Extended observations on leaf-blotch (leaf curl) indicate that this disease is not to be attributed to attack either by fungi or insects.

Seedling plants of the variety of the Potato President have been investigated by Mr. Horne and Professor Lefroy, and from their observations it appears that the malady is to be ascribed to environmental conditions proving unfavourable to the normal development of the plant.

THE ORGANISM OF POTATO SCAB.

By H. T. GUSSOW.

The author concludes that the organism responsible for scab is a member of the genus *Actinomyces* of the Schizomycetes (Bacteria).

BROWN OAK.

By Professor PERCY GROOM.

The author concludes that brown Oak, which occurs sometimes in common British Oak, is due to the action of a mould, *Penicillium glaucum*.

THE GOLF GREEN FLY.

By Mr. A. W. WESTROP.

A description was given of a fly, as yet unnamed, which has destroyed the Grass on putting greens of certain golf courses. The larvae form galls on the grass, and so far attempts to destroy the fly by means of insecticides have not proved successful. Smooth-stalked but not rough-stalked meadow Grass is attacked.

THE PHYTOPATHOLOGICAL CONFERENCE.

By Mr. A. G. L. ROGERS.

It was decided by the delegates at the Conference recently held at Rome to accept the principle of a convention, and the three following points were agreed to with little difficulty:—

1. Plants coming from a country with a certificate of health need not of necessity be separately examined.

2. All diseases to be specified.

3. Consignments should not be detained by the Customs at entry.

In the event of an actual convention the States concerned would be pledged to an official inspection of all gardens, nurseries, etc., offering plants for sale, and to give certificates; also, would undertake to establish one or more research stations.

It was unanimously decided to leave to each country the making of its list of scheduled pests; but some general rules were agreed upon. Thus it was prescribed that the list should be as restricted as possible, no pests should be included in cases where the hosts are absent from the country, and all pests which have been widely distributed in a country for years would be omitted. Pests included would be those easily conveyed by

living plants or parts of plants, epidemic in character, and destructive to the commercial value of the plant. In accepting the principle of a convention a step forward has been taken in the direction of international action, and unity of action based on a system of mutual trust.

KINGSBRIDGE DAFFODIL AND SPRING FLOWER.

APRIL 14.—The Spring Show of the Kingsbridge Horticultural Society was held in the Market Hall.

The 1st class in the schedule was for a collection of fifteen varieties of Daffodils, and the 1st prize was won by Mrs. GAGE-HODGE, with a very creditable exhibit. The same exhibitor was also successful in gaining the 1st prize for nine varieties of Trumpet Daffodils, six varieties of *N. incomparabilis*, three varieties of *N. Leedsii*, and a single bloom of *N. Barrii*. For nine varieties of Daffodils, the 1st prize was awarded to Mrs. G. M. YONGE. Mrs. D. M. YONGE gained the 1st prizes for three varieties of Poetaz and the special prize offered by Messrs. Cartwright and Goodwin for nine varieties of Daffodils; Mrs. SOLTAN-SYMONS was placed 1st in the class for three varieties of *N. poeticus*, and in those for a single bloom of Trumpet Daffodil and of *N. poeticus* respectively. The same competitor also won the 1st prizes for six varieties of spring flowers and for twelve varieties of flowering shrubs. The Rev. H. A. BRKS obtained several 1st prizes, namely, for six bunches of *Polyanthus*, for twelve varieties of flowering shrubs, for three plants of double Primroses, for three pots of Tulips, and for three pots of Lily-of-the-Valley. Other prizewinners were Miss CLARICE VIVIAN, Mr. C. J. ADIE, Lord ASH-COMBE, and Lady L. GREENE.

FOREIGN CORRESPONDENCE.

BRUSSELS WITLOOF CHICORY.

I SEND a sample of what we call Brussels Witloof. Few gardeners in England appear to know the merits of this fine vegetable. Witloof is a much improved variety of the common Chicory, and when properly cooked is equal to Seakale, whilst it is much less costly to grow. I fear gardeners are apt to be too conservative and to look askance at anything that has not been developed in England. I believe that Witloof might be grown as well in England as in Belgium and Holland. *H. Rabjohn, Twickel Castle Gardens, Delden, Holland.*

[The Witloof was very delicious when cooked as Seakale. An article on its cultivation in Belgium was published in the *Gardeners' Chronicle*, July 5, 1913, p. 6.—Eds.]

NOTES FROM SOUTHERN ITALY.

The spring here has been characterised by heavy hailstorms and rain; during March it rained every day. The leaves of the Tulips are mottled with white, and the earlier species will bear but few seeds. The finest of the Tulips (*T. praestans*) is now in flower, bearing three blossoms on a stalk. *T. ingens*, *T. Micheliana*, *T. Fosteriana*, *T. montana*, *T. Dammani*, and the lovely white *T. primulina* are also flowering well. I have a plant which I received from Holland under the name of *Tulipa orphanidea*, but I find it is not the true species, which bears yellow flowers with a dark purple base; it is nothing but the dull-red *T. Haageana*, a native of Palestine.

IRISES.—Under the name of *Iris Van Houttii* I received a plant some years ago from a friend. The standards are blue and the falls dark blue with a black blade; probably it is *I. iberica* × *olbiensis*. It grows here very well; the flowers are not so large as those of *I. iberica*, but are well shaped. Can anyone enlighten me as to its origin? The earlier Flag Irises are now at their best. The dwarf *I. rubromarginata* makes a lovely rockery plant.

Euphorbia biglandulosa and *E. Characias* are in flower. The latter species resembles *E. Wulfenii*, but is earlier in flowering. The blossoms are dark green with red ovaries.

Arisaema ringens and *Epidendrum macranthum* (pure white), and the Japanese purple variety are doing well on a shady rockery among plants of *Woodwardia*, *Cyrtomium*, *Pteris*, *Asplenium* and *Aspidium*.

Nymphaea vomerensis has just opened two fine flowers. It is a hybrid between *N. alba* and *N. pygmaea himalayensis*, and is the first (and latest) of my Water Lilies, which I grow only in tubs.

Calanthe viscolor nucerense is now quite over. It was in flower for over a month in an ordinary cool house, and the Japanese *Calanthes* are coming on. *Willy Müller, Naples, April, 1914*

DEBATING SOCIETIES.

NORTH OF SCOTLAND HORTICULTURAL AND ARBORICULTURAL.—A very large audience was present at the last monthly meeting of the North of Scotland Horticultural and Arboricultural Association, held in the Botanical Classroom, Aberdeen University, to hear a lecture on school gardening by Mr. Lewis Gavin, head master, Drumwhiddle School, Arnage. Mr. Gavin gave a résumé of the methods employed by teachers who give instruction in school gardening. He suggested a course somewhat after these lines:—From the age of twelve to fourteen the pupil might be exercised in digging, trenching, and manuring, and instructed in all methods of obtaining perfect tilth. His knowledge of the commoner kinds of garden produce, their requirements, and the best methods to employ to produce perfect specimens would be practically gained, while the aesthetic side of his nature would be developed in a love for harmonious colour effects in the massing of annual, biennial and herbaceous plants. He should be given an adequate training in English—a training that would fit the pupil to write logically and grammatically. Alongside of this his training in mathematics, mainly in the calculations of area and in content or bulk, in questions for commercial dealings, buying and selling, would go hand-in-hand. In his fourteenth year the pupil's knowledge of plant life, of soil formation, of the disintegrating effects of frosts and rains, leading him up to the chemistry of the soil, should be developed.

CROYDON AND DISTRICT HORTICULTURAL.

At the meeting of this society held on March 17, Mr. W. Swan, of Thorncote Gardens, Staines, gave a lecture on "Bush Fruits," dealing with Apples, Black, Red, and White Currants, Raspberries, Gooseberries, Loganberries, and Blackberries.

BRITISH GARDENERS' (Leamington Branch).

—A meeting of the Leamington Branch of the B. G. A. was held on March 28, when the general secretary, Mr. Cyril Harding, gave a lecture on "The Evolution of Horticulture."

BRISTOL AND DISTRICT GARDENERS'.

—A meeting of this association was held on March 28, when Dr. Smith presided. The lecturer for the evening was Mr. Ayres, who read a paper on "Vine Culture." The meeting held on the 9th ult., Mr. J. Bastin presiding, was of especial interest, being the occasion of the annual visit of the Bristol Amateur Horticultural Society. Mr. Webber, secretary of the visiting society, read a paper, entitled "Ethics of Horticulture," questions being asked and satisfactorily answered by the lecturer, who was accorded a hearty vote of thanks. The prizes offered by Dr. Shaw, for two pots of *Schizanthus*, were won by Messrs. Hayball, Bird, and Spry, in this order.

WARGRAVE GARDENERS'.—At the last meeting of this association, Mr. E. Feltham (of Messrs. Waterer, Sons, and Crisp, Ltd.), delivered a lecture on "The Cultivation of Certain Alpines." He referred to more than twenty varieties, gave cultural directions, and explained how each could be used to the best advantage.

BIRMINGHAM AND MIDLAND COUNTIES GARDENERS'.

—At the meeting of this society, held on the 6th ult., Mr. B. Pugh, of Messrs. Carter and Co., Raynes Park, delivered a lecture on "Hardy Flowers from Seed for Town Gardens," illustrated with numerous handpainted lantern-slides. The lecturer stated that hardy border flowers raised from seed are best grown in boxes and transplanted when the seedlings become established. The boxes should contain soil of poor quality mixed with a little decayed cocoanut fibre. *Antirrhinums*, *Ageratums*, *Carnations*, *Dahlias*, *Canterbury Bells*, *Nemesias*, *Poppies*, *Nasturtiums*, *Phlox Drummondii*, *Scabious* and *Verbenas*—in fact, all herbaceous border plants would, he contended, flourish in either town or country gardens, provided the soil was well dressed with lime and enriched with plenty of manure.

DUMFRIES AND GALLOWAY GARDENERS'.

—The closing meeting of the session was held on the 25th ult., Mr. S. Arnott in the chair. Mr. Oliver, Drumlanrig Castle Gardens, Dumfriesshire, gave a lecture on the Royal Gardens, Kew. Mr. Oliver, who was a member of the Kew staff for four years, gave an admirable account of the national gardens, and the lecture was illustrated by a number of lantern views.

MARKETS.

COVENT GARDEN, April 29.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices. Includes items like Anemone St. Bridget, Arums (Richardias), Carnations, Daffodils, Eucharis, Gardenias, Gladioli, Iris, Lilies, and Narcissus.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage and ferns and their prices. Includes items like Adiantum Fern, Agrostis (Fairy Grass), Asparagus plumosus, and Carnation foliage.

Foreign Flower Market.

Table listing foreign flowers and their prices. Includes items like Anemone fulgens, Lilac white, and Marguerites.

REMARKS.—Prices for white flowers have advanced considerably. White Stock from the South is arriving in much smaller quantities, and this has sent up the price of Pelargoniums. A few white Azaleas remain in the market, but the quality is getting very poor, although the prices are doubled this week. Carnations are highly priced, especially white ones. Lillium Harrisonii and Richardias are much cheaper, but Lily-of-the-Valley is getting short, and prices may advance during the next few days. The white flowers chiefly used for making-up purposes are in greater demand. There is nothing to take the place of Stock or Pelargoniums at present, which is the cause of the sudden rise in price. Stephanotis, Eucharis, and Gardenia are more plentiful. Sweet Peas are coming to hand in better

condition, but pink varieties are still short. Spanish Iris is more plentiful, and is selling better. Gladioli are still very poor; the best variety is Peach Blossom. Iceland Poppies are the latest arrival, but these are limited to a few bunches, and are soon bought up. There is still a glut of all Roses, and prices remain exceptionally low. The consignments of flowers from Guernsey chiefly consist of St. Brigid Anemones, Irises, Ixias, Darwin Tulips, and Gladioli. Darwin Tulips from this quarter are poor, compared with those from English growers. There is an abundant supply of Forget-me-Not, White Gypsophila and Asparagus plumosus, A. Sprengeri, Smilax, and Adiantum Fern. French Myrtle, French Fern, and several other varieties of hardy foliage are now on sale. Single Daffodils are practically finished; a few English-grown Grande Monarch and a few boxes of Emperor from Scotland are the only sorts arriving. The first consignment of Double White Narcissus should come to hand next week. Buyers are daily making inquiries for this useful variety.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various plants in pots and their prices. Includes items like Aralia Sieboldii, Araucaria excelsa, Asparagus plumosus, Begonia, Cacti, Cinerarias, Croton, Erica, and various Ferns.

REMARKS.—Business in this department continues very brisk. Genistas and Azaleas are practically finished, but Ericas are increasing in variety. Both white and coloured Stocks are arriving in good condition. White and pink Hydrangeas are more plentiful, but blue ones are very scarce. Polyanthus and Rambler Roses are making a bright show, and are selling more freely. There is a good supply of all flowering plants.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices. Includes items like Apples (American, Australian), Grape Fruit, Lemons, Lychees, Mangoes, Melons, Nuts, Oranges, Peaches, Pears, and Plums.

REMARKS.—Apples from Colonial sources are a shorter supply; the s.s. "Osterley" brought about 7,000 cases. The most attractive varieties are from Western Australia. There are also fewer Pears from the Cape. Shipments this week from the Cape, per s.s. "Edinburgh Castle," consisted of about 22,000 packages, the bulk being of Grapes. The new crop of Muscat of Alexandria and Black Hamburg Grapes from home growers is available. English Peaches are now arriving in the market. Strawberries are sent in larger quantities daily. There is a fairly plentiful supply of Melons and Figs. Green Gooseberries are on sale, and Cherries are arriving from the Continent. Tropical Fruits on sale include Custard Apples, Loquat, Granadillas (Passion fruit), red and yellow-coloured Bananas, Pineapples, Oranges, Lemons, and Grape Fruit. Tomatoes from English growers are an increasing quantity daily; whilst Marrows, Carrots, Asparagus, Turnips, Beans, Peas, Mushrooms, Cucumbers, Seakale (natural grown), Cabbage, Broccoli, and New Potatoes are all plentiful. Egyptian Onions are very dear.—E. H. R., Covent Garden, April 29, 1914.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices. Includes items like Artichokes, Beans, Beetroot, Carrots, Celery, Chicory, Cucumbers, Endive, Garlic, Horseradish, Lettuce, Marrows, and various Onions.

Old Potatoes.

Table listing old potato varieties and their prices. Includes items like Blacklands, Dunbar-Red soil, and Grey soil.

New Potatoes.

Table listing new potato varieties and their prices. Includes items like Jersey, Lisbon, and Teneriffe.

REMARKS.—Trade is not quite so good for old Potatoes, but consignments are equal to the demand. Several varieties of New Potatoes are arriving, and these will make a considerable difference in the sale of old tubers. New Potatoes will be cheaper almost daily for a few weeks.—Edward J. Newborn, Covent Garden and St. Pancras, April 29, 1914.

GARDENING APPOINTMENTS.

Mr. T. A. Stewart, for the past 7 years at Dover House, Roehampton, formerly as Orchid Grower, latterly as Foreman, as Gardener to J. PIERPONT MORGAN Esq., at Wall Hall, Watford, Herts.
Mr. A. B. Macgregor, formerly of Dover House Gardens, Lambton Castle, Claremont, and St. Oyst's Priory, as Superintendent on the estate of J. PIERPONT MORGAN, Esq., at Glenoave, Long Island, U.S.A.
Mr. John Finnie, for the past 12½ years Gardener at Summerhill, Shandon, Dumfriesshire, as Gardener to H. PHILIPSON, Esq., Stobo Castle, Peeblesshire. [Thanks for 2s. 6d. for R.G.O.F. box.—EDS.]

NEW INVENTION.

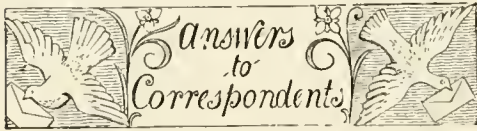
MODEL FOR TEACHING TRENCHING AND DIGGING OPERATIONS.

HORTICULTURAL instructors will welcome a classroom aid in teaching double digging and trenching, devised by Mr. W. H. North, instructor under the L.C.C. For the complex method of lettering the several spits he has substituted the use of wood blocks 6 inches by 1 inch

by 1 inch, painted in different colours to represent the different spits. The top spit is painted black, the middle spit red, and the bottom spit is unpainted. By this mode of demonstration students easily learn an operation, in itself simple, but difficult to grasp from a many-lettered diagram.

Obituary.

CHARLES M'IVER.—Mr. Charles M'iver, formerly gardener at Lincluden House, Dumfries, died at Annan on the 20th ult. at the age of 70. He was a skilful gardener and was specially successful in the cultivation of stove and greenhouse plants.



ANEMOPSIS CALIFORNICA: *E. B. Anderson.* This plant belongs to the Natural Order Piperaceae, and has no resemblance to *Anemopsis macrophylla*, a member of the Ranunculaceae. Its proper name is *Houttuynia californica*, and it will succeed in any light, rich soil in a moist, partially-shaded situation.

BANANA FRUITING IN A CONSERVATORY: *E. G.* The temperatures you mention—60° at night and 75° to 80° in the day—are suitable for winter, but somewhat low for the present season, which might account for the fruits failing to swell at the base of the bunch. When the temperature is too low it is often difficult to get the lower parts of the bunches to swell or finish; especially if the deficiency has occurred when the fruits are first forming, in which case they often decay away altogether. Another frequent cause of failure is an excess of moisture in the house during the winter. The roots are very fleshy, and the plants should be kept rather dry from November to March. You do not state whether your specimens are planted out or growing in tubs. There is always a certain amount of difficulty in finishing off the fruits if planted out, as the absence of root restriction makes them difficult to feed. As you cannot maintain a higher day temperature than 75°, it would be well to keep the house rather close; but overhead damping should be sparingly done, and only after bright sunshine. It is probably a question entirely of temperature, not of food. There was a good deal of dull, chilly weather in March and April, when the fruits were developing; we should not advise you to give an excessive amount of food now, as it would only tend to aggravate the evil by forcing into unnatural growth the few fruits which have formed. If you could employ more heat moisture could be increased in proportion, and the plants of *Musa Cavendishii* would fruit in twelve months. Your night temperature is, if anything, rather low for plants at this time in bearing, but if the fruits set you should, with care, obtain a good bunch.

CUCUMBER STEM DISEASED: *A. McK.* The plants are affected with canker, and any that show signs of the disease should be removed at once as they invariably die, and may spread the disease. This is a notifiable disease according to the regulations of the Board of Agriculture and Fisheries.

CYANIDING VINES IN FULL GROWTH: *E. P. S.* It will not be safe to use cyanide in a vinery in summer until the main leaves on each shoot are firm in texture, otherwise damage may be done. A cold evening should be chosen for the operation, and the flowering plants in pots should be removed from the house. The surfaces inside the vinery must be quite dry, and full ventilation permitted until you are ready to cyanide. This is to prevent any condensation of moisture on the foliage before the gas has generated. The quantities to use are 3 oz. cyanide, 5 oz. sulphuric acid, and 8 oz. water per 1,000 cubic feet contents. Do not fumigate when the vines are in bloom. If the condi-

tions in the vinery are perfect probably only the tips of sub-laterals or very soft young leaves may be injured, but this is of little consequence so long as the main foliage on the full length of each shoot is unharmed. The house should be opened one hour after the operation and a little air left on all night. You must employ earthenware receptacles. The acid would destroy the zinc soup plates.

FIGS DISEASED: *H. R.* The Figs are attacked by a fungus—*Botrytis*. The disease is favoured by moist conditions and extremes of day and night temperature, the latter causing moisture to be deposited by condensation. Keep the house drier and ventilate freely.

FUNGUS ON A SAVIN TREE: *W. K.* The jelly-like fungus called *Gymnosporangium juniperinum* is a parasite, and as its mycelium is perennial in the affected branches these should be removed. The fungus is not likely to have killed the tree.

GARDENING EMPLOYMENT IN AMERICA: *Enchantress.* The hours for gardeners and assistants in U.S.A. are from seven to five. A night fireman is kept during the fall and winter months, and at other times the assistants take turns in looking after the furnace. As to Sunday duty, turns are taken according to the number of hands employed on the place. The average hours in commercial establishments are as a rule from seven to six. Gardeners settling in America are advised to work for at least two years before assuming a head position, as the methods of growing, propagating, and management of plants in the United States differ much from the practices that obtain in this country. Several kinds of vegetables are grown there which are not cultivated here.

KENTIA BELMOREANA: *J. C.* The red points on the Palm stem are the fruits of a fungus called *Nectria sanguinea*.

NAMES OF PLANTS: *T. S.* White variety of *Begonia semperflorens*.—*J. A. I.* *Kerria japonica flore pleno*; 2, *Forsythia suspensa*; 3, *Pyrus floribunda*; 4, *Aucuba japonica* (male form); 5, *A. japonica* (female form); 6, *Skimmia japonica*; 7, *Sprekelia formosissima*.—*G. H., Curry.* 1, *Cytisus monspesulanus*; 2, *Amelanchier canadensis*; 3, not recognised, send when in flower; 4, *Elaeagnus pungens variegata*; 5, *Euonymus pendulus*; 6, *Akebia lobata*.—*C. S.* The fungus is a *Morel*—*Morchella conica*, one of our rarer species.—*G. H. H. S.* *Oxalis cernua*.—*W. K. T. L.* *Dendrobium thyrsiflorum* and *Fritillaria Melegris*.—*Busford.* *Rhododendron ciliatum*.—*J. L. H. I.* 1, *Salvia* sp., specimen too scrappy to identify; 2, *Cadamine pratensis flore pleno*; 3, *Macrotomia echioides*; 4, *Saxifraga cordifolia*; 5, *Epimedium pinnatum*.—*G. D. A. I.* 1, *Ruscus aculeatus*; 2, *Daphne Laureola*; 3, *Ribes alpinum*; 4, *Lathyrus cyaneus*; 5, *Alyssum saxatile*; 6, *Phlox Stellaria* var. *ilacina*; 7, *Helianthemum vulgare* var. *cupressus*; 8, *Anemone Pulsatilla*; 9, *Arenaria balearica*; 10, *Adiantum cuneatum elegans*; 11, *Pelargonium "Clorinda"*; 12, *Adiantum formosum*.—*F. R. D. I.* 1, *Rosa Banksiae*; 2, *Lithospermum purpureo-coeruleum*; 3, *Sedum rupestre*; 4, *S. praealtum*; 5, *Spiraea Thunbergii*; 6, *S. cantonensis*.—*A. R.* *Senecio (Kleninia) articulata*.

PEACHES DISCOLOURED: *T. D. S.* The appearance of the fruits at first suggested Peach mildew, but a critical examination reveals no trace of disease. An excess of water at the roots would cause the rusty appearance, but whether the plants have been over-watered or not only those on the spot can determine.

PEACHES DROPPING: *J. S.* The trouble is due to there being a lack of moisture at the root when the fruit was setting.

RASPBERRY CANES DISCOLOURED: *C. T.* The trouble is due to some external cause, and not to disease.

SCHIZANTHUS UNHEALTHY: *A. E. U.* The trouble is not due to disease; the culture has been wrong in some detail, and only those on the spot could say in what respect you have erred.

SEEDS: *H. S. E.* The seeds are of Ivy, and have passed through the intestines of birds.

STREPTOCARPUS: *Foreman, Surrey.* If the plants are required to flower by May 17 next it would be as well to pick off any flowers that are open now. Those that develop in a fortnight or three weeks before the date mentioned will provide a good crop, although they may be a little longer in very dull weather. Plants of *Streptocarpus* remain in flower for a long time, especially when kept growing freely by judicious feeding. They can be retarded by lowering the temperature and shading in bright weather.

SULPHURIC ACID FOR ROSE MILDEW: *W. L. L.* The proportions are sulphuric acid 1 part to 1,000 parts water. The acid should be pure, as the commercial product contains impurities that are injurious to tender foliage.

TULIPS FAILING: *W. B.* The plants are attacked by *Botrytis* the fungus that causes "Lily" disease. Burn any of the plants that are badly crippled, and, when lifting the others for storing, dust them with sulphur and quicklime in equal proportions.

VERONICA HULKEANA: *A. T. H.* The plants are attacked by a fungus, *Peronospora grisea*. Spray them at intervals of four days with a solution of liver of sulphur—1 oz. in 4 gallons water—until the mildew disappears.

VINE SHOOT DYING: *Serp., Henley.* The border contains too much organic manure, which has prevented the roots from starting as early as they should have done. Unless in a very weak condition Vines always produce fresh shoots before roots, consequently they have to depend, for a time, on material stored up in the buds and stems during the previous season. When the border is in an unsuitable state, and there is irregularity in the growths, the stronger buds contain the larger amount of this stored material, and might hold out till the delayed root formation has commenced, while the weaker shoots, having exhausted the stores in their immediate vicinity, might collapse. As you have a strong and apparently healthy shoot at the base of one of the Vines you should train that up to form a new rod, for the older one will probably be of little use. If there is any mulching material on the surface of the border it should be removed, and you might apply wood ash or potash salts and bone dust or basic slag, with a sprinkling of lime, during the present growing season, but no nitrogenous matter.

WASPS: *W. Baker.* Thanks for nest of wasps received. April 19 is not particularly early for wasps to begin nesting, but, of course, the weather of March and April regulates the re-appearance of the queens after hibernation, a warm spell bringing them out any time during April, or even during late March, if the warmth is great enough and prolonged for a day or two. Every queen killed at this season means the absence of anything from 5,000 to 50,000 wasps later on, and it would probably pay fruit-growers and others interested in any district where the queens appear exceptionally numerous to provide a small fund from which to pay a penny or twopenny reward to school children for every queen wasp brought in before the middle of May. Someone capable of recognising the queens should be the judge, in order that early workers do not get paid for, as has happened on some occasions. It is just as well to remember, however, that wasps consume vast numbers of flies of all kinds, and unless they are exceptionally numerous it is not desirable to attempt their extermination, lest a worse plague befall. Correspondents sending wasps' nests should send also the queens belonging to them, so that they may be identified with certainty.

Communications Received—*E. T. E.*, Toronto.—*W. S. R.*—*I. Masseur*—*E. A. B.*—*E. S. S.*—*P. Blair*—*W. H. D.*—*F. T. J. D.*—*Sir D. P.*—*A. M. C.*—*Nicholson*—*Rev. D. R. W.*—*W. F. T. H.*—*J. F. C.*—*W. Botting*—*H. M. Naples*—*E. T. C.*—*Toronto*—*W. F. R.*—*C. G. B.*—*A. G.*—*H. B.*—*H. T. S.*—*G. I. B.*—*T. C.*—*A. H.*—*W. J. W.* & *Co.*—*W. H. W.*—*F. W. Cave*—*R. P. B.*—*C. P.*—*A. T.*—*S. H.*—*H. F. Z.*—*A. Tomlinson*—*A. C. C.*—*H. J. C.*—*Nimrod*—*W. L.*—*J. C.*—*B.* and *McK.*—*W. J. B.*—*T. W.*

THE
Gardeners' Chronicle

No. 1,428.—SATURDAY, MAY 9, 1914.

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THE HISTORY OF THE STRAWBERRY.

IT was pointed out in a recent article on the genetics of the Strawberry (*Gardeners' Chronicle*, March 14, p. 186) that, although the origin of the present day fruit is complex and uncertain in detail, nevertheless we know and are able to discover more with respect to the evolution of this fruit than with respect to other cultivated food-plants. How much is and may be known is illustrated in an admirable article by Mr. E. A. Bunyard in the current number of the *Journal of the Royal Horticultural Society* (39, 3, April, p. 4). Our knowledge is due to the fact that the development of the Strawberry is comparatively recent, although, of course, *Fragaria vesca*, L. has been known and grown for many hundreds of years, and has been described or referred to by horticultural writers from the days of Pliny onward. From the casual comment of Shakespeare, "the Strawberry grows underneath the nettle, And wholesome berries thrive and ripen best Neighbour'd by fruit of baser quality," it may be inferred that so short a time as 300 years ago the Strawberry was not a fruit which raised the enthusiasm of the gourmet to the extent which it does at the present day.

A fact of cardinal importance is insisted upon by Mr. Bunyard—that *F. vesca* is no exception to the rule that wild plants vary greatly in their natural state. Of this Strawberry, a white form, a sterile form, and a large-fruited variety have been re-

corded in a wild state, and we may be sure that gardeners of the past were quick to avail themselves of the first and last of these variations.

Mr. Bunyard gives evidence in support of the view that the Strawberry was in cultivation in France in the fourteenth century, and we may take it that its present state is the result of some five or six centuries of selection and hybridisation.

In support of our suggestion that in its early days the Strawberry was not the delicious fruit that it is to-day, we may cite Mr. Bunyard's observation that Olivier de Serres, writing in 1600 (*Théâtre d'Agriculture*), values the Strawberry as much for its decorative use as for its fruit. De Serres recommends that plants should be taken from woods, and states that if transplanted to fresh soil their fruits increase in size, this improvement being ascribed to freedom from competition and to the effect of removal of runners.

Among the varieties of *F. vesca* which have appeared Mr. Bunyard mentions *F. aflagellis*, a runnerless form of compact habit; *F. monophylla*, first figured in a picture by Holbein and known to have arisen both among wild and cultivated Strawberries; the Alpine Strawberry, characterised by its habit of producing autumn fruits and first mentioned in 1530. Although the subject of controversy, it is probable that the Alpine Strawberry is not a garden sport but a true Alpine, and that it was introduced into gardens late in the eighteenth century. This form has thrown many varieties, the chief of which is the runnerless form known as "Gaillon." *Reine des Quatre Saisons*, a large-fruited form, was introduced in 1855.

The view has been expressed already in these pages that many wild plants suffer in their natural state from an inevitable repression, and that the larger growth which they make when brought into cultivation is due not to variation in a strict sense, but to a removal of natural disabilities. This view receives remarkable support from the results of experiments with Alpine Strawberries carried out by Henri de Vilmorin and cited by Mr. Bunyard; wild Alpine Strawberries growing in the neighbourhood of Barge-mor were planted by Vilmorin in his experimental garden and produced in the second year fruit equal in size to that yielded by the "improved varieties, such as Janus, Belle de Meaux, and Berger."

The other European species—*F. elatior*, the Hautbois Strawberry—was grown in gardens in the sixteenth century, and gave rise to varieties—Royal, Black, Prolific, etc.—which, whilst retaining the general characters of the species, were sufficiently distinct and toothsome to acquire a certain measure of popularity. The epoch-making period in the history of the Strawberry is, however, the early seventeenth century; for at that time the Virginian Strawberry *F. virginiana* was introduced—probably by Tradescant.

Although cultivated widely, more than 100 years elapsed before variations were recorded, and, indeed, *F. virginiana* had

to await the advent of the Chilian Strawberry *F. chiloensis* before its flavour, mated with the size of the latter, could yield fruits which are one of the chief material pleasures of early summer. It is fit that this *fraisier* should have been introduced by a French officer named Frezier, who found the Chilian Strawberry in both wild and cultivated state; it is also remarkable that, as Mr. Bunyard points out, one of Frezier's imported Strawberries planted near Brest was the origin of the large Strawberry-growing industry which is carried on in Brittany. All Frezier's plants were females, and it was not till Duchesne fertilised the Chilian with the Hautbois that fruit was obtained.

Mr. Bunyard has done a valuable service to the history of this fruit in settling the vexed questions of the origin of the Pine or American Strawberry, and tracing its parentage on one side to *F. chiloensis*.

The concluding part of Mr. Bunyard's study is devoted to the recent history of the development of the Strawberry and to a description of the parts played by Duchesne, Knight, Michael Keens, and Laxton, in hybridising descendants of the Virginian and Chilian Strawberry.

THE MARKET FRUIT GARDEN.

UP to April 11 inclusive my rainfall measurement was 1.02 in., and the only other fall to the end of the month was 0.01. The total for the month is not smaller than it has been in some previous seasons, but the practically uninterrupted drought of nineteen days, with blazing sunshine on all but two days, is unusual. Although the wind was from the north-east or east most of the time, it was seldom strong, and the sunshine kept the temperature high for April until the 30th, when there was a great fall. While Plums were in full blossom, there was no reason to complain of the weather, unless the continued dryness is to be regarded as adverse to the pollination of the blossoms. But the strong north-easter of the last day of the month, not tempered by sunshine, was a bad change for Apple and late Pear blossom. Almost invariably we have this bitterly cold wind when Apples are blossoming; but it may be hoped that the infliction will prove shorter than usual.

FRUIT BLOSSOMING.

The general promise of a full blossoming season for all kinds of fruit, referred to a month ago, has been amply realised. Even the Monarch Plum made a fair show on the whole, the scantiness mentioned last month having been found applicable only to some oldish trees, which in some former years had been badly injured by bud-eating birds. All the varieties of Pears grown by me were very full of blossom, and Cherries never made a better show. The same may be said of Gooseberries and Black Currants in my orchards. Red and White Currants are not remarkable. As to Apples, only some old and dwarfed trees of Lane's Prince Albert and Dumelow's Seedling, and some Gascoyne's Scarlets, all of which were heavily cropped last season, have failed to show from fair to dense blossoms on trees old enough to render such displays desirable. The profusion of blossom on Beauty of Bath, Warner's King, Bismarck, Lord Derby, Golden Spire, Early Julyan, Domino, Cox's Orange Pippin, and Allington Pippin is very striking; while Blenheim Pippin, Bramley's Seedling, Norfolk Beauty, James Grieve, and rather young specimens of Lane's Prince Albert

have quite full displays. Profuse blossom is not an advantage. It is a great tax on the vigour of the trees, and, when it sets freely, nothing but very severe thinning will secure fruit of full size or save the trees from serious exhaustion.

CHANCES OF POLLINATION.

So far as the fertilisation of blossoms of all kinds of fruit is concerned, there should be a good setting, for I have never seen bees working better day after day, so long as the sunny weather lasted. The number of bumble bees strikes me as quite extraordinary.

INSECT INFESTATION.

The greatest danger to the Apple crop at present observable in my orchards is the worst attack of Apple sucker that I have ever had. This was anticipated from the observation of swarms of the Psylla flying among the trees quite

sucker attack is worst on old trees, and is much more serious on some varieties than on others. Beauty of Bath, as usual, is one of the worst sufferers, Lord Derby, Lady Sudeley, Lord Grosvenor, and Lane's Prince Albert being, among others, severely attacked. As a rule, varieties with short-stalked blossoms are most infested, Lane's being an exception. These also are the most difficult to help materially by spraying, in consequence of the compactness of their bunches of blossom buds.

In addition to the insects named above, there are to be found in the trusses of Apple blossom here and there one or more of active little yellow bugs, with prominent black eyes. These Mr. F. V. Theobald, of Wye College, identifies as Capsidae, and describes as very harmful. The strong soft soap wash kills those which it wets thoroughly. These pests appear to have received attention in this country only recently.

in ten, at any rate before the blossom falls. This pest is sheltered to a great extent in the axils of the leaves and blossom buds, while the numerous globules of honeydew which it secretes shelter it further in many cases. It is of hardly any use to spray against the sucker until the blossom buds are well separated, which is not until they are on the point of expanding. Indeed, a few will be expanded by the time that nearly all will be sufficiently separated; but this does not matter much, if at all, when only a soft soap or nicotine wash is used. At the best, there will be a number of backward trusses of blossom buds which will be too compact for effective spraying. It is necessary to keep dodging about among the different varieties in order to catch each just when it is ready, and, unless the grower has a very strong staff of sprayers, he may be unable to get all sorts done before some are in blossom. My trees are sprayed with a strong soft soap wash which will kill any sucker, aphid, or half-grown caterpillar which its wets well, and the trees are drenched. Yet, on examination two days after the operation, I find at least half a dozen live pests to one dead enemy. When the blossom has fallen the operation will need repetition on some varieties. Then there will be a better chance of reaching the suckers. At first they are difficult to find, though their globules of honeydew indicate their presence quickly. The strength of the wash used is 12 lb. of soft soap to 100 gallons of water, which is about double the strength commonly recommended. Formerly Quassia was used with less soap, but has been discarded because on trial alone of eight times the strength recommended for Quassia extract, it entirely failed to kill aphid. For generations Quassia has been commonly used, probably without any result, the money spent on it being wasted. As to nicotine, apart from its prohibitory price, my experience is that, in ordinary strength, it does not kill aphid as well as soft soap does.

SOFT SOAP AND ARSENATE OF LEAD.

As the strong soft soap wash kills young caterpillars well wetted by it, there is no need to add arsenate of lead until after the blossom has fallen, when it is needed to poison the food of the codling moth and leaf-eating caterpillars, the latter by that time approaching their full size. In one list of spray stuffs it is stated that arsenate of lead should not be mixed with soft soap or any other alkaline substance. This implies that two sprayings must be applied instead of one when either caterpillars and sucking insects or either with scab require treatment. But I have used arsenate of lead mixed with soft soap or with lime-sulphur for years with impunity, except on one occasion, when a particular brand of soft soap was used, and then scorching of foliage and defoliation resulted. On that occasion, too, the arsenate of lead and soft soap were mixed in their concentrated forms, whereas it is safer to add the former to the diluted soft soap wash. It is a serious matter to have to spray extensive orchards twice instead of once after the fall of the blossom. Probably the soft soap which did harm when mixed with arsenate of lead contained an excess of caustic potash, which liberated arsenic. The best soft soap should be used.

A DANGEROUS REPORT.

A report from California to the effect that spraying Apple trees in blossom with nitrate of soda at the rate of 1 lb. to one gallon of water has produced marvellous increases in crops of fruit, is calculated to do much harm. It seemed incredible that so strong a solution could be safely used on foliage or blossom buds, and a trial on a small scale proved that it killed in twenty-four hours or less every leaf or truss of blossom buds which it wetted. A correction has since appeared stating that the spraying should be done to dormant trees only. *A Southern Grower.*

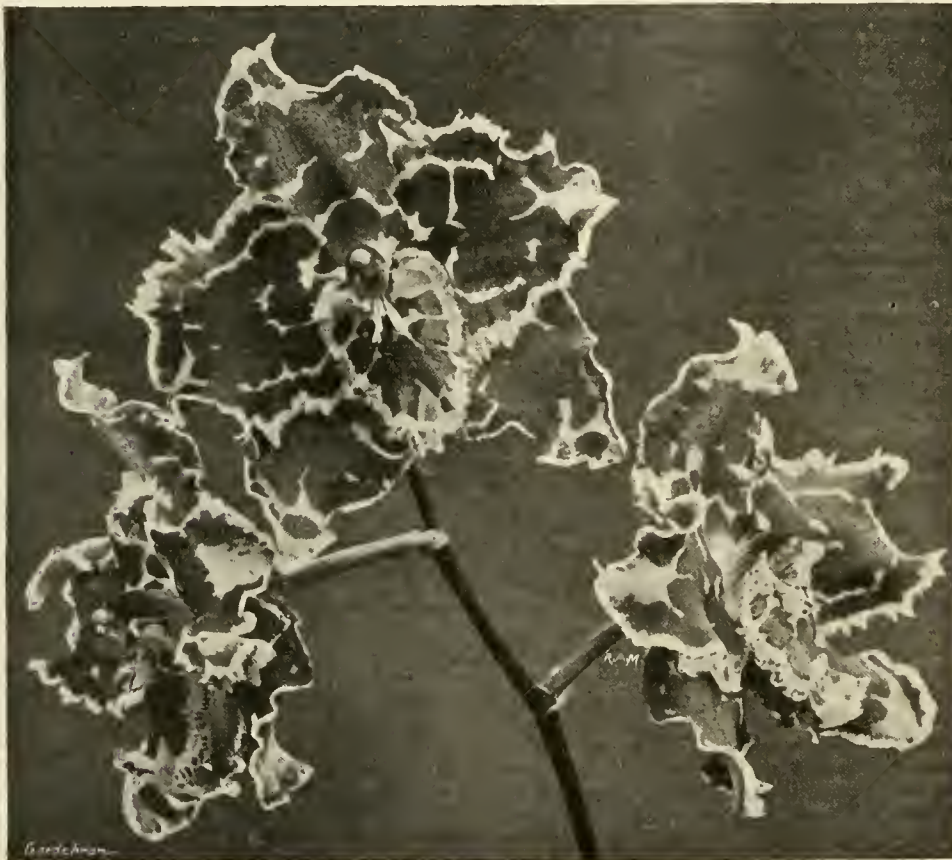


FIG. 136.—ODONTOCLOSSUM LAKINAE: PETALS AND SEALS BLOTCHED WITH CLARET COLOUR TINGED WITH VIOLET.

(See p. 311.)

into the winter. On the other hand, with me there is the most remarkable immunity from aphid attack that I have ever enjoyed. Hardly any aphides have been found on Plums, and out of more than a thousand trusses of Apple blossom examined with a lens, only eight contained an aphid. Even Roses are almost entirely free at present. This immunity, which does not appear to be at all common, as there are many reports of aphid on both Plums and Apples, is a complete mystery. It cannot be accounted for by spraying, as it applies equally where trees were sprayed with lime or lime-sulphur, shortly before the buds burst, and the latter wash has been used year after year without preventing the great aphid infestations which have been usual in my orchards. Moreover, the lime was nearly all washed off the trees two or three days after its application; and, again, separate trees purposely left unsprayed are as free from the pest as those which were limewashed. Fewer thrips than usual, and, I think, fewer caterpillars, have been found in the blossom trusses of Apples. The

THE FORLORN HOPE OF SPRAYING.

We fruit-growers keep on spending large amounts of money in spraying without any reasonable hope of more than partial benefit. It is doubtful whether any winter wash destroys the eggs of any insect. A caustic wash, such as caustic soda, will go far towards the destruction of colonies of the woolly aphid, commonly called "American blight," and other washes will kill the scale insect. For such purposes, as well as for keeping trees clear of moss and lichen, winter spraying is well worth while. But it has never been actually proved that any winter wash destroys the vitality of aphid or sucker eggs, or keeps them from hatching. That spraying Plums or Apples against the leaf-curling aphid after an attack has caused the curling is a waste of time and money is so obvious to me that I have given it up entirely. The case of the apple-sucker is different, as it is not viviparous, as the aphid is; but it is doubtful whether a single spraying, however well done, kills more than one sucker

ORCHID NOTES AND CLEANINGS.

ODONTOGLOSSUM LAKINAE.

In the *Gardeners' Chronicle* for November 8, 1913, p. 317, this beautiful hybrid Orchid was described as "one of the largest, best shaped, and richest in colour of any known *Odontoglossum*." The plant was exhibited by Messrs. E. H. Davidson and Co. at the meeting of the Orchid Committee on April 7 last, when the photograph reproduced in fig. 136 was taken.

The ground colour is white, shaded by the deep violet tint on the backs of the segments, the blotching claret-coloured, with a tinge of violet. It was named in compliment to Mrs. Lakin, the wife of Mr. J. B. Lakin, managing director of the firm of Messrs. E. H. Davidson. This fine *Odontoglossum* is another addition to the ranks of those classed as "parentage unknown." Where any doubt exists (and we fear there are doubts in many cases in which attempts are now made to give the parentage) it is much more satisfactory to leave the question open, for after all the merit of the flower is the matter of chief importance to the gardener. Nevertheless, we counsel all raisers to take every possible means of accurately recording the parentages of their hybrids as a means of rendering possible the elucidation of the scientific points in the complex problems of hybridisation.

MESSRS. WILLIAM BULL AND SONS' EXHIBITION.

THE annual spring exhibition of Messrs. W. Bull and Sons was first held in 1881. The show was formerly devoted entirely to the display of Orchids and new plants, but in more recent years the decorative plants of the season have been used as a setting, and the *Hippeastrums*, for which the establishment is noted, have increased in number until at the present time the show is largely composed of those plants. At this year's show, which opened on the 7th inst., about 600 specimens in full bloom were arranged along the paths beneath the stately Palms and Tree Ferns. The plants are usually massed in groups of one colour, a method which renders them more effective than when they are mixed indiscriminately. At the same time it shows the constancy of some of the new tints of plum colour, mauve, and salmon-red, several of each being arranged together. The space at the Chelsea Winter Gardens has been enlarged this season by including the walks on the office side of the central path. Here the most distinct *Hippeastrums* are Blush Rose, a white variety with rose flush; The Bride, white; Kathleen, large and of fine shape; and Clarice, white, prettily marked with mauve; Winifred is a light plum colour; Queen Mary, pure white; Princess has a white centre, and the petals are tinted rosy-mauve; Queen Alexandra is white, the outer parts being flaked with salmon-scarlet. King George V. is the best dark red; it has two spikes each of four immense flowers of fine shape. A group of light shades is distinguished by The Pearl, Rosamond, and Bridesmaid; the quality is excellent throughout, and the group is all the more interesting in that the plants are raised, grown and flowered in London.

The Orchid section of the show is varied by the addition of Roses, Lilies, and other flowers. The *Cattleya Mossiae* and other large-flowered *Cattleyas* were well represented, and a number of specimens of *Laelio-Cattleya* General Baden Powell were also shown. A selection of seedling *Odontoglossums* raised at Chelsea contained some good blotched forms of *O. crispum*. Prince of Wales is heavily blotched with dark claret colour, the lip also being much marked. Several others were very promising, the blotching varying in tint, but the flowers always of good form. *Cattleya Thayeriana alba* (*Schröderae alba* × *intermedia alba*) is a good white flower. *C. Mendelii* Countess is also a good white, with deep mauve lip. A number of specimens of

Brasso-Laelia, Helen showed great variation in tint. Specimens of *Dendrobium nobile*, *D. thyrsoiflorum*, other *Dendrobiums*, and various *Cypripediums* were well displayed.

FLORISTS' FLOWERS.

DAHLIAS FOR HOUSE AND TABLE DECORATION.

THE oft-repeated question addressed to me at Duffryn when showing the Dahlia trials to visitors, "Which are the best for cutting?" has prompted me to write a short article dealing exclusively with this aspect of our favourite flower. Taking them collectively, it cannot be claimed that Dahlias have the lasting qualities of many other flowers that could be named, but the remark often heard, "What a pity they won't last in water," is really an indication of imperfect knowledge. There are plenty which last for more than a week with ordinary care, and we have found some Stars and Collettertes to last over a fortnight.

A letter received recently from South Africa, asking for information, said: "My varieties

prettily edged, like a Picotee, with another colour. All are good, but preference may be given to Jupiter, white, with yellow edgings; Mercury, white, edged scarlet; Cetus, white, edged rosy-violet; Orion, white, edged yellow and crimson; Aries, white, edged crimson-scarlet. Some of the varieties are given to sporting, usually throwing a self-coloured bloom of the same colour as edging.

Most of the Collettertes are excellent for cutting. It is passing strange that they should last so much better than the singles. I have wondered if it is the Colletterte itself which holds the florets together. The singles appear to drop immediately the stamens are fully developed. Here it may be mentioned that when cutting care should be taken to choose blooms which are just opened and the pollen is beginning to be shed. Some of the large-flowering types of Collettertes are grand, notably *Diomède* and *Souv. de Chabanne*. Both have very long stalks. The blooms of the former are rough, but the rich rosy-crimson and white flowers are very effective for house decoration. A bunch of this particular variety was gathered the day before a frost laid them all low. Extra care was therefore taken



FIG. 137.—VIEW IN THE CONSERVATORY AT MESSRS. W. BULL AND SONS' NURSERY.

have such weak and frail stems, and are practically useless for cutting." Quite so; hence the necessity of growing only those having long and rigid flower-stalks, with the blooms standing bolt upright. Such varieties are to be had in most of the sections.

It is surprising what a difference there is in the lasting qualities of cut flowers of the various types. Taking the sections in their order of merit for our purpose, I place them: Stars 1st, Collettertes 2nd, Paeony-flowered 3rd, Decorative 4th, with the Cactus, Pompon and singles following.

Owing, possibly, to their being overshadowed by the brilliance of other types, the dainty Stars are not much known. They should appeal strongly to everyone on the look-out for cutting varieties; for they have far and away the stiffest and most erect flower-stalks of any type. The flowers are single, with gracefully curled and pointed florets, which give them a lightness so much desired for table decoration. There are only eight or nine varieties, each named after a star. The blooms are of white or creamy-white ground, each petal being

to prolong their life, and the last faded bloom recorded the fact that for three weeks it had stood the test of time. Others to be specially recommended are *Diadem*, rich rose colour; *Goldstern*, for those who are partial to lemon-yellow; *The Needles*, rose and white; and *Queen Mary*, rose. These are suitable for table-work. The art shades of *Windsor* and the bluish-violet of *Madame Poirier* appeal to many.

The Paeony-flowered and decorative types give us the best flowers for large vases. Of the Paeony-flowered, *Hampton Court*, *Mrs. Kerr*, *Sheila*, *Hermosa*, *Salome*, *H. I. Lovink*, *Snowcloud* and *Andrew Carnegie* are the pick of the soft shades. *Liberty*, *John Green*, *The Warrior*, *Bayard*, *Vulcan* and *Unique* supply the bright and dark colours. A few giant decoratives for a very bold arrangement are *Mammoth*, *Souv. de Gustave Douzon* and *The Giant*, all bright. Of medium size, *Délice* and *Loveliness*, pink, are favourites with all. So, too, is *Harmony*, a lovely sheeny-pink. *Princess Juliana* is a grand white, with stalks 18 inches to 2 feet long, and *Lagdene*, rose and white, makes a delightful vase. To this list I would

also add the daintily coloured little Sea Shell and Orange Glare of the Garden. The latter, perfect in its habit, gives a good object-lesson as to how a vase of flowers should be arranged.

How disappointing it is that one cannot write in praise of the beautiful Cactus flowers. They are very erratic, some of the most desirable varieties, such as Sweet Briar, fading almost immediately when cut. A few varieties found to last fairly well are Conqueror, Jenny Wren, White Ensign, Carrie Hammond, Miss Willmott and Salmon Queen. On the whole, the naturally small bloomers are the most satisfactory and make very pretty vases and bowls. Nimrod, Mrs. John Barker, Pink Perfection, Bridal Crown, Rev. M. Lemon and Pink Pearl are a few of the best.

The charming singles, which I am sorry to have to place in such a lowly position, are unaccountably poor lasters. If, as previously mentioned, great care is exercised when gathering one may hope to keep them three or four days. They are, however, very useful for table decoration where changes are introduced frequently. Many pretty colour schemes can easily be effected, as they possess such a range of colour. Rosemary Bridge, Lady Bountiful, Rosy Gem, Mary, Ouida, Donna Casilda, Mrs. T. W. Bates and William Parrot can be confidently recommended.

I have seen it stated that the Pompons are good lasters, but my experience does not go to prove this. In any case, there are many types to be preferred, and we can afford to leave the Pompons to the place to which they seem best suited—namely, the garden. *Arthur J. Cobb, Duffryn Gardens, Cardiff.*

ANNUALS.—V.

THE CANDYTUFTS.

CANDYTUFT has, more than any other annual I know, been the means of "depressing" annual culture. A penny packet purchased and sown in the usual way in a border and left unthinned produces a common, fleeting and most unsatisfactory result. One-tenth of the quantity of seed sown on the same area, and the plants thinned if necessary to 4 or 6 inches apart, gives a beautiful and lasting effect, as the plants develop side branches which bloom well.

Candytuft (*Iberis umbellata*) has long been grown in English gardens. It is referred to by Gerarde. Then there is the Rocket Candytuft (*Iberis coronaria*), from which the giant spiral forms have come. It was a much later introduction, Nicholson giving the date as 1836. Recently there has been a new race of hybrids introduced. Originating in France, it has been worked by the leading English growers, several of whom have very fine strains. The Rocket Candytuft gave rise to the giant spiral or Snowflake variety, about 1879, and, like the waved Sweet Pea, this giant form appeared in a number of different places about the same time. It is the finest form of Candytuft, but it is difficult—impossible, I might say—to get it to breed true, the very best strains giving a proportion of small-flowered forms with small spikes. When thinning care should be taken to leave seedlings with broad leaves, as they generally produce the desired big spikes of bloom. Candytuft is chary of transplantation, but the plan which I recommended for Mignonette may be adopted with success.

C. Giant spiral.—Giant Snowflake, Hyacinth-flowered, and other names are given to this grand form. It grows from 12 to 15 inches in height, and the term Hyacinth-flowered best describes the flower-spikes, which are often 9 inches long by 2 to 3 inches in diameter. It is singular that up to the present this form has not appeared in any other colour.

C. crimson.—Dunnett's is the best known. It gives very rich purplish-crimson flowers. The flower-heads are $1\frac{1}{2}$ inches wide by about an inch deep.

C. carmine grows quite a uniform height of 12 inches, and has carmine petals. In a dry season like 1913 it might well be termed a bluish carmine.

C. lilac.—In habit exactly resembles the foregoing, but produces in great profusion large heads of beautiful, warm-toned lilac flowers.

C. Rose Cardinal.—This was introduced a few years ago and is a most distinct and beautiful variety. The flowers are of good size and of a rich rose-colour.

C. atropurpurea.—Similar to Dunnett's crimson, but a shade darker in colour and rather taller in growth.

C. dwarf Hybrids.—Growing about 9 inches in height, these are most useful for bedding, and can be had in different shades, such as rose, crimson, lavender and white.

C. sweet scented.—This, in the early stage, is not at all like a Candytuft, having distinct soft-green deeply serrated leaves. When in blossom it resembles the perennial form *sempervirens*. It is strongly scented.

C. Little Prince.—This fine dwarf form has already been referred to. It grows from 6 to 9 inches in height, according to soil and locality.



FIG. 138.—CANDYTUFT LITTLE PRINCE: FLOWERS WHITE.

and produces fine large flower-heads (see fig. 138). *W. Cuthbertson.*

A BORDER OF ANNUALS.

The illustration (fig. 139) shows a fine border of annuals in the kitchen garden at Ballyfin House, Queen's County, Ireland. Mr. H. Thornton, who sends the photograph, informs us that the garden, which is walled, covers an area of five acres, and the border runs through the centre. In the season it makes a charming picture, and is planted each year with a choice variety of the best annuals, nearly all of which have been previously raised under glass, to prolong the flowering season. It is in June, July, and August that the colouring is at its best. Alyssum Little Gem is employed as a groundwork. The borders on each side are 156 yards long and 10 feet wide. Along the back of each border is a pergola made of Holly-wood. It is being furnished with rambling Roses. About half-way along the border is an octagon summerhouse, over which climb Roses, Ampelopsis, Wistaria and Clematis.

NOTICES OF BOOKS.

HISTORY OF THE CARNATION.*

This book contains 212 pages of literary matter, printed in a clear, readable roman type, and deals with the history, literature, and artistic features of the Carnation in a manner never yet attempted by any horticultural writer. There are 53 illustrations in black and white, besides two in colour.

In his researches in mediaeval literature Dr. Kronfeld has had access to works but little known to English writers, and some of his reproductions are not only quaint but highly instructive to the student of floricultural history. The work is written in German, and practically the whole of the illustrations are reproduced from German sources.

Our readers are well aware of the antiquity of the Carnation as a popular flower, not only here, but in France and Germany. It was grown and appreciated centuries ago, and its literature is as important as that of the Tulip, the Auricula, the Hyacinth, and other old flowers.

One of the earliest pictures given by the author is fig. 3, in which a young couple are seated on a bench beside a pot of Carnations in flower. It is reproduced from an engraving by J. van Meckenen, of Bocholt (1482-1503). Another, from *Lustgarten und Pflanzungen*, Strasburg, 1530, shows a gardener at work; in the background are three Carnation plants in pots on a stage. Fig. 5 shows a pot of Carnations in bloom, after Bock, 1546. The plants, instead of being staked, are supported by a curious light framework of circular form that keeps them in position and the blooms from drooping. Another illustration shows a Carnation in two-handed vase, after Castore Durante, 1636.

Dr. Kronfeld has also illustrated his work with a series of reproductions of old pictures by famous painters, in which Carnations are more or less prominent. These have been collected from art galleries in Frankfort-on-Main, Vienna, Berlin, Cologne, Munich, and other places. We note particularly the portrait of Simon George holding a Carnation, a work painted by Hans Holbein the younger. The same artist is represented in his portrait of the Merchant Gisze, on whose table is a vase containing cut Carnations. A full-faced, half-length portrait of a young man by Heinrich Aldegrever is another instance of the subject with a Carnation in his hand. Similar to these are fig. 15, Lucas Van Leyden's portrait of the Emperor Maximilian I., and fig. 16 Chris. Amberger's portrait of Ulrich Sulzer. Fig. 18 is Jan Van Eyck's picture, entitled "The Man with the Carnation." Fig. 20 Rembrandt's "Saskia with the Carnation." Fig. 23 is Leonardo da Vinci's "Madonna with the Carnation," and so we might continue with these interesting old pictures.

The book is divided into nine main chapters, which in turn are sub-divided into minor headings. The whole field of Carnation lore from the history of its earliest forms down to present-day culture is covered, be it in England, France, Germany, or America. The references to authors, poets, and other writers are numerous, and include citations from James Douglas, Parlatore, Ponsort, Vallet, Buc'hoz, Ardène, Weissmantel, Freund, Wallace, Grotjan, Hertel, and many others.

The extracts from the old writers on the Carnation show how thoroughly the author has traversed the ground. A noticeable feature of the book is the numerous poetical, mostly German, allusions culled from many sources. We may conclude by saying that those of our readers who are lovers of the Carnation, and who can

* *Geschichte der Gartennelke.* By Dr. E. M. Kronfeld. (Vienna, verlag der K.K. Gartenbau-Gesellschaft, 1, Kaiser Wilhelmring.) 12s.

follow the author in his own language, will obtain much satisfaction from a perusal of a work which will certainly take high rank among books devoted to floricultural history. *C. H. P.*

PLANT NOTES.

TUBEROUS BEGONIAS FOR HANGING BASKETS.

In the case of Begonias for pot culture a sturdy, compact habit is an important consideration; but for hanging baskets, the reverse holds good. Varieties of a loose, more or less pendulous style of growth are seen to very great advantage when suspended. Of late years increased attention has been bestowed upon Begonias for this purpose, with the result that several varieties have recently been brought forward particularly adapted for growing in

of limestone rubble without affording the roots any water all the year round, except when the flower buds appear in midsummer, and then very little, taking care not to wet the rest of the plant. During the remainder of the year I keep the roots cool by placing the pot in a larger one, and filling up the space with Sphagnum-moss, which is wetted once a week in summer. In a continued frost the plant is liable to be injured, but if the temperature is not allowed to fall below 45° F. and the plant kept dry, it does not appear to suffer. This method of keeping roots cool is applicable to many plants in pots which need to be exposed to the sun's rays, since plants usually choose the moist but well-drained sides of the pot to form a profusion of roots. An extract from the plant is used in Mexico to produce a kind of intoxication. It is there known as "Pellote," and has been introduced into medicine in the United States under the name of "Mescale buttons." It produces curious

moraine containing no lime, facing almost due east, without any glass protection. It was quite good last summer when in bloom, and was left unprotected by glass with a view of testing it. *H. frigidum* does not suffer from frost so much as from wet in winter. It is a very dainty Alpine with small, silvery foliage and delightful little white flowers produced in summer and autumn. *S. Arnott, Maxwelltown, Dumfries.*

SCOTLAND.

NEW PARK FOR GLASGOW.—Lord Glenconner has intimated to the Lord Provost of Glasgow his desire to present the city of Glasgow with a park of 13 acres in the St. Rollox district, with which he and his family have long had a special connection. Lord Glenconner has also offered



FIG. 139.—BORDERS OF ANNUALS AT BALLYFIN HOUSE, MOUNTRATH, IRELAND.

[Photograph by J. P. Greene.]

baskets. The main characteristics of these are a drooping habit of growth and a profusion of showy blossoms. Among the most suitable for the purpose are *Alba Plena Fimbriata*, white; *Alice Manning*, yellow; *Carmina*, carmine-red; *Eunice*, pink; *Fleur de Chrysanthème*, salmon-pink; *Gladys*, dark red; *Golden Shower*, much the colour of *Rose William Allen Richardson*; *Lena*, rosy-crimson; and *Mrs. Bilkey*, orange-salmon. A particularly vigorous kind is *Marie Bouchet*, but it is only fitted for cultivation in large structures. When these Begonias are intended for growing in baskets, it is a good plan to start the tubers in small pots, planting them into the baskets when they have made a few inches of growth. It is essential that this be done before the plants are pot-bound, otherwise they will receive a decided check. *W. T.*

MAMMILLARIA (ANHALONIUM) WILLIAMSII.

I HAVE grown and flowered this remarkable cactaceous plant for several years in a pot

physiological disturbances, one of the most remarkable affecting the vision, and causing the illusion of a kaleidoscopic play of colours. *E. M. Holmes.*

THE ROCK GARDEN.

CORIARIA TERMINALIS.

THERE are two things which militate against the value of the pretty, small shrub *Coriaria terminalis*, the graceful habit of which makes it so suitable for rock gardens or sunny banks. First, that in some northern gardens it does not flower; and second, that if it does, the birds eat the fruits almost immediately. The habit, however, is graceful and arching, and the autumn colouring of the leaves is attractive.

HELICHRYSUM FRIGIDUM.

HELICHRYSUM FRIGIDUM has stood the past winter, which was an unusually wet one, on a

the sum of £1,000 to assist in the laying out of the ground.

EDINBURGH PUBLIC PARKS.—The estimated sum to be expended on the Edinburgh parks and gardens for the year 1914-15 amounts to £16,455, as compared with an estimate for 1913-14 of £15,955, and an actual sum of £16,380 expended in the year 1912-13.

FOREST FIRES.—The dry weather has been responsible for a number of forest fires in Scotland. In Inverness-shire thousands of trees were burned at Balblair, on the Seafield and Raigmore and other estates. A considerable amount of damage has been done to trees and moorland in other parts of Scotland.

EDINBURGH SHOW.—The attendance at the spring show of the Royal Caledonian Horticultural Society on April 29 and 30 showed a considerable improvement over last year. The receipts were about £17 more than at the show of 1913. (See p. 323.)

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKEON, Oakwood, Wylam-on-Tyne.

LAELIA.—The small-growing *L. pumila*, also *L. praestans* and *L. Dayana*, are making fresh growth, and may be re-potted or top-dressed, as is considered necessary. They grow best in shallow pans or baskets, just sufficiently large to contain the roots. These miniature-growing plants are serviceable for autumn flowering.

ODONTOGLOSSUM HARRYANUM.—The plants are developing fresh roots from the bases of the growing shoots, and may be re-potted or otherwise attended to at the roots, for the sooner the plants are re-potted after new roots make their appearance the better, as the latter are very liable to be injured. This Orchid is not always grown satisfactorily in gardens, but it is surprising what rapid progress the plants make when suitable conditions are afforded. It is not advisable to use larger pots than will accommodate the roots. The plants grow best in well-drained pots: a few pieces of broken crocks should be placed over the drainage hole, about two-thirds the depth of the pot being filled with chopped Bracken rhizomes. If the old compost is in a state of decomposition, the whole should be carefully removed and the plants re-potted in fresh material consisting of good fibrous peat and *Osmunda*-fibre in equal portions, with a few broken leaves and chopped *Sphagnum*-moss intermixed. Sufficient broken crocks and sand should be added to render the compost porous. Press the materials firmly about the roots, and after re-potting carefully shade the plants for a few weeks. Keep the atmosphere humid, damp the surroundings, and spray the plants overhead in favourable weather. Hybrids of *O. Harryanum* are far more amenable to cultivation than is the species, for they are, without exception, exceedingly vigorous growers. Many *Odontoglossums* have been intercrossed with *O. Harryanum*, so that there are numerous secondary and bigeneric hybrids. Among the latter the vigorous *Odontioda Charlesworthii* (*Cochlioda Noezleana* × *O. Harryanum*) is one of the most serviceable, the long spikes of brilliant scarlet flowers being very effective and useful for any purpose where bright colour is desired. The plants may be grown under the same conditions as *Odontoglossums*, but their re-potting should be attended to at the time the new growths appear.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

SPRING FLOWERS.—There is an abundance of choice and specially interesting bulbous flowers just now, and fresh subjects are opening day by day. At Madresfield Court most of the plants are growing in specially prepared stations, and in shade or shelter, in accordance with individual requirements. How lovely are all members of the *Erythronium* family [Dog's Tooth Violets], including *Pink Beauty*, *Gigantea robusta*, *White Beauty* and *Hartwegii*! *E. Dens-canis* will do well in turf if the grass is not too rank. Then, again, what can compare with a large colony of either *Anemone Robinsoniana*, *A. blanda*, *A. fulgens* King of Scarlets, *A. apennina coerulea*, or *A. pulsatilla*, all of which are easy to grow? We plant them on a gentle slope in prepared ground, with a few stones irregularly let in the ground, to guard them when dormant. They should be sheltered from blazing sunshine and frosty winds by a neighbouring shrub, but they must not be subjected to the drip of overhanging forest or evergreen trees. The *Polyanthus* is now at its full beauty, in company with *Aubrietias*, *Primula nivalis*, *P. denticulata*, *P. cashmeriana*, *Alyssum saxatile*, *Trilliums*, *Tritielias*, *Arabis*, *Wilson's Blue Primroses* and *Auriculas*. The notebook will be in use daily with a view to recording errors or successes, either in the arrangement of the colours, heights and habits of the

various plants, their approximate dates of flowering, and suggestions for improvements; such notes will be found most valuable when planting time comes round again. It has been said that greater profit results from errors or failures than from successes, for the former develops energy and perseverance, whilst the latter may beget conceit and laxity.

VASES FOR SUMMER EFFECT.—The vases on terraces, etc., should be prepared for planting. Make provision for drainage and fill them with rich, turfy loam and decayed leaf-mould in equal parts, adding a dash of grit, sand, or old lime rubble to make the soil porous. For continuous summer blooming I know of nothing to equal Ivy-leaved *Pelargoniums* of such varieties as *Madame Crousse* (pink and double scarlet), *Souvenir de Ch. Turner*, *Galilee*, *Baden Powell* and *Murillo*. The double *Marguerite Mrs. F. Sander* is a good white flower for this purpose.

TREE PAEONIES.—The newer forms of these gorgeous-flowering shrubs, and especially those of the Japanese section, should have their flower-stems supported by stout stakes, which should be hidden by the foliage. Remove any suckers that appear. It is a pity that a more natural and longer-lived stock is not employed for grafting, seeing that our plants are constantly dying in spite of every possible attention. Many of the fleshy roots grow near to the surface, and a mulching of horse-droppings is beneficial; or the roots may be fed with a little fertiliser. The single-flowered herbaceous *Paeonies* are almost in flower; these may be cultivated for years with but very little trouble.

THE IRIS GARDEN.—A good dressing of soot applied from time to time will give colour to the flowers and foliage of the beautiful *Iris germanica* varieties, for soot is always a safe and trusty stimulant. The plants resent disturbance at the roots, therefore transplanting should always be deferred until the clumps are crowded. It is better to remove surplus growths as soon as the flowers are over and to transplant the portions in the reserve garden. A selection of varieties includes *Jaquesiana*, *Mme. Chereau*, *Bridesmaid*, *Mrs. Darwin*, *Purple King* and *Black Prince*. *Iris Kaempferi* flowers later, and succeeds best in partial shade, planted along the margins of lakes or streams, in company with such tall varieties as *I. Monnierii*, *I. ochroleuca* and *I. gigantea*.

MULCHING.—This is an important matter as regards all newly-planted subjects, for it is far better thus to conserve natural moisture in the soil than to have to resort to artificial watering, besides the economy of labour—no small desideratum nowadays.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

HIPPEASTRUM.—The plants have almost finished flowering, and should be placed in a warm pit to complete their growth. Plunge the pots to their rims in a mild hotbed, tie the leaves to a stake, and encourage the growth of bulbs and leaves as much as possible. If a special house is not available for the plants they may be grown in a Peach or other suitable house. Feed the roots once a week with liquid manure and use the syringe freely. If the sun is very powerful shade the plants lightly for an hour or two about midday for the next month, but after that time full exposure to the light will be beneficial. For accommodating seedlings prepare a bed inside a frame, and after allowing time for the fermenting materials to subside place a layer of fairly rich, light soil to the depth of 9 inches, and plant out the young bulbs at 9 inches apart in lines made 1 foot apart. Syringe and close the frame early each day. If the plants are kept growing in a healthy condition a fair percentage may be expected to flower during their third year. Maintain a night temperature of 60° to 65°.

TREE CARNATIONS.—Plants raised from cuttings in autumn are making fresh growth after having been stopped for a second time. Our

plants are being shifted into 7-inch pots, in which they will flower. Suitable soil for this potting is composed of three parts yellow loam and one part each of mortar, rubble and wood ash, the whole enriched with fertiliser at the rate of a 6-inch potful to each barrow-load of compost. If the loam is very stiff and retentive, add a little coarse grit or broken oyster-shell. Pot firmly, and when the work is finished stand the plants in a cold pit or frame on an ash bottom, taking the precaution to first dust the floor with soot. On bright days spray the plants very lightly and damp between the pots, but moisture must be afforded the roots with discretion until the plants become re-established. Plants propagated from cuttings this spring are making headway, and ready for transference to receptacles 4½ inches in diameter. Admit full ventilation on fine days, allowing the roof apertures to remain open all night in favourable weather. Stop the shoots of plants rooted later when about eight pairs of leaves have developed, and re-pot the plants into large 60-sized pots when the secondary growths are 2 inches long. Flowering plants are growing strongly and need feeding occasionally with a concentrated fertiliser. If they are required to flower in the second year they may be re-potted at the end of the present month, or early in June. If the blooms become bleached by the sun, shade the roof-glass lightly during the hottest part of the day. *Souvenir de la Malmaison Carnations* are sending up their flower spikes, and need close attention in the matters of tying the stems and watering the roots. *Aphis* sometimes infests the flower spikes, and should be destroyed by light fumigations. If the sun is very strong a light shading will be beneficial for a few hours during the hottest part of the day. Damp the paths and stagings and ventilate the house freely.

MISCELLANEOUS WORK.—Pot seedlings of *Celosias*, *Balsams*, *Lobelia tenuior*, and *Statice Saurovii* in small pots filled with light, porous soil. Stage the plants close to the roof-glass, and syringe them freely overhead. Fumigate the house at intervals. *Achimenes* and *Gloxinias* are filling their pots with roots, and may be watered with weak liquid stimulants. Annuals such as *Mignonette*, *Gypsophila elegans*, *Calliopsis*, and annual *Chrysanthemums* in pots should be thinned severely and grown in a cool frame. Insert cuttings of *Coleus thyrsoideus*, *Centrapogons*, *Eranthemums*, *Euphorbias*, *Justicias*, and fibrous-rooted *Begonias*.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCILD), Buckinghamshire.

PINES.—The size to which the fruits will ultimately grow depends mainly upon the condition of the roots, although general good management will conduce much towards the health of the plants. A sure criterion of the state of the roots is the quantity of water they absorb, for, as a general rule, those that require a copious supply of moisture develop the finest fruits. The plants should be grown in the same temperature as hitherto and be treated as previously recommended for both the fruiting specimens and successional plants. The smallest of the suckers potted last March are ready for re-potting, and the work should be done at once. If the bed in which the plants are plunged requires refreshing, now is the time to do it by adding a little fresh fermenting material to the surface and turning the whole over to a depth of about 15 inches, to incorporate the new with the old. After the plants are again plunged watch the temperature of the bed carefully to see that fermentation does not cause it to rise too high.

PEACHES AND NECTARINES.—The fruit in the earliest houses—and especially on pot trees—is nearing the ripening stage. Continue to afford the roots copious supplies of water, but reduce the amount of syringing overhead according to the stage of the fruit's ripening. Maintain plenty of atmospheric moisture and permit a free circulation of air, both by day and night. These details are essential to the health of the

trees, which otherwise would be most injuriously affected should the wood be prematurely ripened. Continue to regulate and tie in the shoots of trees in successional houses, retaining only sufficient new growth for fruiting next season. All shoots above or beyond the fruit should be stopped closely with the exception of the leading branches, and the fruit should be exposed as much as possible to the sun. Ventilation must be sufficient to ensure short-jointed and firm growth, and when necessary all inside borders should be watered thoroughly. Feed heavily-cropped and weakly trees by top-dressings of rich materials, liquid manure, or concentrated fertilisers, washing the last into the borders with clear water.

CUCUMBERS.—The plants are growing freely; plenty of moisture should be afforded the roots and the atmosphere kept moist by damping the paths and staging several times a day. As the fruits develop afford top-dressings of good rich loam and decayed manure to encourage the development of roots on the surface. When the plants have furnished the space keep the shoots thinned to prevent overcrowding, but before doing this remove all rusty-looking leaves except those on the same joint as the fruit. Green fly and thrips may be troublesome at this stage and must be destroyed by fumigating the house with a nicotine preparation, which is safer to use than insecticides in solution.

STRAWBERRIES.—During times of bright sunshine accompanied by drying winds insect pests, and especially red spider, spread rapidly on the mature foliage of pot Strawberries grown under glass. For this reason Strawberries in Peach and other fruit houses may be a source of danger to the fruit trees, and it will be advisable to remove infested plants to other quarters to ripen the berries. Should the fruit on successional plants be ripening too fast they may be retarded by turning the fruit from the sun or by removing the plants to cooler quarters. Plants that are still plunged in beds out-of-doors should be placed in cool frames. Syringe them daily until the flowers begin to open, and use diluted manure water at every alternate watering. Reduce the flower-spikes to the requisite number, and if the pots are stood on ashes, or half-plunged in the same material, it will be an easy matter to maintain a moist, genial atmosphere favourable to healthy growth. Allow sufficient space between the glass and the plants to permit of a free circulation of air, as the foliage is easily scorched. Excellent fruit may be grown in frames and the berries will maintain an unbroken supply until the out-door crop is ready.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE, Eastwell Park, Kent.

PEACHES AND NECTARINES.—April generally was bright and sunny with mild nights, the weather being very favourable for the blossoming of Peaches and Nectarines. Bees have been busy amongst the trees, and there is every prospect of good crops in this locality. The genial weather has also been favourable to growth, which is unusually forward, and the work of disbudding the shoots should be commenced at once. Healthy, vigorous trees of these fruits always produce a large number of shoots, and unless severe disbudding is practised the trees become laden with growth that does not ripen properly because of overcrowding. In commencing the work first remove all foreright shoots, and such as develop at the back of the tree facing the wall. When these are all removed, commence the work of disbudding proper at the top of the tree. The degree to which this is done will depend upon the age of the tree, that is, whether it is an established specimen filling the whole of the wall space or a young plant that is required to extend. It is a common error to permit too many shoots to remain, as the surplus ones have to be removed later on after they have taken much of the energy of the trees. A well-placed shoot at the base of a fruiting branch should always be retained, with a view to training it in the place of the latter after it has fruited. The aim of the cultivator should be to retain sufficient young

shoots to furnish the tree after the old fruit-bearing wood has been cut out in the autumn. Train in the young shoots in such a manner that they will not shade the fruits, which is one of the chief reasons for keeping the trees trained as thinly as is consistent with their carrying a full crop. If the weather turns dull and cold, defer the work of disbudding for a few days, and in no circumstances remove a large number of the young shoots at one operation. The top of the tree should be done first, the central part after an interval of two or three days, and the lower portion last.

OUTDOOR VINES.—Vines in the open should be disbudded at an early stage, reducing the buds for a start to two or three on each spur. After an interval of a week or so it will be an easy matter to determine which shoot has the best bunch, and to remove the superfluous ones. Mildew and red spider are the chief pests of outdoor vines in this country, and both should be rigorously combated as soon as detected. For the former employ a good mildew specific, syringing the vines with it in the evening. The syringing should be repeated two or three times if necessary. Red spider can usually be destroyed by syringing with clear water, which may be done on all fine afternoons, taking care that the whole of the foliage is wetted thoroughly. Let the shoots be stopped and fastened regularly, pinching the laterals at about two or three leaves beyond the bunch, according to the space available. The subsequent lateral growths should be stopped at the first leaf. It is impossible to succeed with outdoor Grapes unless the shoots and foliage are kept sufficiently thin to allow the sun to reach every part of the vine.

THE APPLE-BLOSSOM WEEVIL will soon be busy amongst the Apple blossom. Trees that have been neglected in the matter of winter spraying and cleansing, and have, in consequence, accumulations of lichen and rough bark, are lurking-places for this pest, as will be seen later by the quantities of fallen, damaged fruits under them. Soon after the weevil has entered an Apple blossom the petals turn brown, as if affected by frost. On examination such blooms will generally be found to contain a weevil, or a little hole will be found in the petals, indicating its way of escape. If young trees are attacked some of the weevils may be caught by placing a sheet on the ground under the trees, and shaking the branches sharply on a calm day. The insects are easily dislodged, and will drop on to the sheet, which can be taken up and shaken over the bonfire.

NEWLY GRAFTED TREES.—See that the grafts do not suffer harm from the drying effects of the prevailing east winds. Where clay was used as the grafting medium it should be moistened and the hand passed around it a few times to fill up any cracks.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

FRENCH BEANS.—A full sowing of this crop may be made in most localities, choosing a sheltered part of the garden where strong winds will not damage the plants when in full bearing. Strong-growing varieties of the Canadian Wonder type should be afforded a space of about 3 feet between the rows and at least 1 foot between the plants, dropping a bean at every 6 inches, the intermediates to be destroyed when the plants are all up. If the soil is at all heavy do not make a deep drill but a rather shallow one, ridging the soil over the seeds to give them a sufficient covering.

PARSLEY.—As soon as the seedlings are large enough to handle they should be thinned and the thinnings transplanted, allowing a space of about 18 inches each way. The plants will grow into handsome specimens and produce an immense quantity of foliage of the finest quality, for the leaves need not be picked till fairly large, the plants left in the seedling bed at 9 inches apart affording supplies in the meantime. Parsley is sometimes destroyed by a maggot which eats the tap-roots. By making the soil extra firm and then loosening the surface by fre-

quent hoeing the maggots will prove less troublesome, and the Parsley thrives better than in soil of a looser nature. I sometimes save seeds from a selected plant which yields sufficient for a large sowing.

CELERY.—The latest-sown Celery is ready to be pricked out singly. Nothing surpasses a thin layer of compost consisting of half soil and half manure from a spent Mushroom bed into which to transplant the seedlings at 3 inches apart each way. The material should be placed on a cinder bottom. If the seedlings are shaded till established, and watered carefully, at the time for transplanting they may be lifted like grass turves, one mass of roots scarcely any of which need be lost. Plants of the previous batch are beginning to grow freely and will need to be protected only in case of frost being imminent. Should the plants be growing too slowly $\frac{1}{2}$ oz. of superphosphate in each gallon of water will afford the necessary fillip.

WINTER GREENS.—It is the usual practice to sow Savoy, late Cabbages, and Broccoli for late cutting at about this time. I do not find these late sowings give nearly such good results as when the seed is set in April, but then our seasons are shorter in the North. Scotch Kale is a valuable late vegetable which some sow very early, but it is quite early enough to sow it now or a fortnight hence. We are still gathering from a crop sown at the end of last May.

EARLY PEAS.—The plants have grown slower than usual, but provided the weather is genial and water is afforded as required, they will now develop rapidly. To secure a dish at the earliest possible moment pinch the more forward in flower. If rather too close the peas will be small, but they may still be thinned, and the thinnings will be appreciated as flavouring for soups.

SCARLET RUNNERS may be sown in the open quite safely. The plants yield best when trained to tall sticks, but these are not essential, and by allowing the plants a space 3 feet by 3 feet and keeping the shoots pinched they do very well without staking. These Beans crop all the better in rather firm but fertile soil.

THE APIARY.

By CHLORES.

ROBBING.—This is a common trouble during the spring, as well as in August and September, especially in apiaries where syrup feeding has been resorted to. To avoid it, do not spill syrup in the region of the hives, and keep the entrances closed, so that one bee only may escape at a time, and do the work about 4 or 5 p.m. when the apiary is quiet. Do not forget that tits and mice are very busy searching for food, and the former can only be kept in check by shooting, and the latter by trapping, and for this purpose the figure four trap is excellent.

SWARMS.—With the advent of May the apiarist will be looking forward to swarms. Many make the mistake at the initial stage in placing the bees upon the full number of frames, regardless of the number of workers composing the swarm. Our forefathers always placed the bees in a straw skep that was reckoned by its capacity to hold so many pecks, and for this reason had skeps of many different sizes to accommodate swarms of varying strengths. As the colony required more room they gave it by adding ekes. By using only the number of frames that the bees can thickly cover heat is conserved, which is an important detail in successful beekeeping. Beekeepers in Scotland may advantageously purchase English bees, as the swarms are quite a month ahead of those in that country. On receipt of a swarm from a long distance place on the feeder for a few days, and when the weather is too wet for the bees to forage, place on the slow feeder for at least a week, and the results will be far more satisfactory. Wait until the evening before hiving the bees, then toss them out on a platform resting on the entrance, let them pass in, and keep a sharp look-out for the queen, for she might have been injured or even killed in transit.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MAY 11—

United Hort. Ben. and Prov. Soc. Com. meet.

THURSDAY, MAY 14—

Manchester and N. of Eng. Orchid Soc. Ann. Meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 52.3°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, May 6 (6 p.m.): Max. 56°. Min. 50°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, May 7 (10 a.m.): Bar. 29.3; Temp. 61°. Weather—Bright Sunshine.

PROVINCES, Wednesday, May 6: Max. 56°, Cambridge; Min. 50°, Aberdeen.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Hardy Bulbs and Roots at 12; Lilliums and other Bulbs at 3.30; Palms and Plants at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

FRIDAY—

Orchids at Protheroe and Morris' rooms, at 12.45.

Pitcher Plants.
(See Supplementary Illustration.)

In nothing is the infinite resourcefulness of Nature better exemplified than in the Pitcher Plants, and no plants illustrate better than they the occasional whimsicalness in which she indulges. The common run of plants portray in perfection the amazing and fertile marriage between sober utility and radiant beauty.

Nepenthes and Sarracenias, like the Dionaeas and Droseras, are plants which we should expect to see in a midsummer night's dream rather than in our waking moments. In form and in function alike the Pitchers are amazing. For, whereas in the large majority of plants the leaf-tip soon ceases to grow, in the Nepenthes, it forms the large and cunningly, albeit cruelly, devised traps, wherein over-curious insects find certain death. Every detail of the construction of these traps makes the descent easy and the ascent impossible. The movable lid, when open, and the smoothly-polished incurved edges of the pitcher impress the invitation thrown out to insects by the somewhat livid, almost raw meat-like and mottled colour of the traps. Downward directed hairs, not unlike those in the spathe of Arums, or of Aristolochias, bar egress from the pitchers, and the watery fluid in these vegetable tanks makes drowning easy. That fluid, however, is potent, and possesses the properties of the digestive fluids of animals. Savants have disputed the exact process whereby the remains of intruders are disposed of: some asserting that the active principle of the liquid in the pitcher is identical with that

in the gastric juice of the stomachs of the higher animals: others have maintained that it is closer akin to the protein-dissolving trypsin of pancreatic juice. The truth appears to be that, except for the fact that the juice is alkaline and not acid, as is gastric juice, the pitchers contain a vegetable pepsin. In any case, it is all one to the fly: that luckless visitor, introduced with such pomp and circumstance, takes its lethal bath and the nitrogen locked up in its body finds its way, in course of time, into the tissues of the plant. Therein lies the significance of the pitcher. It expresses the clamant need of the plant for nitrogen. That same need is shown also in the no less strangely contrived traps of Dionaea, and in the effective but less elaborate fly-catching and digesting devices of the Sun Dew (*Drosera*). Strangely enough, the Sarracenias—which are the Pitcher Plants of the Western world, as Nepenthes are of the Eastern—though they have the apparatus, lack the juice for digestion.

No less strange than the existence of these pitchers is the fact that the plants frequently make no use of them. Never shall we forget our surprise when observing Nepenthes in its native habitat to note that the long tendril-like junctions between pitcher and leaf were twisted as often as not so that the pitchers were upside down, and, needless to say, empty. Whether this represented a style of vegetable remorse succeeding a surfeit or whether it was sheer accident we cannot say; but the fact remains that the plant in its native state does not always make use of its formidable insecticidal apparatus.

Nevertheless, there can be no doubt but that Nepenthes merits its name of the grief-assuaging plant, though Linnaeus, who named it, justified his appropriation of Homer's name (see *Odyssey*, book iv., 221) by observing, "If this be not Helen's Nepenthes, it certainly will be for all botanists. What botanist would not be filled with admiration if, after a long journey, he should find this wonderful plant? In his astonishment past ills would be forgotten when beholding this admirable work of the Creator."

It is fit also that Nepenthes should stand alone, the solitary genus of the Nepenthaceae. The curious may find in the pages of the *Gardeners' Chronicle* the original descriptions of many of the species and hybrids. Of the latter not a few of the finest have been raised in this country in the nurseries of Messrs. James Veitch. Indeed, it is no exaggeration to say that our wealth in species and hybrids is due to the enterprise of the members of this firm. An account of that work and of the horticultural history of the genus was published by Mr. (now Sir Harry) Veitch in the *Journal of the Royal Horticultural Society* (xxi., p. 237).

These plants are not very difficult of cultivation, provided they are given adequate heat and moisture. When grown in baskets so that their pitchers are well displayed, they form not only profoundly interesting, but also extremely attractive features of our plant-houses.

In the Supplementary Illustration a natural species, *N. ventricosa*, and a hybrid are depicted:—

*Nepenthes ventricosa** is a native of the Philippines, and *N. × Sir W. T. Thiselton-Dyer* a hybrid raised in the nurseries of Messrs. James Veitch and Sons. *N. ventricosa* was first sent to Kew in 1897 by Mr. C. Ford, at that time superintendent of the Hong Kong Botanic Garden. It was figured in the *Gardeners' Chronicle* of June 18, 1898, and a specimen was shown at an exhibition of the Royal Horticultural Society on October 15, 1901. The length of the pitcher is about 6 inches.

N. Sir W. T. Thiselton-Dyer was raised from a cross between *N. mixta ×* and *N. Dicksoniana* (see figs. in *Gard. Chron.*, January 14, 1893; and November 10, 1888). *N. Dicksoniana* is a hybrid between *N. Veitchii* and *N. Rafflesiana*, and *N. mixta* was the progeny of *N. Northiana* and *N. Curtisii*. *N. Sir W. T. Thiselton-Dyer* is one of the largest and most effective hybrids, the pitchers measuring 8 inches. This fine hybrid was first exhibited at a meeting of the R.H.S. in 1900, and a black-and-white sketch of a pitcher by Mr. Worthington Smith was given in these pages on October 6, 1900.

ANNUAL DINNER OF THE KEW GUILD.—

MR. HERBERT COWLEY sends us particulars of the annual dinner of the Kew Guild, to be held at the Holborn Restaurant on Wednesday, May 20, at 7.30 p.m., when Mr. A. W. HILL, M.A., will preside. At 6.45 on the same evening the annual general meeting will take place in a room adjoining the Caledonian Salon of the same restaurant.

DR. HEMSLEY.—The many friends of Dr. W. BOTTING HEMSLEY, F.R.S., will hear with regret that he has sustained a bereavement in the death of his son-in-law, Mr. E. H. LOVELOCK, of Broadstairs. Dr. HEMSLEY'S daughter, Mrs. LEVELOCK, is well known to many botanists and horticulturists who used the Kew herbarium during the three years when she was employed there on the *Index Kewensis*. Mrs. LOVELOCK is left with three quite young children.

NATIONAL SWEET PEA SOCIETY.—The show of the Irish Rose and Floral Society having been abandoned, the provincial show of the National Sweet Pea Society, which was to have been held at Belfast on July 24, in conjunction with the exhibition of the Irish Society, will not take place. The Sweet Pea Society will therefore not hold a provincial show this season.

GUIDES AT KEW.—The Board of Agriculture again desires to bring to the attention of the public the arrangement established at the Royal Botanic Gardens, Kew, whereby a competent guide accompanies visitors on week-days through the Gardens and explains the many objects of botanical interest. A small charge is made for the services of the guide—6d. for each person attending a morning tour, and 3d. for each person attending an afternoon tour. The present arrangements are of the nature of an experiment, and their continuance beyond September next will depend on the extent of the public demand for the services of the guide. A leaflet giving detailed information on the subject can be obtained on application to the Director, Royal Botanic Gardens, Kew.

* *Nepenthes ventricosa*, Blanco, *Fl. Filip.*, ed. 1, p. 807; Hook., *f.*, in *D.C.*, *Prodr.* xvii., p. 100.



LARGE PITCHER : HYBRID NEPENTHES SIR WILLIAM T. THISELTON-DYER.
SMALL PITCHER : NEPENTHES VENTRICOSA, AN INTRODUCED
SPECIES FROM THE PHILIPPINES.

THE RETURN TO SIMPLER.—It is characteristic of the science of the present day that it becomes less and less dogmatic: whilst holding fast to that which it has achieved, it is more and more alert to recognise that, after all, but little is known. In this chastened spirit, which contrasts sharply with less tolerant phases through which it has passed, science is prepared to admit that many old ideas and customs which it laughed at in years gone by may have in them much that is good and true. Whether science laughs or listens, the wise old woman goes tottering and bent across the field, gathering simples, and in them more than in many panel doctors is her faith. That ancient faith is apparently to be justified by recent works. Not long ago, for example, a doctor, writing in the *British Medical Journal*, was bold enough to advocate the use of Dandelion extract in cases of certain troubles of the digestive system, and he cited from his case-book modern instances in

LEGISLATION AND PLANT PESTS.—A meeting convened by the Horticultural Trades Association to consider proposals put forward at the recent Phyto-pathological Congress at Rome was held in the Lecture Room of the Royal Horticultural Society on Tuesday, May 5. Mr. CUTHBERTSON, President of the Horticultural Trades Association, who was in the chair, announced that the purpose of the meeting was to hear Mr. ROGERS, the chief of the Horticultural Branch of the Board of Agriculture, who had kindly undertaken to give an account of the conclusions arrived at by the delegates at the Rome Congress on Phyto-pathology. Mr. ROGERS gave a lucid and detailed account of these conclusions, the chief of which were summarised in our last issue. The recommendations made by the delegates to their respective Governments involved the scheduling of certain serious pests which attack horticultural pro-

duced will be required, as at present, to pay a fee for the certificate of exemption which will be granted to them. Mr. ROGERS explained the suggestion made by one of the Canadian delegates that an attempt should be made to establish a common agreement between the several Dominions of the Empire with respect to the import regulations of horticultural stock. He mentioned also that the United States were not represented at the Congress, and that it is unknown whether they are likely to subscribe to the proposals. In concluding his summary of the work of the Rome Congress, Mr. ROGERS pointed out that the proposals mark a step towards the simplification of import regulations, and explained that the Board of Agriculture desire to ascertain the considered opinion of those engaged in the export horticultural trade in this country. It is for them to say whether the advantages seem likely to outweigh the disadvantages, and whether it is desirable that the recommendations of the conference be carried into effect so far as this country is concerned. After a discussion, in which Mr. BUNYARD, Mr. PEARSON, Lieut.-Col. Sir DAVID PRAIN, Mr. CHEAL, Mr. HUDSON and Professor KEEBLE took part, the chairman proposed that the subject be referred to a committee, and suggested that members of the Horticultural Trades Association should invite the Royal Horticultural Society to join with them in forming a committee to give the subject fuller consideration, and to report to the Board of Agriculture.

AMERICAN AND ENGLISH SHOWS.—Mr. J. HARRISON DICK, the former editor of the *Journal of Horticulture*, who is now editor of the *Florists' Exchange*, of New York, has given in that journal his impressions of the difference between English and American exhibitions. He draws attention to the advantage of the American method in showing long-stemmed flowers, such as Carnations, in very tall vases, so as to accommodate the whole of the stems, without having recourse to cutting. Roses are also shown in this way in America, while in England there are very few growers who exhibit long-stemmed Roses in tall vases. The New York grower excels in the draping of pillars and in the general overhead effect. Florists' exhibits in the New World are described as much more artistic than here, and specimen Ferns and foliage plants show a good balance in favour of the American grower. On the other hand, the display of Orchids in the London spring show excels the corresponding American exhibition, and in the staging of choice early vegetables the English gardener shows superior skill. There is one domain into which the American gardener has scarcely yet ventured—that of rock gardens and out-door Japanese gardens.

ARBORICULTURE AT THE ROYAL AGRICULTURAL SHOW.—The annual exhibition of the Royal Agricultural Society at Shrewsbury comprises a forestry section which is a feature of increasing interest to visitors. This year an exhibition of trees and shrubs is to form part of the arboricultural exhibit. The specimens shown will consist largely of trees and shrubs imported by collectors from China and elsewhere during the last ten years. Some of the classes in this section will be confined to amateur growers, in order to call forth the exhibition of unnamed varieties. Beside the specimens there will be exhibits of forestry implements, planks, gates, tree-guards, pests (insectivorous and fungous), planting schemes, wood preservatives, and other articles connected with arboriculture. Prizes are offered by the Royal Agricultural Society for the best-managed farms and the best-planted woodlands in the neighbourhood of Shrewsbury, and the results of a hedging competition which was held in February of this year will be on view.

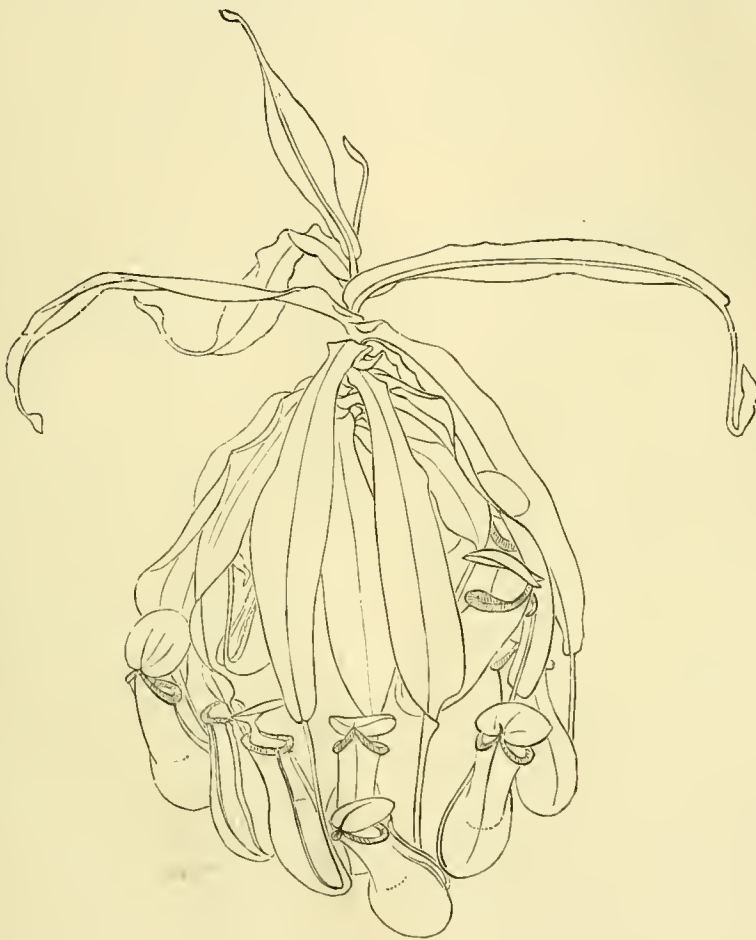


FIG. 140.—PLANT OF NEPENTHES, TO SHOW HABIT OF GROWTH.
(See Coloured Plate.)

which this ancient remedy had proved of remarkable efficacy. Yet more recently another doctor contributed to the *Lancet* testimony of the value of raw Potato juice in alleviating pain and in reducing swelling in cases of synovitis. The value of an application of this extract in the form of ointment or liniment was demonstrated in several cases, and applications are recommended in the case of gout, lumbago, rheumatism, or of bruises. In acute cases the juice is made up with hot water and used as a fomentation or poultice, and it is said to relieve pain in gouty sufferers more quickly than does any other specific in present use. The active agent of the Potato juice is unknown; but here again medicine is less impervious than it was wont to be, and recognising that all knowledge is to a greater or less extent empirical, does not disdain to use that which is wholly so. It is tempting to wonder whether, after all, there may not have been some virtue in the raw beef which we used to apply to a black eye.

duce. Each nation is to draw up its own list of such pests, and it is hoped that those nations who come into the agreement will find themselves relieved from the necessity of inspection at the port of entry. In any case, it is hoped that such inspection, if experience proves that it must be maintained, will be less vexatious than it is at the present time. In lieu of inspection at the port of entry there will be established by the nations subscribing to the decisions of the congress a system of nursery inspection. On the basis of this inspection certificates will be issued guaranteeing that the exported stock is free from the diseases specified. As a corollary to such a system of inspection it will be necessary to establish inspection not only of the nurseries engaged in export business, but also of all nurseries engaged in raising plants liable to be attacked by the scheduled pests. This inspection, being a national affair, will be carried out without charge to the nurserymen who are not engaged in export business, but those who are so

A NEW MUSHROOM.—According to a communication made by Prof. BONNIER to the Academy of Science, and reported in *Le Jardin* (April 20), MM. CONSTANTIN AND MARTRUCHOT have shown that le Pied Bleu, *Tricholoma nudum*, a "Mushroom" which is much appreciated as a delicacy and obtainable in nature only from October to December, may be cultivated in dark chambers at a temperature of 11° C. (52° F.), and made to give good crops all the year round. The mycelium is grown on beds of Beech leaves, and under this system of cultivation it produces enormous heads, which instead of preserving the blue-violet colour characteristic of the fungus become almost white. The fungus may be propagated from year to year by means of mycelial hyphae taken from the bed.

LYONS INTERNATIONAL URBAN EXHIBITION.—This exhibition will be open from May 1 to November 1 next, and in conjunction therewith will be held three temporary horticultural shows. The dates of these will be June 5 to 9, September 4 to 9, October 21 to 27. Horticultural products have eight classes allotted to them at each show, and are as follows:—(1) Fruit trees; (2) ornamental trees and shrubs; (3) Roses; (4) open-air floriculture; (5) greenhouse floriculture; (6) market garden produce; (7) horticultural arts and industries, garden plans, horticultural instruction, and garden publications; (8) the floral decorations of towns and houses. Entries must be sent by May 15 for the first show, addressed to the Commissaire Général of the Horticultural Commission.

INSECT VISITORS TO SUNFLOWERS.—Mr. THOS. D. A. COCKERELL, of the University of Colorado, Boulder, Colorado, is making a study of *Helianthus*, and intends to publish an exhaustive work on the genus. One matter of considerable interest is the relation of the flowers to insects. In America, where Sunflowers are indigenous, a multitude of different insects visit and feed on them, and the question is asked, how soon, and to what extent, do insects in other countries take to them? It is a case of adaptation, of considerable general interest, and as Mr. COCKERELL is particularly desirous of getting *English* records on the subject, he will be very glad if English readers will send him the results of their observations, positive or negative. The chief points to be noted are:—Do insects or other creatures injure Sunflowers? (State what kind of Sunflowers.) Do bees and butterflies visit the flowers? If so, are the visits frequent or rare? What kinds of butterflies? And so forth. Such information is not difficult to collect, as these points can often be noted in going about the garden, if the idea is present in the mind.

A NEW COVER CROP.—Under the above title Mr. W. G. CRAIB describes in the *Kew Bulletin*, No. 2, 1914, the use of *Dolichos Hosi* as a cover crop in rubber plantations. The species, which is new to science, has the necessary qualities for this purpose. It is a low-growing leguminous plant, may be dug into the soil and reproduces itself in time to check the growth of weeds. *D. Hosi* is a native of Sarawak.

ROYAL COUNTIES AGRICULTURAL SOCIETY.—The annual show of this society will be held at Portsmouth, on Southsea Common, from June 10-13. A flower show will be again held in connection with the exhibition, and is being organised as usual by Mr. C. S. FUDGE, secretary to the Southampton Royal Horticultural Society. We understand the promises of entries up to date insure a very good exhibition.

ENTOMOLOGICAL SPECIMENS WANTED.—Dr. A. D. IMMS, Entomological Dept., The University, Manchester, is making a study of the parasites of the mussel scale, and would be grateful to any readers who will send him

specimens of Apple branches badly infected with this scale insect. The branches should be cut about 18 inches long, and their ends sealed with paraffin or grafting wax. They may be sent loosely packed in straw, and enclosed in a wooden or cardboard box. Any expenses will be refunded if necessary, and boxes will be sent for packing the specimens.

A GOOSEBERRY-BLACK CURRANT HYBRID.—In his notes on new shrubs, Mr. W. J. BEAN (*Kew Bulletin*, No. 2, 1914) gives an account of a Gooseberry-Black Currant hybrid, *Ribes wollense*, raised by Mr. W. J. BELL, of The Woll, Ilawick, N.B. As Mr. BEAN points out, a similar hybrid, *R. Culverwellii*, described in *Gardeners' Chronicle* (May 19, 1883), was raised about 1880 at Thorpe Perrow, in Yorkshire; and another, *R. Schneideri*, is described in *Gartenflora* for 1902. *R. wollense* is, however, distinct from either of these, and appears to have originated by natural means. The hybrids, of which some dozen bushes are growing in Mr. BELL'S grounds, are very old plants, and one of them has a main stem 12in. in girth. *R. wollense* is perhaps nearer to *R. Grossularia* than to *R. nigrum*, especially in foliage and flower; but its fruit is black, smooth, of the same size as and similar in flavour to that of the Black Currant.

HOME CORRESPONDENCE.

IN A SCOTTISH MANSE GARDEN.—During the past month, *Prunus Pissartii* has been splendidly effective; and I am not without hope of this tree setting some of its fruit, as it has done in previous mild seasons. But as its flowers are dark purple—almost the colour of the leaves—from the earliest stage of their evolution they are almost certain to be nipped off the branches quite prematurely by rapacious birds. *Pyrus Malus floribunda*, with its roseate flowers, festoons the slender, pendulous boughs. When I visited Logan Garden in this peninsular parish on April 21, such *Magnolia* as *stellata*, *M. conspicua* and *M. Soulangiana* were already in glorious bloom. In the centre of my garden, which is at least equally sheltered, *Magnolia Watsonii*, planted fully fifteen years ago, is by far the most attractive flowering tree. It is valuable by reason not only of its almost peerless grace, but the odorous fascination of its impressive flowers. *M. macrophylla*, which I also possess, has, I have been informed, even in its native North American habitats (Carolina and Louisiana), a peculiar characteristic of not flowering till it reaches its utmost height; and this has been confirmed by my own experience. Plums, Cherries, Apples and Pears have an abnormal profusion of bloom this season, and should be unusually successful, unless unfavourable atmospheric visitations intervene. Last year, in almost every region of Scotland, the crops were much injured by a storm of exceptional violence in May. The first Apple in flower here is the Irish Peach, whilst Denniston's Superb Greengage, an invaluable variety, is the earliest Plum. Among the Roses that are farthest advanced—some of them with their flower-buds already half-grown—are Captain Hayward, British Queen, Old Gold, Viscount Carlow, Margaret Dickson, G. B. Clark, Clio, Enchantress (a charming garden Rose), Rosa Harrisonii, Laurette Messimy, Frau Karl Druschki, and the Waltham Bride. Oriental and American Lilies are developing rapidly, especially *L. Henryi*, *Szovitzianum*, auratum *platyphyllum*, candidum, *pardalinum* var. *Burbankii*, *Washingtonianum*, *longiflorum giganteum*, and *speciosum magnificum*. *David R. Williamson*, *Manse of Kirkmaiden*, *Wigtownshire*.

LA TAILLE LORETTE (see p. 249).—It has long been the custom of French gardeners to cut back the stipulary buds on cordon and fan-shaped trees, though this is not the principle of the "Taille Lorette." It has been resorted to (1) when a shoot has become too strong, thus threatening to destroy the symmetry of the tree; (2) when a shoot has grown too close to the leader; (3) in order to obtain exactly two buds, to form an "étage" in a fan—though in this case there was always the risk of having one

shoot stronger than the other, as in the case of the two stipulary buds. M. Hardy, the first Director of the "Ecole Nationale d'Horticulture de Versailles," was an upholder of the summer pruning method (*i.e.*, the second week in August), stating as his reason that at that time of the year growth was not sufficiently strong to force the buds, and they would be well established by the following season. It is regrettable that there are in English no equivalents for the French words "Brindelles, dards, coursons, bourses, onglets"; but there are technical terms which are capable of expressing the exact position or condition of any shoot. *P. Aquatias*, *Stockport Road, Timperley*.

WASPS.—Referring to the paragraph headed "Wasps" in your "Answers to Correspondents" on page 308, I have, with eight glass jam jars half filled with beer and sugar, accounted for 182 queen wasps to date at a cost of less than 12s., equalling about 3d. per wasp. My garden is about three acres, surrounded by a paddock of some thirty-five acres, containing a good deal of timber. I have also by this method caught many hundreds of flies, which not having, I suppose, yet shed their eggs, has accounted for many millions of flies. By this method of syrup catching your hint not to catch too many queen wasps is somewhat neutralised. *R. Oswald Fordham, Broom Hall, Biggleswade*.

OFFSETS OF HIPPEASTRUMS (see pp. 270, 302).—Mr. C. R. Fielder will be interested to hear that I have for many years grown several fine plants of *Hippeastrum* from offsets from bulbs which were themselves originally offsets, and I have frequently noticed the same thing occurring among plants belonging to fellow gardeners. When I read in your columns the report of Mr. Fielder's lecture, and his remark in regard to an offset not producing an offset, I was much surprised. At the present time I have a few very strong bulbs, originally offsets, growing in 9½ inch pots, with two or three offsets on each, growing vigorously. I have often considered that many growers make a mistake in affording *Hippeastrums* too much heat. Some of the strongest and healthiest plants I have seen were grown in a house from which frost was only just excluded. The plants are grown here under very cool and simple conditions. *Wilmot H. Yates, Rotherfield Park Gardens, Hampshire*.

THE LESSER NARCISSUS FLY (EUMERUS LUNULATUS) (see pp. 240, 272, 302).—The finding of *Eumerus* larvae in a rotting Iris rhizome, which Mr. Shea practically ignores (see p. 302), is, I think, something more than a "so-called" fact—it is a new and very significant fact. It is also beyond doubt that there is more than one brood of flies in a year. I have hatched out flies in April and again in August and September. It is a reasonable deduction that the larvae found in a bulb in the spring should be from eggs laid by the later and not by the first brood, which is about now. It is not suggested "in support of the scavenger theory," for as a matter of fact it does not directly affect that question. It is simply intrinsically probable. If the August brood are the progeny of the April brood it would of course be a certainty, but so far as I know that has not yet been actually proved. To cope with and eradicate a pest it is essential to have a complete knowledge of its life-habits. Until we have proof it would therefore be very unwise to assume that it lays its eggs on the leaves only. It is important to find out whether it may also lay its eggs after the leaves are gone, and if so, how the flies on the grubs find their way to the bulb. And this applies, I feel sure, to the Merodon also. What Mr. Shea appears to have lost sight of is that the view of the *Eumerus* which he upholds—that it attacks and feeds on the living bulb—is every whit as much an unproved theory as that it is a scavenger. As far as the facts are concerned it has no other grounds of support than "post hoc, propter hoc"—larvae have been found in Daffodil bulbs, therefore they were feeding on the living tissue. A crude, unscientific deduction. On the other hand there is the newly ascertained fact already noted. Since, however, as Mr. Shea very truly says, so little is really known about the matter, our proper attitude

SOCIETIES.

ROYAL HORTICULTURAL

TUESDAY, May 5.—The usual fortnightly meeting was held on Tuesday last in the Vincent Square Hall, Westminster. There was a large exhibition, and both the annexes were required to find space for the exhibits. It was mainly a Tulip show, for not only did the National Tulip Society hold competitive classes on this occasion (see p. 322), but growers took the opportunity to exhibit collections of these flowers. A Gold Medal was awarded to Messrs. BARR AND SONS, and a Silver-gilt Flora Medal to Mr. WATTS, of St. Asaph. The Narcissus and Tulip Committee recommended two First-class Certificates to varieties of Tulips.

The principal exhibits before the Floral Committee consisted of Roses, Carnations, flowering trees and shrubs, Sweet Peas, Calceolarias, Schizanthus, and hardy plants. This body recommended two First-class Certificates, and five Awards of Merit to novelties.

There were fewer collections of Orchids than usual, but plenty of novelties were forthcoming, and the Orchid Committee recommended two First-class Certificates and three Awards of Merit.

The Fruit and Vegetable Committee again found very little to do. There was only one group, a collection of Onions. Mr. BENNETT-POE showed a large bunch of home-grown Lemons, for which a Cultural Commendation was awarded. An award of merit was made to a new variety of Apple, subject to an inspection of the tree (to ascertain its habit, etc.) by a deputation of the Committee.

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. G. Reuthe, W. A. Bileny, C. E. Shea, J. Dickson, H. J. Jones, Chas. Dixon, Thos. Stevenson, J. W. Moorman, John Green, J. Jennings, Chas. Blick, J. W. Barr, W. Bain, C. R. Fielder, Geo. Paul, R. Reginald Nevill, W. P. Thomson, R. Hooper Pearson, James Hudson, Arthur Turner, W. Howe, W. Cuthbertson, F. Page Roberts, Ed. Mawley, F. W. Harvey, R. W. Wallace, Chas. E. Pearson, E. H. Jenkins, and J. F. McLeod.

AWARDS.

FIRST-CLASS CERTIFICATES.

Rhododendron × *Loderi* "Diamond."—Under this name was shown a reputed hybrid between *R. Aucklandii* and *R. Fortunei*. In foliage and form of flower it resembled the former parent, but in the size of truss and individual bloom it represented a great advance. The flowers were over 6 inches in diameter, and were sometimes developed in a cluster of as many as twelve together. The colour is almost pure white, but the buds and young flowers show a suffusion of flesh pink. The bells are broadly expanded and of fine texture, and plants shown were obviously vigorous and floriferous. The best developed leaves that we observed were 12 inches in length by 3½ inches in breadth, and the under surface is slightly glaucous.

Rhododendron × *Loderi* "Pink Diamond."—This appeared in every respect identical with the last except in colour, which in this is a pretty shade of soft pink. In a series of trusses of the two forms, however, showing flowers in different stages of development, it was difficult to draw a definite boundary between Diamond and Pink Diamond. These two were shown by Sir E. LODER from the open ground at Leonardslee, Horsham.

AWARDS OF MERIT.

Rhododendron "Gill's Goliath."—This is a very fine seedling with rose-pink flowers, 4 inches or more in diameter, held in trusses of 12 to 14 blooms. The colour is distinctly richer towards the edges. This was stated to be a hybrid between *R. Aucklandii* and *R. Thomsonii*, but we saw very little evidence of the latter parent. The leaves are lanceolate, sometimes as much as 10 inches in length by 2 inches in breadth, of a leathery texture, but not at all glaucous. Shown by Messrs. R. GILL AND SONS.

Auricula "Majestic."—A large-flowered Alpine variety of the florists' *Auricula*. The colour is

a crimson-brown, almost maroon, with a darker belt especially noticeable in the young flowers when the rim is pale, round the large yellow eye. Shown by Messrs. PHILLIPS AND TAYLOR and Messrs. J. VEITCH.

Iris "Isolda."—This and the next are the best of the recent additions to the garden forms of the *Regelia-Cyclus* group. The flowers are coloured light bronze, lightly suffused with purple and richly covered with a beautiful network of purple-brown veins. At the lateral edges the falls show a lighter shade of bronze, but the throat below the beard is heavily blotched with black, which is drawn out in deep veining almost to the tip of the fall. This colour scheme is almost identical with that of the variety *Charon*, which is already in commerce, but *Isolda* has better form.

Iris "Leucothaea."—In size this is one of the finest of the group. The colouring is a rich mauve-purple overlaid with a network of darker tint. The fall shows a small black throat blotch, on a body colour like that of the standards, and showing the same rich intricate venation and dotting. To be fairly appreciated these glorious Irises need to be seen in full sunshine, when their flowers become almost translucent. These two were shown by C. G. VAN TUBERGEN, junr., Haarlem.

Syringa reflexa.—A distinct new hardy Lilac from China. The habit is bolder, the leaves larger, and the growth more rigidly erect than in *S. vulgaris*, but its chief distinction is in its inflorescence, which is drawn out in a crowded tapering arching spray, sufficiently remarkable in form to have given the species its name. The colour is soft pink, still paler in the expanded blooms, which are only one-third of an inch in diameter. The flower sprays were about 6 inches in length by 2 in diameter, but developed specimens should prove much larger. The leaves are thin in texture, and reach 5 inches in length by 2 inches in breadth. Shown by the Hon. VICARY GIBBS (gr. Mr. E. Beckett).

OTHER NOVELTIES.

Rhododendron Willmottiae (Wilson's No. 882).—A charming addition to the Alpine *Rhododendrons* introduced from China through E. H. Wilson. Showy white or pale cream flowers were borne quite freely on a bushy plant 6 inches high, and the young foliage was prettily tinted with bronze. The plant was shown by Miss WILLMOTT, who also exhibited *Androsace Henryi*, a plant which has proved very difficult to raise.

Iris minuta.—Mr. AMOS PERRY showed flowers of this smallest and least conspicuous of Irises. It is a Japanese species, and grows about 2 inches in height, with flowers ½ inch across. There is a long account of it in *The Genus Iris*, and it is of considerable botanical importance.

GENERAL EXHIBITS.

Mr. E. J. LUCAS, Horsham, showed flowering sprays of *Plagianthus betulinus*, *Distylum racemosum*, *Paulownia imperialis* and *Edwardsia macrantha*, all from the open.

One of the finest floral exhibits was a group of *Schizanthus* exhibited by Mrs. STEWART MACKENZIE, Lydhurst, Haywards Heath (gr. Mr. Evans), for which a Silver-gilt Banksian Medal was awarded. This exhibit was composed of large, shapely plants that were literally masses of bloom.

Lady PAGET, Warren House, Kingston Hill (gr. Mr. Figgis), exhibited a group of the bright yellow-flowered *Calceolaria Cibrani*, for which a Silver Banksian Medal was awarded.

From the JOHN INNES HORTICULTURAL INSTITUTION, Merton, were displayed hybrid *Calceolarias*. The finest, from a garden point of view, was a cross between *C. angustifolia* and *C. plantaginea*. The plant is about 2 feet high, and bears a large number of spreading trusses of rich yellow flowers. Another variety of merit somewhat resembles *Bronze Age*. It is the progeny of *C. angustifolia* and a greenhouse *Calceolaria*.

MESSRS. JAMES VEITCH AND SONS, LTD., King's Road, Chelsea, showed magnificent plants of greenhouse *Azaleas*, choice *Hippeastrums*, *Kalanchoë flammea*, *Swainsonia galegifolia*, and a group of *Auriculas*. As a floor group this firm showed baskets of Alpines arranged with flower-

should be that of the open mind. It is in that spirit I have been in correspondence for some time past, urging that the matter should be cleared up by someone who could devote the time to it, and I had already sent all my stock of *Merodon* and *Eumerus* grubs for such an investigation before Mr. Shea's communication to the R.H.S. Scientific Committee appeared. Pending the results of such investigation there is only one other point raised that appears to be of interest. Mr. Shea bases his view chiefly "by what is called analogy" on the fact that *Merodon* and *Eumerus* are closely allied, arguing that therefore their habits would probably be the same. Judging from the diversity of habits of many familiar insect species that are more or less closely allied, I should have thought that that was a very unsafe deduction. It would be of interest if an entomologist would state how closely they are really allied, and on what grounds. Since their habits are still a matter of debate, it must be on purely morphological grounds. Yet to ordinary observation they appear very different (both larvae and flies), not only in size but form. A. J. Bliss.

FROST AND THE FRUIT CROPS.—On the morning of May 2 this district experienced 14° of frost and a keen north-east wind which have caused great damage to Plum, Cherry, Strawberry and Apple blossom. Even the undeveloped Apple bloom is quite black. The young leaves of Oak trees, which are earlier in this district than they have been for many years past, are shrivelled like brown paper, and the foliage of many other forest trees is similarly affected. Many tender herbaceous plants are cut down, whilst Cabbages, Savoys, and Cauliflowers in the seed beds are completely destroyed. Young Turnips and Peas are likewise harmed. The great amount of damage may be owing to the keen wind which attended the frost, as the ground at the time was perfectly dry, although, as Chatsworth is close to the river, atmospheric moisture may have contributed. I have never in my experience seen greater damage wrought by the same amount of frost or so great a range of plant life affected as in this case. F. Jennings, Chatsworth Gardens, Chesterfield.

—The severe frost in the early hours of the 2nd inst. caused widespread damage to the fruit crops in the Vale of Evesham district. The frost, which varied from 6° to 9° in different places, and was most severe from 2 to 5 o'clock, caused great damage to the underground crops. Almost everywhere early Potatoes and Runner and Dwarf Beans were cut down, and a large acreage of Peas was laid flat. Although the fruit trees were dry and well protected with the leaf they have suffered very severely, especially in some low-lying places, where Plums appear to have been completely destroyed. Before Saturday morning there was a remarkably fine promise of fruit, and the trees were healthy and growing well after the warm and sunny April. Some unfortunate growers have very little fruit left on their trees. In many cases 90 per cent. of the Plums have been killed. The Apple trees were in bloom, and it is difficult yet to say whether they were much damaged, but they will be checked in their progress. The loss to Strawberry growers will also be great. Almost everywhere the first bloom, which always produces the finest Strawberries, has been killed. F. P.

PEACH LEAF CURL.—In reading the paragraph on this fungous disease by Mr. J. G. Weston, p. 299, I notice that he does not prescribe a remedy for this pest. We were formerly much troubled by Peach leaf curl, but during the past two years it has not developed, thanks to timely spraying with the Bordeaux Mixture, which in our case has proved an excellent preventive. The trees should be sprayed immediately before the blossoms expand, and again when the fruits are set. The result is that the trees make perfectly healthy growth. We employ 2 lb. of sulphate of copper and 2½ lb. of ordinary washing-soda to 10 gallons of water for the first spraying, and for the second application the water is increased to 12 gallons. This specific is quite harmless to the young foliage. J. Gardner, Batsford Park Gardens, Gloucestershire.

ing trees. *Aquilegia flabiata nana alba* (see fig. 141), *Euphorbia polychroma*, *Saxifraga bathoniensis*, and *Trillium grandiflorum* were all uncommonly good. (Silver-gilt Banksian Medal.)

Messrs. STUART LOW AND Co., Bush Hill Park, Enfield, exhibited Carnations and Roses, for which a Bronze Banksian Medal was awarded. There were fine blooms on long stems of Roses Frau Karl Druschki, Lady Hillingdon, Liberty, Mrs. John Laing, Molly Sharman Crawford, and other well-known sorts.

Messrs. H. B. MAY AND SONS, Edmonton, filled a large table with flowering plants and Ferns. Their Hydrangeas were notable for the fine colouring in rose and blue shades; Verbenas, Clematis and Violas were shown well. (Bronze Flora Medal.)

Messrs. DOBBIE AND Co., Edinburgh, and Marks Tey, Essex, showed Sweet Peas of splendid quality, for which a Silver Flora Medal was awarded. The varieties included Inspector, Thomas Stevenson, New Marquis, Dobbie's

Hillingdon, Fisher Holmes, Lady Reay, Avoca and others were arranged in the boxes.

Messrs. FRANK CANT AND Co., Colchester, also exhibited Roses, for which a Silver Flora Medal was awarded. Besides standards in pots and pillar varieties, there was a choice selection of cut blooms in exhibition boxes.

Messrs. PAUL AND SON, Cheshunt, showed Roses and flowering trees and shrubs, for which a Silver Banksian Medal was awarded.

A very pretty White Rambler Rose was exhibited by the Rev. J. PEMBERTON, Havering, Romford, under the name of Pemberton's White Rambler. It appears to be a white form of the well-known Crimson Rambler.

Messrs. J. CHEAL AND SONS, Crawley, showed sprays of flowering trees and shrubs. The flowering Cherries were exceedingly beautiful, especially the one named Kigansakua. The hardy *Azalea Maxwellii*, *Laburnum Vossii*, *Genista purgens*, *Viburnum Mariesii* and *Pyrus Malus Scheideckeri* were also noticed.

Mr. CLARENCE ELLIOTT, Stevenage, was awarded a Bronze Flora Medal for Alpines, exhibited on a neat rockery, the most conspicuous plants being *Gentiana acaulis*, *Primula involucrata* and the pretty dwarf *Phlox subulata* Vivid.

Mr. G. W. MILLER, Wisbech, showed hardy flowers which included two remarkable varieties of *Viola gracilis*, the one named Golden Treasure (yellow), the other *magnifica* (rich purple). In both cases the blooms were as large as those of ordinary bedding Violas.

Mr. M. PRICHARD, Christchurch, showed varieties of *Scilla nutans* and *S. campanulata*, with other hardy flowers. (Silver Banksian Medal.)

Messrs. G. AND A. CLARK, LTD., Dover, showed fine flowers of *Iris Susiana*, *Onosma alba rosea* and *Gentiana acaulis alba* in a collection of hardy flowers.

Messrs. PHILLIPS AND TAYLOR, Bracknell, were awarded a Bronze Flora Medal for hardy flowers and Auriculas.

The showy St. Brigid Anemones were exhibited by Messrs. REAMSBOTTOM AND Co., Geashill, King's Co., and Messrs. GILBERT AND SON, Dyke, Bourne.

Hardy flowers were also shown by Messrs. GEO. JACKMAN AND SON, Woking; the Misses HOPKINS, Mere Gardens, Shepperton (Bronze Banksian Medal); Mr. JAMES BOX, Haywards Heath (Silver Flora Medal); Messrs. GEO. BUNYARD AND Co., LTD., Maidstone; Messrs. JOHN WATERER, SONS, AND CRISP, LTD., Twyford; GUILDFORD HARDY PLANT NURSERY; Messrs. R. TUCKER AND SONS, Oxford; Mrs. LLOYD EDWARDS, Bryn Oerog, North Wales (Bronze Flora Medal); Mr. H. HEMSLEY, Crawley; Mr. G. REUTHE, Keston, Kent (Bronze Banksian Medal); Messrs. T. S. WARE, LTD., Feltham; Mr. L. R. RUSSELL, Richmond; Mr. REGINALD PRICHARD, Wimborne; and Messrs. J. PIPER AND SONS, Bayswater (Silver Banksian Medal).

Orchid Committee.

Present: J. Gurney Fowler, Esq., in the chair, and Messrs. Jas. O'Brien (hon. secretary), Gurney Wilson, W. Bolton, F. Sander, R. G. Thwaites, F. M. Ogilvie, T. Armstrong, A. McBean, W. Cobb, J. Charlesworth, W. H. Hatcher, J. E. Shill, H. G. Alexander, G. Hunter, W. P. Bound, Arthur Dye, E. H. Davidson, F. J. Hanbury, C. J. Lucas, Stuart Low, De B. Crawshaw, R. A. Rolfe, W. H. White, S. W. Flory and Sir Harry J. Veitch.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontoglossum crispum *The Baroness*, from Baron BRUNO SCHRODER, The Dell, Englefield Green (gr. Mr. J. E. Shill). This is the noble form for which an Award of Merit was obtained on June 17 last year, and now grown to a marvellous state of perfection. The heavy spike bore flowers of great size and beauty. The ground colour is white, heavily tinged with purple at the back, and blotched with a light shade of violet, the fringed margins of the petals and spaces between the blotches white. Lip white, with a chestnut blotch in front of the yellow crest.

Odontoglossum Helmath (parentage unrecorded), from Baron BRUNO SCHRODER. A grand dark flower of the O. illustrissimum class; the segments are claret red with a slight golden hue, the margins and tips blush-white.

AWARDS OF MERIT.

Bulbophyllum Fletcherianum (n. sp.) (see fig. 142), from the Rev. J. C. B. FLETCHER, Mundham Vicarage, Chichester. This is a very remarkable *Bulbophyllum* from New Guinea, which was originally in the possession of Mr. E. V. Low, but is now shown in flower for the first time. The large bronzy-purple pseudo-bulbs have a granulated surface, the fleshy, decumbent, oblong-ovate leaves nearly 1 foot in length, purplish-green, with a glaucous covering. The seven-flowered inflorescence is a short raceme, each flower having a large bract. The broadly lanceolate upper sepal is 2 inches long, claret-coloured, speckled with white; the lateral sepals, 4 inches



FIG. 141.—*AQUILEGIA FLABIATA NANA ALBA*.

Cream, King White, Dobbie's Scarlet and Royal Purple.

A large exhibit of *Streptocarpus* in variety was shown by Messrs. JOHN PEED AND SON, West Norwood. (Silver Banksian Medal.)

Messrs. R. GILL AND SONS, Falmouth, again showed trusses of Rhododendrons, and remarkably well-flowered sprays of *Embothrium coccineum*. (Bronze Flora Medal.)

Miss MANGLES, Littleworth Cross, Seale, Farnham, showed trusses of Rhododendrons from her choice collection of these beautiful flowering shrubs.

Messrs. B. R. CANT AND SONS, Colchester, were awarded a Silver-gilt Banksian Medal for Roses. This very meritorious exhibit was backed with pillar varieties, standards being arranged in front of these, and a front row of large exhibition blooms in boxes. A standard plant of White Dorothy especially appealed to us, as also did the Austrian Copper and Austrian Yellow varieties. Choice single blooms of *Gloire de Chédane-Guinoisseau*, Hugh Dickson, Lady

Carnations of the Perpetual-flowering type were exhibited by Messrs. ALLWOOD BROS., Wivelsfield, Haywards Heath (Silver Banksian Medal); Mr. C. ENGELMANN, Saffron Walden (Silver Banksian Medal); and Mr. H. BURNETT, Guernsey (Silver Banksian Medal).

Messrs. CARTER, PAGE AND Co., London Wall, showed Dahlias, Violas and annuals.

Messrs. WILLS AND SEGAR, South Kensington, showed East Lothian Intermediate Stocks and Ericas.

Mr. A. H. COLE, Swanley, exhibited bunches of Zonal-leaved Pelargoniums and Paeony-flowered Dahlias.

Mr. JAMES DOUGLAS, Great Bookham, was awarded a Silver Banksian Medal for Auriculas and a large specimen of *Myosotidium nobile*, like a giant Forget-me-not.

Mr. AMOS PERRY, Enfield, displayed hardy flowers, including the yellow form of *Viola gracilis*, novelties in Oriental Poppies, varieties of *Oncocyclus Irises* and *Sarracenia Drummondii* in flower.

long, are narrower, connivent or folded, the base almost enclosing the labellum, claret colour, with some small light spots; the 1 inch long petals and smaller lip are bright claret-red. In texture and colouring it resembles a *Stapelia*. It is a species standing alone, but the flowers are in some respects nearest to *B. longisepalum*, but the flowers of this latter species are borne singly on tall scapes.

Cypripedium macranthum album, from Mr. G. REUTHE, Fox Hill Hardy Plant Nursery, Keston. A true albino of the large, rose-coloured and hardy *Cypripedium macranthum*, the flower being pure white without a trace of colour.

Oncidioida Mauricii (*Oncidium tigrinum* × *Cochlioda vulcanica*), from Monsieur H. GRAIRE, Amiens, France. A remarkable bigeneric hybrid which well indicates both parents, although the *Oncidium* predominates. The erect inflorescence has many flowers 2 inches in length; the sepals and petals are dull purple; the lip, which has the side lobes distinctly divided, and the front developed on an isthmus, primrose yellow.

GENERAL EXHIBITS.

Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander), showed the brilliant scarlet *Odontioda Chantecleer* Orchidhurst variety, which obtained a First-class Certificate, May 20, last year; and *O. Chantecleer* Westonbirt variety, a larger form, of a glowing scarlet colour, the flowers being of fine shape. Also very finely grown *O. Vuylstekeae*, *O. Bradshawiae* and *Miltonia* White Admiral, with large milk-white flowers with pale lilac-coloured mask.

The Hon. Lady NEELD, Grittleton, Chippenham (gr. Mr. Pitts), sent *Odontioda* Diana Grittleton variety, with a spike of 25 dark red flowers.

Mrs. NORMAN COOKSON, Oakwood, Wylam (gr. Mr. H. J. Chapman), sent *Odontoglossum illustrissimum* Cookson's variety, a large and perfect flower, prettily marked; and *Odontioda Vivienne* (*Odm. crispum* Britannia × *Oda. Cooksoniae*), with Indian red spotting on the lilac-tinted sepals and petals.

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), showed a still further advance on his famous strain of *Odontoglossum* Queen Alexandra and *O. harvengtense*, both superb flowers; the new *O. Bellamina* (*bellatulum* × *ardentissimum*) and *Odontioda rosefieldensis* *Crawshayana*, two of which had previously secured Awards of Merit.

F. M. OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), showed the unique *Odontoglossum* Harwoodii Shrubbery variety and *O. Iorisanum aureum* (*triumphans aureum* × *luteo-purpureum* *Vuylstekeanum*), true to its parents in its two shades of yellow.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), staged an interesting and extensive group in which rare species and hybrids were well represented. *Miltonia* *vexillaria* were well displayed, with various pretty seedling *Odontoglossums*, *O. Wiganianum*, *O. crispum* *Harryanum*, *O. Souvenir de Victor Hye* de Crom, *O. crispum* Flambeau, *O.-C. Stamfordianum* and other blotched forms; *Zygopetalum* Cecil Rhodes and a pretty hybrid of *Z. Perrenonii* well displayed their violet labellums; *Brasso-Cattleya* Digbyano-Mossiae, B.-C. Rova and other *Brasso-Cattleyas* and choice *Cypripediums*. (Silver Flora Medal.)

Messrs. STUART LOW AND CO., Bush Hill Park, and Jarvisbrook, Sussex, had a beautiful group, the numerous plants of their fine strain of the large white *Dendrobium Jamesianum*, which formed the body of the group, contrasting well with the many tall sprays of bright red *Renanthera* *lmschootiana* arranged above them. (Silver Flora Medal.)

Messrs. HASSALL AND CO., Southgate, staged a good group in which the forms of *Cattleya* *Schröderae* were excellent, one white variety being specially attractive. In front were six well-flowered specimens of the fragrant white *Trichopilia* *Backhouseana*, also good *Laelio-Cattleya* *bletchleyensis* and L.-C. Lydia. (Silver Banksian Medal.)

Messrs. CHARLESWORTH AND CO., Hayward's Heath, had a group of splendidly-grown specimens, including their large red *Odontioda* *Hipolyta*, *O. Madeline*, two forms of *O. Royal*

Gem, and other *Odontiodas*; *Miltonia* *Charlesworthii*, with its large ruby-crimson mask on the lip; *Cattleya* *Schilleriana*, *Chysis* *langleyensis*, and some good *Odontoglossums*.

Messrs. FLORY AND BLACK, Slough, staged a group of hybrids, the best of which were *Laelio-Cattleya* *Dominiana* *alba*, with pure white sepals and petals, the latter having a slight tinge of purple on the tips, the labellum bright violet-purple with gold lines at the base, contrasting effectively with the white petals; and the richly coloured L.-C. *Invincible*. L.-C. *Bellata* (*Bella* × *purpurata*) has large silver-white flowers tinged with lilac, and with a dark purple lip; L.-C. *Deciata* (*Decia* × *purpurata*) is an improvement on L.-C. *Decia*. Other hybrids, including *Disa* *Luna*, were also shown.

E. H. DAVIDSON AND CO., Orchid Dene, Twyford, sent *Sophro-Laelio-Cattleya* *Dorila* var. Mrs. Hatfield (*S.-C. Doris* × *L. punila*), a pretty

Narcissus and Tulip Committee.

Present: E. A. Bowles, Esq. (in the chair), Miss E. Willmott, Rev. Joseph Jacobs, Messrs. P. Rudolph Barr, J. Duncan Pearson, Jan de Graaff, Herbert Smith, E. M. Crosfield, F. Barchard, Christopher Bourne, C. Lemesle Adams, Harold A. Denison, W. W. Fowler, Wm. Poupart, Charles T. Digby, R. W. Wallace, F. Herbert Chapman, W. Goldring, A. D. Hall, C. Scrase Dickens, and Chas. H. Curtis (hon. sec.).

AWARDS.

FIRST-CLASS CERTIFICATES.

Tulip Siren.—This is a Cottage Tulip of the retroflexa type, but the flowers open widely, disclosing the white base to the bright pink segments. The flowers on view were all slightly drooping, in consequence, probably, of their long journey; but if they naturally remain erect after



FIG. 142.—*BULBOPHYLLUM FLETCHERIANUM*: A NEW SPECIES FROM NEW GUINEA.

(See *Orchid Awards*, p. 320.)

rosy-mauve flower with purplish tips to the petals and purplish front to the lip.

R. G. THWAITES, Esq., Chessington, Streatham, showed the clear white *Odontoglossum* *Pescatorei* *virginale* Thwaites' variety, *Cattleya* *Dusseldorfei* *Undine* and *Laelio-Cattleya* *Pizarro*.

M. M. MERTENS, Ghent, showed *Miltonia* *vexillaria* *Memoria* G. D. Owen and three hybrids from this.

THE CHELSEA SHOW.

The Chairman called attention to the rule relating to entries for plants to go before the Committee at the Chelsea Show. These must be strictly adhered to, unless in the case of foreign exhibits, the owners of which might not know the rule, which runs:—"Single plants, etc., for Certificates may be entered as late as (entries posted) Thursday, May 14, but no plants can under any circumstances be entered on the day of the show."

being cut this will prove to be a valuable decorative variety. (Shown by Messrs. E. H. KRELAGE AND SON, Haarlem.)

T. Grenadier.—The largest of the Cottage Tulips, which holds itself erect, and is exceedingly decorative. The colour is vermilion-scarlet with a sheen of cerise on the outside of the segments. (Shown by Messrs. H. D. PHILLIPS, LTD., Olton.)

GENERAL EXHIBITS.

Messrs. BARR AND SONS, Covent Garden, London, had a representative collection of excellent Tulips. Besides the standard varieties of Darwin, Cottage, Rembrandt, and Old English Tulip, there were several vases of Tulipa species, such as *T. vividiflora* *praecox* and *T. retroflexa*. The chief Darwins were Bacchus, Negra, and Clara Butt. Of the Cottage varieties, Golden Bronze, Jaune d'Œuf, and Moonlight were good.

Among the English Tulips were especially noted Talisman (bybloemen feathered) and Dr. Hutcheon (bizarre feathered). This group of considerably over one hundred varieties was exceedingly interesting, and showed the different types of Tulip in good form. (Gold Medal.)

The exhibit of Mr. W. A. WATTS, St. Asaph, was magnificent. He displayed a large quantity of bloom in masses of rich, clear colour, harmoniously arranged; seldom has a more imposing display of cut blooms been seen in the Hall. So fine was his group that some of the visitors were of the opinion that it was worthy of a higher award, but they overlooked the important fact that relatively few varieties were shown, and that the group was not representative of the different types of Tulip. As a spectacular display, however, it was worthy of the highest praise. The yellow sorts (Moonlight, Bouton d'Or, and T. Gesneriana lutea) were especially prominent, and enhanced the beauty of the group. (Silver-gilt Flora Medal.)

MESSRS. CARTWRIGHT AND GOODWIN, Kidderminster, had many attractive Cottage varieties in their exhibit of Tulips. Grenadier (the variety which received a First-class Certificate). Scarlet Emperor, William Pitt, and Moonlight were excellent. Besides many Darwins of more than average quality, there were vases of T. Gesneriana lutea pallida and T. retroflexa. (Silver Flora Medal.)

MESSRS. R. AND G. CUTHBERT, Southgate, arranged a display of Darwin and other varieties in vases, interspersed with pots of Maidenhair Fern. Chief amongst the Darwin Tulips were Nauticus, Fairy, Bartigon, Clara Butt and Europe. Of the May-flowering sorts, Fairy Queen, Mrs. Moon, and Louis XIV. were well represented.

MESSRS. R. WALLACE AND Co., Colchester, specialised with Darwin Tulips of mauve shades. Of these, Erguste, Corot and Dream were noticeable. (Silver Flora Medal.)

MESSRS. ALEX. DICKSON AND SONS, Newtownards, Ireland, showed Bamboo stands, lightly filled with such varieties as Dora, Feu Brilliant, Clara Butt, and Flora's Ornament. (Silver Flora Medal.)

MESSRS. JAMES CARTER AND Co., Raynes Park, constructed a spring garden, bounded by trees and shrubs at the back, and in front by a low wall. The chief feature of the garden was the colour-scheme, composed of Tulips such as Clara Butt, Europe, G. de Cardous and Sieraad van Flora. (Silver Flora Medal.)

MESSRS. SUTTON AND SONS, Reading, arranged, on a broad, velvet-covered stand, a splendid collection of bright and showy Tulips. The central place was occupied by a large group of Clara Butt, and on either side were tall stands of Moonlight, Mr. Farncombe Sanders, and Sieraad van Flora. (Silver-gilt Banksian Medal.)

MESSRS. DOBBIE AND Co., Edinburgh, showed a collection of Tulips, which bore very fine flowers. The massed blooms of Golden Crown, Pride of Haarlem, Inglescombe Pink, and other varieties made a noteworthy display. (Silver-gilt Banksian Medal.)

MESSRS. ROBERT SYDENHAM, LTD., Birmingham, showed May-flowering Tulips. (Silver Banksian Medal.)

MESSRS. HOGG AND ROBERTSON, Dublin, arranged a collection of Irish-grown Tulips, which gave evidence of suitability of soil and skilful cultivation. Yellow Queen, Psyche, and Gipsy Queen were remarkably fine.

Mr. C. BOURNE, Simpson, Bletchley, had a dainty arrangement of cut Tulips in bright colours.

MESSRS. JOHN WATERER, SON, AND CRISP, Liverpool Street Arcade, London, included many Cottage varieties in their exhibit of Tulips. Of these, Ellen Willmott, Acuminata, Orange King and Yellow Queen were attractive.

MESSRS. WM. CUTBUSH AND SON, Highgate, had a long range of Tulips of most of the standard sorts, making a very attractive display. (Silver Banksian Medal.)

MESSRS. R. H. BATH, LTD., Wisbech, and Mr. A. DAWKINS, King's Road, Chelsea, also showed many fine varieties.

Half a dozen classes were arranged by the National Tulip Society, and the exhibits were displayed in an annexe. The competition generally was poor, and the flowers of Darwin and Cottage Tulips were inferior to those in the Hall.

In every class five blooms of each variety were shown.

Darwin Tulips, twelve varieties.—Mr. C. BOURNE, Simpson, Bletchley, was placed 1st in this class. He showed fresh blooms of good size and form of such varieties as Leonardo da Vinci, Louise de la Vallière, Velvet King, and Mr. Farncombe Sanders. The best blooms in the 2nd prize collection of the Rev. Canon FOWLER, Earley, Reading, were of Isis, Duke of Westminster and Anthony Roozen. Mr. W. O'SULLIVAN, Streatham, was placed 3rd.

Darwin Tulips, six varieties.—The only exhibitor, Mr. H. J. BARTLETT, Shooters Hill, was awarded the 2nd prize for a moderate collection in which the best varieties were Europe and King George.

Rembrandt or "Broken" Darwin Tulips, three varieties.—The Rev. Canon FOWLER was the only exhibitor, but his blooms of L'Ingénue and Mr. Farncombe Sanders were very good.

Cottage Tulips, twelve varieties.—Mr. C. BOURNE won the 1st prize with a collection rich in yellows (Moonlight, Avis Kennicott, and Mrs. Keightley); Goudrink and Louis XIV. were also good. The 2nd prize was awarded to the Rev. Canon FOWLER, who had attractive blooms of Jaune d'Oeuf, Apricot, and Don Pedro.

Cottage Tulips, selfs or breeders, six varieties.—The 1st prize was awarded to Mr. O'SULLIVAN, in whose exhibit the best blooms were of Scarlet Emperor, Turenne, and John Ruskin. Mr. A. D. HALL was 2nd; he showed a good Rose seedling named Gloriana.

Cottage Tulips, variegated or broken, six varieties.—The flowers in Mr. A. D. HALL's 1st prize collection were the best formed; those of the other exhibitors were generally too long in the petals. His varieties were Sam Barlow, Masterpiece, George Edward, Stockport, Sir Joseph Paxton, and Mrs. Collier. 2nd, Rev. Canon FOWLER; 3rd, Mr. H. J. BARTLETT.

Fruit and Vegetable Committee.

Present: Jas. Cheal, Esq. (in the chair), F. Perkins, W. Bates, J. Willard, Wm. J. Jefferies, Edwin Beckett, Horace J. Wright, H. Somers Rivers, A. Grubb, J. Jaques and C. G. A. Nix.

Mrs. E. H. DENNISON, Little Gaddesden, Berkhamstead (gr. Mr. A. G. Gentle), showed large, well-kept bulbs of Ailsa Craig Onions.

AWARD OF MERIT.

Apple Sandlin Duchess.—This late variety is heavily flushed with red on a yellow ground, has a short, thick stalk, and small, shallow eye. It is of medium size, round in shape, and possesses excellent qualities, both for dessert and cooking. The fruits were from an old tree, which will be inspected by members of the committee before the award is made absolute. Shown by Mr. W. CRUMP, Madresfield Court Gardens.

Scientific Committee.

APRIL 21, 1914.—**Present:** Mr. E. A. Bowles, M.A. (in the chair), Dr. A. B. Rendle, Messrs. W. E. Ledger, J. Fraser, C. E. Shea, R. H. Pearson, J. T. Bennett-Poë, W. Fawcett, A. Worsley, W. C. Worsdell, W. Hales, J. Hudson, and F. J. Chittenden (hon. sec.).

Salix showed carpellobody of stamens.—Mr. W. C. WORSDELL reported as follows on the curious *Salix cinerea* (not *S. Caprea*, as was at first thought), sent from Bognor by W. B. FLETCHER, Esq., to the last meeting:—

"On a male plant some catkins were normal; most of them had all the flowers female, due to transformation of the two stamens into two carpels, which were quite separate, long-stalked, and contained rudimentary ovules. In a minority of catkins every flower contained two structures transitional between carpels and stamens; each exhibited a terminal stigma, and bore 2-4 pollen-sacs, which contained pollen. The ovuliferous part of the capel is homologous with the anther of the stamen, and the stalk of the carpel with the filament of the stamen."

Mr. FLETCHER also sent *Salix alba vitellina*, with aberrant catkins, upon which Mr. WORSDELL reported:—

"An apparently male plant originally. The catkins contain for the most part normally-constructed male and female flowers intermingled throughout. Here and there was a flower consisting of two organs transitional between carpels and stamens. In one such flower observed, one

of the stamens had become completely transformed into a sessile carpel, while the other was normal save for the presence of a stigma topping the anther!"

Grapes sporting.—Mr. J. HUDSON exhibited a bunch of Grapes said to be of the variety "Hemnapoot," from the Cape, and sent to him by Mr. Lees, of Watford, with two green berries about twice the size of the normal purple ones at the shoulder of the bunch.

Tasmanian Orchid.—Mr. J. W. ODELL showed flowers of the terrestrial Orchid, *Pterostylis curta*, flowering from plants given him by the late Mr. Andrew Kingsmill. Dr. RENDLE kindly verified the name.

Yarrow galls.—Mr. ALEX. MORTIMER, of The Downs, Wimbledon, sent Yarrow (*Achillea millefolium*) with numerous blackish, round galls upon its creeping stems. The sender had not found these in previous years, though the plants had been examined in weeding. The galls were apparently the work of the gall fly, *Trypeta guttularis*.

Virescent Wallflowers.—Mr. CHITTENDEN showed specimens of Wallflowers which had been grown at Wisley, the second generation from the cross of a virescent with a normal Wallflower. In the first generation all the plants were normal, in F₂ segregation into the two parent forms had occurred in the proportion of 101 normal to 42 virescent. There were no intermediates among the plants. The only variation found was in the number of supernumerary carpels—usually six, but sometimes only four. The numbers approximate to the 3 to 1 ratio of Mendel's laws, where the expectation would be 107 to 36.

Abnormal Dendrobium Wardianum.—Mr. CHITTENDEN showed an abnormal flower of *D. Wardianum* from Wisley, which Mr. WORSDELL examined and reported upon as follows:—

"Dimerous flower; two lateral sepals fused into one, which occupies place of labellum, causing the latter to disappear. Lateral petals displaced into a position at right angles to the fore and aft sepals. Column normal."

Gall on Daphne Mezereum.—Mr. W. E. LEDGER showed a shoot of *Daphne Mezereum* with numerous gall-like excrescences at the bases of the lateral shoots. Dr. RENDLE took them for further examination.

Albino seedlings of Crinum Moorei.—Mr. H. W. B. BRADLEY, of Sydney, N.S. Wales, sent two dark and two white seeds of *Crinum Moorei*. He stated that the latter, if sown at once, "will develop ivory-white foliage, but seem to have so little vitality that they die out at the end of the first season. . . . Every year a few albino seeds come without any apparent reason. Generally speaking, all the seeds in a fruit are either albino or normal. Last year, in the same fruit, I had two seeds, one normal, the other albino. Both grew. The normal seed developed a normal plant, with green foliage, which is still alive; the albino seed an albino plant, now dead. This year seedling of *Moorei* has not been at all free, and I have nearly, if not quite, as many albino as normal seeds; last season there were very few albinos."

"In 1912 we had very little rain until March, and we then had a superabundance of rain until August, then no rain to be of any service until after *Crinum Moorei* had finished flowering. . . . The season immediately preceding the flowering in 1913 and 1914 was very similar, and could have had no effect on the matter, as there were very few albinos in 1913 and more than usual in 1914."

Cuscuta on Ramondia.—The manager of the Burton Hardy Plant Nurseries, Christchurch, sent a plant of *Ramondia pyrenaica*, with a *Cuscuta* on its foliage, not identifiable further, however, on account of the absence of flowers.

NORTH OF ENGLAND HORTICULTURAL.

APRIL 29 AND 30.—The spring exhibition of this society was held in the Corn Exchange, Leeds. The exhibits were composed chiefly of hardy plants, many of them of considerable merit. *Narcissus* and Tulips were well shown.

MESSRS. R. H. BATH, of Wisbech, showed a large collection of Darwin Tulips, all in good condition and admirably arranged. Clara Butt

was one of the best varieties; the colour is a soft, salmon-pink. Faust, a large, bold flower of maroon-purple, and Flambeau, bright scarlet, were striking and attractive. (Gold Medal.)

Mr. G. W. MILLER, of Wisbech, showed hardy flowers in good condition. An attractive seedling in this exhibit was *Viola cornuta* The Clarkson, a new variety considerably darker than the species, with a distinct Violet scent, to which a 1st Class Diploma was awarded.

Mr. J. MALLENDER, of Bawtry, Yorks, showed *Narcissus* well displayed on a sloping stand. An interesting seedling *Narcissus*, Sybil Forster, to which a 1st Class Diploma was awarded, formed a feature in the display. (Silver-gilt Medal.)

Messrs. ARINDALE AND SON, of Sheffield, won a large Silver Medal for their display of Alpines and hardy plants. A new pink seedling *Arabis* (*A. Holboellii*) was comprised in this group, to which a 1st Class Diploma was awarded.

A large Silver Medal was awarded to the group shown by Messrs. ROBERT KER AND SONS, of Liverpool, which comprised forced shrubs and greenhouse plants of various kinds. Their *Calceolarias* were well flowered, and *Rhododendron* Pink Pearl carried large heads of delicate blossoms.

Messrs. G. GIBSON AND SONS, Bedale, showed Alpine plants, for which a Silver Medal was awarded.

Mr. J. WOOD, of Boston Spa, showed an interesting collection of Alpines in pans, to which a large Bronze Medal was allotted. Mr. A. AKERS, of Ilkley, was awarded a large Bronze Medal for varieties of florists' *Auriculas*, including the variety Griffith Jones, for which he was awarded a 2nd Class Diploma.

Messrs. MANSELL AND HATCHER, of Rawdon, showed a small collection of Orchids, arranged with their new Fern, *Asparagus Hatcheri* (to which was awarded a 1st Class Diploma). The group included good examples of *Miltonia vexillaria*, *Cattleya Mossiae*, and *Cymbidium Lowianum*, besides a number of other kinds. The group was awarded a Silver Medal.

Mr. T. H. GAUNT, of Farsley, showed a small rock-garden, the stone consisting of water-worn limestone. Saxifrages were grouped about the foundation in bold masses, the effect being very pleasing; varieties of *Aubrietia* were also arranged in clumps. A Silver Medal was awarded to the exhibit.

SOCIÉTÉ FRANÇAISE D'HORTICULTURE DE LONDRES.

MAY 2.—The annual dinner of this society, held at the Café Royal on the 2nd inst., celebrated the twenty-fifth anniversary of the Association. A large and influential company assembled under the presidency of Mr. Harold Beale (of Messrs. James Carter and Co., Raynes Park).

Covers were laid for over 130 guests, and with few exceptions the places were filled. The function was one of the most brilliant in the annals of the society. The tables were beautifully decorated with Tulips and Roses, arranged with the greatest taste by M. Ripard.

The chairman was supported on his left by Sir Geo. Wyatt Truscott, Bart., on his right by M. George Schneider, founder and president of the society. Among other guests were Messrs. J. McKerchar, W. Cutbush, Rudolph Barr, Lelasseur, N. N. Sherwood, Professor Keeble, S. T. Wright, E. A. Bunyard, Guilloud, Ripard, F. Reader, J. F. McLeod, G. J. Ingram, Harman Payne, G. Prickett, F. Gardiner, Reg. Beale, J. Hiehle, senr. and junr., D. Ingamells, T. Stevenson, T. Bevan, W. Howe, R. J. Frogbrook, and Ed. Sherwood.

The toasts of "The King" and "The President of the French Republic" were duly honoured. In proposing the latter toast the chairman referred to his stay in Paris, and his experience elsewhere in France, humorously observing that he had learnt much from that country. He referred to the recent visit of King George to Paris, and said that the warm welcome received by His Majesty had sunk deeply into our hearts.

The next toast was "Success to the French Horticultural Society of London," proposed by the chairman, who opened his speech in excel-

lent French, to the delight of the Frenchmen present. He reminded them of the objects of the society and of its many supporters, among whom he specially mentioned M. Philippe de Vilmorin, Sir Harry Veitch, Mr. N. N. Sherwood, Mr. Harman Payne, Sir Albert Rollit, and Mr. Rudolph Barr, who had each presided over their annual banquet. He was much gratified at the presence and support of Sir Geo. Wyatt Truscott, whose father had been the Chief Magistrate of London. After referring to the early days of the society, and the vast amount of labour expended upon it by their excellent friend M. Schneider, he was glad to say that as he grew older so the work grew lighter. The friendliness now existing between the two great nations was a fact at which they all rejoiced, and this society had done much towards bringing about this excellent result. As there was a long and interesting musical entertainment he would not detain them further. He asked them to drink to the continued prosperity of La Société Française d'Horticulture de Londres, with which toast he coupled the name of their honoured and devoted president, M. Geo. Schneider.

M. Schneider replied. After the kind words of their chairman he would not trouble them with details concerning the society. The suc-



MR. HAROLD BEALE, WHO PRESIDED AT THE ANNUAL DINNER OF THE FRENCH GARDENERS IN LONDON.

cess of the meeting was due entirely to their chairman, whose interest in the society they all appreciated, and to whose generosity they owed an excellent musical programme. He could not refrain from wondering what the early members of the society would have thought twenty-five years ago if they could have seen the present meeting. Little by little the society has made its way until it counts amongst its members the most eminent persons in this country and abroad in the horticultural profession. He was glad to welcome that evening so many of their English friends and supporters, for although they placed young Englishmen in situations abroad, it was to English nurserymen that their thanks were due for receiving young Frenchmen who came here to learn English and improve their knowledge of horticulture. He asked them to drink to the success of English horticulture, to which Sir Harry Veitch would have replied, but as he was too unwell to attend he would ask Mr. N. N. Sherwood to take his place.

At this juncture M. Schneider read telegrams from friends wishing the meeting every success, and from others regretting unavoidable absence. Among the latter were Sir Harry Veitch, Sir Albert Rollit, Mr. Hooper Pearson, and others.

Mr. Sherwood replied, saying he hardly felt qualified to respond to such a toast as English horticulture. He was a seedsman, but he fully appreciated the work the society was doing. He was pleased to do what he could for the society, and hoped the members would pay him a visit during the ensuing year. He proposed the health of the officers of the society.

M. Schneider, on behalf of the society, returned thanks; they would have been pleased to accept the invitation which was given two years ago but for circumstances beyond their control.

M. Sausy responded to Mr. Sherwood's toast of the officers. He was sure that his colleagues were deeply grateful for the help afforded them by the English nurserymen, and also to their past chairman for presiding over their meetings. He asked them to drink the health of the past chairman, coupled with the name of Mr. Harman Payne.

Mr. Payne responded, regretting that he was unexpectedly called upon to supply the place of Sir Albert Rollit.

Sir Geo. Truscott proposed the chairman's health in a very complimentary speech, in which he paid a tribute to the chairman personally and to the eminent firm of which he was a member. He was sure that under such guidance the house of James Carter and Co. would long continue to flourish.

The evening's entertainment was brought to a close by the singing of "Auld lang syne," prior to which M. Legrange, in the name of the young Frenchmen, presented to M. Geo. Schneider a testimonial in recognition of their esteem for his labours on their behalf.

ROYAL CALEDONIAN HORTICULTURAL SPRING SHOW.

APRIL 29 and 30.—The spring show of this society was held in the Waverley Market, Edinburgh, on these dates. The exhibits numbered about 50 in excess of those of last year's spring show, and there was an excellent display of non-competitive exhibits. Favoured by summer-like weather for more than a fortnight, everything seemed in the pink of condition, and taken all round it was generally conceded that, from the point of view of quality, it was one of the best spring exhibitions of recent years, although the competitive exhibits suffered somewhat by the absence of entrants in the leading class—the group of Orchids. The show was opened by the President, and there was a satisfactory attendance of visitors.

GARDENERS' AND AMATEURS' PLANTS.

There were four competitors in the class for four stove or greenhouse plants in flower, and Mr. BALLANTYNE, The Neuk, Peebles (gr. Mr. Allan Smith) was placed 1st, the Earl of HOME, Douglas Castle (gr. Mr. A. McMillan), 2nd, and Sir R. USHER, Bt., Norton, Midlothian (gr. G. McKinna), 3rd. Mr. BALLANTYNE's plants were *Cymbidium Lowianum*, *Anthurium Wardii*, *Rhododendron* var., and *Clivia* var. Sir R. USHER was awarded the 1st prize for six plants in bloom; 2nd, the Earl of HOME; 3rd, J. MCKELVIE, Esq., Halton House, Midlothian (gr. Mr. F. R. Findlay).

Sir R. USHER was the only entrant for four hardy *Rhododendrons*, and he was awarded the 1st prize. This gentleman was also placed 1st for four plants of *Rhododendron* (*Azalea indica*). Col. MORE NISBET, The Drum, Midlothian (gr. Mr. R. Wharrel) was 1st for two specimens, and J. MCKELVIE, Esq., 1st for six hardy *Azaleas*.

Sir A. B. MILNE, Bt., Inveresk Gate, Musselburgh (gr. Mr. R. McAndie) excelled in the class for four Orchids; and the same competitor and R. HINDLE, Esq., Edinburgh (gr. Mr. A. Jeffs) were placed equal 1st for one Orchid.

Mrs. HUTCHESON, Carlownie, Kirkliston (gr. Mr. J. Thom), excelled for four foliage plants, for six foliage plants, for three *Dracaenas*, and three *Codiaeums* (*Croton*). Wm. BAIRD, Esq., Elie House, Fife (gr. Mr. A. A. Law) won the 1st prize in the class for six table plants.

The Earl of HOME excelled in all the Palm classes, being first for four and six specimens and one plant respectively.

Mrs. HUTCHESON showed the best group of twelve *Roses* in pots, the best six H.P. *Roses*,

and the best six H.T. Roses. Mrs. DEWAR, Drylaw House, Midlothian (gr. Mr. W. T. Galloway) excelled for two climbing Roses.

Sir R. USHER took 1st place for the following:—Four Ivy-leaved Pelargoniums, four Zonal Pelargoniums, two Deutzias, three Guelder Roses, and three Lilacs. Mrs. HOG, Gogar Burn, Midlothian (gr. Mr. Wm. Brow), excelled in the classes for four show Pelargoniums, six Cinerarias, and six *Cineraria stellata*.

J. MCKELVIE, Esq., was awarded the 1st prize for three exotic Ferns and three *Adiantums* respectively, and Mr. ALEX. BRYSON, Edinburgh, for six dwarf hardy British Ferns.

Mrs. HUTCHESON, Carlowie, was placed 1st for three plants introduced since 1909, with *Dracaena Doucettii* Prince Albert, *Dracaena Warneckii*, and *Adiantum farleyense gloriosum*.

Mrs. HOG excelled for six plants of *Primula obconica* and six distinct species of *Primula*; Sir R. C. MUNRO FERGUSON (gr. Mr. D. McLean) for six *Polyanthus*; Mrs. DEWAR, Drylaw House, for six *Primula Sieboldii*; and Miss WATSON, Edinburgh (gr. Mr. D. Dickson) for six *P. japonica*. Miss BALFOUR-MELVILLE, Pilrig House, Edinburgh, exhibited the best six Alpine *Auriculas*, three Alpine *Auriculas*, six stage *Auriculas*, one white-edge *Auricula*, one grey-edge *Auricula*, and one self *Auricula* respectively, whilst C. W. COWAN, Esq., Dalhousie Castle, Midlothian, excelled for twenty-four and six Alpine *Auriculas* respectively.

CUT FLOWERS.

Mr. L. BRYDON, Innerleithen, was awarded the 1st prize for twelve bunches of *Narcissi*. Mrs. DENNISTOUN, Rosslea, Row (gr. Mr. W. Parlane) excelled for twenty-four Roses, twelve Roses, twelve *Maréchal Niel* Roses, twelve Roses other than *Gloire de Dijon* and *Maréchal Niel*, and G. D. MACKAY, Esq., Inveralmund, Cramond (gr. Mr. J. A. Sword) for twelve *Gloire de Dijon* Roses.

Lord STRATHEDEN AND CAMPBELL, Hartrigge, Jedburgh (gr. Mr. A. Williams), showed best in the class for three vases of *Souvenir de la Malmaison* Carnations and four vases of other Carnations.

Lord ELPHINSTONE (gr. Mr. D. Kidd) exhibited the best decorated dinner table; 2nd, the Earl of DALHOUSIE, Panmure, Carnoustie (gr. Mr. J. Simpson).

FRUIT AND VEGETABLES.

Lord ELPHINSTONE excelled for Strawberries, and Mrs. HAMILTON-OGILVIE, Biel, East Lothian (gr. Mr. Thos. McPhail), for bottled fruits.

Lord ELPHINSTONE was also placed 1st for a collection of vegetables, arranged in a space 4 feet by 3 feet; 2nd, the Marquis of TWEEDDALE, Yester, East Lothian (gr. Mr. Wm. Hunter).

The competition for garden plants, open only to under-gardeners, resulted as follows:—1st, A. CARD, Milton Abbey, Blandford, Dorsetshire; 2nd, H. G. OLIVER, Royal Botanic Garden, Edinburgh; 3rd, A. MACEY, Chirk Castle, Whitehurst, Wales.

AWARDS.

FIRST-CLASS CERTIFICATE.

Primula Leddy Pilrig (*P. Bulleyana* × *P. Beesiana*), exhibited by Miss BALFOUR-MELVILLE, Edinburgh (gr. Mr. W. Robertson).

AWARDS OF MERIT.

Primula Bon Accord King, *P. Bon Accord Prince*, *P. Bon Accord elegans*, *P. Bon Accord Jack*, exhibited by Messrs. JAMES COCKER AND SONS, Aberdeen.

CULTURAL CERTIFICATE.

Calceolaria Olibranii, exhibited by Sir W. H. HOULDSWORTH, Coodham, Kilmarnock (gr. Mr. McGran).

NON-COMPETITIVE EXHIBITS.

Messrs. SUTTON AND SONS, Reading, showed a large collection of Potatos, with examples of the various Potato diseases. (Gold Medal.)

Messrs. DICKSONS AND Co., Edinburgh, exhibited a fine group of seedling *Amaryllis*, and a large group of Pink Pearl and other *Rhododendrons*. (Gold Medal.)

Messrs. DOBBIE AND Co., Edinburgh, showed Rambler Roses, Tulips, Potatos and, for the first time at a spring show in Edinburgh, Sweet Peas. (Gold Medal.)

Mr. DAVID KING, Murrayfield, had an artistic exhibit of spring-flowering subjects, backed by

Palms, which formed a conspicuous object at the end of the hall. (Gold Medal.)

Messrs. CUNNINGHAM, FRASER AND Co., Edinburgh, showed a general collection of Alpines. (Gold Medal.)

Mr. JOHN DOWNIE, Edinburgh, exhibited *Pelargoniums*. (Silver-gilt Medal.)

Messrs. HOGG AND ROBERTSON, Dublin, staged a collection of Tulips and St. Brigid Anemones. (Silver-gilt Medal.)

Mr. H. N. ELLISON, West Bromwich, showed a collection of small Cacti. (Silver-gilt Medal.)

Messrs. MANSELL AND HATCHER, LTD., Rawdon, exhibited a collection of Orchids. (Silver-gilt Medal.)

Messrs. STORRIE AND STORRIE, Glencarse, Perthshire, had a fine collection of seedling *Primulas* and *Polyanthus*. (Silver Medal.)

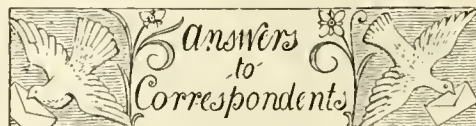
Messrs. SANDER AND SON, St. Albans, showed Orchids. (Silver Medal.)

Mr. D. McLEOD, Manchester, showed seedling Orchids. (Silver Medal.)

Silver Medals were awarded to Messrs. THYNE AND SON, Dundee, for Alpines; Messrs. PIPERS, London; Messrs. WM. CUTBUSH AND SON, London, for perpetual-flowering Carnations and Alpines; Mr. D. W. THOMSON, Edinburgh, for Tulips; and Messrs. JAS. COCKER AND SONS, Aberdeen, for *Primulas*.

Messrs. JOHN FORBES (HAWICK), LTD., had herbaceous and Alpine plants. (Bronze Medal.)

Mushrooms were shown by the EDINBURGH MUSHROOM COMPANY.



ABNORMAL CARNATIONS: *W. S. R.* The trouble is due to an excess of vigour. They present the following phenomena: 1, Kind of fasciation or internal branching of the flower, in which the place of the petals seems to be occupied by numbers of very small subsidiary flowers, each of which produces nothing but a great number of petals; 2, Ovary much enlarged, and has assumed the consistence, size, and functions of a calyx for the secondary flower formed by proliferation within the primary one. In the same way the ovary of the secondary flower acts as calyx for the tertiary flower, which, however, is rudimentary. The ovules of the ovary of the primary flowers are rudimentary and few in number, and parietally situated.

CARNATIONS: *R. H.* The plants are perfectly normal, and the spikes not blind as you suggest. Exercise patience and you should have a good show of flowers.

EVERGREEN FLOWERING SHRUBS FOR A HEDGE: *Nimrod.* As you require an evergreen flowering hedge the choice is restricted to a very few subjects, the two most suitable for your purpose being *Berberis Darwinii* and *Rhododendron ponticum*. The former makes a capital hedge up to 4 feet in height, bearing bright, orange-coloured flowers in April, followed by blue-black berries in August. The leaves are small and neat, and a hedge of this plant can easily be kept in shape by an occasional trimming. If you decide to use this *Berberis* select plants about 2 feet high, which are as large as can be transplanted with safety. It is a somewhat difficult subject to move, and you should insist on the nurseryman supplying one-year transplanted plants. *Rhododendron ponticum* bears lilac-purple flowers about the end of May, but you would not get much bloom from a hedge restricted to 4 feet in height, as the flowers are produced terminally, and in topping the plants you would cut away the flowering wood. This *Rhododendron* may be transplanted at any size.

GOLDEN CURRANT: *Thos. Winkworth.* The *Ribes sanguineum* Brocklebankii with yellow young foliage appears to be a very good shrub of its type. We have not seen it before.

NAMES OF PLANTS: *Chas. Palmer.* *Ulmus montana*.—*W. S.* Plant with largest double white flowers, *Prunus japonica* flore pleno; plant with small double white flowers, *Spiraea prunifolia* flore pleno; evergreen plant, *Choisya*

ternata; tree with white flowers, *Prunus Padus*; bulbs, *Leucoium vernum*; other too shrivelled for identification.—*P.* *Olearia stellulata*.—*W. H. W.* 1, *Staphylea pinnata*; 2, *Leycesteria formosa*; 3, *Symphoricarpos racemosus*; 4, *Amelanchier canadensis*; 5, *Pyrus* sp. (send in flower); 6, *Viburnum Opulus*.—*T. T.* 1, *Berberis Thunbergii*; 2, *Spiraea prunifolia flore pleno*; 3, *Pulmonaria rubra*; 4, *Phlox stellaria lilacina*; 5, *Brodiaea uniflora*; 6, *Saxifraga Wallacei*; 7, *S.* "Guildford seedling"; 8, *S.* seedling (unnamed); 9, *Sedum maximum*; 10, *Tiarella cordifolia*; 11, *Saxifraga rotundifolia*; 12, *Arenaria balearica*.—*A. H. P.* *Corydalis thalictrifolia*.—*H. F. Z.* 1, *Prunus triloba*; 2, *Cypripedium Calypso*; 3, *Cattleya Schröderae*; 4, *Dendrobium Pierardii*; 5, *Pulmonaria saccharata*; 6, *P. officinalis*; 7, *Tritonia crocata*; 8, *Saxifraga caespitosa* var.; 9, *Saxifraga "Rhei"*.—*J. M. S.* *Prunus Padus*, Bird Cherry.—*J. H. B.* *Mackaya bella*.—*B. H.* *Chrysosplenium oppositifolium*.—*Cestrian.* 1, *Cheiranthus Cheiri flore pleno*; 2, *Gerbera nivea*; 3, *Carex alba*; 4, *Lonicera tatarica*.—*F. B.* *Rhipsalis salicornioides*.—*O. R. C.* 1, *Masdevallia simula*; 2, *Masdevallia Schröderiana*; 3, *Masdevallia coniculata*; 4, *Stelis ophroglossoides*; 5, *Oncidium flexuosum*; 6, *Odontoglossum constrictum*.—*G. R. H.* *Prunus Padus*.—*C. S., Surrey.* 1, *Cercis Siliquastrum*, Judas Tree; 2, *Pyrus japonica*; 3, *Spiraea confusa*; 4, *Prunus Padus*.—*W. R.* 1, *Brassavola cordata*; 2, *Thunia alba*; 3, *Cymbidium pendulum*; 4, *Cypripedium vernixium* (*Argus* × *villosum*).—*F. J.* 1, *Amelanchier canadensis*; 2, *Dielytra eximia*; 3, *Symphytium rubrum*; 4, *Tiarella cordifolia*.

PEACH LEAVES: *H. B.* The injury to the leaves of the Peach is due to a disease commonly known as "leaf blister" or "leaf curl" (*Exoascus deformans*). In order to prevent attacks the trees should be sheltered from cold winds, preferably by a wall. When an attack has already taken place all diseased leaves should be burned and the shoots cut back beyond the point of infection. Spraying with dilute ammoniacal solution of copper sulphate when the leaf-buds are beginning to expand, and again after a period of three weeks, would prove a safeguard against inoculation by spores borne by the wind.

POTATOS TURNING BLACK: *E. T.* It is difficult to give a definite reason for your Potatos turning black. In some cases the soil is at fault, but they are sometimes known to become black without any apparent reason. It has, however, been found by experience that when Potatos such as you describe are steamed, instead of boiled, they are a better colour when cooked.

VINES CUT BACK IN JANUARY: *S. H.* We have known vines succeed, after a loss of one or two seasons, when the old spurs have been cut off close to the rods, but January is too late to perform such an operation, the end of November being a more suitable time. However, the vines may break satisfactorily, and you need not be alarmed about the sap exuding through the bark.

VINE LEAVES SPOTTED: *Bristol.* Besides the spots on the surface of the leaves, the tips of the serratures have a seared appearance. This is called scorching, but is in reality the result of a chill. The mornings up to the last day of April were unusually bright and followed cold, often frosty nights. Vineries under such conditions have required a little ventilation very early, those with an eastern aspect as early as 6 a.m. One with a southern aspect would not need it so soon, but it should be attended to before the temperature rises more than a degree or two, otherwise an abundance of moisture collects on the cold surfaces, and when air is admitted, especially with such a dry atmosphere prevailing outside, this moisture is evaporated too quickly and causes a chill. Black Alicante is one of the first varieties to show the effects of such faulty treatment.

Communications Received.—Somerset—A. B.—*J. S.*—*Lankas*—*F. R.*—*T. Siins*—*E. B.*—*F. Johnson*—*S. A.*—*A. Fraser*—*A. Gilbert*—*C. G. B.*—*W. C. W.*—*P. A.*

THE

Gardeners' Chronicle

No. 1,429.—SATURDAY, MAY 16, 1914.

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NEW FACTS CONCERNING AMERICAN GOOSEBERRY MILDEW AND ITS CURE.

THE purposes of this article are to describe the results obtained by the author in a series of spraying experiments carried out in 1913, and to draw attention to some fresh facts which have been discovered in the life-history of this mildew.* Both matters are likely to prove of importance to the gardener and fruit-grower. It is satisfactory to note that while, unfortunately, the official legislative measures which were adopted on the importation of this new pest have not prevented its spread far and wide over the country, the attention which has been directed to this mildew is resulting in the acquisition of a better knowledge both of the details of its life-history and of the means of checking its ravages. As will be seen from the facts mentioned below, there is now reason to believe that gardeners, and fruit-growers of a small acreage of Gooseberries, will be able, if attention is paid to certain all-important points, to prevent epidemic outbreaks of the mildew, and save the crop and bushes from serious injury.

In the spraying experiments carried

out with the assistance of Mr. R. G. Hatton, plots comprising several hundred bushes of a number of different varieties, situated on commercial fruit-farms at three centres in Kent (Rodmersham, Mereworth, and Boughton-under-Blean) were sprayed with either the lime-sulphur wash or with a solution of liver of sulphur. The results obtained show clearly the superiority of lime-sulphur over liver of sulphur for preventing the spread of the mildew in its white powdery "summer stage." In one experiment bushes previously quite free from mildew were observed to show a slight trace of it on June 6. The bushes were immediately drenched with the liver of sulphur solution at the strength of two ounces to three gallons of water—clearly the strongest solution advisable, since at this strength the tips of the youngest shoots are turned brown and killed, and the edges of the young leaves are scorched and shrivelled. Another drenching with the same wash was given on June 12—less than a week after; yet an examination on June 23 showed that the disease had not been appreciably checked, many of the shoots and berries being smothered with mildew. Similar results were obtained in other sprayings, while in most cases the use of the lime-sulphur wash greatly checked the spread of the disease.

The lime-sulphur spray at full strength (1.01 sp. gr.) can be used during the early part of the season, April to June, and probably during July in most years, on the varieties named below, without causing any serious injury, even when applied several times successively to the same bushes. The bushes which may be thus treated are:—Whinham's Industry, Rifleman, Warrington, May Duke, Howard's Lancer, Gunner's Seedling, and Cousin's Seedling (Sandwich Yellow), and, when growing in a shaded position, Berry's Early and Lancashire Lad. The varieties named below are liable to be injured if the bushes are sprayed many times successively, or if they are situated in a sunny position:—Berry's Early, Freedom, Lancashire Lad, and Crown Boh. and it is, therefore, advisable to use the half-strength lime-sulphur wash (1.005 sp. gr.) on these varieties, and to avoid spraying late in the season. The varieties Yellow Rough (Golden Drop) and Valentine's Seedling show so great a susceptibility to injury by lime-sulphur and other sulphur-containing fungicides that they cannot be treated.

In early seasons—such as the present season, when the mildew made its appearance so soon as April 6—spraying should be commenced as a general rule in mid-April in all plantations where the disease occurred in the previous season: in other circumstances the first week in May is early enough. The spraying with lime-sulphur should be continued at intervals of about a fortnight to within about a month of the picking of the berries, when the liver-of-sulphur solution or flowers of sulphur should be tried for the purpose of stopping the spread of the mildew to the fruit. By these means it

should be possible to grow a clean crop of berries. After the crop has been gathered a good final spraying with lime-sulphur should be given.

The advantages of the lime-sulphur wash are its cheapness, ease of application, and adhesiveness when dry; a slight disadvantage consists of its sediment marking the berries. The wash is best purchased from firms of repute, who now place on the market lime-sulphur in a concentrated form, with a guaranteed specific gravity of 1.3. Lime-sulphur washes of unknown specific gravity should always be avoided. One gallon of the concentrated wash of 1.3 sp. gr. requires making up with water to 30 gallons in order to obtain the full strength wash of 1.01 sp. gr. suitable for spraying most varieties of Gooseberries; for the half-strength wash of 1.005 sp. gr. one gallon must be made up with water to 60 gallons. The wash is best applied by a knapsack pump, which must be fitted with a nozzle which gives a fine misty spray, such as is supplied with the Vermorel "Eclair" knapsack pump.

The spray, when dry, is so remarkably adherent that even heavy rains do not wash it off; consequently, if there are berries on the bush they become much marked by the whitish sediment. The handling of the berries in the operation of picking removes a good deal of the sediment, and should any appreciable amount still remain, and this be objected to, the berries can be cleaned by a vigorous rinsing in water. It is pointed out—and this is a matter which will need emphasising now that the use of lime-sulphur is becoming so common—that there can be no danger to health in the use of berries with lime-sulphur sediment on them; sulphur is not a poison, and the very small quantities present on berries could not possibly cause any disagreeable effects. As a matter of experiment, I took some berries, which had been specially heavily sprayed with lime-sulphur, with the result that when dry, they were well covered with the whitish sediment, and boiled them with sugar as in ordinary domestic cookery; it was found that no objectionable smell was given off during the cooking, and that the berries when eaten had no objectionable taste or unpleasant after-effects.

While, however, spraying with lime-sulphur is very often successful in keeping the mildew from attacking the berries, I find that in cases where the soil under or round the bushes has become infested with the "winter spores," the berries become badly mildewed in spite of frequent and thorough sprayings. In order to understand how this happens a brief review of the main facts in the life-history of the mildew is necessary. As shown in the coloured illustrations published in *Gard. Chron.*, Dec. 7, 1912, the American Gooseberry mildew passes through two distinct stages in its life-cycle every year: in its "summer stage" it is white and powdery and extremely infectious, the "powder" consisting of myriads of minute "summer spores" (conidia), very light and easily carried by the wind. These spores:

* See *Journal of the Board of Agriculture*, March, 1914.

convey the disease to the leaves, shoots, and berries, and in this stage the disease can be checked by spraying. In the second stage—called the "winter stage," because, although formed during the summer, it carries on the life of the mildew through the winter—the fungus becomes dense and scurf-like, and produces hundreds of minute blackish fruit-bodies (perithecia), inside each of which is found a little sac (ascus) containing eight "winter spores" (ascospores). No spraying is of any use against this winter stage, because, the walls of the fruit-body being of a corky nature, no chemical is able to penetrate them and reach the "winter spores" inside; consequently, the only way of dealing with the winter stage is to remove and burn it. From personal observations I am able to describe the mode of opening of the perithecia. When moistened with water, a perfectly ripe fruit-body soon cracks open by a slit at the top, and the contained sac begins to swell and protrude through the opening. In about five minutes the sac has swollen enormously, and has become about eight times as large as it was when inside the fruit-body. The wall of the sac becomes thinner and thinner in consequence of the increase in size—just as in the case of a bladder or soap-bubble when blown out—until in a short time it splits and the eight "winter spores" are forcibly ejected into the air to a distance of about 1 inch. Carried about by currents of air, these ascospores reach the leaf-stem or berry and give rise in a few days to fresh patches of mildew in its white, powdery, infectious "summer stage."

Now, these fruit-bodies are at first firmly attached to the brown patches of "spawn" on the shoots; but as these patches begin to be affected by weather conditions in winter they become loose and drop to the ground. There they remain during the winter, burst open in the spring, and discharge their "winter spores," which give rise to the fresh spring and early summer outbreaks. This fact has been known for some time, and on this account the removal and burning of all diseased tips of shoots in the early autumn—about October—has been enforced (so far as possible) by the authorities. I have discovered, however, that this soil infestation may take place much earlier. Thus, in August the fruit-bodies formed in the "winter stage" on infested berries have become free; when such a mildewed berry is gently tapped over a piece of white paper hundreds of just visible black "specks" may be observed; these are ripe fruit-bodies containing mature "winter spores."

In the light of this fresh fact, it is a matter of great practical importance in fighting the mildew not to allow berries with any brown "winter stage" on them to remain on the bush, as there will always be the serious danger of the soil under the bushes becoming heavily infested, in which case spraying in the next season would probably be of little avail in keeping off the mildew from the berries. It was observed that last season this infestation of the soil occurred in August in many plantations in Kent, where late dessert varieties of Gooseberries are grown.

Another fact of equal practical importance is the frequent occurrence of the "winter stage" of the mildew on the leaf of the Gooseberry. In cases where the shoot is severely attacked the young leaves become arrested in growth, and finally covered with the brown "winter stage." In other cases the leaf itself is not affected in size or shape, and the mildew is confined to the lower part of the leaf-stalk, where a small brown patch of the winter stage is formed. In either case, if such diseased leaves are allowed to fall to the ground they inevitably infest the soil, with the result that next spring the "winter spores" cause fresh outbreaks of mildew. To prevent such soil infestation, "tipping" in August before the leaves fall must be resorted to.

Taking everything into consideration, "tipping" in August or early in September before the leaves have fallen is to be strongly recommended. In some seasons and with bushes of a certain age no further growth of the shoots will take place after this tipping is done; and if all the mildew has been cut off the bush is freed from the parasites, since the disease is always confined to the young wood. If, as will probably occur in some seasons, a little fresh growth is made and this becomes infected with mildew, the grower will still be in a better position, since there will certainly be much less disease to be removed before the "fruit-bodies" fall to the ground.

The following conditions of culture help bushes to withstand attacks of mildew:—(1) An open



FIG. 143.—ONCIDIODA MAURICII: SEPALS AND PETALS DULL PURPLE, FRONT OF LIP PRIMROSE YELLOW

(R.H.S. Award of Merit, May 5, 1914.)

situation. (2) Not too close planting. (3) A natural unforced growth; such is obtained naturally in a good soil or by well-balanced manuring. Excessive nitrogenous manuring—e.g., heavy dressings of organic manures—causes the bushes to produce sappy shoots, which are liable to become virulently attacked by mildew.

In conclusion, it may be pointed out that it is clear that, with the new facts now brought forward, the combat against the American Gooseberry mildew has entered on a fresh stage. If we may conclude, as there seems ground for doing, that the lime-sulphur spray will keep the "summer stage" from doing serious injury, and

that "tipping" in August or September will prevent soil infestation, then all growers of Gooseberries on a small scale should not find it too difficult a task to grow a healthy crop of Gooseberries in spite of the introduction into this country (and doubtless the permanent establishment) of this most serious pest of the Gooseberry. E. S. Salmon.

NEW OR NOTEWORTHY PLANTS.

CYPRIPEDIUM PEREIRAE.

THE subject of this note is a remarkable *Cypripedium*, of which a specimen in formalin and a coloured drawing were sent to me by Mr. J. D. Pereira, Singapore. The plant which he has for sale was obtained on one of the islands near the Laukawi group north of Penang, the home of *Cypripedium niveum*. He suggests that it may be a natural hybrid between *C. niveum* and *C. exul*, although, so far as we know, the latter species has not yet been met with in this region. It certainly has the appearance of being a hybrid of *C. niveum*, with some other species at least allied to, if not actually, *C. exul*. The leaves are linear, rounded, and unequally lobed at the tip, 15 cm. long, green, faintly mottled; the peduncle is 12 cm. or more long, the bract lanceolate, much longer than *C. niveum*, but shorter than *C. exul*, shorter than the ovary. The flower is white, with pink spots on the bases of the upper sepal and the petals. The upper sepal is ovate, pubescent, obtuse, 12-nerved, 3 cm. long, broad-based, and as wide and less orbicular in outline than in *C. niveum*. The lower connate sepals are lanceolate, ovate, obtuse, 3 cm. long and 2.5 cm. wide, shorter than the lip. The petals are oblong, undulate, slightly twisted at the tip, pubescent all over, 4 cm. long and 1.5 cm. across, utterly unlike those of *C. niveum* and its allies. The lip is glabrous, a little longer than the sepals, longer in proportion to its width than in *C. niveum*, with the basal lobes well developed and strongly incurved, as in *C. exul*. The column is thick and hairy, the shield obovate, pubescent, broad, with a short terminal median tooth, but no central base (as there is in *C. exul*), nor is it cordate at the base.

No artificial hybrid of these two species appears to have been made as yet, but a study of the peculiarities of the different organs seems to suggest that Mr. Pereira's theory is correct, and that it is a natural hybrid between the two species. I gather from his letter that only one clump of four plants has been found. It seems to be quite a handsome plant, the nearly pure white flower standing up well on its tall stalk. H. W. Ridley.

ORCHID NOTES AND CLEANINGS.

ONCIDIODA MAURICII.

OUR illustration (fig. 143) represents this interesting cross between *Oncidium tigrinum* and *Cochlioda vulcanica*, for which Monsieur H. Graire, Amiens, received an Award of Merit at the Royal Horticultural Society's meeting on May 5. The sepals and petals are dull purple and the lip primrose yellow. The hybrid is a very interesting one, in that the colouring of the outer segments is like the *Cochlioda*, whilst the lip resembles the *Oncidium*.

CLASSIFICATION OF HYBRID ORCHIDS.

Mr. J. GURNEY FOWLER, chairman of the Orchid Committee of the Royal Horticultural Society, submitted at the last meeting of the Orchid Committee, for the consideration of the

Nomenclature Sub-committee a scheme for classifying hybrid Orchids in sections, each under the heading of the species directly or indirectly present in the hybrids.

From notes supplied by the chairman the honorary secretary had ready pictures of thirteen sets of hybrids for comparison. They disclosed interesting facts concerning the variation of plants of the same cross and the resemblance of hybrids of different crosses of the same species.

The subject is under consideration and will be reported on more fully. It has been referred to in these pages on several occasions, and it is well worth following up.

An interesting point in hybrid Orchids is the extreme variation which in some cases appears in the same batch of seedlings. The proposed classification would render the study of these variations interesting and instructive. It is probable that latent features in the so-called species used in making a cross may assert themselves in varying degrees in hybrids.

THREE CANADIAN CYPRIPEDIUMS.

THE glory of many a forest creek and grassy thicket in Canada is the Moccasin flower (*Cypripedium spectabile*), and when first seen in profusion, far from the haunts of man, it evokes a picture of wild flower life that will never fade from memory. The illustration in fig. 144 depicts the purplish form in rich luxuriance in a swampy retreat in Ontario. I shall not mention the exact spot for a reason that all botanists will appreciate. There are two forms, the purplish and the pink, which differ from one another in the matter of environment, the latter seeking rather drier lands in grassy places on the fringe of wood and forest: but the surroundings only accentuate the fresh beauty of the flowers, which are borne on strong, leafy stems about eighteen inches or two feet high. Sometimes three or four flowers appear on each stem. It is unnecessary to describe this beautiful Lady's Slipper, but when found wild in such rich profusion as here depicted, some general reference to it may be opportune.

C. pubescens, a *Cypripedium* of mountain heights, is found under conditions dissimilar from those that surround *C. spectabile*. Near the sun-baked forests this species flowers abundantly, and in the wild plants the colouring is purer and more fascinating than in those under cultivation. The stem, as hardy plant enthusiasts are aware, is strong and sheathed with light green foliage, the flowers sometimes solitary, sometimes three in number, the lip with ruby-red stripes and spots on a golden-yellow ground, and the sepals and petals twisted and coloured into shades of fawn. It is a lovely *Cypripedium* at all times, but in the cool light of its Canadian home seems to have a most alluring beauty.

C. parviflorum enjoys a similar environment to *C. spectabile*—marshy meadows and swampy woods, and there the graceful plant is seen in its wildest beauty. During the day a sweet scent comes from the flowers. *E. T. Cook, Toronto, Canada.*

FUCHSIAS FOR SUMMER BEDDING.

THERE is a greater tendency to employ taller growing plants for summer bedding than was at one time the case. This is perhaps the reason that Fuchsias are now used for this purpose more than ever, for large examples, whether in a bed by themselves or grouped with other subjects, are very satisfactory. Tall, well furnished specimens sunk in the turf, such as may be seen in Regent's Park during the season, are also very effective. To be seen at their best these should be placed at such a distance from

each other that each plant may be distinctly seen, and yet near enough to form one harmonious whole. When associated with other subjects Fuchsias are shown to considerable advantage if thinly disposed over some low-growing plants. In this way the graceful manner in which their pendulous blossoms are borne can be well seen. One advantage that Fuchsias possess over some other bedding plants is that a wet summer, such as we sometimes experience, does not affect them as it does many others; indeed, it suits them better than a hot and dry season. This is to be accounted for by the fact that in the Andean region of South America—the home of the species of Fuchsia—there is a good deal of atmospheric moisture. Many of the newer varieties of Fuchsia are selected by reason of the large size of the blossoms, but this is a feature which detracts greatly from their value for outdoor work. These large flowers are heavy, and much fewer in number than the smaller ones, so that they are liable to break off in strong winds, and each flower leaves a

makes a delightful dot plant. The truly hardy varieties must on no account be passed over. Of them the old varieties *Corallina*, *globosa*, *gracilis* and *Riccartonii* are hardier than some of the newer kinds that have been distributed under this head. These hardy Fuchsias are excellent for a variety of purposes; they are effective in the hardy flower border, in the foreground of shrubberies, and in beds on lawns. *W. T.*

THE CULTIVATION OF RHUBARB FOR MEDICINAL PURPOSES.

THE cultivation of medicinal plants has recently attracted public attention, both in this country and abroad, especially in the United States, Germany and Austria, each country being desirous of producing as far as possible the amount required for home consumption. The cultivation of Rhubarb for its roots has hitherto



FIG. 144.—CYPRIPEDIUM SPECTABILE GROWING WILD IN THE NEIGHBOURHOOD OF TORONTO, CANADA.

vacant space. This accounts for the fact that so many of the older kinds are very generally employed. Some of the best varieties for the purpose are, of the light-flowered section: Amy Lye, Lady Heytesbury, Mrs. Marshall, Idra and Rose of Castile. Of dark flowers: Abel Carrière, Charming, Marinka, Scarcity, Wave of Life, and Valiant. With white corollas: Flocon de Neige and Cadmus. All of the above have single flowers. A few of the best doubles for the purpose are, dark: Auguste Hardy, Comte Léon Tolstoi, Avalanche, La France, and Phenomenal. With white corollas: Duchess of Edinburgh, Madame Jules Chrétien, Molesworth, and Mrs. E. G. Hill. Madame Cornellison, the oldest and most popular of all, has semi-double blossoms. Two dwarf-growing kinds, much used as an undergrowth to the taller ones, are Alice Hoffmann, with a white corolla, and Mrs. Ida Noack, dark coloured. The tinted-leaved kinds, which are often pegged down as an edging, include Cloth of Gold, Meteor, and Regalia; while the tricolour-leaved *Sunray* is very pretty, a remark that also applies to *F. gracilis variegata*, which

been confined chiefly to England, France and Austria.

Medicinal Rhubarb has been cultivated at Banbury since 1777, when an apothecary named Hayward won a silver medal from the Society of Arts, and in 1794 a gold medal, for the excellent Rhubarb root that he produced. The species then cultivated was *Rheum Rhaponticum*, although in 1877 most of the plants under cultivation appear to have been hybrids between *R. undulatum* and *R. Rhaponticum*. There were also other growers in Somersetshire, Yorkshire and Middlesex who cultivated *Rheum palmatum*, and to whom medals were also awarded in 1789-1795. In 1873 Mr. Usher, of Bodicott, near Banbury, who was at that time the chief grower in this country of *Rheum Rhaponticum* for the root, undertook, at the instigation of Mr. Daniel Hanbury, the cultivation of *Rheum officinale*, a large and handsome plant then not long introduced from China, and reported to be the source of the Chinese Rhubarb root. At the present date these two species, as well as a little *Rheum palmatum* var. *tanghaticum*, are the species cultivated in this country, formerly near

Amphill, in Bedfordshire, but now at Long Melford, in Suffolk, by Messrs. Stafford Allen and Sons. Neither of these possess the exact characters of the best Chinese Rhubarb, nor can they entirely replace it. In France the cultivation commenced in the latter half of the eighteenth century, and the species grown were *R. Rhaponticum*, *R. compactum*, *R. undulatum* and *R. palmatum*, L. In Hungary and Austria *R. Rhaponticum* is the species used, and in Silesia *R. Emodi*. At one time *R. undulatum* was cultivated in Southern Siberia by orders of the Russian Government, but the industry was not long continued.

The root of *R. Rhaponticum* is considered to be less active than the true Chinese Rhubarb, but it yields a powder of a much brighter yellow colour, and on this account is preferred by those who buy cheap drugs. That of *R. officinale* is asserted by those who have tried it to be quite equal in efficacy to the Chinese root.

R. officinale produces roots larger than those of *R. Rhaponticum*, quite equal in size to the finest

field, except in the case of *Rheum officinale*, the inflorescence of which has hitherto been allowed to remain.

The leaf-stalks are never gathered for food because doing so lessens the size and quality of the root. In about eight or nine years the soil becomes exhausted and rotation of crops is necessary; the Rhubarb is planted out in fresh ground, the young plants being set out about 3 feet apart. The root is collected when the plants are four years old, but it improves in quality and size up to nine or ten years of age. Plants of different ages are cultivated in separate fields, so as to ensure a succession of harvests each year.

Plants four years old yield $1\frac{1}{2}$ to 2 tons of dried root per acre, but full-grown plants at ten years old will yield about 5 tons per acre.

The roots are dug up in July, or, if the weather be fine, at any time up to October, and for the first fortnight are exposed to a current of air in wicker baskets in a covered shed, and are then removed to a drying-room, where they

was always sound, having been examined at Kiachta by agents of the Russian Government, and the inferior pieces rejected; but this quality of Rhubarb has not been imported into this country since 1863. Occasionally pieces of Chinese Rhubarb are found brown and rotten at the core, through too quick drying, although the outer surface may be quite sound; and it was to ascertain if the pieces were sound at the core, that the Russians always enlarged the holes made by the Chinese to insert string for hanging the roots up to dry. For the same reason, at the drug sales in this country a number of pieces in each chest of Chinese Rhubarb are chopped transversely, so as to show if they are sound internally.

There is no doubt that the Chinese cultivate different species of Rhubarb in different provinces on the borders of Thibet. *Rheum officinale* is said to be used in Szechuan and *R. palmatum* var. *tanghusicum* in the neighbourhood of Tangut. *Rheum Collinianum* is also stated to yield some of the root, but the species



FIG. 145.—RHEUM OFFICINALE IN FLOWER: CULTIVATED BY MESSRS. STAFFORD ALLEN AND SONS, LONG MELFORD, SUFFOLK.

Chinese Rhubarb, but does not give such a bright yellow powder as *R. Rhaponticum*. It has not hitherto been so carefully dried and does not present so good an appearance as the Chinese root, and has therefore not been able to compete with it.

The successful cultivation of medicinal Rhubarb depends upon a well-drained, but not dry, soil containing a sufficiency of lime. At Bodicott the soil is a rich, red, friable loam, but in spots where the soil remains damp the root is apt to decay internally and ultimately to disappear.

The plant is always propagated from off-sets or lateral shoots. The large central root is more correctly a root-stock, the upper portion having the characteristics of a stem and producing lateral buds which, when the plants are about four years old, are of sufficient size to be detached and made to form new plants. This is done partly because time is saved, and also for the reason that after a few years' cultivation and the cutting off of the inflorescence, so as to prevent the root becoming exhausted, the plant ceases to flower or produce seed, so that it is quite exceptional to see many flower-stalks in a

are heated gradually, but thoroughly, for about six weeks in a current of warm air. This process requires great care, since if the exterior be dried too quickly the interior becomes dark-coloured and rotten.

The central root-stock is either divided transversely or longitudinally, according to size, the longitudinal sections being known as "flats" and the transverse sections as "rounds." The large pieces find a principal market in the United States.

The lateral or true roots are cut transversely only and are known as "small rounds," and are usually supplied in this country when English Rhubarb is asked for; the tapering ends, about the size of a large forefinger, are sold as "stick Rhubarb," and, being cheaper, are chiefly used by herbalists. The pieces, when dried, are trimmed so as to give them a better appearance, and the trimmings ground into powdered Rhubarb. In some cases the larger pieces are bored with a rat's-tail file to imitate the holes which are found in the finest Chinese Rhubarb. This used to come through Russia, and every piece of it

that yields the best Shensi Rhubarb has not yet been identified.

The species used in China appear, however, mostly to belong to plants with more or less palmately-divided leaves. The elegant network of white lines that characterises the Shensi Rhubarb root is well shown in Goebel and Kunze's work on *Materia Medica*, part II., tab. 1, figs. 2b and 3a. No root that has yet been cultivated in Europe shows this remarkable veining. But so far as the medicinal activity of the root is concerned there is no doubt that the root of *R. officinale* prepared in this country answers every purpose. That it could be dried quite as well as the Chinese Rhubarb by means of the machinery now used for drying Hops in a rapid current of hot air is certain. There is one difference between the English dried root and the Chinese, in that in the latter the bark of the root is removed. This has not yet been done in this country, and it is thus possible to distinguish the two. Attention to this matter would remove the shrunken appearance which also characterises English Rhubarb as distinct from the Chinese drug. *E. M. Holmes.*

NOTES ON FRENCH HORTICULTURE.

TREATMENT OF PLANTS DESTINED FOR FORCING.

THE results of comparative experiments on etherisation and on the "warm bath" treatment of plants, communicated by M. Bultel to the scientific section of the National Society of Horticulture show that the treated plants flower earlier and more freely than untreated plants, and give a larger yield of fruit. The trials were carried out with Strawberries, and extended over two years. In last year's experiments 200 plants, subjected for forty-eight hours to ether vapour, were brought into the forcing-house on December 17. Of these plants, 84 were in flower on January 12, 47 on the 14th, and 19 on the 26th.

Another lot of 200 plants immersed in warm water at a temperature of 35° C. (95° F.) for seven hours and brought into the forcing-house on the same date (December 17), flowered as follows:—52 plants on January 12, 67 on the 14th, and 44 on the 26th. An untreated lot of 100 plants was forced at the same time—commencing on December 17. Of these, 5 plants only were in flower on January 14, and 33 on the 26th. Moreover, of 140 etherised plants which were grown on, 56 were bearing ripening (red) fruits on February 25; of 150 plants which had been immersed in the warm bath 55 had ripening fruits on February 25; whereas of 61 untreated plants none bore ripening fruits on that date. The results show that both processes are efficacious for the Strawberry, and to an approximately equal degree.

The method used for immersing the pot plants is as follows: A small plug of straw or hay is wrapped round the collar of the plant to keep the soil of the pot in place, and the pot, resting on two supports, is inverted, so that all the foliage of the Strawberry is immersed in the warm water.

LIST OF CHRYSANTHEMUM SPORTS.*

The *Journal* of the National Society of Horticulture has published (March, 1914, p. 172) a list of Chrysanthemum sports with notes on the colours and the variety from which the sports have severally arisen. Unfortunately, the list does not give the colour of the sporting varieties. Hence, on those who wish to use the list a certain amount of research is imposed. I have succeeded in 118 cases out of 187 in determining the colour. The results of a comparison between the sporting variety and the sport are as follows:—

1. White or white flushed sports have arisen from red, rose, magenta, blue, violet or mauve; but never from yellow.

2. Yellows, with a yellow or chamois ground, constitute the most numerous sports (44). They have arisen from white, and from various colour-forms, such as rose, magenta, red, orange, etc., but especially from whites (14 cases), and rose-lilacs (10 cases). Yellows appear never to have arisen from plants with violet, lilac or mauve coloured flowers. These latter give only red (in three cases), rose (5), and white (3).

3. Yellows rarely throw coloured sports, and even when they do the colour of the sport is similar, though of different shade from that of the variety which yields it. Thus in three sports from yellows the colour is darker, and in two cases the shade is slightly different—e.g., bronze.

4. Apart from the production of white or rose sports, the colour of the sport is generally darker than that of the variety which produced it. Certain varieties have produced large numbers of sports. For example, *Baronne de Vinols*, a magenta, has thrown no fewer than sixteen named sports of yellow, red, rose, purple, and white colours. Next in sporting proclivity comes *Vivian Morel* with 8 and *Mrs. Ch. Harman Payne* with 6. A. M.

* Compare "Chrysanthemum Sports," by the Rev. G. Henslow, *J. Roy. Hort. Soc.*, 1897-8, p. 537.—Eds.

NOTICES OF BOOKS.

HARDY CONIFERAE.*

THIS richly-illustrated compendium of Gymnosperms (Pinaceae, Taxaceae, Gnetaceae) hardy in Central Europe is by far the best and most comprehensive book of its kind yet issued. It is the joint work of a number of specialists, edited by Count Silva Tarouca, and the illustrations, original and reproduced from the best sources, comprise every phase of the plant's life from the seed to the fully-developed tree. The editor himself treats of Conifers in landscape, Camille Schneider of architectural associations, Mr. E. H. Wilson of Chinese Conifers, illustrated by photographs of his own selection, and Mr. A. Rehder of American Conifers, also with original illustrations. The illustrations of external morphology are excellent, and in many instances contain from twenty to thirty figures. There is a chapter on injurious insects and fungi, not illustrated. A very large section of the book is devoted to selections for various purposes, especially in relation to soils, situations, climate, etc. The illustrations of specimen in-

insects that visit Primroses, as recorded in his book on pollination, are not mentioned in the essay on the fertilisation of that flower. Again, but few observers of British butterflies can have seen *Camberwell Beauties* "wrestle on high, like gladiators." It seems strange, too, to find it stated that the gorgeous colours of the underwings of moths "seem to serve no useful purpose." One has but to disturb a Red Underwing in the daytime from a Willow trunk, where its mottled upper wings rendered it almost invisible, to find out how eagerly some swallow or sparrow will hunt the bright red flying insect as it zigzags to and fro over the river. I have often laughed at the perplexity of the bird, and the way it has flown hurriedly round to the further side of the Willow on which the moth at last settled, for immediately it closes its wings, hiding the scarlet underwings, it vanishes from its pursuer's sight. The bird still looks for a scarlet moth, and ignores the triangular patch of mottled grey on the Willow bark.

But throughout the book one can find little pictures in words that recall the traits of living things such as the little V-shaped wave running



FIG. 146.—HOLLY HILL: FLAGSTONE PATH LEADING TO THE ROCKERY.

(See p. 334.)

dividuals are almost exclusively Continental, and new to English readers. W. B. H.

THE SEASONS.†

THE seventy-eight short essays collected in this volume range in subject through most branches of the animal and vegetable kingdoms. A glance at their titles suggests that the proverb about Jack of all trades being master of none should be applicable here; but as one turns from zoology to botany, from birds' eggs to toadstools, from the peak of Snowdon to the levels of the Norfolk Broads, it is to find fresh instances of the accuracy as well as the versatility of the writer's powers of observation. It is true that experts in some of these branches of science may find traces of incomplete knowledge of the literature of their special subject. Thus, Knuth's records of the

rapidly towards the shore and then out again, caused by a perch on the feed; or of the robin. "It is his garden. He sits in it where he will. His man dug it while he watched." Again, "When every blade of grass in this lane holds a dewdrop none holds them half so prettily as the half-closed blossoms of the Wood Sorrel."

Somehow the tone of the essays has an undercurrent of sadness, and a realisation of the fleeting nature of the year's pageant pervades most of the records of its joys. The writer has rather an elderly way of looking at things, perhaps explained by a note in the preface that the book embodies the impressions of a City-born man now and then renewing former pleasures among the birds and flowers. It is full, however, of quiet charm, and should help many to seek or recall the pleasures of country walks, the main objective of which is to learn what is going on through the roll of the seasons. Most of the twelve colour plates are landscapes, reproduced from water colours, and pleasantly soft in colouring; but two plates of butterflies and one of birds' eggs, with many varieties shown on each, look rather as though they had strayed from text-books for the young. E. A. B.

* *Unsere Freiland-Nadelhölzer. Anzucht, Pflege und Verwendung aller bekannten in Mitteleuropa in Freien Kulturfähigen Nadelhölzer mit Einschluß von Ginkgo und Ephedra.* Herausgegeben von Ernst Graf Silva Tarouca. Large 8vo, pp. 300, with 307 illustrations in the text, six uncoloured plates and twelve coloured plates. Vienna, F. Tempsky; Leipzig, G. Freytag, 1913. Price 18.70 mark. Cloth.

† *The Roll of the Seasons. A book of Nature Essays.* By G. G. Desmond. With 12 illustrations in colour. (Duckworth and Co.) 5s. net.

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

SUMMER-FLOWERING CYPRIPEDIUMS.—*Cypripedium barbatum*, *C. Curtisii*, *C. callosum*, *C. ciliolare*, *C. Lawrenceanum* and their derivatives are on the point of flowering. In the majority of cases the blooms are exceedingly durable, remaining for a long time in a good condition, but the spikes should be removed after the blooms have been expanded for a reasonable time. The albino or green forms of the coloured species are the most liable to suffer exhaustion from this cause, as in the majority of cases they are less vigorous in constitution. The potting of these plants is best done either when new growth develops or just at the time when growth is completing and before there are any signs of flowers. The plants are all shallow rooting and do not require so much potting compost as those of the winter-flowering section. The pots should be filled to about one-half their depth with clean, broken crocks. The compost suitable for most of the tessellate-leaved kinds consists of two parts fibrous peat to one of finely-chopped Sphagnum-moss, with sufficient sand and broken crocks added to render the compost porous. Almost all these *Cypripediums* make continuous growth on a single rhizome. Back growths are rarely produced, and as living roots are rarely attached to them, these growths gain sustenance from the front portion of the plant. It is a good plan to examine the plants a few weeks before potting, and to sever the rhizome. This will induce the old growths to produce new breaks, and the stock may thus be increased or the specimen made larger. *Cypripedium niveum* is one of the most admired among the summer-flowering varieties. The plants grow best in a situation of about 2 feet from the roof-glass, in a structure where the normal temperature ranges from 65° to 70° throughout the year. They are potted in a compost of turfy loam mixed with plenty of lime rubble. The drainage should consist of old lime broken into small pieces. Very little potting compost is necessary, as the roots mat together near the surface. The compost is made moderately firm when the plants are repotted. It is not desirable to disturb the plants for repotting unless the compost is in an advanced state of decomposition or the drainage becomes deficient. During the active growing season water is given by dipping the plants. Care must be taken to prevent the water from reaching above the base of the growth. In the winter season they require no more root moisture than is sufficient to keep the foliage in a plump state.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

SPRING BEDDING.—It is time to consider the clearing of the beds in the formal garden, with their spring occupants, and a beginning must be made with those of which the beauty shows signs of vanishing. *Polyanthus*, *Aubrietias*, and *Daisies* used as carpet plants should be pulled to pieces, varieties selected to colour, and replanted in the reserve garden for next spring's supplies. *Wallflowers*, *Forget-me-nots* (*Myosotis*) and *Alyssum saxatile* are best grown annually from seeds, a suitable place being the frames which are at present sheltering the summer bedders. Here they may be shaded and watered during their infancy. Always sow thinly and the plants will become hardier than those from thick, crowded sowings. *Hyacinths*, *Tulips* and other bulbs may now be taken up (with roots as intact as possible), labelled and laid in a sunny position in the reserve garden to ripen. Give one watering and Nature will do the remainder. In June or July the bulbs should be taken up and sorted into sizes, and

the largest bulbs placed in bags in a cool store room, in readiness for woodland or copse planting next autumn. It is very seldom that bulbs, however well treated after being removed from spring beds, can be depended upon for a second year's results, and new bulbs can be purchased in large quantities at fairly cheap rates.

CLIMBERS.—*Clematis* and other climbers should have frequent attention as to training. Give all possible room for extension to the *C. montana* section before the plants become entwined in their young growths. *Jasmines*, *Wistarias*, *Solanums* and *Ceanothus* will require constant attention.

BEDDING OUT.—It will now be safe to bed out *Pentstemons*, *Carnations*, *Lobelia cardinalis*, *Marguerites*, *Alyssums*, *Geraniums*, *Salvias*, *Calceolarias* (*C. amplexicaulis* excepted, being somewhat tender), and *Tree Carnations*, especially if the plants are properly hardened off already by full exposure to the atmosphere. Everyone should try a few beds or groups of *Tree Carnations*, struck and grown specially for bedding out. This section will probably in course of time supersede the old border varieties by reason of its long continued period of flowering. On the other hand the border varieties grown in pots under the usual *Tree Carnation* treatment are superior to those grown under border treatment.

HELENIUM PUMILUM.—Where yellow *Calceolarias* will not grow this plant makes a really good substitute, and keeps up a long summer succession of bright yellow flowers. It may be divided in the autumn and grown in the reserve garden, but is also successful when divided in the spring, using only the best outside portions of the plant and sheltering them from bright, hot sun and drying winds by the insertion of a few *Portugal Laurel* or other evergreen branches.

BAMBOOS of all sections should be divided, as a small stock of reserve plants is desirable to replace old plants. *Bamboos* flourish in light, rich loam, with plenty of leaf-soil or humus. Half a barrowful of well-rotted dung placed deep down in the bottom of the hole before planting is good for the plants. Give established plants liberal annual top-dressings of rotten manure, and in hot weather occasional soakings of manure water.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

VINES.—*Vineries* in which the *Grapes* are ripe should be ventilated freely both by night and day, and the bunches examined occasionally for the removal of faulty or decaying berries. Be on the watch for the presence of red spider, for if remedial measures are taken in time much trouble and damage will be saved. If pure, soft water is to be had syringing with this is preferable to the common practice of applying sulphur to the hot-water pipes. The spraying should be done during the evening or in the early morning. If needs be the few leaves above the bunches can be sponged by hand. Maintain the requisite temperature and proper amount of atmospheric moisture in successional houses where the berries are swelling towards maturity. See that the lateral growths are not crowded and attend to the work of stopping, tying, and thinning the shoots of vines in later houses. Examine the borders frequently, and afford water copiously when moisture is needed. Encourage pot vines that are intended to fruit in 11 or 12-inch pots next season to grow vigorously. When the rods have grown 7 or 8 feet long stop them, and aim at a gradual ripening of the wood or the results will be unsatisfactory. Young vines that have been planted recently should be encouraged to grow freely in a moist, brisk atmosphere. Keep the roots regularly supplied with moisture. Allow all lateral growth to develop freely, as the root action will be in relation with the top growths.

MELONS that are nearing the ripening stage need careful management; the ventilation of the house is a matter that calls for good judgment. Carefully preserve the leaves from injury of

any kind, and see that they are exposed fully to the sunlight, for this is an important detail in ensuring good fruit. Successional plants require daily attention in the work of stopping and training the shoots, remembering always to allow the growths plenty of room. Red spider and thrips must be destroyed as soon as their presence is detected; the foliage immediately above or near to the hot-water pipes will be the first to become infested with these pests. Water plants that are growing in frames with great care, and keep up the heat of the bed by renewing the linings occasionally. Should there be any danger of the plants "going off" at the collar, heap fine charcoal around the base of the stems, and do not let the water-can reach this part.

CHERRIES.—With the rapid development of the fruit, careful attention must be paid to the watering of the roots, especially of pot trees. When the stoning stage is passed the night temperature may be increased, provided a little ventilation is given. As soon as the fruit shows signs of colouring cease syringing or the fruits will split. The roots also may receive less water, but not to the degree that will cause the foliage to flag, or the fruit would shrivel.

FIGS.—The fruits of the *Brown Turkey* variety are ripening fast, therefore the roots should receive less moisture, and syringing should be almost discontinued. The top ventilators should not be closed entirely at any time during the ripening period, but a circulation of warm, dry air permitted both by day and night. An occasional damping of the paths and staging will afford, for the time being, all the moisture necessary.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY,
Knowsley Hall, Lancashire.

CHRYSANTHEMUMS.—The main batch of plants should be shifted into 6-inch pots before growth is checked through the roots being pot-bound. Use a similar compost to that recommended earlier in the season, with the addition of a little bone-meal. Pot firmly and secure each plant to a stake. Stand the plants almost pot thick on an ash bottom previously dusted with soot and spray them daily, keeping the atmosphere rather close for a few days. If the soil about the roots is moist, root-waterings will not be necessary for some days. Dust the points of young shoots with an insecticide as a preventive of green and black fly.

FUCHSIAS.—Plants growing in greenhouse borders with shoots suspended from the rafters should be top-dressed occasionally. Regulate the growths to produce a natural appearance. Specimen plants should be placed in larger pots, the soil to consist of two parts loam, one part rotted manure and a little leaf-mould and sand. Pinch out the points of the shoots to make shapely specimens. Plants raised from cuttings last autumn are ready for transfer to 7-inch pots. Those intended for growing as standards should have the side shoots removed, whilst for pyramids secure the main shoot to a stake and pinch out the points of the side shoots beyond the first pair of leaves.

CLIMBERS.—Such plants as *Allamandas*, *Cissus discolor*, *Dipladenias*, *Gloriosas*, *Stephanotis* and *Hibiscus* must receive close attention as regards tying and thinning out weakly growths. Avoid tying up climbers too stiffly or the natural effect will be lost. A very light shading provided by tiffany could be used during the brightest part of the day and removed shortly after closing the house, according to the strength of the sun. For the next two months the night temperature should be 68° to 70°, rising during the day to 80° and 85° with sun heat. Repot *Justicia*, *Scutellaria Mocciniana*, *Acalypha Sanderiana*, *Clerodendron fallax*, etc., before they become potbound.

HARDWOOD PLANTS.—*Camellias* and *Azaleas* which have made their shoots should now receive a little ventilation, to prepare them for standing outside at the end of next month to ripen their wood. All growing plants, especially hardwoods, must be regularly stopped. Specimens coming into bloom may have a light

shading. Tie the shoots of Hydrangeas, and feed the plants twice weekly with a little fertiliser. Cut back all shrubs that are out of shape, and keep them rather close afterwards to get good breaks. Repot those that require it, and inure them gradually to outdoor temperature before standing them outside.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

STRAWBERRIES.—There is every prospect of a good Strawberry crop, for there are plenty of strong trusses of bloom which are already well above the foliage. If litter has not already been placed along the rows this should be done at once. But first sprinkle soot and lime around the plants to ward off slugs and other insect pests, and remove any weeds that are present. A good layer of the litter should be used, sufficient to protect the fruits from being splashed with soil during times of rain. Have ready the nets for protecting the berries from birds so that they may be placed in position directly the fruits show signs of colouring. Wire netting 3 feet wide and of a small mesh should be fixed around the outsides of the bed, the fish-netting fastened on to this, and supported over the beds either by wires stretched from posts or long, thin green poles, called "binders." Nets supported in this manner last much longer than when allowed to rest on damp ground, nor is there any need to remove them until the crop is finished. Simply placing the nets flat over the beds is the least satisfactory way, as then the birds usually work through the meshes, and the nets are liable to become torn by being removed on each occasion that fruit is gathered.

EARLY RUNNERS.—Strawberries planted late last season should not be allowed to fruit, but encouraged to develop early runners. The flower-trusses should be picked off directly they appear in order to throw all the energies of the plant into leaf-growth. Keep the surface soil regularly but not deeply hoed, and do not allow the plants to suffer from drought, as this would give a check to growth.

MORELLO CHERRIES.—The trees have blossomed profusely and, given favourable weather for a little longer, they should bear heavy crops. The Morello Cherry should be disbudded in the manner recommended for Peaches and Nectarines. The cultural requirements are simple, and perhaps because of this the trees are often accorded very indifferent treatment. If the work of disbudding and stopping the shoots is neglected in the spring the trees become a dense mass of shoots, and are not only much more difficult to keep free from insect pests, but the fruit has little chance to develop. But do not disbud too severely at first; if there are more shoots than required when the training is done the superfluous ones may be stopped at the third or fourth leaf to form spurs. The finest fruits are produced on young wood trained in each season to take the place of the old fruiting branches. Allow each shoot sufficient space to develop, for sunshine and air should reach all parts of the tree. Watch for the first appearance of aphids, which is usually found directly after the blooming period. Spray with a solution of Quassia and soft soap, or some other insecticide, and afterwards wash the trees thoroughly with clear water with the garden engine. See that Cherry trees on walls do not suffer from want of water at the roots, especially where the walls have glass copings.

THE KITCHEN GARDEN.

By R. P. BROTHERTON, Gardener to the Earl of Haddington, Tynninghame, East Lothian.

BROAD BEANS.—A sowing of this vegetable for late supplies may be made at once. Bank soil against each side of the earlier crop to steady the plants against high winds. Some of the plants may be cut to within one foot of the ground to succeed those left to crop, whilst the tips may be pinched out of a few others to hasten the crop—but only a few, because those unstoppered will quickly catch them up.

TURNIPS.—To have nice sweet roots, break the soil very finely and leave the surface somewhat loose before sowing. We must expect times of dry weather now, and the drills for the seeds should be fairly moistened with soft water an hour or so before sowing. Though thin seeding is important, it is as well to allow some of the seeds to fall on the sides of the drill as well as in the bottom. This as a precaution against the attacks of fly. A few drills may be sown with Swedes for winter eating, allowing these about 18 inches between the rows and 9 inches between the plants in the rows.

PATIENCE (RUMEX MAGELLANICUS).—I presume this old esculent is now grown in very few gardens, though at one time it was a usual dish at Eastertide. It comes into use much earlier than Sorrel, and the flavour is so like that of Sorrel that when served as a cooked vegetable one cannot be distinguished from the other. Make a sowing for supplies next year. The plant is absolutely hardy and to succeed needs only to be thinned out to foot spaces and kept clean.

RAMPION.—This is another vegetable not frequently found in gardens. Those who have acquired a taste for the roots like to have a supply for winter eating, and seeds for the present year must be sown soon. My practice is to make the ground very fine, stretch a line to mark the rows, pat with the back of a spade into the soil, and scatter the tiny seeds very thinly therein. By drawing the back of the spade along the surface the seeds will be covered sufficiently. If the weather be dry subsequent to sowing, mats laid along the rows will be advantageous to an equal germination. Shade of this kind is much to be preferred to repeatedly moistening the ground. Allow the plants a space of 12 by 9 inches.

THE APIARY.

By CHLORIS.

REMOVING HIVES.—Those who are removing hives to a new position must remember that it is essential to stand them quite level, and for this purpose it is best to use a spirit level. See that the ground under and around the hives is free of all weeds, so that it can be kept perfectly clean all the season.

NUCLEUS SWARMING.—This is by far the best method of securing increase, and those who propose to adopt it should begin their preparations at once. By this method we have a fertilised and fully-matured queen raised under the very best conditions; further, a young and vigorous queen causes the workers to work more industriously, so more honey is gathered and stored.

METHOD OF CHOOSING A COLONY FOR NUCLEUS SWARMING.—Choose a strong stock headed by a queen that is two summers old, very prolific, and whose offspring have been noted for vigour, hardiness and industry. These are the qualities transmitted by the queen, while the drone influences the disposition. For drones choose an equally good colony, introduce drone comb into the centre of the brood-chamber and resort to stimulative feeding, for a queen always deposits more drone eggs when there is a good supply of food. This careful selection of colonies will perpetuate the best qualities and prevent inbreeding. When drones are hatching freely insert a clean worker comb in the centre of the brood-nest of the first hive being stimulated. In this new comb the queen will lay eggs, and in three days it should be full. The queen at the end of this time must be removed. She may be utilised in another hive, as she will be too valuable to lose. Then remove all combs containing unsealed larvae, and these may be utilised to strengthen weaker colonies. The bees will be compelled to raise queens from the eggs in the centre comb, and we can assist them by enlarging the mouths of the cells along the edge of the comb with a conically-shaped stick which breaks down the side wall and that below. A strip may be cut off the lower part of the comb, and the lower cells of the upper portion enlarged to form queen-cells. In this way we shall secure from 10 to 30 queen-cells raised from eggs, not larvae. The advantage lies in the fact that the

former are copiously fed from the start, and finer queens result. During the first eight or nine days there should be plenty of nectar and pollen coming in, otherwise artificial feeding must be resorted to. Next take three combs from a populous hive, one containing honey and pollen and the other two brood. They may be placed in an ordinary hive and kept separate by a division board. The adhering bees should be included, but care must be taken not to include a queen. As the old bees will return to the old hive shake off bees from two or three other combs, so as to have not less than one quart of bees. On the centre comb carefully secure a queen-cell in the middle; in doing so do not shake the cells or the queen inside may be injured. Cover the frames with a well-fitting quilt, and reduce the entrances to prevent robbing. In a few days the queen will be hatched, afterwards fertilised by selected drones, and a week later laying. After the queen has hatched add a comb of hatching brood, or the whole of the bees may leave with the queen when she leaves for her mating trip, in which case all the work will be lost.

THE "FRENCH" GARDEN.

By PAUL AQUATIAS.

NURSERY BEDS.—The first batch of Celery and the whole of the Tomatoes have been pricked out, and the plants should receive ventilation whenever the conditions are favourable. Frames must be reserved to transplant the Tomatoes a second time in the last week of April, 100 per light instead of 250 as at the first time. This method results in strong, hardy plants, which do not wither when set outside. Endive sown early in March is pricked out on hot-beds. Where only a few hundred plants are grown this may be done in boxes, which are placed on the Melon beds until the seedlings are well established, after which they are transferred in cold frames to be hardened off previous to planting out. Further sowings are made as required in hot-beds. Kidney Beans are becoming an important summer crop in the "French" garden owing to the irregular supply from the market gardeners. The seeds are sown in 60-sized pots, and germinated in cold frames, where they receive ventilation and light waterings as needed. They are also covered at night with mats. The earliest batch of Lettuces for the summer crop is now sown. This is a very profitable crop in such season as last year and 1911. Grown as a catch crop they occupy small space, especially as only batches of a few hundred plants are given at regular intervals. The Cabbage Lettuce Vauxhall Defiance has given great satisfaction; it hearts and travels well. The favourite Cos Lettuce is Paris White.

MANURE BEDS.—All the frames and lights have been transferred to the Melon quarter, and the crops of Carrots, Cauliflowers and Turnips are growing fast. The plants should be watered freely with the hose. Where plenty of room has been allowed the Carrots may be pulled for market, and the bed cleared as the work proceeds.

CLOCHES ON BEDS.—The cloches have been placed over the Cos Lettuces which were set outside them. Shading must be done very carefully. The plants will be ready for market within 8 or 10 days, and, as in the case of the first crop, a bed should be cleared at the same time. See that the growth of Carrots, sown as a catch crop, does not become drawn. In the places previously occupied by the first batch of Cos Lettuces, Cauliflower are set from the February sowing; this crop follows those planted in the cold beds late in July.

COLD BEDS.—All the "Passion" Lettuces should be disposed of within the next fortnight, when the outside crop will be ready. The beds previously occupied with the variety "Little Gott" are cleared of all frames and lights, and where Cauliflowers only are grown the ground should be hoed and a good layer of short manure spread over as a mulch. Carrot sown as an inter-crop should be weeded carefully and watered copiously. Remove the cloches from the Cos Lettuces, and see that the soil is kept moist to promote a quick growth.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.
 Editors and Publisher. — Our correspondents would oblige by delaying in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all points to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MAY 19—
 Roy. Hort. Soc. Spring Sh. at Roy. Hospital Gardens, Chelsea (3 days).
 WEDNESDAY, MAY 20—
 Roy. Nat. Tullip Soc. Sh. at Roy. Hospital Gardens, Chelsea (2 days).
 THURSDAY, MAY 21—
 B.G.A. (Watford branch). Address by Mr. Cyril Harding.
 FRIDAY, MAY 22—
 Royal Botanic Soc. Lecture by Professor W. B. Tomlinson.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 53.9°.

ACTUAL TEMPERATURES:—
 LONDON, Wednesday, May 13 (6 p.m.). Max. 55°. Min. 44°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, May 14 (10 a.m.): Bar. 29.8; Temp. 65°. Weather—Bright Sunshine.

PROVINCES, Wednesday, May 13: Max. 57°. Aberdeen; Min. 52°. Yarmouth.

SALES FOR THE ENSUING WEEK.

MONDAY—
 70,000 Bedding Plants, at 158, Ravenscroft Road, Beckenham, by Protheroe and Morris, at 12.
 WEDNESDAY—
 Lilliums and other Hardy Bulbs at 12; Palms and Plants, Tree Ferns, etc., at 5. By Protheroe and Morris, 67 and 68, Cheapside, E.C.
 Orchids, by order of Messrs. Sander and Sons, and Mrs. Cookson. By Protheroe and Morris, at 1.
 THURSDAY AND FRIDAY—
 Greenhouse and other Plants, at The Nurseries, Feltham, Middlesex, by order of Messrs. J. Veitch and Sons, Ltd., by Protheroe and Morris, at 12.
 THURSDAY—
 Orchids, by order of M. Jules Hye de Crom, Ghent; also Seedling Orchids, at 67 and 68, Cheapside, E.C., by Protheroe and Morris.

Manganese as a Fertiliser.

Of recent years much discussion has ranged round the question whether salts of manganese are or are not capable of increasing the yield of crops. Yet, in spite of the discussion and of the very numerous experiments made to test the action of salts of manganese, no certain rule for the guidance of the practical grower has been enunciated. That this is so is due not to shortcomings on the part of investigators, but to the fact that soils differ so much from one another, and are the seat of such complex and contradictory chemical changes, that results obtained with soils of one kind differ absolutely from those obtained when other soils are used. It is probable, indeed, that the experimenters who have been engaged in researches with manganese have been for the most part anxious to obtain results of service to agriculturists, and that this anxiety, so much in evidence at the present time, has defeated the object which they had in view. Nature only answers simple questions, and the simple questions in the present case have not yet—so far as we know—been put to her. It is true that all plants contain manganese, but it cannot be stated with certainty that manganese is an essential constituent of plants. It is also true, as Bertrand was the first to show, that traces of man-

ganese play the part of activators of the oxidation processes of soils and plants; but it cannot be asserted that the acceleration of oxidation processes is necessarily an advantage to the plant. The plant, like the human tiller of the soil, has a labourer's stroke. It must grow at its own rate, and in its growth oxidation and reduction processes alternate and reciprocate. Wherefore it is probable that the curious and capricious effects of manganese will be explained only when investigators begin their investigations in a scientific spirit, and at the beginning ascertaining first by the classic methods whether a plant can do without manganese, as the textbooks' omniscience says it can, and whether the addition of manganese to nutrient solutions of known and varied compositions produces any positive effect on growth. The most recent investigations of the manganese problem, carried out by Messrs. Skinner and Sullivan (*Bull.* 42, U.S. Dept. of Agric.), raise our hopes at the outset, only to dash them at the conclusion. The investigations are as thorough as they can well be. They include experiments with pot-cultures and field-cultures, but, nevertheless, the conclusion to be drawn from them is not decisive. Working with Wheat in pots of unproductive sandy loam, Messrs. Skinner and Sullivan find that manganese salts—chloride, sulphate, nitrate and carbonate—all accelerate growth. The increase is most marked in the case of soils treated with manganese chloride, and almost as great in the soil to which manganese sulphate is added. It is, moreover, considerable, and up to a certain point progressive. The addition of 10, 25, and 50 parts of manganese chloride per million of soil results in an increase of crop weight of 19, 29 and 31 per cent. A further addition of the salt reduces the effect. When, however, similar experiments were conducted with a productive loam the result of adding manganese salts was negligible—the plants grew as well in the normal as in the treated soil. Experiments made with extracts of soils similar to those used in the previous tests show that in the case of Wheat plants grown in the soil solution from the sandy loam the oxidation power of the plant is increased by the addition of manganese salts, and that in the case of Wheat grown in the extract from a productive loam it is not.

Thus it would appear that in a poor soil the addition of small quantities of manganese chloride or sulphate is likely to lead to increased growth, but that on a fertile soil to add manganese salts is waste of time and money. Unfortunately the field trial made by Messrs. Skinner and Sullivan, though it does not necessarily invalidate this conclusion, does not lend it support. Various crops, Wheat, Rye, Corn, Cowpeas and Potatoes, were grown on a silty clay loam, low in organic matter. The physical condition of the soil was rather poor, and the soil was lime-hungry. The result was that in the case of most of the crops the addition of manganese (in the form of sulphate) did not produce any beneficial effect.

The experiments are to be continued,

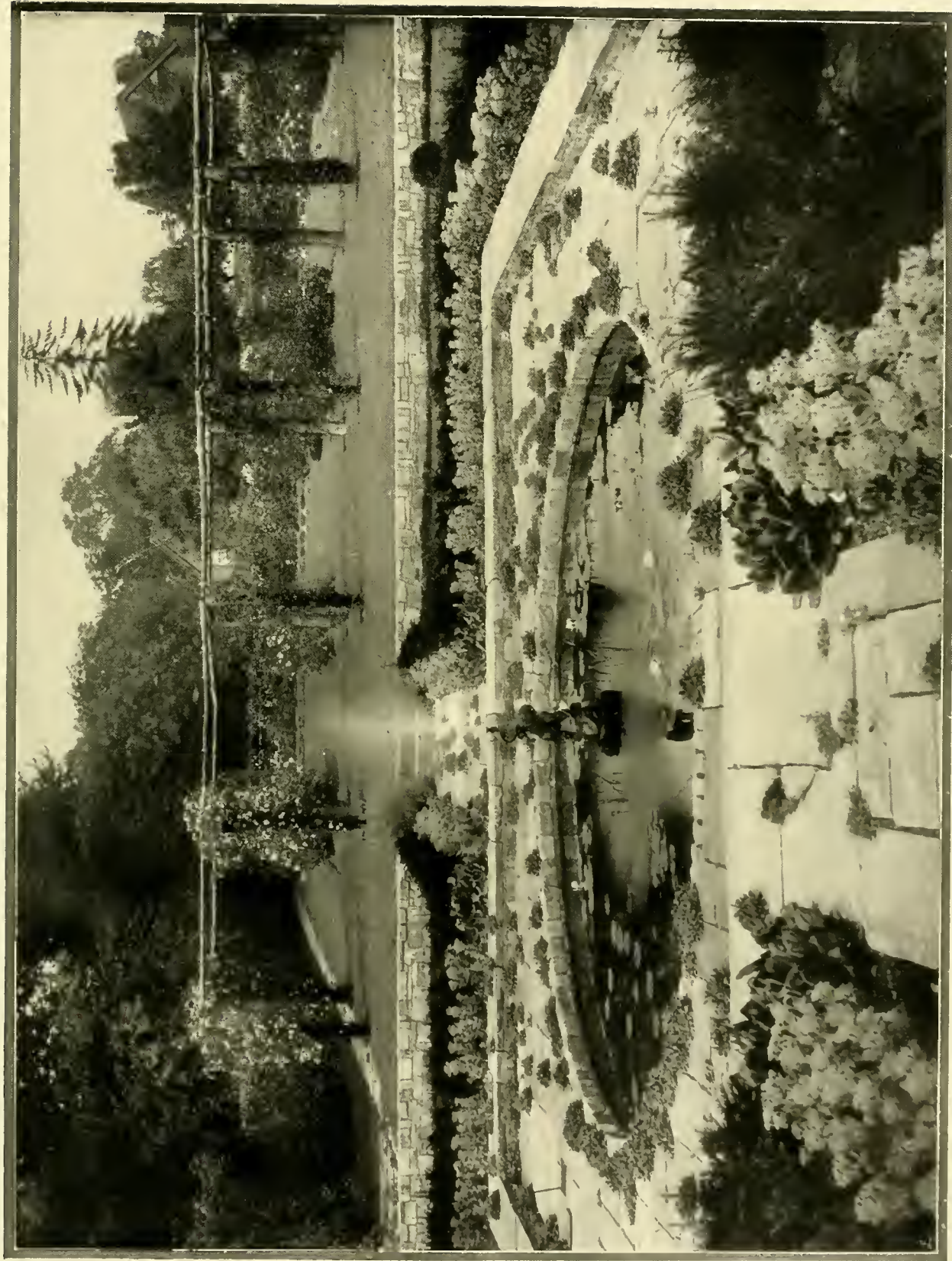
and the acid state of the soil having been remedied by the application of lime, it may well be that the next few years will tell a different experimental tale. In the meantime the enterprising gardener may, if his soil be very poor, try the effect of giving it a very moderate dose of manganese chloride or sulphate, but if it be of good heart he had better leave it alone so far as manganese manuring is concerned.

Coloured Supplement.—The subject of the Coloured Plate to be published with the next issue is *Collerette Dahlia* "Tuskar."

R.H.S. CHelsea Show.—The Spring Exhibition of the Royal Horticultural Society, which will be held in the grounds attached to the Royal Hospital, Chelsea, on the 19th, 20th, and 21st inst., promises to be even more successful than that of last year. Her Majesty QUEEN ALEXANDRA will visit the show on Tuesday, the 19th inst., an honour of which all horticulturists will be sensible. A few alterations and improvements have been made in the arrangements. The large tent is to be slightly enlarged, and all exhibits are to be grouped on the ground. The area covered by this tent will now be 275 feet by 300 feet, and the dimensions of the other two tents will be 300 feet by 35 feet and 300 feet by 70 feet respectively. In these two tents the exhibits will be staged on tables. New gravel paths are to be laid down between the tents and the outdoor groups, which will much improve the general effect. The Orchids are to be shown in the large tent, space being reserved for them at the north and south ends. The rock gardens will be arranged near the fence at the Embankment end. The whole of the central avenue is being utilised, from one end to the other. The water supply, which is so necessary for keeping the plants in good condition, to say nothing of the requirements of the rock and water gardens, has been well provided for and will be laid on in every part of the grounds. A new second-class refreshment tent has been erected, and also a tent for the exhibitors' assistants, which was much needed. The new plants will be shown all together on one table; their position will be in the second-sized tent. In the sundries tent there will be a special exhibition of paintings of flowers, gardens, and other floral and horticultural subjects.

PROFESSOR BATESON ON DOUBLE FLOWERS.

—On the 5th inst. Professor BATESON delivered a lecture on "Double Flowers" at the Royal Institution. He noted the interesting fact that in certain Natural Orders, among which are the Labiatae, the Boraginaceae, and the Gentianaceae, no doubling has occurred. Of the many forms of doubling the commonest is petalody, in which the anthers or other organs are changed into the likeness of petals. Another kind of doubleness is seen in *Lobelia*, in which each petal is divided. Both these forms occur together in the Paeony. The inheritance of doubling has been much studied in recent years, and it has been shown that in general, doubleness is recessive to singleness. But there are cases in which the heterozygote exhibits a certain degree of doubleness. For instance, in *Campanula persicifolia* the commonly grown double form is a heterozygote, and throws both singles and very full doubles, which are sterile. The Carnation behaves in a somewhat similar manner, for the heterozygote form is double, and throws both singles and the full double which bursts the calyx. The double Stock, which is completely sterile, has been investigated by Miss SAUNDERS. She has found that there are certain strains of singles which throw doubles and singles in the proportion of 9 double, 7 single. By crossing these heterozygous strains with the pure-breeding singles, it was found that the pollen



Photograph by H. N. King.

DUTCH GARDEN AT HOLLY HILL, BUCKINGHAMSHIRE,
THE RESIDENCE OF W. A. JUDD, ESQ.

of the former is all carrying doubleness, whereas the ovules are of two kinds, some carrying doubleness and others singleness. Miss SAUNDERS has also investigated the double Petunia, which is sterile on the female side, but bears pollen. The doubles are always obtained by fertilising the singles with pollen from the doubles, and as yet no exception has been found to the rule that singles thus fertilised give both singles and doubles. Professor BATESON then gave a short account of some experiments on the inheritance of doubleness and sex in Begonia and in Tropaeolum.

HOSPITAL EGG WEEK.—The secretary asks us to remind readers that the collection of new-laid eggs for the hospitals ends on the 19th inst. The eggs should be sent to 154, Fleet Street, London, carefully packed and carriage paid. All boxes used will be returned on request. Supplies of labels for despatching eggs will be sent on application.

PERPETUAL-FLOWERING CARNATION SOCIETY.—The annual dinner of the Perpetual-flowering Carnation Society will be held in the Holborn Restaurant on the 20th inst. (the second day of R.H.S. Chelsea Show), at 6.30 p.m.

NATIONAL DAHLIA SOCIETY.—The National Dahlia Society, with which is incorporated the London Dahlia Union, will hold its annual exhibition on Wednesday and Thursday, September 16 and 17, at the Crystal Palace, Sydenham. The hon. secretary is Mr. J. B. RIDING, Forest Side, Chingford.

NEW PUBLIC GARDEN AT KENSAL TOWN.—The new open space at Kensal Town, presented to the public by Mr. EMSLIE J. HORNIMAN, J.P., will be opened, at 3.30 p.m., on Wednesday, the 20th inst., by the Right Hon. the Viscount PEEL, chairman of the London County Council. The land is about one acre in extent, and has been laid out partly as a children's playground and partly as a "Japanese" garden. A sand pit for children has been provided. The garden, which is to be known as the Emslie Horniman Pleasance, is situated in a densely populated district.

ROYAL GARDENERS' ORPHAN FUND.—The twenty-sixth annual dinner of the friends and supporters of the Royal Gardeners' Orphan Fund will take place at the Hotel Cecil on Thursday, May 21, at 6.30 for 7 p.m. Baron BRUNO SCHRODER will preside. The secretary (Mr. BRIAN WYNNE, 19, Bedford Chambers, Covent Garden, W.C.), will be pleased to receive at once the names of any visitors to the Chelsea show who would like to be present at the dinner.

WINTER SPRAYING WITH NITRATES.—From experiments carried out by Messrs. BALLARD and VOLCK in California (see *Journal of Agricultural Research*, Washington, Vol. I., No. 5), it appears that dormant fruit trees sprayed with nitrate of soda may be caused to blossom precociously. Thus in one experiment 7 12-year-old Apple trees were sprayed on February 2 with nitrate of soda (50 lb.), caustic potash (7 lb.), and water (50 gallons), with the result that the trees blossomed two weeks earlier than did unsprayed similar trees. The effect of the spray appears to have been confined to the flowers, the time of appearance of foliage not having been affected by the spray. Even more remarkable than the hastening of blossoming was the effect of the winter "food" spray on the yield. It is claimed by Messrs. BALLARD and VOLCK that the nitrate-sprayed plants yielded five times as much fruit as was produced by the unsprayed trees. Subsequent experiments show that the forcing effect is less when a weaker strength of nitrate of soda is used, or when the caustic potash—added originally as an insecticide—is omitted. On the other hand, nitrate of soda (1 lb.) and oxalic acid (2.5 lb.) produced a similar effect to that of nitrate of soda and caustic potash. Lime nitrate and lime cyanamid were also used, and each was

effective in producing early flowering. Furthermore, the authors claim that the forcing effect is continued—albeit less markedly—in the second season after the spray has been applied. Various growers in America have put this method of spraying to the test. In one case—of Sweet Cherries—the evidence for precocity of flowering was only partial, and no effect on crop production was noticed. In another experiment Pears were sprayed—on this occasion with nitrate of soda (1 lb. per gallon) mixed with lime sulphur (1.9). The rows thus sprayed came into bloom about a week earlier than those treated with lime-sulphur only. The crops on both plots were full ones. Taking the results as they stand, and examining them critically but in no unfriendly spirit, we cannot say that we are convinced of their conclusiveness. They certainly give ground for believing that the nitrate of soda spray does hasten blossoming time, but the evidence that the yield is increased is not sufficient to justify acceptance of a conclusion of such importance. From the practical point of view we fear that nitrate spraying will not help the commercial fruit-grower, for the dangers attendant upon early flowering are serious. On the other hand, if further experiments confirm the conclusions reached by Messrs. BALLARD and VOLCK, these investigators will deserve the great credit of having put into the hands of horticulturists a method capable of very wide application. Anyone with a taste for experimentation might well test the matter by trying the effect of nitrate spraying on fruits grown under glass. For such an experiment, however, we disclaim in advance all responsibility, since we cannot say whether—as suggested in these pages recently by *Southern Grower*—so strong a solution as 1 lb. per gallon of nitrate of soda might not do harm even to dormant buds.

MAKING CUT FLOWERS LAST.—Useful hints on prolonging the life of cut flowers are given by Mr. S. L. BASTIN in the May number of the *Agricultural Economist and Horticultural Review*. Among these hints is the following:—"For flowers which are really old add a little camphor to boiling water and stand the stalks of the flowers therein." It would appear that flowers almost dead may be revived by this plan. For despatching flowers by rail wooden boxes are better than those of cardboard and tin boxes are best. Tight packing is better than loose packing, and it is best not to sprinkle any water on the flowers in boxes.

LEONARDSLEE AND SUSSEX CHARITIES.—Sir E. LODER will open the gardens at Leonardslee, Horsham, in aid of Sussex charities on Tuesday and Thursday, May 26 and 28, from 2 p.m. to 7 p.m. The fee for entrance will be 1s. We are confident that Sir E. LODER's generous act will attract large numbers of visitors to Leonardslee, the fame of which is world-wide. The gardens are about seven miles from Horsham, which station is reached from London (Victoria) in about an hour. It is no exaggeration to say that no garden scenes in England are more lovely than those presented by Leonardslee. The natural beauties of the site, the skill in cultivation, and the great variety of the plants make upon the visitor to Leonardslee an impression never to be forgotten. At the present time the Rhododendrons—many of them seedlings of Sir EDMUND's raising—are among the most impressively beautiful of the plants in flower. In no garden is the principle *ars est celare artem* more completely carried into effect; each plant grows, not constrained in a bed, but, as it would seem, where it has sprung up naturally, and the juxtaposition of native and exotic trees and shrubs suggests the rich variety of a tropical forest where no two neighbouring trees are alike. Sir EDMUND's interest in his plants is as extensive as the gardens themselves, and visitors who have the fortune to be shown round by Sir EDMUND carry away with them not only memories of loveliness, but a wealth of new

knowledge which renders them not only grateful but also very humble. As is well known, Sir EDMUND LODER is a great naturalist as well as horticulturist, and it is an added delight for the visitor to come upon groups of wallaby, herds of kangaroo, colonies of prairie dogs, all enjoying as much freedom as in their homes. It is by no means our present purpose to describe even in outline the horticultural features of Leonardslee, but only to say enough to make it clear to every lover of wild gardens and beautiful scenes that it is no less in his own interests than in those of the Sussex charities that he should take advantage of Sir EDMUND LODER's kind invitation and make pilgrimage to Leonardslee on May 26 and 28—one day is far too brief, and he who goes on the 26th will undoubtedly want to go again on the 28th. At all events, that was the unanimous verdict of those members of the Council of the R.H.S. who, at the invitation of Sir EDMUND, visited Leonardslee about a week ago.

CHINESE TREES AND SHRUBS.—In his interesting lecture to the members of the Royal Horticultural Society, Mr. BEAN cited figures which demonstrate the wonderful thoroughness of Mr. WILSON's explorations in China. As the results of his three expeditions WILSON has introduced no fewer than 1,500 plants—as seeds or cuttings. Of this number four are those of new genera and 400 are new species. The horticultural value of WILSON's introductions may be gauged by the fact that nearly 100 have already received either a F.C.C. or Award of Merit. Besides enumerating the many plants which have proved valuable acquisitions to our gardens, Mr. BEAN showed how WILSON's botanical explorations have confirmed the remarkable fact of the similarity between the floras of North-east Asian and Atlantic American plants. The facts of such similarity of flora require us to suppose that in pre-glacial times there was a considerable land connection between the continents, and that when plants were driven southward by the gradual onset of lower temperatures, those which took the American route were constrained by the range of the Rocky Mountains to deflect their course: in short, the Rockies acted like the "points" of a railroad, and instead of allowing the plants to run directly southward along the Pacific side, shunted them across to the Atlantic track. As examples of this discontinuity of distribution and of the corresponding species of China and America, Mr. BEAN mentioned the Tulip Tree. Until the discovery of a Chinese species of *Liriodendron* by WILSON the only known member of the genus was the well-known *L. tulipifera* of North America. Other examples of correspondence are Sassafras, of which one species, *S. officinale*—the Sassafras tree—is American, and another discovered by WILSON is Chinese: *Symphoricarpos*, with North American species extending so far south as Mexico, and now also with Chinese species. Another scientific aspect of WILSON's work which was dwelt upon by Mr. BEAN is the need for revision of our opinion with respect to the distribution of the Rhododendron. HOOKER's exploration of the Himalayas led to the natural belief that in those mountains the largest numbers of this genus are aggregated. WILSON's collections show, however, that this claim must be withdrawn in favour of that of West and South-west China, which possess an aggregate of about 170 species.

POTATO CROP IN 1913.—The Board of Agriculture has now published the statistics of agricultural productions for the year 1913, and we learn that the estimated average yield per acre of Potatoes was 6.55 tons, exceeding the average of the previous decade by 0.57 ton. This result in England and Wales has been exceeded in only four previous seasons since the produce returns were first collected, and the effect, with the relatively large acreage under Potatoes, was to give the largest total production of England and Wales which has yet been recorded. This total, 2,894,655 tons, was 324,000 tons more than

the decennial average production and about 26,000 tons above the previous largest crop in 1908. Only 13 counties in England and Wales returned lower yields than usual; the best results were in the east and north-east of England, and the least satisfactory in the south-west. On the 76,000 acres planted in Lincoln the yield was four-fifths of a ton above average; in Cambridge (including the Isle of Ely) the crop on 33,000 acres was 1.25 tons above average; on 24,000 acres in the West Riding and 46,000 acres in Lancashire the excess was about three-fifths of a ton, though on 24,000 acres in Cheshire the crop yielded only one-fifth of a ton more than usual.

HOLLY HILL, BUCKINGHAMSHIRE.

(See Fig. 146 and Supplementary Illustration.)

Nor far from the beautiful old parish church of Stoke Poges, immortalised by the poet Gray,



FIG. 147.—RHODODENDRON SEARSIAE: FLOWERS PALE PURPLE.

(See p. 335.)

whose *Elegy* was written in its churchyard, stands the Buckinghamshire home of Mr. W. A. Judd. Holly Hill boasts of no ancient associations. Seven years ago, when Mr. and Mrs. Judd took possession, it was a small house used as a summer retreat by the previous owners. Of gardening, except an undulating lawn, a few flower beds and a large kitchen garden, there was none. Yet most of southern Buckinghamshire makes good garden land, and this estate is no exception to the rule. Mr. Judd concerned himself with enlarging and modernising the house, whilst Mrs. Judd turned her attention to garden-making, and, as she is possessed of artistic feeling, unflagging energy, and an intuitive knowledge of the right course to adopt, an ordinary uninteresting country residence has been transformed into a very beautiful pleasure. Holly Hill lent itself kindly to this transformation; the estate slopes gently to the south, it is framed with the rich umbrageous foliage which has given the county a world-wide fame, and although the subsoil is heavy clay and retentive of water, with drain-

age and proper cultivation luxuriant growth results. Knowing full well that first impressions are abiding, the entrance received early attention. The carriage-drive is short, but so well have the curves and planting been treated that this is not readily apparent, and there is but little suggestion of the residence until the forecourt is reached. A paved terrace adds dignity to the garden front of the house, and also provides a pleasant promenade, from which, over the tops of the Elms, Beeches, and Oaks which stud the distant valley, a good view of Windsor Castle and its surroundings is obtained. The flower-beds, just wide enough to allow of effective planting, are gay with Wallflowers, which next month are to be replaced by a colour scheme in *Antirrhinums*, and the house is fast becoming furnished with climbers, which, though growing almost rampantly, ripen so thoroughly in this sunny aspect that flowering is abundant. Several plants of *Ceanothus Veitchianus* are smothered with filmy blue

Illustration—but now more furnished than when the photograph was taken. Only red and pink *Roses* are used, and the beds contain distinct varieties. The principal sorts are General McArthur, Hugh Dickson, Richmond, La Tosca, Madame Abel Chatenay, and Caroline Testout. On the pillars the same scheme is observed, and here it is *Hiawatha* and *Dorothy Perkins*, associated with *Jackmannii Clematises*, which yield a profusion of bloom. In the Dutch garden the *Marliac Nymphaeas*, around the leaden water-sprite, have become strong and vigorous, and stud the surface with rich blooms. A bordering of *Sedum* spectabile bearing trusses of rose-purple flowers against the dark Yew background provides a charming summer effect, and various lowly herbs relieve the broad paving. On the southern side, in a low and informal rockery (see fig. 146), *Campanulas*, *Alyssums*, *Aubrietias*, *Saxifrages*, and many other Alpines increase and multiply, and bloom profusely. The companion herbaceous border, where pink *Galegas*, rosy *Pentstemons*, and golden *Heleniums* make a charming feature, is to be replaced by an extension of the rockery and canal, so as to be more in keeping with the paved walk.

When Mr. and Mrs. Judd acquired the property there was a large kitchen garden attached to the residence. This necessary feature was almost as ugly as the kitchen garden at its worst can be. Two long gravel walks divided it into four squares, which were again divided with geometrical precision, making it a severely utilitarian garden, easy to work, and productive of splendid vegetables, but, except to the gourmand, devoid of interest. As is nearly always the case, there were a few redeeming features. At Holly Hill these were a beautiful old standard *Cherry*, a couple of large, round-headed *Stone's Apple trees*, and an ancient prostrate *Lavender*, all of which Mrs. Judd at once decided to cherish and to "work around." The old *Lavender* bush, weighted down by the growth of ages, and with rugged, twisted, moss-grown stems, looking like a gnarled, prostrate *Juniper*, is now a fascinating corner piece of the broad flower borders, which stretch down and across the garden. At the present season *German Irises*, *Lupins*, *Anchusas*, *Violas*, *Forget-me-nots*, and *Alyssum saxatile*, with batches of *Darwin Tulips* flaunting their gorgeous colours just behind large patches of silvery-foliaged *Pinks*, make a very attractive display, and for a later blossoming there are goodly clumps of *Delphiniums*, *Day Lilies*, *Veronicas*, *Erigerons*, *Canterbury Bells*, *Sweet Williams*, and a host of other summer and autumn flowers, which will continue the display.

There is still a large portion of the ground devoted to kitchen garden crops, and in this sunny, southern slope the edible *Peas* are already in flower, and rows of strong *Sweet Peas* promise to be magnificent. On an eastern wall *Peaches*, *Plums*, and *Apricots* are carrying such heavy crops that severe thinning has been necessary. In the glass department the same skilful attention is apparent. The houses of *Muscat*, *Black Hamburg*, and *Black Alicante Grapes*, contain large, well-balanced bunches of splendid appearance. For furnishing the conservatory and for house decoration there are healthy batches of *Gloxinias*, *Gesneras*, *Achimenes*, *Begonias*, *Justicia carnea*, *Ferns*, and *Orchids*, which will be valuable throughout the summer. The conservatory attached to the residence is gay with *Schizanthuses*, *Stocks*, *Hydrangeas*, *Canterbury Bells*, *Justicia carnea*, *Primula obconica*, and *Larkspur Webb's Carmine*; whilst from the roof hang rich yellow *Maréchal Niel Roses* of unusual size and beauty. In this southern aspect shade in summer is essential, and the position of the structure precludes the use of blinds or stippling, but Mr. J. E. Wheeler, the enthusiastic and very capable gardener, overcomes the difficulty by training a *Clematis montana* over the roof, thus combining beauty with utility. A. C. B.

flowers, and amongst these numerous bees make a drowsy hum. The Heath-like shrub, *Fabiana imbricata*, which one associates with the western counties, is also in full bloom, and in a sheltered south-west corner *Plumbago capensis* promises abundant bunches of blossoms in the coming summer and autumn. Sprays of climbing *Roses*, pushing out from amongst small-leaved *Ivies* and *Clematises*, are capped with red-flushed flower buds.

Immediately below the terrace is a spacious tennis-lawn, terminating in a broad herbaceous border, where pillar *Roses* add their rich beauty to the border display. On the right are shady trees margined with beds of *Rhododendrons*, in which the white, bell-like flowers of *Solomon's Seal* show up in contrast with the dark foliage. Amongst the *Rhododendrons* may be seen stout stems of *Lilium candidum* and spikes of *Foxgloves*, for summer and autumn beauty. Away to the left, past a splendid *Bay tree* and a rockery nook rich in spring flowers, is the Dutch garden and Rosary, which are shown in the Supplementary

RHODODENDRON SEARSIAE.

THERE appear to be a considerable number of small-sized species among the Chinese Rhododendrons, and it is fortunate that cultivators are not blinded to their charms by the magnificence of the giants of the genus, whose progeny are represented by the popular garden sorts. There is room in horticulture for both. One of the best of the Chinese introductions is *R. racemosum*, but it has taken us about twenty years to discover its merits as a hardy free-flowering shrub. When this species first flowered in 1892 it was described as a small Box-like shrub, 6 inches high, with loose terminal heads of pinkish flowers nearly 1 inch across, and not unlike some of the forms of *R. parviflorum*. There are fine bushes of it now 5 feet high, and when in flower they are as showy as the Japanese *R. amoenum*, and of a more pleasing colour. The pretty little *R. nigro-punctatum* has been the delight of not a few gardeners this spring, its clusters of violet-blue flowers being a new feature among Rhododendrons. Patience is required with the small-flowered species; we must wait until they have grown to something like full size before passing judgment upon them as garden plants. Fig. 147 illustrates one of the latest of them to flower, which was exhibited at the R.H.S. meeting on April 21, 1914, by Mr. Reuthe, to whom we are indebted for the specimen. *R. Searsiae* belongs to the *Lepidota* section of the genus, which is characterised by having flowers from terminal buds, corolla campanulate or funnel shaped, medium-sized, and smallish leaves, lepidote or hairy. To this section belong *R. Hanceanum* and *R. ambiguum*, both yellow flowered, and in cultivation; also *R. polylepis* (*Harrovianum*) and *R. concinnum* (*coombense*), which have purple flowers, and are both figured in recent volumes of the *Botanical Magazine* (tabs. 8,309 and 8,280). *R. Searsiae* was named by Wilson in compliment to "Sarah Choate Sears, artist, successful cultivator and lover of flowers." It is described in *Plantae Wilsonianae* as a shrub 2 to 5 metres high, with slender branches, covered when young with brown scales; leaves thin, leathery, lanceolate, margins revolute, 2 to 4 inches long, dark green above, at first scaly, afterwards glabrous, glaucous beneath; petioles purplish; flowers 4 to 8 in terminal umbels, with short pedicels, shallow, campanulate, 5 lobed corolla nearly 2 inches across, white or pale purple; stamens 10, longer than the corolla; style and stigma purple. A native of Western Szechuan, where it grows in thickets at an altitude of 2,300-2,800 metres, it was collected in flower in June, 1908. In the same section, and therefore nearly related to *R. Searsiae*, are *R. Augustinii*, now fairly well known in cultivation, and *R. moupinense*, a figure of which will be found in this volume, p. 133; the latter has small leaves and fragrant white flowers, and is a most promising plant for the rock garden. W. W.

PACHYSANDRA PROCUMBENS.

PACHYSANDRA procumbens (fig. 148) is one of the most interesting and pretty of rare herbaceous plants and is quite novel in character. Its attractiveness is mainly due to the thickened white filaments, though the dark bronzy leaves, which form a fine contrast to the flower spikes, are very handsome. The habit of the plant is well shown in the illustration, which is reproduced from a photograph taken in the Botanic Gardens here, where the plant forms a tuft about 2 feet across. The popular name is the Alleghany Mountain Spurge, but it is a native also of Carolina and Kentucky. There are three other species, *P. terminalis*, a useful diminutive shrub for the rockery, which, in its variegated form, is not infrequently found in botanic

garden greenhouses, and two other comparatively new species, both natives of China, but not known to be in cultivation. The genus belongs to the Buxaceae, and is most nearly allied to *Sarcococca* and *Buxus*, though it differs widely in appearance from both. It has capsular fruit like *Buxus*, but the leaves are alternate instead of opposite, and *Sarcococca* stands alone, because of its baccate fruit. The flowers are monoecious, the pistillate and staminate on the same spike. The sepals are four, the stamens four, opposite the sepals, the filaments thick, and long, exserted.

The present species is of spreading habit, and as the spikes of flowers are borne near the stem bases, the general effect is that of a central flowering area, with a ring of foliage outside. The stems are about 9 inches long, stout and unbranched; the leaves are 2.4 inches long, ovate, oval, or obovate, obtuse or acute at the apex, coarsely dentate, or in some cases entire, narrowed at the base into a petiole, either shorter than the blade or about equal to it; the spikes are one or several in the axils of the lower scales, densely, many-flowered, 2-3 inches long, the greater part of the lengths with stam-

A specimen of *V. Hulkeana*, however, sent by a correspondent showed the young leaves and growing points dry and withered, and the under surfaces of the leaves entirely covered with a dingy white mildew, which on examination proved to be *Peronospora grisea*. It is highly probable that this *Peronospora* will, now it has acquired the power of attacking exotic species, prove a very serious pest to cultivated species of *Veronica*, as there is no reason to doubt its ability to spread to other species of this genus. In *V. Hulkeana* the fungus appears to attack only the young shoots and leaves, which are speedily killed outright, consequently the increase in size of the bush is checked. On the other hand, it is not uncommon to see plants of *V. Chamaedrys* or *V. Beccabunga* having the under surface of almost every leaf covered with a delicate dingy white mildew, yet the plant is not killed, nor, it appears, very much inconvenienced.

This is another illustration of the well-known fact that a fungus on first attacking a new host causes serious injury, whereas it often does but little damage to a host to which it has long been accustomed. In future everyone wishing to grow



FIG. 148.—PACHYSANDRA PROCUMBENS—THE ALLEGHANY MOUNTAIN SPURGE.

inato flowers, the pistillate, with comparatively large fleshy spreading styles, a few only towards the base; the filaments are from a third to nearly half an inch long. The flowers are produced in April and are fragrant. There is a figure in the *Botanical Magazine*, tab. 1964.

The culture of the plant is quite simple. Cuttings would no doubt strike, but most conveniently perhaps it may be divided. It grows in woods, so that some shade is no doubt desirable. It is here fairly in the open, but with the shadow of trees passing over it. *R. Irwin Lynch*, *Botanic Gardens, Cambridge*.

DISEASE OF VERONICAS.

AMONG some plant diseases sent to the *Gardeners' Chronicle* for identification recently was one which possesses considerable interest. The fungus in question, *Peronospora grisea*, de Bary, has hitherto been thought to be strictly confined to various wild species of *Veronica*, being of common occurrence on the leaves of *V. Chamaedrys*, *V. agrestis*, and *V. Beccabunga*, etc.

Veronicas should exercise the precaution of keeping down all weeds belonging to the order *Scrophulariaceae*. *I. Massee*.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE BEAUTY OF FRUIT BLOSSOM.—There are two periods of the season when, to my taste, an old-fashioned garden, with an orchard attached, is more beautiful than at any other time. The first is when Cherries, including Double Cherries, and Pears are in full bloom; and the second, closely following, is when Lilac, Laburnum, Guelder Roses, and Apples are in full beauty, if they are so at the same time, as is the case this season. Plums in full bloom make a charming off-hand sight, but on close observation are not nearly so beautiful as Apples, Cherries, or even Pears. Apple-blossom, in my opinion, is pre-eminent, particularly that of varieties which are most pink, such as Lord Derby, Domino, Cox's Orange Pippin, Charles Ross, Benheim Pippin, Mr. Gladstone, Irish Peach, and Allington Pippin.

Beauty of Bath is gorgeous from its thick and large bunches of bloom, but is not deeply tinted, while Worcester Pearmain is the least prettily coloured of any Apple that I grow. The display is most striking in the cases of varieties which naturally grow symmetrically, and blossom on short natural spurs along the branches. *Southern Grower*.

PEACH LEAF CURL OR BLISTER.—I was much interested in Mr. J. Gardener's note on p. 319 of your last issue. I should like to know if Mr. Gardner sprayed the whole of his Peach trees on the outside walls, for if all were treated the test cannot be regarded as conclusive, as alternate trees should have been left unsprayed. Some few years ago the Peach and Nectarine trees on the outside walls here were very badly attacked by "blister" for several successive years. At the time there was advertised a preparation that would check the disease, and I intended ordering some, but forgot to do so until too late to use, and, strange to say, that year there was not a leaf affected, and the three following years the trees were almost immune from curl, and there is very little of the disease this season. I only mention this to show how necessary it is to give fair tests before anything definite as regards a certain cure is claimed, and the only satisfactory way is to spray alternate trees with the Bordeaux mixture and see if these remain free each season after the spraying, and to watch those that are unsprayed to see if the fungus attacks them. If I had bought and used the specific four years ago I should undoubtedly have said that it cured Peach leaf curl or blister. *A. Jefferies, Moor Hall Gardens, Harlow, Essex.*

DAMAGE TO FRUIT BY FROST.—I have seen reports from several parts of the country on serious damage to fruit crops by frost which occurred early in the morning of May 2. The maxima varied from 9° to 15° of frost. The damage to Strawberries, Plums and Pears in most of the districts was serious, one estimate being that three-fourths of the Plums were killed. Gooseberries generally were more or less damaged, and Currants in some places. The extent of damage to Apples is variously reported. In my own district thermometers 4 feet above the ground level have not fallen below freezing point since March. *A Southern Grower.*

SERVANTS OF THE CROWN.—An appeal is being made by the Committee of the Kew Guild on behalf of Mr. Crisp, who for a period extending over 34 years has served both Kew Gardens and the Crown faithfully and well in the capacity of packer. It appears that Mr. Crisp has been compulsorily retired on account of age limit, and it goes without saying that the salary attached to that office precludes the possibility of anything beyond a very meagre sum being set aside for a rainy day or old age. He is granted a gratuity of £47 12s., which in the most careful and economical hands must render the recipient practically penniless in less than a year. Is it not a shame in this the wealthiest country in the world that men should be thrown upon the scrap heap in this heartless fashion after long and faithful service? Had Mr. Crisp served a municipality he would have been comfortably placed for the rest of his days, freed from anxiety as to the wherewithal to keep his body alive and a shelter over his head. A large and ever-increasing number of public bodies, also private concerns, point the way in this matter, and the Government may and should follow the good example set by them. What kind of a chance has Mr. Crisp at the age of 60 to secure employment, and is it reasonable and humane to oblige him to scour the country in search of it? *Walter H. Aggett, Superintendent Public Gardens, Hermondsey, S.E.*

THE LESSER NARCISSUS FLY (EUMERUS LUNULATUS) (see pp. 240, 272, 302, 318).—I fear that your readers are by this time feeling a little bored by this small fly, and inasmuch as both Mr. A. J. Bliss and I agree that very little is at present known about it, while those having the time and special facilities for dealing with its life-history are at work upon the matter, it is difficult to see what practical good can result from a prolonged discussion of your correspon-

dent's particular views upon the subject. He pleads that "our proper attitude should be an open mind." Exactly, and if he will read more carefully my previous letters he will see that this has been my position from the first; in fact, it is put forward in my first letter, but with the suggestion that, from prudential considerations, it would be well "until thoroughly investigated under scientific conditions, to reverse our usual judicial practice and to consider the accused to be guilty until he has been proved innocent." But otherwise I hold no brief for the prosecution, and no one would be more pleased by a verdict of acquittal than I, but that verdict has not yet been given. On the other hand, Mr. Bliss's "open mind" has been evidenced by an open, and persistent, advocacy of the "scavenger" theory, an advocacy which could only tend to put people off their guard, and disastrously so, should, in the end, the verdict be given the other way. To negative this tendency I have naturally pointed out what I have considered, and still consider, the very weak points in Mr. Bliss's case. But surely the time has now arrived when we may consider that the need for precautionary measures is widely recognised, and so a further discussion of what that gentleman's particular views may be would be but waste of time. We can afford to wait the result of the scientific investigations now in progress, although I must confess that I should



FIG. 149.—PERONOSPORA GRISEA.
(See "Disease of Veronicas.")

dearly like to have more of your correspondent's views of what are, and are not, "crude unscientific conclusions." In fact, I must confess to a difficulty in "placing" Mr. Bliss's "more than so-called fact" that the finding of Eumerus larvae in a rotting Iris rhizome proves that the rot came before the larvae. This may be an assumption, as in the case of the Narcissus, and further investigation may show this to be so. This is, of course, a mere suggestion, but as Mr. Bliss presumably did not lift, and examine, his Iris until it was observed to be out of health, and then found both rotten tissue and larvae therein, was it *post hoc* or *propter hoc* in that case, or a jump to a conclusion? But I note with pleasure that Mr. Bliss has brought into the arena our old friend the Merodon, on the question of where it lays its eggs. Poor fly, it must be very pleased, even if only at this late hour, to find that it is not quite left out in the cold, overshadowed by the prestige of its younger and smaller brother. *Charles E. Shea.*

—The discussion between Mr. A. J. Bliss and Mr. Chas. E. Shea is most enjoyable reading, and to those who give attention beneficial results are bound to accrue. Mr. Chas. E. Shea, writing in *The Garden*, April 18, p. 191, says: "Eumerus lunulatus rivals its great brother, the Merodon equestris, in its capacity for destruction. . . . Both eat out the

interior of the bulb, resulting in almost every case in the destruction of the bulb." In his letter to the *Gardeners' Chronicle*, May 2, p. 302, he charges Mr. Bliss with the use of deductive reasoning. Are we to assume that Mr. Shea's statement above is not deductive reasoning? If not, then I would suggest production of proof. A close examination of any bulb troubled like his Glory of Noordwyk ought to furnish evidence. Mr. Shea writes: "It seems to me that where so little is really known about the matter there is a better guide than mere surmise, and that is the guidance furnished by what is called analogy, and in this case, as the Merodon and Eumerus are so closely allied," etc. They certainly are allied in entomological classification, but there the resemblance ceases. They are different in general appearance, in habit, and in their life-cycle, and I am therefore puzzled to know where the analogy comes in. Mr. Bliss has given us some strong arguments respecting Eumerus feeding on decaying matter. It is no argument to say that because the Merodon eats the living tissue that Eumerus does also. To me such deductive reasoning lacks conviction. But we must ever bear in mind that the cleverest reasoner has not all the arguments. *Geo. St. Oz, Doncaster.*

STRANGE HOME OF A PAIR OF OWLS.—A pair of little brown owls have made their home in a remarkable place on one of our farms. They have laid their eggs in the furnace of a portable boiler used for washing beehives, and their larder is well stocked. Of course, the fire has not been lighted recently, but the copper is used every day, and when the owls are at home they do not mind this at all. They find their way in and out of their home by means of the small iron chimney attached to the copper. This species of owl is not indigenous to Great Britain. Lord Lilford brought a pair of them from Spain and kept them in captivity at Lilford Hall, near Thrapston. They thrived, and several years ago he turned them out into the open. Since then they have multiplied, and are now fairly common in the Eastern Counties. The interesting thing about the little brown owl is that it flies by day as well as by night, and there is much difference of opinion as to the amount of harm or good that it does. *Chivers and Sons, Histon, Cambridge.*

TREES AND SHRUBS.

MAGNOLIA KOBUS.

NEVER previously has this tree flowered here with such profusion as at the present time, rivaling even the better-known *M. stellata* in this respect. The flowers have some resemblance to those of the latter species, but are not so spreading, are larger and have fewer petals, six being the usual number. Like those of *M. stellata*, the flowers are easily damaged by cold winds, therefore the tree should be planted in a sheltered position. Specimens are said to attain to a height of 70 or 80 feet in Japan, its native country. The specimen here is only about 14 feet high, but it is growing freely, and, as we are training it to one stem, it bids fair to become a tree of considerable size.

PRUNUS SPINOSA, FL. PL.

THE most noticeable plant in the Bath Botanic Garden recently was a fine specimen of the double Sloe in full flower, demonstrating once again, as it does every year, what a fine tree it is in spring. The flowering of this plant is annually looked forward to by numerous visitors to the garden, and it never disappoints, but year after year creates such a picture as to warrant its inclusion in the most select garden. Our tree is about 20 feet in height and as much across, and was smothered with its tiny, pure-white flowers. Like other plants which flower before the leaves develop, it should have a background of some dark-foliaged evergreen. *J. D. Halliburton, Royal Victoria Park and Botanical Gardens, Bath.*

GRAFT HYBRIDS.

I.—THE RHODODENDRON.

THE occurrence of a graft hybrid Rhododendron is recorded by Messrs. D. Bois and G. T. Grignan in *Revue Horticole* (August 1, 1913). It arose as a result of grafting the variety Madame Linden on a stock of Rhododendron Cunningham's White. A shoot which had been left on the stock just below the graft produced pale rosy-lilac flowers; whereas the flowers of the stock are white, and those of the scion deep rosy-lilac with dark red spots. This form of leaf borne by the anomalous shoot is also distinct, approaching that of the scion.

II.—PEACH ALMOND.

MESSRS. DANIEL and Delpont describe in the journal above cited (September 1, 1913), a graft hybrid between Almond and Peach. A Peach grafted on the Almond bore as its first crop true Peaches, but produced in the next year buds, some of which resembled those of the Almond; others were like Peach buds, and others again were intermediate. Seeds from the graft have produced trees, the foliage of which resembles both that of the scion and stock. The trees have not yet flowered.

III.—BELLADONNA AND TOMATO.

By grafting Tomato on Belladonna, Mr. Daniel (see *Rev. Hort.*, July 16 and August 1, 1913) appears to have obtained decisive evidence that scion may influence stock. He shows that the Tomatos produced by the graft contain an alkaloid allied, chemically and physiologically, to atropine; whereas Tomatos grown normally do not contain this substance.

BRAMBLES FOR WINTER EFFECT.

UNTIL the introduction of *Rubus Giraldianus* the best of the white-stemmed Brambles for winter effect was *R. biflorus*; but the new Chinese introduction surpasses the latter, both in grace and general effect. Mr. W. J. Bean, in describing *R. Giraldianus* in the *Kew Bulletin* (No. 2, 1914), states that it has a fountain-like habit, the stems rising erectly for 5 to 7 feet, and then arching so that the tips reach the ground. They root at the tips, and hence propagation is easy. A white or blue-white waxy bloom covers the stems, and though most vivid in October, remains all the winter. The stems are biennial, reach their full length by the first autumn, and flower in the following spring, and ripen their black fruit in late summer. After fruiting the shoots should be cut out. *R. Giraldianus*, though discovered originally by Giraldi, was introduced into cultivation by Wilson in 1907. K.

PUBLICATIONS RECEIVED.—*British Year Book of Agriculture and Agricultural Who's Who, 1913 and 1914.* (Vinton and Co., Ltd., 8, Bream's Buildings, Chancery Lane.) Price 5s. net.—*Wholemeal Flour: All About It and How to Use It.* By J. H. Cook. (Birmingham: J. H. Cook, 121, Aston Brook Street. 1914.) Price 1d.—*Journal of the Royal Horticultural Society.* Vol. XXXIX., part 3 (April, 1914). *The American Pomologist.* Proceedings of the American Pomological Society, Washington Session, 1913. Bulletin No. 7, April, 1914. (Published by the American Pomological Society, Washington, U.S.A.) Price 25 cents. *Journal of the North of England Horticultural Society.* No. 38, May, 1914. (Leeds: J. A. Stenbridge, St. Ann Street.) *Flower Favorites: Their Legends, Symbolism, and Significance.* By Lizzie Deas. (London: Jarrold and Sons.) Price 3s. 6d. net. *The Intra-dermal Test for Tuberculosis in Cattle and Hogs.* By Clarence M. Haring and R. M. Bell, Bulletin No. 243 of the College of Agriculture Experiment Station, Berkeley, California. (Published by University of California Press, Berkeley, Cal., U.S.A. 1914.)—*Annual Report of the Commercial Control Branch of the Board of Agriculture and Fisheries for the Year 1913.* (London: Wyman and Sons, 20, Bream's Buildings, W.C. Price 4d.

SOCIETIES.

ROYAL HORTICULTURAL
Scientific Committee.

MAY 5.—*Present:* Mr. E. A. Bowles, M.A. (in the chair), Rev. Canon Fowler, Messrs. J. Fraser, W. C. Worsdell, J. Ramsbottom, W. Hales, G. Wilson, A. Worsley and F. J. Chittenden (hon. sec.).

Pelargonium hybrids.—Mr. FRASER continued his remarks upon *Pelargonium* hybrids, dealing with those into whose composition *P. quercifolium* had entered. The complete record of his examination of these forms will be published in the *Journal* of the society later on.

Scale Insect on Furze.—The Rev. W. WILKS exhibited a branch of Furze thickly infested with a cottony white insect looking very much like a scale insect, and probably identical with *Pseudomonas ulmi*, which has previously been recorded as attacking that plant.

Malformed Rose.—Miss COLLIN sent from Surbiton a very curious malformed rose, which Mr. Worsdell took for further investigation.

Beech with curious root growth.—A specimen of Beech came from Mr. P. T. GODSAL, of Iscody Park. The tree had been, it is supposed, struck by lightning, and partly killed, the upper living portions had sent bad roots which had grown down, branching as they went, to the ground, beneath the dead bark. This kind of growth is not infrequent in Willows.

"Fire" in Tulips.—Rev. Canon FOWLER said that this season the Tulips in his garden were remarkably free from "fire," though last season they had been badly diseased. Mr. CHITTENDEN said that plants in his garden exposed to wind had suffered badly, but in the Tulip trial in the Wisley garden scarcely any was to be seen. There they had been protected by putting branches of Broom between the beds.

Schizanthus malformed.—A *Schizanthus* in which the flowers had apparently been displaced by vegetative shoots was received from Mr. CROSSWELL, of Pickhurst Manor, Hayes, and referred to Mr. Worsdell for further examination.

Uncommon plants.—Messrs. PERRY exhibited *Iris minuta* with narrow petalled yellowish flowers about an inch across, native of Japan, and *Glaucidium palmatum*, a beautiful Ranunculaceous plant, with divided bracts on the single flowered scapes, and a mauve flower about 2 inches in diameter, with yellow flowers, native of the same country.

HORTICULTURAL CLUB.

LECTURE ON INDIAN GARDEN CRAFT.

MAY 5.—On the occasion of the usual monthly dinner of the Horticultural Club, at the Hotel Windsor, on Tuesday, May 5, a most interesting lecture on Indian garden craft was delivered by Mrs. PATRICK VILLIERS-STUART. Mr. A. Worsley presided, and amongst the guests of the club were Her Excellency Lady Hardinge of Penshurst, Lady Margaret Graham, Sir Krishna Gupta, Mirza Ali Baig, Colonel and Mrs. Sykes, Mrs. Fielden, Captain Patrick Villiers-Stuart, and Mr. Allen, editor of the *Pioneer* (India). The lecture was illustrated by a series of very beautiful lantern views in colour. We print below a contribution on the subject of the lecture from the pen of Mrs. VILLIERS-STUART.

THE OPEN-AIR HOUSE.

Accustomed as we are, under our rainy northern skies, to a sharp distinction between house and garden, Indian garden craft may seem at first more architectural than horticultural, for it springs, not so much from the requirements of flowers and plants, as from the needs of the people who grow them, and live in their gardens. The Indian garden is an open-air house. Its separate pavilions correspond to our several rooms with their various uses. This fact, taken into consideration with the arid climate and the consequent need of irrigation, governs the whole design of these country houses or architectonic gardens.

Water is a vital necessity to cool the dwelling rooms and supply the baths, to fill the big swimming tanks, as well as to moisten the air with "pearl showering" fountains, or charm the

eye with the lovely tranquil reflections of the long canals, that form the cosmic cross on which the old designs are based. The soul of an Eastern garden hides not in the flowers, the grass, the trees, but in the running water that alone makes its other beauties possible.

AN INDIAN COUNTRY HOUSE.

For a time I stayed in just such a place, situated far away in the country of the Himalayan foot-hills. It was a huge walled enclosure, partly fortified. First came the great high gateway, which formed the double purpose of entrance hall and quarters for the guard; beyond extended a large flower garden, laid out in parterres, with Marigolds, Cypress trees, and Palms bordering the main canal. At the end of this first terrace, built over the stream, were the principal loggias and reception rooms. On its other side this building opened on to the Rose garden, across which towered the high palace of the women's quarters, with its splendid views and airy bedrooms on the roof. Here, built into the side walls, a kitchen pavilion on one hand balanced rooms for guests on the other; while forty feet below lay the large fruit garden, the "bostan," or orchard, with the summer drawing-room delightfully "withdrawn" in the centre of the largest fountain tank.

THE TWO STYLES.

This garden, although built in Mughal times, now belongs to a Hindu Maharaja, and it must be remembered that two constantly intermingling styles are traceable in the history of Indian gardening. Both are primarily based on the central tree, fountain, or pavilion, and the four-went water-ways, or paths of the old Indian village plan. But the Central Asian water garden, brought into India by the Moslem conquerors, although not in the least exotic, as has been incorrectly suggested, for it reproduced an ancient Indian form, had at first, from the climate of its origin, quite another horticultural character to the Hindu gardens of the plains.

SPRING BULBS AND ORCHARD GARDENS.

The Mughal garden in the hills was essentially a garden of spring flowers, a pleasure of Cherry, Quince, and Apple blossom, with Tulips, Anemones, Daffodils, Narcissus, Crown Imperials, and Iris scattered in the grass under the great Chenar avenues, or grouped in glowing parterres near the streams. Paeonies, Hollyhocks, Jasmine, and Carnations followed the spring bulbs, although even the Roses droop and fade before the first hot breath of the burning summer wind. But in autumn these orchard gardens, where the purple Grapes festoon the Poplar trees, are almost as lovely as in spring. So Bahar thought long ago, when he saw the Garden of Fidelity, with the "Pomegranates hanging red on the trees," or that garden at Kabul, where he notes in his memoirs, "One Apple tree had been in excellent bearing. On some branches five or six scattered leaves still remained, and exhibited a beauty which the painter with all his skill might attempt in vain to portray."

THE NISHAT BAGH.

The Nishat Bagh, true to its name, is the gayest of all Mughal gardens. Its twelve terraces, one for each sign of the Zodiac, rise dramatically higher and higher up the mountain side from the eastern shore of the Dal Lake in Kashmir. The stream tears foaming down the carved cascades, fountains play in every tank and watercourse, filling the garden with their joyous life and movement. The flower beds on these sunny terraces still blaze with colour—Roses, Lilies, Geraniums, Asters, tall growing Zinnias, and feathery Cosmos, pink and white. Beautiful at all times, when autumn lights up the Peplars in clear gold, and the big Chenars burn red against the dark blue rocky background, there are few more brilliant, more enchanting sights than the first view of Asaf Khan's Garden of Gladness.

The garden was built about the year 1620 by Jahangir's prime minister, the brother of his garden-loving Empress, the famous Nur-Jahan. It is about 600 yards long by about 300 yards wide. Exploring it terrace by terrace, as it

exists to-day, we may be able to arrive at some of the details of Indian gardening in Kashmir.

CHOICE OF SITE.

The Mughals, with their fine traditions, laid most stress on choice of site. All the finest Mughal gardens or their ruins are found most beautifully placed. Even the little Chasma Shahi, the Garden of the Royal Spring, perched high on the mountain side, over the Lotus fields of the Dal, although so small, hardly more than an acre and a half, from its plan and its marvellous view, is quite as attractive as its great rivals round the lake below. The river gardens at Bijbehara, Fadai Khan's garden at Pinjor, Nur-Gahan's favourite Verinag, Lalla Rookh's garden on the Manasbal Lake, all illustrate some special theme. Achibal Bagh is an ideal site. Nothing can surpass the natural loveliness of the river gushing out of the honeycombed limestone cliff just at the point where the mountains intrude farthest on the plains. If I were asked where the most perfect modern garden on a medium scale could be devised, I should answer without hesitation, Achibal. Nowhere else have I seen such possibilities for the combined appeal of a stately stone-bordered pleasure, between ordered avenues of full-grown trees, and a natural rock and woodland upper garden, with haunting, far-reaching views, where the white wild Roses foam over the Firs and the boulders, rivalling the "great cascade" the traveller Bernier praised.

THE INFLUENCE OF THE PLAINS.

The scheme of the Mughal garden, based as it is on the most simple and scientific principles for an irrigated garden in a dry climate, stayed unchanged in the plains. But the fresh environment altered its aspect. The water became, on account of the heat, more and more the central motive. The Indian flora, too, so unlike that of Turkestan, gave a very distinctive character to the garden.

Strange as it may seem, few wild flowers are found growing in the upper Indian plains, for there, even in winter, the fierce sun burns into the ground. But the flower patches of the northern hills and meadows are replaced by deep-rooted blossoming trees, and these make up to some extent for the absence of the smaller herbaceous plants, their leafless boughs and bare twigs burst into a gorgeous flowering in the hot Indian spring, till the jungle glows like English Beech and Elm woods on a clear autumn day. Then in the plains there is the second flowering, the season of the rains, when the rank green growth chokes all but the tall grasses and ferns, and the Lotus flowers, with their lovely curving leaves, completely hide the surface of the ponds. Creepers flourish in the damp, dripping forests, where the gnarled, twisted limbs of the old Mangos are fringed with sweet scented Orchid sprays, as if swarms of little mauve and yellow butterflies were fluttering down to settle in the dim green shadows of the trees. The Hindu garden then was a cool woodland place. Its outstanding features were the flowering shrubs and trees, the creepers, and the aquatic plants; the Mango, Asoka, and Champaka groves, the Bignonia, Jasmine, and Convolvulus bowers, and the Lotus and Water Lilies floating on the ponds.

"THE FOUR CAUSES."

The question of the garden soil was carefully considered. It was placed under three heads and subdivided into six different colours. It would take too long to enumerate the different trees and plants considered most suitable to each soil. But an old Hindu writer closes with a remark, the truth of which, I think, all good gardeners who have struggled with bad soils will appreciate: "If any lasting and productive tree will be found on a different soil from that to which it is adapted, such casual growth is accounted for from the four causes, namely, that underneath the tree there might be a hidden treasure, or the tomb of a sage, or that the ruler of the country is fortunate and auspicious, or by the unwearied exertions and good conduct of the planter."

MOONLIGHT GARDENS.

Many fresh and charming ideas stepped into the Moslem garden with Akbar's Rajput queen. But the greatest change the Hindu influence wrought was the introduction of the moonlight garden—a change from the sunlit Turkish

gardens, with their Rose pergolas and glorious parterres, to moonlight Indian gardens of dark trees, white flowers, white paths, perfumes, and lights. The Hindu pleasure is planned essentially for evening enjoyment. Not that the Mughals failed to see the beauty of night. Babar, who so loved the glowing rings of the camp fires, had his Mahtab Bagh, one may be sure. But the Indian flowering trees are at their best in the hot weather and the rains, especially when the cool evening breeze brings out their perfume. Hindu ladies until recently rarely entered their gardens except at night.

DECORATIVE LIGHTING.

It follows that decorative lighting was, and is, a very distinctive feature in Indian garden craft, and one, from the nature of things, but little understood by Europeans. Now, what with the adaptability of electricity, and our modern French and English artists' obvious delight in the contrast of blue twilight and the rosy warmth of artificial light, the little lamps may once more gleam from under the waterfalls, and many other charming traits of Indian gardening be developed or revived.

MODERN GARDENING IN INDIA.

Horticulture, viewed as a science, flourishes in India. Botanical gardens and horticultural colleges are constantly improving well known shrubs and flowers, and acclimatising new ones. But, on the other hand, the use and beauty of design and the charm of garden symbolism have been almost lost sight of under our rule. This is not surprising when one remembers, as Mrs. Evelyn Cecil has so well pointed out, that the British Raj was being firmly established in India just at the time when the revolt against old gardens was strongest in this country. It was not likely, when it was the fashion to destroy whole avenues, and to obliterate the formal lines of parterres and stone-bordered pools at home, that those of India should be studied or admired.

It is only within quite recent years that the remarkable advance in horticulture (which we owe to societies like yours), hand in hand with the revived appreciation and development of architecture, is rapidly producing a new and yet more lovely style of English gardening.

I believe at this juncture we have much to learn from the art of the Indian garden. In the East it is impossible to foretell what delightful developments might arise from the combination of traditional Indian garden building with our modern needs and our modern wealth of flowers. Colour groupings, massing of Roses, and spring bulbs, and terraces devoted to a single kind of tree or flower, are Mughal fancies likely to appeal to Anglo-Indian gardeners. Our present feeling for stone or brick-built pergolas would renew an old tradition, and have full scope under the hot Indian sun. A revived and restrained use of tiles in the garden might prove a lovely feature of the modern Indian style; blue tiles under the blue-green water reflecting yet a deeper blue than the cloudless Eastern sky; flower-decked tiles set in garden gateway, or lining a fountain or a little garden well. Round Lahore beautiful examples of this Nakkashi work, as it is called, are to be seen. There are still one or two old workers left, but nowadays nobody wants their tiles. The aimless statues, which with European zeal we scatter up and down the land—the Maidan at Calcutta is thick with them—might find an appropriate and dignified repose in the alcoves of these architectural gardens. Ruskin, I think it was, points out how straight lines when partly clothed form the best foil to the grace of natural curves in plants and foliage, and the beautiful canals of Indian gardens, the long lines of the waterways and paths, hedged in by trees, produce a wonderful sense of stately dignity and peace, while the tranquil breadth of water repeats the flowers, trees, and buildings with a double magic charm, till the whole garden seems full of that mysterious beauty that comes of the sense of calm continuance, the result of quietude, part of that rhythm of harmonious change, through birth to death, and death to birth again, that special Eastern consciousness of universal life.

Fresh points of view and a change of technique give an impetus in every art: details may, with advantage, be transplanted and transformed, and among the details which a study of Indian

gardening might suggest to us at home are a closer harmony of house and grounds, the treatment of water, the moonlight garden of white perfumed flowers, the use of decorative lighting, and a fuller realisation both in spring and in autumn of the orchard garden.

THE DISCUSSION.

A particularly interesting discussion then followed. Sir Krishna Gupta and Mr. Ali Baig, members of the Indian Council in London, spoke eloquently and at pleasant length, expressing their extreme gratification at Mrs. Villiers-Stuart's lecture, and their pleasure in seeing such excellent views of the old Indian gardens. Gardening in India was now far from being such a general phase of the daily life of the people as in England, and they hoped that in the near future a wave of gardening enthusiasm would sweep over their country. At Delhi, the new capital of the Empire, attention is being paid to gardening, and the influence of this departure will undoubtedly be great, but India is a vast country, and before any general garden spirit can be observed examples must be set in various other centres. But for the consummation of their desires a large amount of money would be required, and in the Indian Empire the necessary funds for such work were always difficult to obtain. It would be quite natural, they observed, to attempt to compare the gardens of India, which have been so well portrayed by Mrs. Villiers-Stuart, with English gardens. But there could be no real comparison, because there is no gardening in India as it is understood in this country. The horticulture of the Eastern Empire is more largely architectural than horticultural, and the essentials there are an open situation, so as to provide views and to admit the cooling breezes of evening, and running water to cool the air. For this latter reason the fountains are always numerous and of small size. The magnificent jets of water occasionally seen in England have no counterpart in India, for there fountains and running water are looked upon in their utilitarian rather than aesthetic aspect. The many fountains projecting fine sprays of water play a very necessary part in cooling the air. The typical garden in India is a place of seclusion, and is used more especially in the evening, when the great heat of the day has passed. In the past the chief stimulus to garden building has come from Turkestan and Persia; later the Portuguese and Dutch introduced new shrubs and flowers, and it would be interesting to speculate on the gardens of the future, which it is very probable will be largely what may be termed English in style. But the cool green lawns and rich verdure of the trees can scarcely be embodied in any general garden scheme in India, and their place must be taken by running water and fountains.

In the course of an interesting speech Col. Sykes drew comparisons between the gardens of Persia and those of India. In the former country the terraces are usually seven in number; this number being chosen to symbolise the seven planets. As in India, water is always a great feature of the gardens, and anyone, he said, who had ridden twenty or more miles across the exceedingly hot and treeless plains of that country, under the fierce summer sun, could appreciate to the full the delightful coolness afforded by the sprays of the many fountains. As in India, the gardens of Persia always contain fruit trees, and of these the most common are the Peach, Fig, and the Grape vine.

Mr. J. Cheal spoke of his great interest in the lecture, and of his hopes that in the near future he might see some of those interesting gardens. He felt that in England greater use might be made of hardy fruit trees for ornamental purposes, a sentiment which was shared by Mr. Arthur Sutton and by Mr. H. R. Darlington. In conveying the thanks of the club to Mrs. Villiers-Stuart for her lecture, Mr. A. Worsley expressed his opinion that gardening in India owed more than was generally realised to Portugal, for he had been impressed by the unmistakable signs of Portuguese influence, and emphasised the fact that in Portugal gardening was everywhere a prominent feature. He sketched the history of the word garden, which he found to have originally meant an enclosed yard. The older gardens always were enclosed

yards, and, as in India, were places of secluded rest or promenade. As greater security spread over a country, so the garden generally spread away from the dwelling. He agreed with the previous speakers in that there be no proper comparison between the gardens of this country and those of India, for the latter are essentially places of rest and retreat, whilst we look upon the garden as a place to grow plants for their beauty or use, or, as often happens, because of their rarity.

SCOTTISH HORTICULTURAL.

MAY 5.—The monthly meeting of this association was held in the Goold Hall, 5, St. Andrew Square, Edinburgh, on the 5th inst. Mr. King, the president, was in the chair, and there was an attendance of 90 members.

Mr. ROBERT FIFE, of Messrs. Dobbie and Co., Edinburgh, gave an account, with lantern illustrations, of some experiments in the manuring of Sweet Peas with artificial manures which he had conducted last year, and which showed some interesting results. The plants were grown in pots, in pure pit sand, and photographs of the variously treated plants (which were all of the same variety) and their roots were thrown on the screen. The sand was as pure as could be obtained of its kind, and contained practically no humus. Plants treated with nitrogenous manures gave only slightly better results than with no manure, but the leaves were of a darker green and the nodules were but sparingly developed on the roots. With superphosphate of lime alone the leaves were large and the plants were of strong growth, with an abundance of nodules on the roots. With sulphate of potash alone the leaves were small and dark green, and the plants were of moderate growth, with a plentiful development of nodules on the roots. With sulphate of magnesia (Epsom salts) alone the leaves were of normal colour, the plants were of good growth, and there was a moderate production of nodules on the roots. Sulphate of potash and superphosphate of lime in combination gave good growth and colour of leaf, with a plentiful supply of nodules on the roots. But the best results were with nitrogen, phosphate and potash in combination. In the last-mentioned cases the addition of neither magnesia nor sulphate of iron made any appreciable difference.

The exhibits were:—"Greened" tuber of Potato Dalhousie Seedling, weighing 3 lb., exhibited by Mr. WM. GRAY, Braehead Farm, Cramond Bridge; Cabbage, Broccoli and Rhubarb, exhibited by Mr. CAIRNS, Murieston; and Tulip with four flowers, exhibited by Mr. R. MORRIS, Edinburgh.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

APRIL 16.—Committee present: Rev. J. Crombleholme (in the chair), Messrs. Ashworth, J. Bamber, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, A. Hanmer, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, W. J. Morgan, C. Parker, W. Shackleton, H. Thorp, A. Warburton, Z. A. Ward, G. Weatherby, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum triumphans var. "Royal," *Odontioda Charlesworthii sanguinea*, *L.-C. Vesuvius* (bletchleyensis × *Dominianum*), and *Phaius tuberosus*, all from R. ASHWORTH, Esq.

Miltonias Bleuana alba and *rosa* var. "Leeana," and *M. vexillaria Lyoth magnifica* (chelsense × G. D. Owen), both from W. R. LEE, Esq.

Laelio-Cattleya Fred Boyle var. "Kerchorae" (*C. trianae* alba × *L. anceps* alba), *Cymbidium Pawwelsii* var. *Ideal*, from JOHN LEEMAN, Esq.

Odontoglossum illustrissimum var. "Purpureum," and *O. eximium* var. "Nero," from WM. THOMPSON, Esq.

O. Mrs. Phoebe Fletcher (*eximium* × *amabile*), from R. LE DOUX, Esq.

AWARDS OF MERIT.

O. amabile var. "Princess," *O. Phoebe* var. "Brunette," *O. Harvingtonse* var. "Emperor,"

O. excellens var. "Gold Crest," *O. eximium* var. "Nero," *O. Adrianae* var. "Brunum," all from WM. THOMPSON, Esq.

Brasso-Laelio-Cattleya Joan (B.-L. Mary Gratrix × *C. Octave Doin*), *Brasso-Cattleya Queen Alexandra* "Bearwood" var. *B.-C. gloriosa* (*Aphrodite* × *Digbyana*), all from Col. J. RUTHERFORD.

O. amabile Her Majesty and *O. "Merl Dene"* var., both from A. J. OAKSHOTT, Esq.

Odontioda Brewii var. *auriferum*, from R. ASHWORTH, Esq.

APRIL 30.—Committee present: Rev. J. Crombleholme (in the chair), Messrs. J. Bamber, J. Cypher, A. Hanmer, J. Howes, J. Lupton, C. Parker, F. K. Sander, W. Shackleton, H. Thorp, A. Warburton, Z. A. Ward, G. Weatherby, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cattleya Mendelii alba Ashlands var., and *Laelia purpurata lineata*, both from R. ASHWORTH, Esq.

Odontioda Flamingo and *Odontoglossum* × *Princess Mary*, both from WM. THOMPSON, Esq.

O. × Pharos, from JOHN LEEMAN, Esq.

Miltonia Charlesworthii Marlfield var., a fine flower, with intense blotch on the lip, from R. LE DOUX, Esq.

BOTANICAL CERTIFICATE.

Cirrhopetalum Cummingii, from R. ASHWORTH, Esq.

AWARDS OF MERIT.

Odontoglossum crispum Christopherson, *O. nebulum* (*nebulosum* album × *asperum*), *O. Jasper Purple King*, *O. crispum flavocolum*, *O. Roymond*, *O. Fascinator waltonense*, all from WM. THOMPSON, Esq.

O. Mendelii Brilliant, *O. caudatum aureum*, *O. crispum Puritan*, *O. × Darkie*, all from R. ASHWORTH, Esq.

O. × Domingo de Larringo (*Harryanum* × *illustrissimum*), *O. ardentissimum Minnie*, *O. Lambeauianum Dr. John Utting*, all from R. LE DOUX, Esq.

O. eximium Cleome, from JOHN LEEMAN, Esq.

Miltonia Bleuana Beardwood Variety, from Col J. RUTHERFORD, M.P.

CULTURAL COMMENDATION.

To Mr. GILDEN, gardener to Rd. Ashworth, Esq., for a plant of *Dendrobium Victoria Regina*.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

MAY 11.—The Committee met on the 11th inst.; Mr. A. BEDFORD presided. A member who joined the society in 1877 and lapsed in 1912 had a sum of £107 15s. standing to his credit, this being passed for payment to him. Three members were also allowed to withdraw double the amount of interest, amounting to £13 10s., and one member £5 from his deposit account, whilst the sums of £36 and £29 5s. 10d. were passed for payment to the nominees of two deceased members. A grant of £2 was made to a member in distress. The sick pay for the month on the ordinary side amounted to £72 12s., and on the State £32 19s., with maternity benefits £10 10s.

PERPETUAL-FLOWERING CARNATION.

APRIL 29 and 30.—The spring show of the Perpetual-Flowering Carnation Society, which was held at the Winter Gardens, Bournemouth, was an unqualified success. Local exhibitors did very well, especially Mr. A. E. USHER, of Blandford, who showed a number of fine blooms. The opening ceremony was performed by Sir Merton R. Cotes, and Sir Daniel Morris, K.C.M.G., President of the Bournemouth Horticultural Society, was also present.

The classes were numerous and well contested. First prizes were won by Mr. A. E. USHER for a decorated épergne, for five vases (special prize presented by G. Mount and Sons), for twelve of Messrs. Wells' blooms (silver challenge cup presented by that firm), twelve blooms of Young and Co. (special prize given by Messrs. Young) and

several others. He was also successful in gaining the Silver Challenge Cup presented by Mrs. F. Norman, Much Hadham, for one vase of British-raised seedling Carnations. In the open classes, Mr. C. ENGELMANN, Saffron Walden, was successful in gaining the first prize (gold medal and 60s.) for a group comprising twelve varieties of cut Carnations; the challenge cup presented by Mr. J. S. Brunton for twelve blooms of British novelties; the Challenge Cup presented by the American Carnation Society; and other awards. Mr. A. F. DUTTON, Iver, won the Challenge Cup presented by Mr. Geo. Monro, jun., for twelve vases of twelve varieties, and Messrs. G. WATTS AND SONS, of Bournemouth, obtained first prizes for a decorative basket, and brides' and bridesmaids' bouquets.

The exhibits were almost uniformly of good quality, which made the judging in some cases difficult. The arrangements for the exhibition had been excellently carried out, and a large number of visitors attended.

DEBATING SOCIETIES.

BRITISH GARDENERS' (Leamington Branch)

—A meeting of the Leamington branch of the B.G.A. was held on the 25th ult., when a lecture on *Chrysanthemums* was delivered by Mr. Turner, East Hadden Hall Gardens, Northampton.

READING GARDENERS'.—At the fortnightly meeting of this association, which was held in the Abbey Hall on Monday, 20th ult., Mr. J. T. Tubb presided, and there was again a good attendance. The evening was devoted to the following competitions:—Vase of flowers (open to head gardeners, single-handed gardeners, and foremen only): The 1st prize was awarded to Mr. E. Barnes; 2nd, Mr. F. W. Costin. Vase of flowers (head gardeners, single-handed gardeners and foremen not allowed to compete): Mr. R. Baker was successful; 2nd, Mr. D. Petterson. Bowl of flowers arranged for effect (open to head gardeners, &c.): Mr. J. Wynn secured the 1st award; 2nd, Mr. C. Goodchild. Bowl of flowers arranged for effect (head gardeners, &c., not allowed to compete): Mr. H. Randall was placed 1st; 2nd, Mr. J. Lloyd. This meeting had been selected for the annual hospital night, when members bring flowers which are the next day sent to the Royal Berkshire Hospital and the Workhouse Infirmary. Nearly one hundred bunches were contributed. A collection on behalf of the funds of the Royal Berkshire Hospital was made by Mr. E. J. Dore, the association's representative, the sum of £2 3s. being thus realised.

WATFORD HORTICULTURAL.—The monthly meeting of this society was held on the 17th ult., when Matthew Arnold, Esq., presided. Mr. A. Harrison gave a lecture on "Orchids," illustrated with lantern slides. He also exhibited a collection of Orchids in pots, and a number of cut blooms.

BIRMINGHAM AND DISTRICT GARDENERS'.—The meeting on the 20th ult. concluded the spring session of fortnightly meetings. Mr. J. Webb, gardener to W. B. Kenrick, Esq., Metchley House, Harborne, delivered a lecture on "Hardy Flowering Trees and Shrubs." Originally it had been his intention to devote a paper upon this occasion to Alpine plants, but as the forthcoming visit of the society to Mr. W. A. Cadbury's Alpine garden, which will take place in May, will also include an illustrated lecture upon "Alpine Plants" by his gardener, Mr. Bick, Mr. Webb decided to address the meeting on hardy flowering trees and shrubs. By conducting experiments with *Almond*, *Cerasus Avium*, *Daphne Mezereum* album and rubrum, *Forsetia suspensa*, *Honeysuckle*, *Jasminum*, *Prunus Pissartii*, *P. triloba* fl. pl., and *Ribes atrorubra-guinea*, he had been able to obtain flowers in December and January. By cutting a promising branch of Sweet Almond from a tree in the open, and placing it in water in the forcing house for five or six weeks a delightful spray of blossom suitable to adorn any table could be obtained. Practical experience had revealed to him that with some of these trees the earlier growths yielded better blooms, and in others the later growths did better. As standards for borders *Ribes*, *Skimmia japonica*, *Hydrangeas*, *Laburnum*, *Viburnum Tinus* (*Laurustinus*), and *Lilacs* were exceedingly useful. *Cytisus Andreanus* could be utilised for making a neat finish in dry situations such as are found beneath Pine or Fir trees; while *Berberis aquifolium* (*Mahonia*), *B. Darwinii*, *B. stenophylla*, and *B. Thunbergii*, together with *Pernettya speciosa*, and other of the dwarfier shrubs furnish excellent plants for beds. After dealing separately with each of the various species, and describing the best methods of growing the plants, he concluded by giving a selection of the best varieties of *Rhododendrons* for cultivation in town gardens.

BRISTOL AND DISTRICT GARDENERS'.

—The sixteenth annual meeting of this association was held on the 30th ult. Mr. J. Bastin presiding. The annual report showed that the association had enjoyed a record year, both from a financial point of view, and in the increase of members. The officers were elected as follows: President, Colonel Cary Batten, J.P.; chairman, Mr. Jennings; vice-chairman, Mr. Woodward; hon. sec. and treasurer, Mr. Scott; assistant secretary, Mr. A. Coumbe. The special prizes offered by Messrs. Brown and Jennings for the greatest number of points awarded for non-competitive exhibits, were won by Mr. Bird (1st), Mr. Jennings (2nd), and Mr. Woodward (3rd).

The Under-Gardeners' special prizes given by Messrs. Scott and Shaddick were won by Mr. Extence (1st), and Messrs Barrow and Daly (equal 2nd).

CROYDON AND DISTRICT HORTICULTURAL.—A lecture on "Insect Pests" was delivered by Mr. G. J. Nimes at a recent meeting of this society. He first described the appearance and habits of the aphid, or "green-fly," sketching briefly the life history of the pest, and showing how in the hover, or hawk-fly, it finds a formidable enemy. He also made allusion to the "spittle-fly," earwig, and many other insect pests, and gave directions for their destruction. A meeting of this society was held on the 5th inst. The evening was devoted to studies with the microscope relative to plant life.

WARGRAVE AND DISTRICT GARDENERS.—The last meeting of the spring session was held on Wednesday, April 22. A competition in table decorations took place in two sections, one for head gardeners and one for journeymen. The winner of the 1st prize in the class for head gardeners was Mr. Hiscad; the successful journeyman was Mr. Plumridge. Messrs. John Waterer, Sons, and Crisp sent an effective non-competitive group of hardy plants.

SOUTHAMPTON AND DISTRICT GARDENERS.—The usual monthly meeting of this society was held on the 30th ult., Prof. E. S. Lyttel presiding. A lecture was given by the president, Mr. H. E. Molyneux, on "The Morality and Sagacity of Plants."

WATFORD HORTICULTURAL.—A meeting of this society was held on the 8th inst., when W. A. Smith, Esq., presided. Mr. W. Waterton read a paper on "Celery and Leek Culture."

BATH GARDENERS.—At the meeting held on the 27th ult. Mr. Elkes, of the Bristol Gardeners' Society, delivered a paper on "Organic and Inorganic Manures." Mr. T. Parrott occupied the chair. The annual outing will take place on July 23, when the Royal Gardens, Frogmore, will be visited.

GARDENING APPOINTMENTS.

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

Mr. J. Porter, for the past 12 months Foreman at Hillfield Park, Hertfordshire, and previously at Shottersbrooke Park, as Gardener to H. M. HARFORD, Esq., Merryhill House, Bushey, Hertfordshire.

Mr. W. J. Buckle, for the past 5 years foreman at Blankney Hall, Lincoln, as Gardener to Mr. CLAYTON SWAN, Welbourn Manor, Lincoln. [Thanks for 1s. for R.G.O.F. box.—Eds.]

Mr. Jas. Cunningham, for several years Gardener at Abercainey, Crieff, and formerly General Foreman at Scone Palace, Perth, as Gardener to Sir ARCHIBALD EDMONSTONE, Bart., Dumtreath Castle, Blanehead.

Mr. T. Lloyd, late Gardener to Sir OFLEY WAKEMAN, Bart., Yeaton Peverye, near Shrewsbury, Shropshire, as Gardener to ROSCOE BRUNNER, Esq., Belmont Hall, Northwich, Cheshire.

Mr. J. Smith, for 8 years Gardener to H. F. SEYMOUR, Esq., Potterells, Hatfield, Hertfordshire and Thornhill, East Grinstead, previously in the R.H.S. Gardens, Chiswick and Wisley, as Gardener to A. P. HOSKINS, Esq., Linholme, Holmbury St. Mary's, Surrey. [Thanks for 2s. for R.G.O.F. box.—Eds.]

Mr. Wm. Evans, Gardener for the past 9 years to R. F. MOSLEY, Esq., Croft House, Sheffield, as Gardener to J. DYMOND, Esq., Burntwood Hall, near Barnsley, Yorkshire.

Mr. C. Ware, for 18 months Gardener to V. FLEMING, Esq., M.P., Braziers Park, Ipsden, Oxfordshire, as Gardener to J. CAMPBELL-BANNERMAN, Esq., Hunton Court, Maidstone. [Thanks for 2s. for R.G.O.F. box.—Eds.]

CATALOGUES RECEIVED

CHARLES P. KINNELL AND CO., LTD., 65, Southwark Street, London.—Garden Requisites.

KELWAY AND SON, Langport, Somerset.—Gardens of Delight.

THOMAS S. WARE, LTD., Feltham, Middlesex.—Dahlias, Begonias, and other Summer Bedding Plants.

C. J. ELLIS AND CO., Weston-super-Mare.—Alpines.

HOGG AND ROBERTSON, 22, Mary Street, Dublin.—Bulbs.

CLIBRANS, Altrincham.—Dahlias and Bedding Plants; Pot Roses, Herbaceous and Alpine Plants, Shrubs, Climbers; Indoor Plants; Early Chrysanthemums for the Flower Border; Perpetual-flowering Carnations.

CHARLESWORTH AND CO., Haywards Heath, Sussex.—Orchids.

THE ARBOLINE SYNDICATE, 54, Bermondsey Street, London, S.E.—Arboline, preparation for Trees, Lawns and Soil Insecticide.

C. S. DANIELS & SON, Wymondham, Norfolk.—Bedding Plants.

THE "SANITAS" CO., LTD., Locksley Street, Limehouse, London, E.—Sanitas Insecticide and Weed Killer.

WM. PAUL AND SON, LTD., Waltham Cross, Hertfordshire.—New Roses.

GEO. COOLING AND SONS, Bath.—Roses, Bedding Plants and Seedlings.

CLARK BROS. AND CO., LTD., Carlisle.—Summer Flowering Plants.

Foreign.

CHAMBERLAIN AND GAGE, Wellesley, Massachusetts, U.S.A.—Bulbs.

D. M. ANDREWS, Boulder, Colorado, U.S.A.—Colorado Wild Plants.

ARTHUR COWEE, Meadowvale Farms, Berlin, New York (London Agent, A. DIMMOCK, Craven House, Kingsway, London).—Gladioli.

MAISON DELECOUVILLERIE, Blandain, Belgium.—Glass-houses and Boilers.

CLINGENDAAL NURSERY, LTD., Clingendael, The Hague, Holland.—Carnations.

THEODORE PAUWELS, Meirelbeke, Iez-Gand, Belgique.—Orchids.

J. CHANTRIER, Mortefontaine, France.—Greenhouse Plants.

B. SUTER-KREZT AND FILS, Lucerne.—Carnations.

HENRI CORREYON, Floraire, Chêne-Bourg, Geneva.—Rock Plants.

V. LEMOINE AND FILS, Rue du Montet, 136, Nancy.—Herbaceous Plants.

E. HEINRICH, Planegg, Bavaria.—Glasshouses and Frames with Patent Removable Sashes.

YOKOHAMA NURSERY CO., LTD., 21-35, Nakamura, Yokohama, Japan (London address: Craven House, Kingsway).—Plants, Bulbs, Seeds, etc.

HANS LUDWIG THILO, Gartengut Bluetenberg, Lichterfelde, bei Eberswalde, Germany.—Hardy Plants.

Colonial.

F. COOPER, LTD., Wellington, New Zealand.—Bulbs.

C. A. NOBELIUS, Gumbrook Nurseries, Emerald, Victoria, Australia.—Fruit Trees and Nursery Stock.

SCHEDULES RECEIVED.

Southampton Royal Horticultural Society.—The Rose show of this society will be held at South Stoneham House on Wednesday, July 1; the summer and Carnation show will be held on Tuesday and Wednesday, July 21 and 22, at the Royal Pier; and the autumn show will be held at the Drill Hall, St. Mary's Road, on Tuesday and Wednesday, November 3 and 4. Secretary, Mr. C. S. Fudge, Silverdale Road, Southampton.

Llandudno and District Horticultural Society.—The third annual show of this society will be held in the Town Hall, Llandudno, on Wednesday, July 15. Secretary, Mr. Alfred Conolly, Barrowby, Llandudno.

Newcastle-upon-Tyne Flower Show.—This show will be held on Tuesday, Wednesday and Thursday, August 25, 26 and 27, in the Recreation Ground, North Road. Secretary, Mr. R. H. Newton, 24, Grainger Street, West, Newcastle.

Morley and District Paxton Society.—The tenth annual Chrysanthemum show of this society will be held on Saturday, November 21. Secretary, Mr. S. J. Wormald, Zion House, Morley.

Paisley Florist Society.—The Chrysanthemum Show of this Society will be held on Saturday, September 19. Secretary, Mr. F. Ferguson, 40, High Street, Paisley.

Haywards Heath and Mid-Sussex Horticultural Society.—The 26th exhibition of this society will be held on July 22 in Victoria Park, Haywards Heath. Secretary, Mr. Geo. Prevett, The Rosery, Franklyn Road, Haywards Heath.

Dover Horticultural Society.—The summer show of this society will be held on Thursday, July 2, and the autumn show on Tuesday and Wednesday, November 10 and 11. Secretary, Mr. C. P. Tomlin, 41, Folkestone Road, Dover.

Croydon Chrysanthemum Society.—The 27th annual show will be held on Wednesday and Thursday, October 28 and 29, at the Central Baths Hall, Scarbrooke Road, Croydon. Secretary, Mr. F. Ortoxy, The Cottage, Coombe Lodge, Coombe Road, Croydon.

Streatham Sweet Pea and Rose Society.—The sixth annual exhibition will be held at Streatham Town Hall on Thursday, July 2. Secretary, Mr. David Gibb, 152, Sunnyhill Road, Streatham.

Weybridge, Walton-on-Thames and District Rose and Horticultural Society.—The 16th annual summer exhibition of this society will be held at the Old Palace Gardens, Weybridge, on Wednesday, July 8. Secretary, Mr. C. Rowland, Station Road, Weybridge.

Watford Horticultural Society.—The summer show will be held at Little Cassibury, on Wednesday, July 22, and the autumn show will be held in the Clarendon Hall, Watford, on Wednesday, November 4. Secretary, Mr. W. Waterton, Heath Farm House Gardens, Watford.

Glasgow and West of Scotland Horticultural Society.—The flower show of this society will be held in the Exhibition Hall (Zoo Buildings), 48, New City Road, Glasgow, on Wednesday and Thursday, September 2 and 3. Secretary, Mr. Hugh M. Mackie, 124, St. Vincent Street, Glasgow.

Brighton, Hove, and Sussex Horticultural Society.—The summer show of this society will be held on Tuesday and Wednesday, August 18 and 19, at the Dome Corn Exchange, and Western Lawn; and the Chrysanthemum Show will be held at the Dome and Corn Exchange, on Tuesday and Wednesday, November 3 and 4. Secretary, Mr. A. J. Gaston, 170, Springfield Road, Brighton.

Bletchley and Fenny Stratford Horticultural Society.—The fifth annual show will be held on Monday, August 3, in the grounds of Bletchley Park. Secretary, Mr. Thomas Best, Bletchley.

Windsor, Eton and District Chrysanthemum and Horticultural Society.—The twenty-third annual exhibition of this society will be held in the Royal Albert Institute, Windsor, on Friday, November 6. Secretary, Mr. G. E. Keer, Meadowlea, Datchet.

Bradford and District Chrysanthemum Show will be held in St. George's Hall, Bradford, on Friday and Saturday, November 13 and 14. Secretary, Mr. H. Spencer, Horton Park, Bradford.

Oldswinford Horticultural Society.—The second annual vegetable, flower, and fruit show will be held in the Parish Rooms, Oldswinford, on Thursday, August 27. Secretaries, Messrs. Lambert and Caldwell, Parish Rooms, Oldswinford.

County Clare Horticultural Society.—The annual exhibition of fruit and farm produce will be held on October 1, in the Court House, Ennis. Secretary, Rev. R. Scott, The Manse, Ennis.

Bolton Horticultural and Chrysanthemum.—The twenty-eighth exhibition of this society will be held in the Town Hall on Friday and Saturday, November 20 and 21. Secretary, Mr. Geo. Corbett, Heaton Grange Gardens, Bolton.

Weston-super-Mare and District Chrysanthemum Society.—The annual exhibition will be held in the Knightstone Pavilion on Thursday, October 29. Secretary, Mr. C. E. Masters, 4, South Parade, Weston-super-Mare.

The Sutton Rose Society.—The thirty-third exhibition will be held in the Public Hall, Sutton, on Saturday, July 4.

Horticultural Exhibition to be held in conjunction with the Lincolnshire Agricultural Show, at Boston, on Tuesday and Friday, July 16 and 17. Secretary, Mr. Peter Blair, Trentham Gardens, Stoke-on-Trent.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending May 9, is furnished from the Meteorological Office:—

REMARKS ON WIND AND WEATHER.

May 12, 1914.
During the earlier half of the week, when a large barometrical depression extended over the United Kingdom from the Atlantic, the wind on all but our extreme Northern Coasts was south-west or west, and in the Western and Southern districts it blew with considerable strength. Rain was frequent, but the amount was, as a rule, not large. Thunderstorms occurred on the 5th at several places situated in the North and East of Great Britain. The central portion of the disturbance passed on the same day eastward across Scotland, but in its rear numerous small secondaries were developed, and on the 7th and 8th the gradual deepening of one of these systems over Scotland was attended by a heavy fall of rain in the Northern and Central Districts. At Fort Augustus the total quantity for the two days amounted to 70 millimetres, and at Gordon Castle to 62 millimetres, thunderstorms occurring at the same time in many parts of England. On the 8th and 9th, when the centre of the disturbance passed to the North Sea, the wind, which had previously been variable, shifted to the north-westward, and blew with the force of a gale in many places. Temperature at the same time decreased rapidly, and on the 9th a slight fall of snow occurred in several parts of North Britain.

WEATHER IN WEST HERTS.

Week ending May 13, 1914.
A Cold and Gloomy Week. The first day proved warm, but since then the days have all been cold, and on the coldest day the temperature in the thermometer screen did not rise above 47°, or 12° below the average maximum reading for the time of year. On the coldest night the exposed thermometer registered 5° of frost. The ground is now 2° colder at 2 feet deep, and 3° colder at 1 foot deep, than is reasonable. Rain fell on five days, and to the total depth of 3 inches. Small quantities of rainwater have passed through the bare soil percolation gauge on each of the past six days. The sun shone on an average for 3½ hours a day, which is 2½ hours a day short of the average duration for the early part of May. The wind was rather high at the beginning of the week, but in no hour did the mean velocity exceed sixteen miles—direction west. The average amount of moisture in the air at three o'clock in the afternoon exceeded a reasonable quantity for that hour by as much as 12 per cent. The first roses to flower in my garden in the open ground were Rosa rubella on the 5th inst., Rosa alpina on the 8th inst., and Rosa sericea pteracantha on the 10th inst. The two latter dates are respectively a week and eleven days earlier than last year. E. M., Berkhamsted, May 13, 1914.

APRIL.

Remarkably Warm, Dry, and Sunny.—This was with one exception (1893) the warmest April I have yet recorded here during the past twenty-eight years. The night readings were variable, but on the whole rather higher than is reasonable. The days were remarkable, being, with three exceptions, warmer than is reasonable. In fact, the mean maximum reading (60°) was with one exception higher than in any of the past twenty-eight Aprils. On the warmest day the temperature in the thermometer screen rose to 74°, and on the two coldest nights the exposed thermometer registered 8° of frost—the former being, with two exceptions, higher than in any April during the past twenty-eight years, and the latter the highest extreme minimum in April for ten years. Rain fell on only eight days—all but one being in the first ten days of the month—to the total depth of one inch, which is not much more than half the average fall for April. No snow fell during the month. The sun shone on an average for 7½ hours a day, which is 2½ hours a day in excess of the average duration for the month, making this, with two exceptions, the sunniest April during the past twenty-eight years. The winds were on the whole rather light. In the windiest hour the mean velocity reached twenty-one miles—direction W. The average amount of moisture in the air at three o'clock in the afternoon fell short of a reasonable quantity for that hour by 4 per cent.—E. M., Berkhamsted, May 6, 1914.

MARKETS.

COVENT GARDEN, May 15.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices, including Anemone St. Brigid, Arums, Carnations, Gardenias, Gladioli, and various orchids.

are seen in greater variety; the variety The Bride is now in a better condition, and the quality of other sorts is improving daily. Irises in all colours are plentiful, also Double White Narcissus, which is seen in better condition. There is a good supply of White and Pink Gypsophila. Of Lilliums, L. Harrissi is most in demand; L. speciosum rubrum and L. s. album are very scarce.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various plants in pots and their prices, including Aralia Sieboldii, Asparagus plumosus, Cacti, and various ferns.

REMARKS.—The cold weather has influenced the sale of plants, more especially of Pelargoniums and hardy roots. Marguerites, Heliotropiums, Fuchsias, Pelargoniums, and Rhodanthe are all arriving in good condition. Pink Verbena Miss Willmot is on sale, but not the scarlet variety.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices, including Apples, Bananas, Cherries, Dates, Figs, Grapes, and various nuts.

REMARKS.—There have been received from Australia 147,000 cases of Apples, Pears, Grapes and Plums, the bulk of the fruits being in an excellent condition. Consignments of fruit from Cape Colony amounted to about 6,000 packages, the bulk consisting of Grapes. Supplies of Grapes from home growers and the Continent are increasing daily. Peaches and Nectarines are available in fairly large quantities. The market is better supplied with Figs and Melons. Continental growers are sending fine samples of Cherries packed very attractively in small boxes. Gooseberries on sale include some fine samples. English Tomatoes are arriv-

ing in larger quantities, and Tomatoes from Teneriffe are very good in quality. Forced vegetables available include Cucumbers, Beans, Peas, Mushrooms, New Potatoes and Marrows. English Asparagus is more plentiful, but Continental growers are sending fewer supplies of this vegetable. Onions are arriving from the following sources:—Canary Islands, Egypt, and Lisbon, but the stocks are small, and the prices very high. Spring Onions are now available. Of all ordinary vegetables there is a fairly plentiful supply with the exception of Broccoli.—E. H. R., Covent Garden, May 15, 1914.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices, including Artichokes, Asparagus, Beans, Carrots, Celery, and various leafy greens.

Table listing Old Potatoes and their prices, including Lincoln-King, Edward, Everwood, and Scotch-Grey soil.

Table listing New Potatoes and their prices, including Jersey, Spanish, and Teneriffe.

REMARKS.—Trade in old Potatoes remains fairly firm. There are few consignments, and stocks in the market are becoming much fewer. Business in new Potatoes is steady, and prices will drop next week.—Edward J. Newborn, Covent Garden and St. Pancras, May 15, 1914.

TRADE NOTE.

WM. FELS AND SON, LIMITED.

This new company was registered on April 30, by Gascotte and Fowler, 1, York Buildings, Adelphi, W.C. Capital, £4,000, in £1 shares (2,000 Preference). Objects: To take over the businesses of nurserymen, seedsmen, florists, gardeners and horticulturists carried on by A. H. Fells, A. Fells and W. F. Langford, trading as William Fells and Son, at Hitchin and Letchworth, Herts, and by W. A. Helmes, at Station Road, Letchworth. Private company.

Obituary.

WILLIAM EARP.—Mr. William Earp, gardener at Hume Towers, Bournemouth, for the long period of 42 years, died at Barton Road, Bournemouth West, on the 6th inst., at the ripe age of 82. Previous to his appointment at Hume Towers he was for five years gardener at Lighton House, Westbury, Wiltshire. In his younger days he was foreman at the Garstone Vineyards, Liverpool, under the late Mr. James Meredith, and subsequently was for two years engaged in Grape growing at

REMARKS.—The cold weather has checked vegetation, and supplies generally, but more especially of Carnations and Roses, are fewer. White Carnations and the crimson variety, Carola, are very scarce; but blooms of the pink Enchantress, Winsor and May Day, also Scarlet Beacco and Britannia, appear to be sufficient for the demand, which is only moderate. Rose Mme. Abel Chatenay is the more plentiful in its class; special quality blooms of Liberty, Richmond and Sunburnt are scarce, but there are fine flowers of Melody and My Maryland. Fine spikes of Delphinium are on sale, also good bunches of English-grown Cornflower. Paeonies from France are more plentiful, but there is no special demand for them. Double White Pyrethrum is the latest subject to arrive from that country. Gladioli

Morristown, U.S.A. To the older generation of gardeners Mr. Earp will be remembered as a successful exhibitor at such places as Trowbridge, Crystal Palace, Alexandra Palace, and Bath, competing often against the famous Mr. Coleman, of Eastnor Castle. Mr. Earp was a vice-president of the Bournemouth Gardeners' Mutual Improvement Society, and a member of the Bournemouth Chrysanthemum Society. He resigned his appointment at Hume Towers two years ago, when his employers granted him a pension.

PHILIPPE VAN TIEGHEM.—We learn with regret of the death, at the advanced age of 75, of one of the most distinguished botanists, Mr. Philippe Van Tieghem, who held for many years the professorship of botany in the Museum of Natural History and in the Institute of Agriculture (Paris). Besides being the author of many memoirs, Van Tieghem produced what is in many respects the best modern textbook of botany. Although most of his recent work related to the anatomy of plants, Van Tieghem's researches covered an extraordinary wide range; some of his earliest work was done on Fungi. In addition to his other labours he edited for many years the botanical part of the *Annales des Science Naturelles*, and held since 1877 the office of Permanent Secretary of the Academy of Science.

possession with six expanded inflorescences and another spike developing.

INSECTS: *L. B. P., Lynton.* The insects are clay-coloured weevils. Place portions of root-vegetables or Cabbage-leaves as traps, and hunt for the creatures at night, for they feed when it is dark. Shrub next week.

LARCH DAMAGED; *P.* The shoots have been injured by aphides, which may be checked by spraying with soft soap and paraffin emulsion. This specific is made as follows: Take a quantity of soft soap, place it in the bottom of a pail, and pour in paraffin. With the hand work the paraffin and soap in together until the soap will absorb no more paraffin, when the superfluous liquid may be discarded. It will then be found that the soap and paraffin will dissolve in water without the oil floating on the top. A full handful of the mixture should be dissolved in a pail of water.

MUSHROOMS AND SLUGS: *F. J.* A dressing of soot in a reasonable quantity would not damage the growth of Mushrooms to such an extent as you complain. But its use is not to be recommended. The best way to eradicate slugs on Mushroom beds is to place a few young Cabbage or Lettuce leaves as traps and to search for and destroy the slugs at night.

NAMES OF PLANTS: *H. E. T. and Son.* *Ilex diplyrena.*—*C. E. B.* *Prunus Padus* (Bird Cherry).—*W. A.* *Prunus Pseudocerasus* var. *flor. luteo.*—*Somerset.* 1, *Coelogyne cristata*; 2, *Dendrobium nobile*; 3, *Xanthoceras sorbifolia*; 4, *Lithospermum* sp.? too faded to identify; 5, *Piptanthus nepalensis*; 6, *Iberis semper-virens.*—*F. R.* 1, *Epimedium alpinum*; 2, *Prunus Padus*; 3, *Daphne Cneorum*; 4, *Cytisus purpureus*; 5, *Geranium phaeum*; 6, *Andromeda polifolia*; 7, *Daboecia polifolia.*—*W. B.* *Bryanthus empetrifolium.*—*W. G. W.* the Orchid from Rhodesia is *Ansellia gigantea.* It is the light-coloured form of *A. africana* which extends to Natal, whilst the typical, dark-coloured form *A. africana* extends through tropical Africa to the extreme west. The difference in colour and habit warrants the distinctive name of *A. gigantea.*—*J. F. Dancer.* 1, *Viburnum tomentosum*; 2, *Crataegus coccinea.*—*J. Shaxted.* 1, *Exochorda grandiflora*; 2, *Akebia quinata*; 3, *Pyrus floribunda atrosanguinea*; 4, *Elaeagnus multiflora*; 5, *Prunus acida* variety; 6, *Spiraea arguta.*—*T. S. N. A.* 1, *Exochorda Albertii*; 2, *Ceanothus dentatus*; 3, *Neviusia alabamensis*; 4, *Rosmarinus officinalis (prostratus)*; 5, *Coronilla Emerus*; 6, *Lepidium latifolium*; 7, *Genista hispanica*; 8, *Kalmia glauca*; 9, *Elaeagnus longipes*; 10, *Pyrus floribunda*; 11, *Phlox subulata*; 12, *Piptanthus nepalensis.*—*Miss G.* 1, *Ribes aureum*; 2, *Solanum crispum.*—*T. Knight.* 1, *Ribes aureum*; 2, *Exochorda grandiflora*; 3, *Aspidium angulare*; 4, *Oncidium divaricatum*; 5, *Saxifraga caespitosa*; 6, *Ionopsidium caule.*—*F. F. A.* 1, *Lastrea varia*; 2, *Pteris longifolia*; 3, *Adiantum hispidulum*; 4, *Asplenium cicutarium*; 5, *Davallia bullata.*

NAMES OF FRUITS: *Doubtful.* The fruits were decayed; they resemble Newton Wonder.—*T. Taylor.* Hornead's Pearmain.

PEACH CURL: *T. K.* See reply to *H. B.* in the last issue, p. 324; also note in "Home Correspondence," p. 336.

PEACH LEAVES: *A. W. P.* The small, round patches of diseased tissue which have in some cases fallen out and left small holes are caused by the fungus *Cercospora circumscissa*, known popularly as the "Shot-hole fungus." Spray the trees at intervals of a week with self-boiled lime sulphur wash, which is prepared as follows:—Take 1 lb. flowers of sulphur, 1 lb. stone lime, and 5 gallons of water. After weighing the lime into a barrel, add 5 pints of water, sift in the sulphur, and slake the lime slowly. Add more water gradually and stir every now and again; when fully slaked cool by adding the remaining water.

PEACH SHOOTS DISEASED: *S. B.* The shoot you send us is attacked by the silver-leaf disease (*Stereum purpureum*). All affected branches

should be cut back, taking care to cut beyond the last discoloured wood; but if the trees are badly affected this treatment may not be found successful. A good deal of mystery surrounds the origin and cure of silver-leaf; some growers think it may be due to an overdressing of farmyard manure; others, that it follows a particularly wet season. Sulphate of iron has been tried as a remedy as follows:—1 lb. of the crystals were dissolved overnight in water, and the next day sufficient water was added to fill a forty-gallon barrel. This preparation was applied to the roots of the tree, which were afterwards mulched with a thick layer of farmyard manure. The treatment was once repeated; and before the tree was started into growth the following season the worst affected branches were removed. During this second summer the treatment was applied about three times, with the result that a marked decrease in the disease was noticed, and the growth was much more robust. During the third season a slight silvering of the first leaves was noticed, but disappeared as the roots became active, giving place to perfectly healthy growth. The tree furnished a good crop of fruit. It will be seen that the treatment with iron, even when successful, is slow; and unless the utmost care is taken, the tree will contaminate those near it during the process of recovery.

PEAR FRUIT AND FOLIAGE INJURED: *W. F. G.* The trouble is due to the Pear-gall mite. The injured leaves should be gathered and burned, and the trees sprayed next winter with the preparation known as "self-boiled sulphur wash." (See also "Peach Leaves.")

PEAR SHOOTS DYING: *J. H. P.* The trouble is not due to disease that can be attributed to any fungus or insect pest, but has been brought about by unsuitable cultural conditions. If the tree is worth saving we advise you to make an examination of the roots next autumn and remove some of the soil, adding some fresh, rich compost.

ROSE TREE UNHEALTHY: *Tristram.* Stems of old Rose trees often form corky outgrowths such as are found on the specimen you sent. This is not due to disease, and there are no known means of preventing the affection.

SHALLOTS: *E. P. D.* The bulbs are infested by *Sclerotium* disease, caused by a fungus. The soil in which the crop was grown will be infested, and should be treated with lime, as many other kinds of plants are liable to be attacked by this complaint.

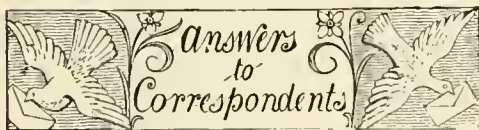
SPECIFIC FOR ROSE MILDEW: *Rosa.* As you do not wish to employ flowers of sulphur, on account of the unsightly effect it gives to the foliage, you should use liver of sulphur, at a strength of 1 oz. in four gallons of water. This preparation will not injure the flower-buds, but if the spray touches white-painted woodwork it will turn it black.

TULIPS DISEASED: *W. H. S. and Sons.* The bulbs are attacked by the well-known "Lily-disease," a species of *Botrytis*. The bulbs should be destroyed by burning, but if you wish to preserve them for planting again take the precaution to dust them with quicklime and sulphur in equal parts before they are stored.

TULIPS NOT FLOWERING: *T. C.* See reply to *W. H. S. and Sons.*

VINE LEAVES WITH WARTY EXCRESCENCES: *T. B.* The trouble is due to keeping the vinery too close and moist. Ventilate the vinery and keep the atmosphere less moist.

Communications Received.—*W. S.*—Inchicore. [Correspondents must observe the rule to furnish their names and addresses, although these are not published when a request is sent to that effect].—*E. M.*—*R. M.*—*R. A.*, Framlingham—*G. H. B.*—*E. W. H.*—*Geo. T.*, Versailles—*E. N. A.*, P. A. G.—*S. V. S.*—*Mr. P. V. S.*—*A. E. T.*—*C. T.*—*H. B.*—*J. B. F.*—*G. H. C.*—*India*—*J. R. J.*—*G. M. Taylor*, Edinburgh—*W. C.*—*H. S. T.*—*T. H.*—*Sir H. V.*—*R. Holmes*—*H. C. E.*—*W. G.*—*Professor Balfour*—*T. Mawson*—*Reg. Farrer*, Shensu, China—*Miss T.*



ABNORMAL BLUEBELL: *J. B.* The bracts are virescent, this departure from the normal being not uncommon.

ABNORMAL GLOXINIA: *G. S.* A Gloxinia flower with four limbs to the corolla instead of the normal five is not unusual. Reduction or increase in the number of petals of cultivated flowers is a common occurrence, due, probably, to the altered conditions under which the plants are grown.

AQUILEGIA: *Mayview.* You would find it advantageous, when cultivating your bed for Aquilegias, to always dig the ground a little deeper than on the previous occasion, bringing the deepest soil to the surface. The Aquilegia lives for many years on the same spot without particular attention, but, as you remark, the best results are obtained from seedlings of the first flowering. That is usual with many plants. Cow manure, if you wish to supplement it with artificial, should have a stimulating one, such as slight dressings of two parts nitrate of soda to one part superphosphate of lime; but you might try, in the first place, two or three applications of soot, and if the soil inclines to clay, then add lime. The strain you grow was selected by a Scotch lady of the Borders, and is one of the best.

CATERPILLARS INFESTING APPLE TREES: *S. B.* The examples received are caterpillars of the winter moth, *Cheimatobia brunata*. Spray the infested trees with Swift's arsenate of lead paste according to directions supplied. It is rather late in the season for spraying, but there is, so far as we know, no other remedy.

GOLDFISH: *C. B.* The common goldfish, frequently called Italian goldfish, breed freely in Italy in warm water. The Spanish cold-water goldfish breed in English water. The goldfish is a small species of carp.

GOOSEBERRIES DISEASED: *Anxious.* The symptoms suggest that the bushes are attacked at the collar or low down in the main branches by the fungus *Botrytis*. Plants which are affected cannot be cured, but you should take the precaution of dusting the stems of bushes which are still healthy with quicklime while the bark is damp.

HYACINTH WITH SIX SPIKES: *A. G.* Your plant of Hyacinth with six spikes is not a record, for in *Gard. Chron.*, March 2, 1912, p. 142, a correspondent gives details of a plant in his

THE Gardeners' Chronicle

No. 1,430.—SATURDAY, MAY 23, 1914.

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THE SOURCE OF YELLOW ROSES.

THE attempt to secure by hybridisation a Rose of clear deep yellow colouring is maintained with undiminished ardour by Rosarians, both amateur and professional, and from the inquiries that are from time to time addressed to me as to the subjects to which recourse may be had, it is evident that considerable uncertainty still prevails as to the characters of the wild or spontaneous yellow species.

It seems worth trying to collect what we know about them in case it may be possible in any way to simplify the task of the hybridist.

Two yellow Roses were known to Parkinson. He calls them *Rosa lutea simplex* and *Rosa lutea multiplex sive flore pleno*. "The first," he says, "is planted rather for variety than any other good use. It often groweth to a good height, his stem being great and woody, with few or no prickles upon the old wood, but with a number of small prickles like hairs, thick set upon the younger branches of a dark colour somewhat reddish, the bark of the young shoots being of a sad greene reddish colour; the leaves of this Rose bush are smaller, rounder pointed, of a paler greene colour, yet finely snipt about the edges, and more in number, that is, seven or nine on a stalk or ribbe than in any other garden kinde, except the double of the same kinde that followeth next; the flower is a small single Rose, consisting of five leaves not so large as the single Spanish Muske Rose, but somewhat

bigger than the Eglantine or Sweete Briar Rose, of a fine pale yellow colour." This seems an admirable description of our modern *R. hispida*, the peculiarity of which is that though in habit and foliage it bears a strong resemblance to the taller-growing members of the *R. pimpinellifolia* group, it is abundantly supplied with setae, but has no thorns. Setae are almost always deciduous.

Parkinson's double yellow Rose must have been our *R. sulphurea* Ait., also often called *R. hemisphaerica* Herm., and, from the account of his experience, it cannot have been much easier to induce this Rose to flower well in those days than it is at the present time. Lindley wrote of it, "This, by far the most splendid of the genus, has never been heard of in a single state, nor even near it, and its native country is still unknown." Its true habitat was probably decided by M. de Teliatcheff, who discovered it or its spontaneous form *R. Rapinii* Boiss., in Galatia, in 1849. *R. Rapinii* was first collected by Balinsa, and under that name created by Boissier, who at first regarded it as a distinct species, but later considered it as the type or spontaneous form of *R. sulphurea* Ait., a view which Prof. Crépin seems to have adopted (see *Primitiae*, pp. 216 and 277), and he does not in his later writings distinguish it from *R. sulphurea* Ait.* *R. Bungeana*, described by Buhse, is merely a form of *R. Rapinii* or *sulphurea*, and *R. caesarea*, another variation, differs in being more glandular. Neither this nor *R. Rapinii* need detain us longer, unless, as some prefer, *R. Rapinii* Boiss. be retained as a name for the single form, and *R. sulphurea* Ait. confined to the double-flowered plant.

R. xanthina is one of the most beautiful of the yellow Roses. It was first described by Lindley, apparently from a picture, as "A Rose with all the appearance of *R. spinosissima*, except in having no setae and double flowers the colour of *R. sulphurea*." Except for the double flowers, which is a form I have never seen, and may perhaps be a mistake of the artist, the above cited words well describe this plant. Its absence of setae and the appearance of its straight thorns and general habit resembling the taller *spinosissima* render this Rose difficult to confuse with any other species. *R. Ecae*, an Afghan Rose, is perhaps rather similar in some respects, but the habit is dwarfer, and though it will live in this country, seldom seems to flower, while *R. xanthina* flowers grandly for something less than a fortnight during May. *R. spinosissima lutea* is another Rose of the *spinosissima* group, and is of a fine yellow colour. It appears to be the Rose discussed by Prof. Crépin in his *Rosae Hybridae*, wherein he concludes that it is probably the result of a cross *R. lutea* x *pimpinellifolia*. *R. lutescens* was described by Lindley as "with branches defended by innumerable slender, unequal, pale brown, deflexed prickles, and an almost equal number of setae": he

* Déséglise took the same view and gave his reasons at length in a paper in the *Journal of Botany* (Cat. Rais., p. 235-6).

adds, "The flowering shoots offer an excellent discriminative character, as they differ entirely from the branches in their arms, which are little more than tubercles tipped with a weak bristle." Both in habit and colour of the flower this Rose seems to differ from *R. hispida* but little, and that only in the presence of prickles on the stems, and if, as Crépin thought, it and *R. ochroleuca* Gw. be merely hybrids of *R. pimpinellifolia*, it is quite likely that these characters may merge into one another in different individuals. Though I have not seen Gwimpel's authentic specimen of *R. ochroleuca*, the plant sent me under that name, and now in my possession, bears very marked resemblance to *R. xanthina*, especially in the leaves and thorns, and is doubtless a hybrid of this Rose.

The beautiful and early-flowering *R. Hugonis*, though its position may not yet be finally settled, is clearly connected with the *pimpinellifolia* group, and is probably also of hybrid origin.

Rosa lutea Mill. has long been known. It is described by Lindley as "a naked-looking bush about 4 feet high. Branches somewhat erect, dark brown, defended by pale, straight, nearly equal scattered prickles, and no setae; root shoots more densely armed. Leaves somewhat shining deep green; stipules narrow, dilated, and divaricated at the end, finely toothed and fringed with glands a little pubescent or not, petioles naked or downy rarely glandular, leaflets 5-7, elliptical or ovate, a little pointed, spoon-shaped, simply or doubly serrated, naked above, more or less glandular beneath. Flowers deep yellow, large, cup-shaped, solitary; bracteae none; peduncle and tube of the calyx unarmed, the latter ovate, sepals ovate, pointed, a little divided, setigerous and even prickly on the outside, petals obovate; disc thickened; styles villous distinct, fruit unknown." He continues: "This has been strangely confounded by some botanists with *R. sulphurea*. And yet their resemblance chiefly consists in the similarity of colour in their flowers, *sulphurea* being undoubtedly allied to *R. sibirica* (one of the *pimpinellifolia* variations), *lutescens*, etc. And this, though very different, so closely bordering upon *R. rubiginosa* that Linnaeus at one time did not distinguish them, and united them under the name of *eglanteria*. . . . It [i.e., *R. lutea*] is known at first sight by its branches with foliage only at the extremities, prickles, usually several under the stipulae, and the leaflets, which are hollow, like the bowl of a spoon." For habitat he gives Austria and the South of France, a habitat which has since been extended to include Armenia and the Western Himalayas.

Lindley, however, was far from settling the positions of *R. lutea* and *R. sulphurea*. Many authors since him have asked whether they may not be two varieties of the same specific type. Crépin himself once raised the question. He points out that both Roses show many features of specific resemblance, have almost the same coloured flowers and an almost identical morphological organisation, while the leaves with their stipules have also a

great resemblance. In 1889, in reviewing the work of M. Paul Sinentis in Armenia, he went fully into the differences between *R. lutea* and *R. sulphurea*. One of the most important is the armature of their stems, the thorns in *R. sulphurea* being normally of the hooked type, while those of *R. lutea* are of the straight type. But properly to appreciate this character the thorns of *R. sulphurea* must be studied as a whole, for it may often happen that in places on the plant the thorns may be more or less straight, and in some variations many may be so. In *R. lutea* the thorns are always straight, though sometimes the point (which is straight) may be turned downwards.

Another distinction is that the epidermis of the stems and branches of *R. sulphurea* is generally charged with glands, a condition that does not occur in *R. lutea*. A third is found in the leaves, which, though much alike, are not the same, being more attenuated at the base in *R. sulphurea*, while in *R. lutea* the teeth are deeper, and they are often finely pubescent. In *R. sulphurea* the stipules and auricles are

xanthina. Before leaving this part of the subject it may be interesting to inquire how far the recognised descriptions of *R. Rapinii* Boiss. carry out Crépin's view put forward above. The best description of this Rose known to me is that of Regel; it is shorter than Boissier's original description, but gives the essential features, and is as follows:—"Branches with strongly-curved prickles dilated at the base, otherwise glabrous, flowering branchlets clothed with setaceous prickles and glands on short stalks. Stipules adnate, leaflets non-glandular beneath, lobes of the calyx entire or with a few short lateral lobules. A tall bush, the stipules expanded, glandular on the edge, petioles and rachis shortly pubescent, nearly unarmed. Leaflets 5-7, obovate, obtuse or shortly-pointed, glabrous above, with a pale, rather soft and very fine pubescence beneath, somewhat doubly toothed. The peduncles glabrous or glandular. Calyx tube glabrous. Calyx lobes lanceolate, acuminate pubescent on both margins. Petals yellow, crowned by the calyx lobes."



FIG. 150.—CATTLEYA TRIANAE AS GROWN IN CANADA.

less dilated and their edges less toothed than in *R. lutea*.

The inflorescence in *R. sulphurea* is always single-flowered, and the peduncles are shorter, the receptacles smaller, and the sepals shorter. In *R. lutea* the inflorescence is rather often many-flowered.

Finally *R. sulphurea* fruits regularly, and its receptacles ripen and produce well-developed seeds, while in *R. lutea* the receptacles, according to Prof. Crépin, always remain absolutely sterile. He says that in his experience he had never seen really fruiting receptacles of this species. At most the fruits contain atrophied achenes. In like manner *sulphurea* possesses well-developed pollen, while in *R. lutea* a very large proportion is imperfectly developed. Crépin found only one-fifteenth of the pollen perfect in this Rose, though a correspondent had a higher proportion. Not unnaturally, he asks "Does this point to *R. lutea* itself being a hybrid?" If so, he thinks *R. sulphurea* must be one ascendant, while the other may be either *R. pimpinellifolia* or perhaps Lindley's *R.*

This description agrees fairly well with Lindley's *R. sulphurea*: the chief discrepancies are that Lindley says that the leaflets of the double form he is describing are free from pubescence in every part, but very caesious beneath, and simply-toothed, while Regel's account of *R. Rapinii* gives the leaflets as having a very fine pubescence beneath and somewhat double-toothed (sub-biserate). These differences in such a variable organ as the leaf do not seem sufficient to displace Prof. Crépin's view, confirmed as it is by Déséglise that *R. Rapinii* is the spontaneous or wild form of *R. sulphurea*.

We are thus driven to the conclusion that the yellow species free from hybridity to which the hybridiser may have recourse do not exceed three, namely, *R. sulphurea* (including *R. Rapinii*), *R. xanthina* and *R. lutea*—a conclusion arrived at by Prof. Crépin in his *Rosae Hybridæ*; while if, as seems extremely probable, *R. lutea* be itself a hybrid, there may be only the two first named.

There are two garden forms which may receive notice for their good yellow colouring.

Persian Yellow was introduced into this country from Persia in 1833 by Sir Henry Willock, and into France in 1842 (see Jamain and Forney; the date given in the *Noms des Roses* is 1837). It is a fine deep yellow, particularly when grown under glass.

The other Rose is *Harrisonii*, said to have been raised from seed in America, and sent out by Mr. Harrison in 1830. It is of a somewhat lighter or canary yellow, and has much of the habit of the *pimpinellifolia* group. *White Rose*.

ORCHID NOTES AND CLEANINGS.

CATTLEYA TRIANAE.

THE accompanying illustration (fig. 150) is from a photograph sent us by Mr. W. J. Jones, Orchid-grower, Dale Estate, Ontario, who is largely engaged in growing Orchids for cut-flowers. The specimen is of exceptional merit, bearing eight flowers on one spike and six on each of the other two. Mr. Jones says:—"I may say that four, five, and six flowers on a spike are quite common with us, but eight is an extraordinary number. *Cattleya Trianae* is one of our best commercial varieties, for we have cut over 15,000 flowers since the beginning of last November to the end of March. We are now cutting (April 6) from a large batch of *Cattleya Schröderae*, and for the Easter trade alone we shall cut from 5,000 to 6,000 flowers." *Cattleya Trianae* is one of the most variable and widely distributed of the labiata section; the plants from some localities are superior in the size and beauty of their flower to those from other districts, and the Popagan forms are the best. It was collected by Wier for the Horticultural Society in 1863, and it was awarded the R.H.S. First-class Certificate on February 20, 1866. From that time until the early seventies some fine forms were certificated to Mr. Marshall, for many years Chairman of the Floral Committee, and since then forty distinct varieties have received awards, mostly in the months of February and March.

It was always a favourite Orchid with British growers, but two things have brought a decrease in the numbers grown of late. Being a winter flowerer, it is not so well adapted for growing in the neighbourhood of towns and in manufacturing districts, where fogs often prevail at that season, and destroy the flowers before they can expand, as cause them to develop imperfectly. Another cause of decadence is that since the advent of hybrid Orchids less space in the Orchid houses is given to imported species.

Nevertheless, for market purposes in good localities the grower in England might find the more extended culture of large-flowered *Cattleyas* to be as profitable here as it appears to be in Canada.

TREES AND SHRUBS.

NEW CHINESE SPECIES.

In the following list of trees and shrubs, introduced into this country from China, I propose mentioning only those which are cultivated with success here at Aldenham. It may be of interest to those who wish to make trial of them if I mention that our conditions are by no means favourable. The soil is a cold, stiff clay, and most of the plants suffer considerably from early spring and late autumn frosts. It may safely be said, therefore, that any importations which survive here are likely to do well in almost any part of this country.

Most of the seven hundred specimens grown here by the Hon. Vicary Gibbs were raised from seed sent home by Wilson. Some of the trees are already upwards of 20 feet high, and promise to make first-rate

specimens; but the heights given in the list are of those mentioned by Wilson as growing in a wild condition. It is probable that under careful cultivation many would attain to a much greater size.

TREES.

ACER DAVIDII (20 feet-30 feet) is a beautiful little tree. The bark is striped with white, which gives the stem a bizarre appearance, which is attractive when the leaves have fallen.

ACER HENRYI (35 feet) is a deciduous tree. The young leaves, on first opening, are of a delicate pink, changing slowly to a rich green.

ACER LAEVIGATUM is evergreen. It is doubtful whether this *Acer* is really hardy, which is a pity, as it is decidedly one of the most attractive. The long, narrow leaves measure from 6 inches to 7½ inches; their bright, delicate tints becoming on maturity exceedingly effective. The plant is well worth a little coddling.

ALANTHUS VILMORINIANA (150 feet) is distinguished from *A. glandulosa* by its spiny stems and long leaves. It is a handsome, typically-tropical plant; the leaves, which are from 3 feet to 4 feet long, are borne on red petioles.

ALNUS LANATA is a strongly-growing Alder, but it may not prove quite hardy, especially in severe winters. Nevertheless, it has done well here so far, and is certainly an acquisition to the *Alnus* family.

ALNUS CREMASTOGYNE is hardier than *A. lanata*. It has rather small, bright green leaves, and branches very freely; it would make an excellent water-side plant.

BETULA No. 900 is described by Wilson as the best Birch in China. It has small foliage and rather wiry branches; its chief beauty lies in the bright, orange-coloured bark which is exposed when the outer, older bark peels off. Our specimens are too young as yet to show the fine colours described by Wilson, but there are already indications of success.

CATALPA FARGESII (20 feet) is a small tree, with large, pale-green leaves. Our specimen has not yet flowered, but the foliage is very attractive.

CERCIS RACEMOSA grows well, forming a small tree, but with leaves larger than those of *C. Siliquastrum*. It is said to bear rosy-red flowers.

CERCIS CHINENSIS bears magnificent foliage, but is, unfortunately, not sufficiently hardy for general use.

EUPTHEA FRANCHETII forms a small specimen, with red stems and petioles. The leaves have a wrinkled surface. The tree branches thickly and neatly, and has an ornamental appearance—especially in autumn, when the foliage assumes very attractive colours.

JUGLANS CATHAYENSIS is a large tree, bearing pinnate leaves 2 feet to 3 feet long. The male catkins are 12 inches to 15 inches in length; the plant is a vigorous grower, and makes a good specimen for isolated positions. It has already borne fruit, which is black in colour, and has ripened seed, from which we have obtained several young plants.

LIRIODENDRON CHINENSIS (50 feet), the Chinese "Tulip Tree," bears much larger, handsomer foliage than the American species, *L. tulipifera*. It is certainly a beautiful tree, and assumes in the autumn varied and delightful colours.

MORUS No. 10 forms a large bush or small tree. The stems are grey, and the foliage light green, a combination which gives a peculiarly attractive effect. The fruit resembles that of the common Mulberry.

PAULOWNIA TOMENTOSA VAR. *LANATA* is a quickly-growing tree, said to bear flowers of a purplish colour. It has larger leaves than *P. imperialis*, and bears them for a longer period. It is also somewhat hardier, but requires a sheltered position and good soil. It well repays any care which is expended on it.

POPULUS LASIOCARPA (70 feet) may be said to be, so far, the best of the *Poplars*. It bears very large leaves, with red petioles and veining. It will grow fairly well in a dry position, but prefers a moist situation.

RHUS HENRYI is a large shrub, or small tree, with long, pinnate leaves, thin in texture, and in colour a light green. It is an attractive plant.

SALIX MAGNIFICA is a beautiful Willow, of quick growth; the leaves attain the size of 10½ inches by 6½ inches. Both leaves and stems are glaucous. It is said to bear catkins of great length, but none have as yet appeared on our specimen. At the first glance it seems to have little affinity with the *Salix* family, and more nearly resembles a *Magnolia*.

XYLOSMA RACEMOSUM VAR. *PUBESCENS* (60-70 feet) is a pretty evergreen, with small leaves and spiny branches. Wilson describes it as one of the handsomest evergreens in China.

CEDRELA No. 626 is a very fast-growing tree, with pinnate leaves from 2 feet to 2½ feet long.

PRUNUS CONRADINAE belongs to the *Cerasus* section of the *Prunus* family. It forms a graceful specimen, with rather thin shoots and large leaves. It bears pink blossoms, which add fresh beauty to its appearance.

PRUNUS PILOSIUSCULA VAR. *MEDIA* is a freely flowering Cherry. The flowers, which are pink, are borne in early spring.

EVODIA No. 387 (20 feet) forms a small tree, with red-brown stems and pale green leaves.

LIQUIDAMBAR FORMOSANA VAR. *MONTICOLA* (50 feet) is a fine variety for autumn effect, assuming a brilliant red in that season. The foliage is carried well on into the winter, and the variety is a good deal hardier than the species.

TETRACENTRON SINENSE is a distinct and beautiful species, bearing delicate stems, long pointed buds, and broadly ovate leaves. The foliage is at first a pleasing shade of bronzed-red, changing to green on maturity. The specimen will probably attain to the dimensions of a small tree.

RHUS No. 123 is an ornamental tree with large, pinnate leaves. If the present rate of growth (3 feet to 4 feet in a season) is maintained, it will form a tree of considerable dimensions in a few years.

SHRUBS.

BERBERIS SARGENTIANA is an evergreen Barberry with large, tough leaves 3 inches to 4 inches long, and formidable spines. Part of the foliage becomes bright scarlet in the autumn. The leaves resemble those of *B. Knightii* in shape, but the size is larger. The flowers, which measure about half an inch in diameter, are almost white, and are followed by black fruits. The species is considered to be the hardiest of all the evergreen Barberries, and is a fine and attractive addition to the family.

BERBERIS SUBCAULALATA (4 feet) is a semi-evergreen species, which flowers late in the summer. It forms a dense bush, and makes an attractive specimen, especially in November and December, when it is bearing its bright, scarlet berries.

BERBERIS AGGREGATA is a deciduous species, resembling *B. Wilsonae*, but more pyramidal in form. The berries are coral-red, and rather large.

BERBERIS WILSONAE has already established itself in the public favour, and it is certainly a very attractive plant, with its delicate stems, small, glaucous leaves, and salmon-pink berries. It is a good plant for rock-gardens.

BERBERIS GAGNEPAINII is a compactly-growing, pretty evergreen, with narrow, twisted leaves, of a bright green colour. It is likely to become a general favourite.

CORIARIA No. 12 grows strongly, the stems attaining to a length of 6 feet to 8 feet. The catkins, which open in spring, are red; the fruits are said to be black, but it has not fruited here up to the present.

DEUTZIA VEITCHII flowers very freely, and at an early stage. The blossoms are pink, and the plant is considered one of the best *Deutzias* of this colour in cultivation.

DEUTZIA LONGIFOLIA resembles *D. Veitchii*, but the flowers are not so large, nor the colour so bright.

EUONYMUS JAPONICA VAR. *ACUTA* is an evergreen climbing or creeping shrub, with small leaves, veined with white. It would be suitable for hanging over rocks.

CORNUS PAUCINERVIS is a low, spreading shrub, with narrow leaves and white flowers. The stems are bright green, which gives the plant an attractive appearance in winter. It is suitable for rock-work, or for growing under trees.

COTONEASTER DAMMERI is a creeping, evergreen species, which grows quickly. It forms an excellent groundwork for shrubs of upright habit. The flowers are white in colour and the berries are red.

COTONEASTER DAMMERI VAR. *RADICANS* has broader leaves than the species, and does not spread so fast. It is a very suitable plant for a rockery.

COTONEASTER HORIZONTALIS VAR. *PERPUSILLA* is an attractive, closely-growing form of *C. horizontalis*. It bears bright red berries, which show to great advantage when the leaves have fallen.

COTONEASTER DIVARICATA forms stout, freely-branching stems, and grows to a height of 4 feet to 6 feet. The flowers are pale pink, and the fruit red, very freely borne. It is perhaps at its best in autumn, on account of its wealth of berries.

COTONEASTER SALICIFOLIA VAR. *RUGOSA* is a handsome evergreen of upright habit. It bears white flowers, followed by scarlet fruits, which are produced in great abundance.

COTONEASTER SALICIFOLIA VAR. *FLOCCOSA* has narrower leaves and smaller fruits than *C. s. rugosa*. It is altogether a more elegant plant, and would look well where *rugosa* might be too large.

COTONEASTER ZABELII is a good deciduous species. Pink flowers are followed by dark red berries, very freely borne, which render it a conspicuous object when the leaves have fallen. *E. Beckett, Aldenham House Gardens, Herts.*

FOREIGN CORRESPONDENCE.

ERRONEOUS NOMENCLATURE.

THE difficulties attendant on the correct labelling of plants increase every day. To lovers of plants, who collect them *con amore*, it is quite depressing to read certain catalogues. For instance, in a list of Alpines or perennials the name of an apparently new plant is found; but if the plant be ordered, it proves to be an old friend under a wrong name. Some catalogues give the same plant under two, three, and even four different names, so that the fervent collector (unless he be a skilled botanist) may get the same plant several times over.

The difficulty caused by these wrong names, however, sinks into insignificance beside the confusion produced by the naming of plants by titles which are non-existent, or are the result of a lapsus made by some ignorant person in the copying of a label. Take, for instance, the barbarous word *Pintenectitia*, which clung for twenty years to *recurvata*. I remember, when I was a boy, Mr. van Houtte relating that one of his gardeners, in copying a label which bore the name of "P. C. Noline" (to whom the genus *Nolina* was dedicated by Michaud), miswrote it "Pintenectitia." Thus the absurd name passed into the nurseries, creating ever-fresh difficulties among cultivators, until one in despair made of it "le pot aux Roses"!

A similar error seems to have been the origin of the famous blunder "*Sempervivum californicum*," which prevails all over Europe. The

name is probably a corruption of *S. calcareum*, Jordan, which plant grows in the centre and south-east of France; I found it gracefully adorning the ruins of the old Temple Church near Comps, in the Var. Everyone knows that neither in California nor in any part of America is there a *Sempervivum* to be found, the genus being essentially European.

ing surprise that he should have thought it an Alpine. In reply he sent me a small catalogue (compiled by a small nurseryman) in which "*Urvillea acaulis*" figured as an Alpine. Curious to see what it could be I obtained a plant, and found it none other than the familiar *Centaurea Urvillei*, a small perennial and not very ornamental, but useful in a collection.

year I was visited at Floraire by a nurseryman who lives near London. I was not at home at the time, but when I returned my head gardener reported that the visitor had told him the plants of *Daphne collina* were wrongly named: they should be called *D. Fronina*. Now, I have constantly laboured (but apparently in vain) to prove that there is no "*Daphne Fronina*" at all; the name is a stupid corruption of *D. collina*, and no book on botany, or index, or catalogue of any note recognises it. Yet the gardener who took exception to the name *D. collina* is quite a clever grower who exhibits successfully in flower shows.

Another error which occurred a short time ago was in the name of an *Achillea* of which photographs appeared in the horticultural papers. The plant was called "*Achillea argentea*," but should have been "*A. argenti-folia*," *A. argentea* being a synonym either of *Pyrethrum argenteum* or of *Achillea Clarence*.

I once obtained a small branch of an *Erodium* which was sent me from a famous garden where it was grown as an importation direct from the Orient. The plant was labelled under some absurd name which I have now forgotten; the owner of the garden was dead, and the gardener, in renewing the labels, had also renewed the name. I took the plant with me into the library, shut the door, and, with the aid of Edmond Boissier's *Flora Orientalis*, decided that it was the famous *Erodium Guicciardii*, of Heldreich, from Aetolia, Orient, of the utmost rarity in gardens. I asked, therefore, for cuttings, and soon had the plant flourishing at Floraire under its right name.

I should like to mention the great esteem I have for those nurseries—and I must acknowledge that in England they are in the majority—in which the real names of the plants are carefully preserved. In the Swiss Exhibition held at Geneva in 1896 a special prize was awarded to those exhibitors whose nomenclature was above reproach. I do not know whether this principle is adopted in English shows, but I hope that the R.H.S. will take care in every way to impress upon its members the importance of the question of nomenclature, upon which order and clearness in the domain of horticulture so greatly depend. *H. Correvon, Geneva.*

THE MOON'S EFFECT ON PLANTS

IN reference to the correspondence on this subject (see p. 151), let me say that in Holland every farmer and every journeyman will tell you that the moon has an influence on plants. It would be interesting to know whether the same belief exists in other countries. If there really be an influence by the moon on plant growth, it would be also very interesting to know on what this influence depends. Here I have heard nothing about it from the natives. *M. Buysman, Jardin Botanique, Lawang, Java.*

HYBRID ARABIS.

M. CAYEUX has obtained interesting results by crossing *A. alpina grandiflora superba*, a vigorous race with pure white flowers, and *A. alpina rosea*, a less robust race, the flowers of which are bright rose-coloured, but small.

The individuals resulting from the cross exhibit the vigour of the former race, and possess rose-coloured flowers of a less bright tint than in *A. rosea*.

In the second generation a large amount of segregation was observed, and the individuals showed a considerable range of form, habit, foliage, size and colour.

A very charming plant of the F_1 generation named *Arabis alpina rosea grandiflora*, possessing the vigour of the large-flowered mother plant, and also delicate rose-coloured flowers, was propagated by division, and received from the National Horticultural Society of France a Certificate of Merit. *A. M.*



[Photograph by C. P. Raffill.]

FIG. 151.—PRUNUS SARGENTII: FLOWERS PALE ROSE COLOUR.

(See p. 347.)

I was asked a short time ago by an English visitor to Floraire for a plant of "*Urvillea acaulis*." Never having heard of this plant, I took my *Index Kewensis* and found that *Urvillea* is a genus in N. O. Sapindaceae. I wrote to my visitor giving him a description of the plant he had asked for, express-

However, it is not everyone who has the time or the patience to search out the right name in such cases, and I know many collectors who have been seriously discouraged by these and similar mistakes in nomenclature. It is a great pity that nurserymen are not more careful to avoid adding to the number of errors. Last

PRUNUS SARGENTII.

THIS beautiful Cherry appears to have been introduced to cultivation first by Dr. Bigelow, who, in 1890, collected seeds in Japan and sent them to the Arnold Arboretum. Two years later Professor C. S. Sargent collected seeds in the same country, and in 1893 the species was introduced to Kew. For some time it was thought to be the type of *Prunus Pseudo-cerasus*, but in 1908 was proved to be distinct, and was given the above name by Mr. A. Rehder. It is a deciduous tree, said to reach a height of 80 feet in Japan, with a trunk 9 to 10 feet in girth. Its leaves are between oblong and obovate, the largest 4 inches long and 2 inches wide, rather abruptly narrowed at the apex to a slender acuminate point, and sharply toothed. The flowers are of a pale rose colour, and about $1\frac{1}{2}$ inch wide, the petals notched at the end; they are borne in clusters, two to five together, each flower with a stalk up to $1\frac{1}{2}$ inch long. It blossoms in great profusion in April, as may be seen from the illustration in fig. 151. The Cherries are small and shining black, about $\frac{1}{2}$ inch wide, but are not very freely borne in this country. I remember seeing the originally introduced trees in the Arnold Arboretum in July, 1910. They were then 25 to 30 feet high, and laden with an extraordinary profusion of black Cherries, which gave the trees a striking and handsome appearance. As a timber tree this is perhaps the finest of all Cherries; it is also one of the most ornamental. W. J. B.

NOTICES OF BOOKS.

LES ILES D'HYÈRES.*

IN the *Gardeners' Chronicle* for October 8, 1908, appeared a long notice by the present writer of a book on the Flora of the Var by the late Abel Albert and M. Emile Jahandiez, which was printed, like the present work, at the private press of the two brothers Jahandiez at Carqueiranne.

The beautifully illustrated volume before me, on *Les Iles d'Hyères*, is much more interesting, for it is an account of the general history, geology, flora and fauna of those remarkable Mediterranean islands, the Stoechades of the ancient Greeks, lying south of Hyères, a few miles from the mainland of the Department of the Var. The old name of these picturesque islands is familiar in *Lavandula Stoechas* and *Helichrysum Stoechas*, so well known to visitors on the Riviera.

The author of this useful book is M. Emile Jahandiez, a travelled botanist and naturalist. The illustrations comprise five maps, thirty-six fine plates, and thirty-two smaller figures from photographs, drawings, and paintings by the clever artist, M. Albert Jahandiez. It was my privilege, after several previous visits, to spend a couple of days in May, 1913, on the Isle of Porquerolles with these remarkably able and versatile brothers, when some of the most interesting photographs were taken. Porquerolles is the largest of these islands, which are also called *Les Iles d'Or*. It is the most accessible (from Toulon or Hyères) and the most populated. But, unfortunately, since a recent change of ownership, opportunities for studying its natural history have not been improved. For example, the only two stations in France for the handsome *Lathyrus tingitanus*, which had long been naturalised at Porquerolles, have been destroyed.

The islands, barely 3,000 hectares in area, support flora remarkable chiefly on account of several almost endemic species, and because it forms a link between that of Corsica and the Provençal mainland. Of twenty-eight very rare French species which occur twenty-six are strictly

Mediterranean, and most of them here attain their northern limit; twenty are fairly distributed in Corsica, and four species—*Delphinium Requierii*, *Cirsium trispinosum* (a remarkable Thistle), *Teucrium Marum* and *T. massiliense*—do not appear on the adjoining mainland, and may be survivors of an earlier geological period. The points of connection with the Spanish flora are more numerous than with that of Italy, twelve species are characteristic of the islands of the western Mediterranean, and five appear in the Isle of Ste. Marguerite, near Cannes.

About 73 pages are devoted to a complete list, with localities, of the Phanerogams, and 36 pages are given to lists of the mosses, algae and fungi. A good majority of the 200 fungi is described as edible. How characteristic of France!

Then follows a chapter on the zoology, with lists of all the known mammals, reptiles, birds, fishes, molluscs and insects. The short list of twenty-three butterflies is, however, certainly incomplete. The remarkable promontory, known as the *Presqu'île de Gieus*, and the sands and salt marshes of the connecting isthmus, are described in this work, which is really a greatly enlarged, rewritten, and cheaper edition of one which the authors published some ten years ago. There is a short introduction by M. C. Richet. H. S. Thompson.

THE LAND.*

THIS is a breezy book, written by a man who thinks for himself and who is not bothered over-much with conventional science. The object of the author is to create "a fresh interest in the land, to promote a healthy co-operation between town and country, and to restore the land to its former position as a sound investment . . . to make it once again what it ought to be, viz., the nation's premier gilt-edged security."

The text of the author's discourse is that the land, fully cultivated, will prove a veritable gold mine lying within 12 inches of the surface. The present failure to exploit this *El Dorado* is to be ascribed to lack of labour, to which cause the author attributes the fact—as he claims it to be—that 90 per cent. of the agricultural land of England is imperfectly farmed.

To reform cultivation labour and improved machinery must be available, and the farmer must put in practice the teachings of Jethro Tull, the Berkshire husbandman of 200 years ago. The author's tribute to the genius of Tull is a fine one and deserves to be widely read. Tull was indeed a wonderful man, for he had the genius to draw absolutely right conclusions from absolutely wrong premises. Plant nutrition, according to Tull, is a simple business. The roots of plants are like intestines. Food must be got into them. The food which they want consists of particles of soil. In order to be got into the intestines (the roots) the particles must be very small and the roots must be able to squeeze themselves among the soil particles. Therefore the soil cannot be cultivated too thoroughly nor too often. Every one of Tull's postulates is unsound, but the conclusion which he draws is unchallengably right.

Naturally Tull carried his illogical reasoning to illogical conclusions, and maintained that tillage, and tillage alone, will supply plants with all the food they require, and that manure is unnecessary. Nevertheless, it is not to be gainsaid that Tull deserves all the encomiums which our enthusiastic author lavishes upon him.

Having concluded that the finer the soil be divided the larger the yield, he proceeds to develop his ideas of an improved form of machinery which shall enrich the soil, and by pounding it finely enough transmute it, as it were, into gold. "The greatest need of agriculture is the production of an oil-motor that will travel over the land without pressure upon or panning the subsoil." And to the question,

"Will it ever be forthcoming?" the author gives a hopeful answer in his chapter entitled "The Expected Motor-Digging Plough." This apparatus, the coming of which is to herald the agricultural reformation, must work on the rotatory system. The specification of the requirements which it ought to satisfy is set forth with something of the fervour of the prophet; but it is all very well for agriculturists to be told to "Wake up" and "March forward" when the plough which is to lead them into the promised land exists only in the fertile brain of our author.

Succeeding chapters deal with crop rotation and land tenure; the latter, the author thinks, will be on a co-operative basis, with small holdings "near the chimneys and large holdings in the open." In this golden age of agriculture the great holding will pay 15 to 20 per cent., and labour thereon will be the best remunerated in the kingdom.

Indomitable optimism is the keynote of this interesting little work, and although now and again a doubt may arise, the reader, remembering that it is useless to argue with a prophet, will do well to let his doubts alone, and to devote himself to reflection on the many wise and shrewd remarks with which the author points his moral and adorns the tale of how the new agriculture is to be established.

BRITISH PLANTS FROM THE NATURE STUDY POINT OF VIEW.*

ANOTHER contribution to the already long list of books designed to meet the requirements of the nature student, "This little book is intended to give the beginner and the student of Nature Study a brief, but clear, insight into the characteristics of the better known orders of British wild plants."

Since the volume runs into 250 pages of letterpress, illustrated by 72 photographs, the author is perhaps somewhat modest in so describing his work. Of the excellence of the illustrations there can be no doubt. They are photographs of the plants described—many of them in their natural habitats, and are of quite unusual distinction and charm. One may select for special mention those of the Water Buttercup, the Greater Stitchwort, the Cross-leaved Heath, the Primrose, and many of the photographs of trees.

In the main the letterpress consists of a general account of a number of families of plants, with detailed descriptions of some of the British members.

There is not much scope here for originality, and the author is not always as careful as he might be in the use of Latin and common names when the same plant is referred to. On page 118, for instance, alluding to *Adoxa Moschatellina*, he refers twice to the *Moschatel*, but a few lines below he uses the generic name without giving the beginner any clue that he is referring to the same plant.

Mr. Horwood has collected many of the local names of common British wild plants, and has further loaded his botanical descriptions with odds and ends of information culled from Herbals and books of Folklore.

The botanist will certainly take exception to some of the conclusions set forth in the introductory chapter.

Is the author really prepared to maintain, for instance, that "the division of water plants . . . is connected with the derivation of land plants from water plants, since the latter were the forerunners of the former, though in one case the *Green Algae of the fresh water were derived from one or more types of seaweed*"? (The italics are mine.) And again, "The trailing land plant is a water plant which has adopted a land existence."

These are statements to the support of which it would be indeed difficult to bring convincing evidence! M. C. R.

* *Les Iles d'Hyères: Histoire, Description, Géologie, Flore, Faune.* Par Emile Jahandiez, Carqueiranne, Var. Printed and published by the author. 8 francs.

* *The Land: Its "Inherent Capabilities" and How to Secure Their Full Development.* By G. C. P. (St. Catherine Press, Norfolk Street, London.)

* *Plant Life in the British Isles.* By A. R. Horwood, (J. and A. Churchill, London), 1914. Price 6s. 6d.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

ECHINOCACTUS (LOPHOPHORA) WILLIAMSII (see p. 313).—Any reference to Cacti is so rare in the horticultural papers that the remarks in your issue of the 9th inst. regarding the above plant came as a very pleasant surprise. Lemaire's genus *Anhalonium* (or rather *Aerocarpus* Scheidweiler) is closely related to *Mamillaria*, and sometimes sunk in it. But Dr. Karl Schumann has pointed out that *Echinocactus Williamsii* cannot be referred to this genus as the flowers are areolar and not axillary. The same great authority refused to recognise Coulter's

CHINESE TULIP AND SASSAFRAS TREES.—In your account (May 16, p. 333) of these remarkable trees, the credit of introducing, and not of discovering, them should have been attributed to Mr. Wilson. The Chinese Tulip Tree, *Liriodendron chinense*, was discovered by Shearer and Maries in the Lushan Mountains, near Kiukiang, as long ago as 1875 and 1878; and was subsequently collected by Dr. A. Henry and other botanists in different parts of Central China. The Chinese Sassafras tree was discovered in the mountains of Hupeh by Dr. A. Henry in 1884, and was subsequently found near Ningpo by Dr. Faber. It was originally called *Lindera Tzumu* and *Litsoea laxiflora* by Hemsley in *Index Florae Sinensis*,

stake in the centre for support. What impressed me most, however, was the small size of the pots in which they were grown; the majority were in 6-inch pots, and I noticed none of the pots exceeded 8 inches in diameter. The variety of colours was splendid. On one of the side stages of the same house was an equally well-cultivated batch of *Schizanthus*, Sutton's large-flowered hybrid. I noticed many plants in 60-sized pots from a foot to 18 inches in height and as much in diameter, with flowers of the most charming shades of colour. There are many other things which Mr. Newman grows with equal skill and success. *B. Ashton, Lathom Gardens, Ormskirk.*

THE LESSER NARCISSESS FLY (EUMERUS LUNULATUS).—The note of Mr. Geo. St. Ox (p. 336) is of interest inasmuch as it appears to promise us what so far we lack, namely, some useful information concerning this fly based not on surmise or deduction, but upon actual fact and observation. But first let me reply to his question whether the statements made by me in my note to *The Garden* were not based upon deductive reasoning. My answer is, Certainly not. The note in question was merely a condensed summary of the various "Enemies of the Narcissus," and did not in any way pretend to be an exposition of the various considerations, in detail, which led up to the conclusions stated. But inasmuch as several dozen bulbs when raised were found to contain the *Eumerus* in quantities varying from over 100 (in the case of *Narcissus* *Glory of Noordwijk*) to two or three in other bulbs, the operations of the *Eumerus* larvae were a matter of observation, and not of speculation. As a system I distrust deductive reasoning, although in the hands of genius it has sometimes produced startling results. But, as a rule, I agree with the gifted Arnold Toynbee, who, in his earlier days a conspicuous employer of the method, in his later years emphatically repudiated purely deductive reasoning, as—to use his own words—"too often leading merely to metaphysical subtleties and mazy entities." But to the point of interest to us: Mr. Geo. St. Ox affirms, not as a matter of opinion merely, but definitely and certainly, that admitting what Mr. Bliss appears to doubt, namely, that the two flies, the *Merodon* and the *Eumerus*, are allied in entomological classification, nevertheless that the resemblance ceases there, and—here we have the important statement—that "they are different in general appearance, in "habit, and in their life circle." Now, if Mr. St. Ox's assertion is based upon actual and careful observation and experience he is in a position to throw useful light upon at least one aspect of the question. "Appearance" goes for little, but "habit" and the "life circle" go for much. Would it be trespassing too much upon your correspondent's time if he would state, in some sufficient detail, the actual observations and experiences which have led him to feel justified in making the very distinct and definite statements to which I have referred? Contributions to exact science are always most welcome. *Charles E. Shea.*



THE CHELSEA SHOW.

FIG. 152.—TELOPEA SPECIOSISSIMA.
(See Floral Committee's Awards, p. 364.)

genus *Lophophora* as valid. As regards Mr. Holmes's system of cultivation, it is more usual to afford a more nourishing soil to this as well as to other Cacti. Undoubtedly, too, satisfactory growth cannot be obtained without a free supply of water to the roots during the somewhat short growing season, and frequent overhead syringing in hot sunny weather is generally found decidedly beneficial. A minimum temperature of 45° F. in winter is doubtless quite high enough for numerous species; we are probably inclined to grow Cacti far too warm. It is unfortunate that, in this country at least, there is no means by which those who grow Cacti can make known the results of their experience in cultivation and learn that of others. As a family the Cacti are excelled by no other in the beauty of their flowers, and their marvellous forms are of never-failing interest. *R. A. Todd, Fulwell House, Nunney, Frome, Somerset.*

pp. 383, 392 (1891); but was ultimately described by him as *Sassafras Tzumu* in *Kew Bulletin*, 1907, p. 55. Further accounts of both these peculiar trees will be found in *Elwes and Henry, Trees of Great Britain*, Vol. I., p. 64, and Vol. III., p. 515. The credit of their introduction is due to Mr. E. H. Wilson, who sent seeds from Central China to Coombe Wood in 1900 and 1901. *A. H.*

CINERARIAS AND SCHIZANTHUS AT CUERDON HALL GARDENS.—A few days ago, when visiting Mr. Jno. E. Newman at Cuerton Hall Gardens, near Preston, I had the pleasure of seeing the finest cultivated batch of *Cineraria stellata* in my experience. The plants occupied the centre bed of a span-roofed house about 50 feet long, and ranged in height from 18 inches to 4 feet 6 inches, many of them being more than 4 feet in diameter and having only one

ROADSIDE BEAUTY.—I have not seen the letter in the *Times* referred to on p. 300 in your issue of May 2, but you say sufficient to prove how easy it is to condemn the various causes to which you attribute blots on our country roadside beauty. Now, let me take your remarks seriatim. In this part of Hampshire, which is noted for its flora, the plant collector is unheard of, except perhaps the man who digs up a few *Primrose* roots to transfer to districts where there are few naturally. In this district there are acres and acres of *Primroses* in woods and hedgerows, and they increase annually. Now with regard to the smearing of the roads with tar, you say he lays down poison for the trees and shrubs which adjoin the road. I fear you have not inquired into the method in which the tar is used, and also what a boon it is to plants, especially fruit-growers whose land adjoins tarred roads much frequented by motors. First the grit and dust from one half of the road is swept into the middle of the road, the tar is made hot and spread over the swept portion. The dust is then laid evenly over the tar, thoroughly cover-

ing it. If sufficient dust and grit are not available, sand is added. Now, under this method the tar is completely covered, and beyond a slight smell for a few days it is not afterwards noticed. How tar so laid can be a poison to trees and shrubs requires explanation, and the present luxuriance of roadside plants is a proof that they are not injured. Next as to the advantage of the use of tar. Apart from the allaying of the dust to those following a motor, either driving or walking, the tar prevents the wearing of the road surface, therefore on that score alone the tarring is economical. The boon to the fruit-grower is great. Instead of his fruit being smothered with dust for yards into the fields away from the hedge, it now remains comparatively clean. Now I come to the case of the farmer, who is always to blame for something or another. No good farmer ever allows his hedges to grow in a neglectful manner, but he trims them annually, and generally twice in a year, allowing them to grow to stated heights of 4ft., 5ft., or more, as circumstances warrant. Such hedges are not cumberers of the ground, but are absolutely essential to success. Here are hedges of Quick one hundred years old still remaining 4ft. 6in. high and less than one yard wide. Again, we have hedges of the same age 20ft. high. These are not cumberers of the ground, because they are a shelter, but they do not encroach on the land unnecessarily. They are shelters for fruit trees and cattle. Properly kept ditches do not require hedges to guard them, rather the opposite. Arable land would be better without hedges at all, or certainly those only which grow a yard or so high; these are all the better for being closely trimmed annually. The advantage of low hedges is in the case of harvest or haymaking. High hedges or belts of trees hinder the corn drying after being cut; in the same way saves hay from spoiling in that portion of the field. *E. Molyneux, Swanmore Park Estate.*

DOES SPRAYING FOR APPLE-SUCKER PAY?

In further reference to my remarks on "the forlorn hope of spraying" on page 310, I should be glad if any readers who have been spraying against Apple-suckers will say if they have found any or many dead ones on examining the trusses of blossom after the operation. Since my last notes were written I have examined a great number of trusses two days or more after spraying, and I have found very few dead suckers, certainly not one to ten live ones found. Yet the wash used has killed the great majority of suckers in trusses cut off the trees and dipped in it, presumably all that were thoroughly wetted. Indeed, when I used only 6lb. of soft soap to 100 gallons (1oz. to a gallon), instead of 12lb., twenty-two out of twenty-seven were found dead twenty hours afterwards, and three of the five live ones were in a particularly compact truss. One inference is that all that were well wetted were killed. Another is that in ordinary spraying not one out of ten suckers is thoroughly wetted. Many other tests were made, and the success was much the same when the trusses were dipped in the wash. If it pays at all to spray against suckers before the blossom expands, my conclusion is that it is better to drench the trees with a weak wash than to spray them lightly with a strong one. With soft water 6lb. of good soft soap to 100 gallons, and with hard water 8lb., should suffice. In my opinion the quantity of wash used is of much more importance than the force applied. No amount of force will get the wash down to the axils of the blossom-buds and leaves if the stuff hits a truss on the side, as it does in the great majority of instances. What is wanted is to drench the trees so that the wash will run down into the trusses. I have tried using washing soda, 1oz. to a gallon, with the same quantity of soft soap, and still there was the lack of many dead suckers found on the sprayed trees. Another trial was one fluid ounce of domestic cloudy ammonia to the gallon, with the soft soap. This, although weaker than the ordinary clear ammonia, scorched the edges of open blossoms, and therefore the quantity of ammonia is probably too much. Half the quantity of clear ammonia might serve. The mixture, so far as can be judged from a limited trial, seems more effective in killing suckers than the other washes tried this year. But, although several

other washes have been used in past seasons, the proportion of dead suckers found two days or more after spraying has always been very small. If any reader has had better results, I should be glad to know what wash was used. But the dead suckers must be found in the trusses to prove the success. They are in the trusses in my test cases, so that apparently they do not drop out when killed. *A Southern Grower.*

MEALY BUG ON VINES.—An infestation of mealy bug at this season is particularly to be deprecated because of the difficulty of destroying it by means which at the same time will not harm the vines and the crop. Pure water warm enough to kill does not hurt the foliage or the fruit, but it has the disadvantage of failing to reach every crack and hiding-place, and so is

exposure of the foliage to the vapour. But still there would be a risk. For some time I have experimented with nicotine (98 per cent. commercial) and find many plants not in the least injured by the use of double the strength recommended by vendors, and its fumes destroy all bug, etc. For vines, half the strength recommended has been used, and the little bug found in one viney difficult to keep free on account of Guavas growing in the same structure was all killed. More than one experiment has been made with equally satisfactory results, and the foliage of Lady Downes was not in the least affected. I would like to ask others to try nicotine with equal caution. It has other advantages over cyanide. I find bug usually appears on the part of the young wood of the previous year, and as soon as convenient after growth is well forward the snags



THE CHELSEA SHOW.

FIG. 153.—CALCEOLARIA STEWARTII: FLOWERS YELLOW. (See Floral Committee's Awards, p. 363.)

not perfectly efficient. Watching the appearance of solitary individuals and touching each with a drop of methylated spirits is subject to a like disability and we must fall back on nicotine vaporising or fumes of cyanide. The danger of vaporising the varieties Muscat of Alexandria and Lady Downes with nicotine is well known, whilst the cyaniding is equally apt to damage the foliage. It is not to be disputed that cyaniding is harmless to vegetation under certain conditions. The question is, what are these conditions? For one thing, vine leaves still immature are in a peculiarly susceptible condition, and to cyanide a viney while that condition lasts is always risky. There are, however, precautions which may be taken. If what may be called a full 3 oz. application be used, then 15 to 20 minutes will destroy every living bug, and the chance of harming foliage is reduced to the minimum. There is the other extreme, to reduce the strength to 1 oz. per 1,000 feet and allow a long

should be cut off close to each lateral. In doing this I have repeatedly found bug lurking ready to issue forth when none were to be seen on other parts of the vines. One should always be suspicious of ants in a viney. Once they become active it is a suspicious coincidence that bugs soon appear also. Ants are easily destroyed in the following manner:—Partly fill a pail with boiling water and fill it up with paraffin oil, stir it through the hot water, and after it has all floated to the top spray the paraffin over the border, woodwork, glass, or wherever the ants are found. A few applications will destroy them all. The common-sense practice of having only the primary leaves on laterals—no sub-laterals whatever—is a means of keeping bug in check, and also low night temperatures with early ventilation, or all-night ventilation when weather permits, and the minimum of "damping down" or none at all, are other contributory means to freedom from bug. *R. P. Brotherston.*

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKSON, Oakwood, Wylam-on-Tyne.

SEEDLING ODONTOGLOSSUMS.—The seeds of *Odontoglossums* and allied genera which were sown in the late autumn and early months of the year are now forming their leaves, and may be transplanted into store pots, either several together or singly in small pots. The later sowings, owing to the dry, cold, unfavourable conditions outside, have not made so much progress as usual. The old seed-beds should be examined, and any seedlings left on the pots from last year should be transplanted if ready. Where only a few seedlings are grown the sooner they are potted off separately the better progress they are likely to make. The advantage of treating plants individually is that attention may be paid to the particular requirements of each. The greatest enemy to seedlings is the destructive maggot, which does considerable damage to the germinating seeds and to plants in the earliest stages of growth. Many successful hybridists have often succeeded in inducing satisfactory germination, only to find, soon after the leaves have been produced, that the plants are attacked by the miniature black fly maggot. Here, also, the advantage of potting plants singly will be observed. There appears to be no satisfactory remedy for the pest. Vaporising at frequent intervals destroys the male insect in flight, but the female hides in the potting compost, where it is difficult for the fumes to penetrate. Spraying with weak insecticide helps to check them, and wiping the pots containing the seeds with a cloth dipped in a very weak solution of carbolic assists in keeping the pests at a distance. Where the potting compost is badly infested, it is best to re-pot the seedlings at the earliest possible moment and burn the old soil. Plants which were put into single pots last autumn will now need attention and those which have made good progress will be benefited by more root-room. It is not desirable when potting seedling plants of *Odontoglossums* and allied genera to disturb the roots unnecessarily. If the potting compost is in good condition, carefully turn the plants out of their pots and transfer them to suitable sizes without disturbing the roots. Much progress is often made by seedlings after the third leaf has been developed, and if encouraged by suitable treatment after this period, it will be found that a satisfactory first pseudo-bulb will be produced, and the plants will flower early. It is advisable to see that the compost used is of a lasting nature. Sphagnum-moss should be sparingly used and chopped very fine. The compost should be graded according to the size of the plants, and attention should be given to the supplying of proper drainage.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

THE IRIS GARDEN.—Irises are extremely useful plants for supplying the floral display in the garden during the transition stage from spring to summer bedding, and although the flower spikes of the German and allied Irises are prostrated by sharp frosts, they soon recover and become erect again, little the worse for the ordeal. The foliage of the flag Iris, even when not in flower, is ornamental, both in clumps or beds in grass. The rhizomes of this section of Iris grow and spread along the surface of the ground, throwing out fresh roots. If the old, exhausted back portions are cut away occasionally, the plants will not need removal often, but will continue to flower well in the same spot for many years. Do not plant in rich, freshly-manured soil, nor practise deep planting. Should any clumps or beds have become so thick and crowded with growth that the plants have failed to flower, lift them as soon as the flowering season is over, divide to single or double crowns and re-plant on a fresh

site in ordinary garden soil. Arrange the portions 1 foot apart, taking the precaution to stick a few Yew or other evergreen branches in the soil amongst them for shade until the plants are re-established. Secure, at the same time, surplus plants for the reserve garden to make good any losses that may occur. The varieties of the pallida section possess handsome foliage and beautiful flowers, and thrive in any situation, whether sunny or shady. Few plants are more strikingly handsome than *I. Kaempferi* with its gorgeous shades of soft, rich colours. The plants grow best in damp situations, such as on the margin of a stream or pond, but require a more generous treatment than their congeners of the German section. Ground intended for planting with Japanese Irises should be dug deeply, and manure should be placed in the bottom of the trench sufficiently deep to be below the roots. We plant *I. Kaempferi* in the spring, and have been very successful with imported clumps, as sent over in 6-inch squares of natural soil. Partial shade seems to suit them, although if the rooting medium is congenial they grow well in full sunshine. *Iris stylosa* may be propagated now from portions pulled from established plants. Plant this beautiful winter-flowering species in the warmest corner.

FLOWERING SHRUBS.—The best time to prune flowering shrubs is after the flowers are over. Old flowering branches that show signs of exhaustion should be cut clean out, also weak, twiggy growths that tend to crowd the interior of the plant. Endeavour to obtain fresh, strong shoots from where the old branches were cut back. When planted in beds of a kind, one or more of the plants may be cut to within 1 foot of the ground each year. This will result in a good crop of healthy, flowering shoots for the next season. *Berberis Darwinii*, *B. stenophylla*, and other evergreen flowering shrubs, may be pruned less severely.

ROSES.—As a precaution against infestations of *Aphis* syringe the bushes twice a week with *Quassia* extract, or *Quassol*, employing one pint to 10 gallons of soft water.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

GREENHOUSE RHODODENDRONS. Varieties of *Rhododendron* such as *Purity* (white), *Countess of Haddington* (blush white), *Lady Alice Fitzwilliam* (white), and *Edgeworthii* (white tinged with pink) make beautiful subjects for the decoration of a conservatory or corridor. They may be grown in large pots and the shoots trained to wires suspended from the roof or over wire shapes fashioned as balloons. Now is a suitable time to ascertain the condition of the soil and drainage. It is not advisable to repot the plants annually; it will suffice, if the soil is in a good condition, to give a top-dressing of peat and silver sand, making the materials very firm by ramming. If repotting is necessary, use slightly larger pots and make the compost very firm around the ball of roots. Repotted plants should be grown in a little heat until the roots are re-established. Train in the shoots and pinch out the points of extra strong growths, to secure shapely specimens. Syringe the underside of the leaves to destroy thrips. Plants of *Rhododendron indicum* (*Azaleas*) may be treated similarly to the above. Remove the seed-pods and promote a clean healthy growth by syringing the foliage daily. Feed the roots with weak manure water.

GARDENIA.—Plants that have flowered should be placed in an intermediate house where they can be syringed freely. Prune the plants into shapely specimens and when the subsequent growth is 2 inches long they may be repotted, using a compost consisting of equal parts fibrous loam and peat lightened with sand, and enriched with a little bone-meal. Keep the plants growing actively, syringing them on frequent occasions and sponging the leaves to free them from mealy bug and brown scale. Pot rooted cuttings and pinch out the points of the leading shoots to ensure shapely plants, but discontinue stopping the growths about July, when the plants should be placed in plenty of light and air to ripen the

wood. As young plants produce the finest flowers, it is advisable to propagate new stock each season to replace those that are two years old.

HOLBOELLIA LATIFOLIA.—This beautiful greenhouse climber is worthy of a place in every establishment. If planted in a border the roots should be grown in a limited space. Train the growths to pillars or to wires suspended from the roof-rafters. The delicate perfume of the flowers scents the whole of the greenhouse. Cuttings may be inserted in sandy soil now and rooted in a temperature of 60°. Syringe the plants when out of flower and remove all weak growths.

LACHAENALIAS having finished flowering, water at the roots should be withheld gradually. Place the pots or baskets in a frame exposed to full sunshine to ripen the bulbs.

POT ROSES are now sufficiently hardened and may be plunged out-of-doors to the rims in ashes. Select a sheltered situation, but exposed to full sunshine. Water the roots with extra care and feed them occasionally with liquid manure.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

THE ORCHARD HOUSE.—Attend carefully to such important details as ventilating the house, watering the roots, and keeping the atmosphere moderately moist. Apricots that are at the stoning stage should be thinned for the last time. Do not overcrop the trees, and especially those in pots; a fair-sized tree growing in a 10 or 12 inch pot may be allowed to carry about two dozen fruits. Pinch the shoots closely, to cause fruit-buds to form. Stopping Apricots by the finger and thumb is far preferable to knife-pruning, which frequently causes gumming. Guard carefully against the caterpillar, which feeds upon the tender foliage. Syringe the trees in bright, sunny weather, but less frequently on dull days. Pinch the shoots of Peaches growing in pots when about 4 or 5 inches long; the lower buds will be benefited by this. Keep the shoots thin, for an excess of growth is a frequent fault in the culture of pot-trees. Continue gradually to thin the fruit, and watch carefully for green and black fly. Remove all decaying leaves, and afterwards dust the trees with tobacco powder, which, if applied just after the trees have been syringed lightly, will destroy the fly in a few hours. Syringe the trees with clear water afterwards to cleanse them; it is possible to keep Peach trees almost if not quite free from green fly by syringings of clear water alone. Pinch closely the young shoots of Plums and Cherries, and water their roots freely, never allowing the foliage, whether of trees in pots or horders, to flag for want of water. A little liquid manure may be afforded the roots at every alternate watering. Top-dress pot-bound trees with a mixture of well-decayed manure and fresh fibrous loam in equal proportions, adding a sprinkling of wood ashes or bone-meal. Syringe the foliage freely during the early morning and again in the afternoon, closing the house when the temperature is from 65° to 80°, according to weather.

PEACHES AND NECTARINES.—Trees with fruits on the point of maturity should be fed liberally. Admit air freely during bright, sunny weather, and syringe the foliage twice daily. Soft water should be used, as hard water may spoil the appearance of the ripe fruit. Attend to the thinning and tying of the young shoots of trees in late houses, admit air freely, and use every means to keep the foliage healthy and clean. Feed the roots as occasion requires.

PINES.—The night temperature for Pines in fruit should be 75°, and in the daytime from 80° to 90°, or even higher on bright days, when an abundance of air is admitted. Close the ventilators with the temperature at 80° or 85° and well syringe all bare surfaces, but not the plants themselves. Some of the suckers from last season's fruiting plants, which were potted during the autumn, are beginning to show fruit. Maintain a humid atmosphere and lightly dew

the plants overhead with a fine syringe on warm, bright days at the time of closing the house.

FIGS.—Maintain a dry and rather warm atmosphere in houses where Figs are ripening, but admit plenty of air. In later houses maintain an atmosphere as close, warm and humid as is consistent with the health of the trees. Well syringe the trees overhead twice daily and damp all available surfaces during hot, drying days.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTCOTE, Eastwell Park, Kent.

DESERT CHERRIES.—Cherry trees are among the first to be attacked by black fly, which appears shortly after the fruit is set. Every effort should be made to exterminate this pest at once, or it will increase with great rapidity, injuring the delicate points of the young shoots and spoiling the fruit. Syringe the trees with a reliable insecticide, and afterwards wash them thoroughly with clear water. If the flies are not all removed by one operation it should be repeated on successive afternoons. Remove gross shoots, which might disturb the balance of the tree, and pinch at the fourth or fifth leaf all those not required for extension. Keep the growths thin, so that each shoot receives the maximum amount of sun and air.

PROTECTIVE MATERIALS.—Canvas blinds, nets, or other coverings which have been employed to protect fruit trees from frost may now be removed. If, however, inclement weather occurs, the coverings may be replaced for a few more nights. So far, late spring frosts have done very little damage in this locality. On several occasions when the thermometer has fallen it happened that the trees were rather dry, and thus escaped injury. Blinds should be dried and labelled before being stored. Care should be taken to guard against damp and the attacks of mice.

BLACK CURRANTS are now growing rapidly, and the trees, except those attacked by the mite, are looking extremely healthy. Strong, vigorous bushes are always able to withstand both insect and fungous pests much better than old, half-starved ones, and as the young shoots of the previous year fruit best, the bushes should be encouraged to make growth by an occasional dusting of the soil with artificial manure during showery weather. Where big bud has been found, persevere with the treatment recommended in previous calendars, following this up by picking off and burning affected buds. Young bushes planted last autumn should not be allowed to carry much fruit. The better plan is to cut them back hard, thus encouraging the production of strong basal shoots, which will fruit well next season. Black Currants are subject to attacks of green fly in some seasons. They should be frequently examined for this, and if any signs of the pest are seen, measures should be taken to clear the bushes at once. If left many days the fly will cause the leaves to curl in such a manner that it will be impossible to dislodge the insects by ordinary means, and much damage will result.

RED CURRANTS.—The same measures should be applied to Red Currant bushes, as to Black. Apart from injury to the shoots, if the bushes are not kept free from insects, the fruit is made dirty and unfit for use. Keep the fruit quarters hoed, both to eradicate weeds and to maintain the surface soil in a loose and friable condition. This, combined with mulching as required, will keep the trees in good health during a dry period. It is far more effective than watering, though this latter operation may also be necessary in the case of recently transplanted trees.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

VEGETABLE MARROWS.—The plants should not remain for long in pots, or they will become starved and fail to grow freely when planted. It is not essential to plant Marrows in manure exclusively, for the plants do very well in ordinary fertile soil. For a time they should be protected at night and during periods

of high winds. Four main shoots are sufficient on each plant, and all fruits should be cut young, at least during the summer months.

ONIONS.—This crop is succeeding well, and needs only occasional attention in such matters as hoeing and applying manurial dressing. The hoe should be run through among the plants at 10 to 14-day intervals, and soot, pigeon manure, and concentrated fertilisers applied about once a fortnight. It is remarkable the amount of "feed" the Onion is capable of appropriating to its palpable benefit. Provided the ground was properly prepared and these cultural methods adopted, watering is not essential. I have no water to spare, and even in such dry seasons as those of 1911 and 1913 our Onion crops were satisfactory.

SEAKALE.—It sometimes happens that some of the crowns left for latest supplies are never cut, and if they are lifted carefully, re-planted and watered, they become re-established without much of a check, and afford splendid material for early forcing. If they show signs of flowering the stems should be cut off, but these are never so good for forcing as those which make foliage only. The plants set from thongs are beginning to grow freely, and a dressing of pigeon manure or artificials will give them an extra fillip. At the same time these dressings are not so important as they are for Brassicæ.

LEEKS.—Should the seedlings hang growth as they are apt to do, apply a stimulating dressing such as pigeon manure and soot, or, failing these, superphosphate of lime and nitrate of soda in equal proportions, and after applying them stir the ground thoroughly between the rows. Should the weather be dry a moderate application of water will be helpful. Leeks planted a few weeks ago will progress all the better for an occasional supply of weak manure water at the roots. It is usual to prepare ground for the main crop earlier in the year, but where this has been overlooked the work should be done as soon as possible, the important point being to introduce a 10-cwt. to the rod dressing of rotted cow manure at least 1 foot under the surface. Leeks are particularly valuable in late spring and at this time of the year. Any plants of last year's crop still in the ground should now be lifted and laid in a cool place for future use.

HERBS.—Plant out Basil and other tender herbs on a warm border, allowing each plant a foot of space. Hardy kinds such as Thyme, which are being increased from seeds sown early in the year, should be thinned meanwhile to 6 inches, before they crowd each other. Shear off the tops of Sorrel running to seed, and make an occasional sowing of Chervil where it fails to keep up a supply from self-sown seeds.

THE "FRENCH" GARDEN.

By PAUL AQUATIAS.

NURSERY BEDS.—Beans sown in frames should be ready for transplanting out-of-doors soon. Another sowing may be inserted either in 60 pots or direct in the soil of the frame for a succession. Plants of the batch of Celery raised in February must on no account receive a check at this period from either dryness at the roots or inefficient ventilation, for this would cause bolting in July or August. The main batch sown in March should now be pricked out in frames preferably, though when no space is available a temporary bed may be made by spreading 3 or 4 inches of manure in a sheltered corner, and covering it with a few inches of soil. The last batch of Cauliflowers should be planted in a well-prepared bed in the open, where root-waterings can be afforded frequently. Sow the seeds very thinly to obtain a sturdy growth. This batch will be available for planting as an intercrop among the Melons, or to follow the present crop of Cauliflower now growing on the manure beds; they are also useful as a stop-gap to fill ground when the supply of Celery plants is short. Tomato plants should be hardened gradually for setting out in a fortnight's time. The shelter of the lights must not be disregarded at night-time in case of late frost, and the frames should be sufficiently raised to keep all the leaves

clear of the glass. If cloches are at liberty set the best plants on a south border and cover the glasses for a period of three or four weeks. Ridge Cucumber seeds may be inserted at 2 or 3 inches apart in a cold frame, which should be covered with lights and mats till the cotyledons appear. Sow two seeds in each 60-sized pot and plunge the latter in the frame.

MELONS.—The planting of this crop is the most important operation during May. A trench having been prepared in advance, it should be filled with good manure, which should be watered and trodden firmly. Set the frames lengthways, allowing a good slope towards the front. After having marked the site of the next trench, throw the soil therefrom into the frames just placed in position; level it and make two holes in the centre, where the Melon plants will be set. Fill the holes with black soil, place the lights in position, and cover them with mats for a few days. When the bed is warmed sufficiently by fermentation of the materials, plant the Melons six for every frame. Keep the lights closed and covered for three or four days, after which the shading may be removed gradually until, when the plants are well established, it may be dispensed with altogether and ventilation afforded. To be successful with this crop it is essential to keep the plants as hardy as possible without subjecting them to a check from low temperatures. The bulk of the Melon plants should be set this month, reserving a few beds to be set in June, when the frames and lights will be available for the Vegetable Marrows.

OUTSIDE CROPS.—Owing to the pressure of work in other departments the crops out-of-doors are apt to be neglected, unless the careful cultivator plans the work accordingly. The work of hoeing and watering the Lettuces and Cabbages must be done to hasten their growth. Radishes and green Onions need bunching. Spinach must be gathered, and ground intended for the Kidney Beans well broken and hoed deeply. Endive sown in March should be transplanted at a distance of 12 inches each way in the open. Do not set the plants deeply, and keep the foliage moist by light waterings. Endive thrives best in rich ground and is chiefly cultivated at this time of the year as an intercrop. The plants should be sufficiently established before setting the main crop. Accommodation is now made for the first sowing of Witloof Chicory. This useful crop does well in deep, rich ground, and the seed is sown in drills very thinly, the latter at 1 foot apart. This crop can also be sown in nursery beds where no room is available at present. The roots pricked out produce better and thicker crowns when forced than the others, though this method entails extra labour.

THE APIARY.

By CHLORIS.

SHORTAGE OF BEES.—The daily Press informs us that a large number of Dutch bees are being imported into the Eastern Counties, and that they are immune from the Isle of Wight disease. This is very good news, and that it may prove true will be the fervent wish of all who have the interests of apiculture at heart. At the same time we must not take too sanguine a view of the matter, because the experiment will require the test of at least three or four years before any certain verdict can be pronounced upon it. This must not be taken to mean that I do not regard the experiment favourably. The English bees may have degenerated more than we are aware of by the constant in-breeding that undoubtedly takes place. I know a large village where, to my knowledge, no bees have been introduced, either as swarms or queens, for more than twenty-five years, nor can anyone remember any being introduced. No one who knows anything about rearing stock will affirm that this practice is good for the virility of the race.

PAINTING.—Where painting has been neglected all arrears should be made up with as little delay as possible, recollecting that uniformity in colour should be avoided, as young queens often return to the wrong hive after their wedding trip through inability to distinguish the hive from which they emerged.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.
Editors and Publisher.—Our correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MAY 25—

Linnean Soc. Anniversary meet. at 3 p.m.
 Rhododendron Sh. at R.H.S. Hall (5 days).

THURSDAY, MAY 28—

Bath and West and Southern Counties Soc. Sh. at Swansea (5 days). Royal Botanic Soc. meet.

FRIDAY, MAY 29—

Royal Botanic Soc. lecture by Professor W. B. Botherley.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 55.98°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, May 20 (6 p.m.). Max. 76°.
 Min. 51°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, May 21 (10 a.m.): Bar, 30.2; Temp, 70°. Weather—Bright Sunshine.

PROVINCES, Wednesday, May 20: Max. 73°, Cambridge; Min. 50°, Stornoway.

SALES FOR THE ENSUING WEEK.

TUESDAY—

First Annual Sale of Bedding and other Plants, at the "Home of Flowers," Swanley, by Protheroe and Morris, at 12.

TUESDAY, WEDNESDAY, AND THURSDAY—

The entire collection of Orchids formed by the late J. J. Holden, Esq., of Lancashire, at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 1.

WEDNESDAY—

Hardy Bulbs and Roots, at 1. Dwarf Japanese Trees, at 3.30. Palms and Plants, at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

The Chelsea Show.

The Royal Horticultural Society is to be congratulated on one of the most brilliant shows ever held in this country. Favoured by weather so fine as to satisfy all but the most delicate subjects—whether human or plant—the Chelsea exhibition attracted a vast concourse of people, and although it did not bring to light any specially remarkable novelty it proved that the standard of cultivation is as high as it can well be. Moreover, and speaking generally, the display of the exhibits was remarkably good, and exhibitors for the most part demonstrated the fact that air and space between their groups lend a natural aspect and an added attractiveness to the groups themselves. The relegation to the ground level of all the groups in the great tent—except the end groups of Orchids—must be pronounced a complete success. It gives an independence to each and a spaciousness to all which allows the visitor to imagine himself in a garden and not in a flower shop.

The laborious work of organisation was carried out with an ability and devotion which reflect the greatest credit on the officers of the Society. The membership of the Society has increased so greatly of recent years that Fellows—even in the roomy spaces of Chelsea—had some diffi-

culty in gaining an entrance when the show opened at 12 o'clock, and it may be that the Society will be obliged, on future occasions, to give the holders of a Fellow's ticket priority of entrance over those who carry "transferable" tickets.

The Exhibition was honoured by a visit from Queen Alexandra, who showed her appreciation of its merits by making a prolonged stay.

The exhibits of the leading firms were of the high standard of excellence which we have been led to expect of them.

Of the rock gardens, which have achieved such wonderful success and admiration during the past few years, there is little to be said. They showed a high level of general excellence, but there was not one among them—good as many were—that stood out pre-eminently like Mr. Wood's rock garden of last year. It is as though the rock-garden architects were enjoying a pause in inventiveness, and in the meantime are content to reproduce the features which have won them such well-deserved distinction in the past.

A regret was general among the real gardeners present at the Exhibition that more prominence and particularity is not given to novelties, and there is a general feeling that the Society might follow the example of the National Rose Society and contrive that all novelties shall be exhibited together in some prominent situation. Of the novelties exhibited in the tent allotted thereto mention should be made of the Irises of Mr. Dykes.

Perhaps the most noteworthy feature of this noteworthy show is the thoroughness with which the "sundries"—those all-important adjuncts of the garden—are now represented, and the R.H.S. may claim to do for all branches of Horticulture what the sister society has done for Agriculture on the occasion of the annual exhibition.

It will be a matter of general regret if the magnificence of the trade exhibits should tend to slacken the zeal for exhibiting on the part of the amateurs. Most distinguished among the amateur absentees was Sir George Holford; but we understand that this lapse is but temporary, and we shall hope to see again in the near future the superb specimens which have won him world-wide fame.

The attendance on the opening day was phenomenal—greater, so it is said, than at the International Exhibition—and nothing was more striking than the business-like and instructed way in which the majority of visitors carried out their inspection of the plants. For providing instruction in so pleasant a manner the Society and the exhibitors deserve the warmest thanks of all good horticulturists.

Coloured Supplement.—The subject of the Coloured Plate published with this issue is a new variety of the Collette Dahlia, an attractive section comprising many good garden plants. "Tuskar" has richly-coloured florets tipped with white, while the collette itself, a pale cream colour, gives the needed touch of variety and softness to the effect. The plant has a free habit, and grows to a height of three feet.

EXHIBITIONS OF RHODODENDRONS.—Messrs. JOHN WATERER, SONS AND CRISP announce that they are holding their Annual Exhibition of Rhododendrons and other plants in the Royal Horticultural Hall from Monday, May 25, to Friday, May 29. The exhibition will open on Monday at 2 p.m. Messrs. WATERER, SONS AND CRISP are also holding an exhibition of Rhododendrons and Alpine plants at the Royal Botanic Gardens, Regent's Park, N.W., for two or three weeks from June 8. The exhibition will be opened on that day by Her Highness the Duchess of TECK at 3 p.m.

PRESENTATION TO A GARDENER.—MR. JOHN POTTER, gardener to Sir WILLIAM MAXWELL, Bart., Cardoness, Kirkcudbrightshire, is leaving Cardoness. To mark the occasion his friends have made him presentations of two purses of sovereigns.

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.—The annual show of this agricultural society will be held at Swansea on May 28, 29, 30, and June 1 and 2. Besides exhibits of a purely agricultural character, there will be a section devoted to horticulture, and the gardening exhibits will be accommodated in a special pavilion.

DAMPING OFF.—The malady of damping off is, as is well known, due to the attack of the fungus *Pythium de Baryanum*, following on unfavourable conditions—excess of moisture and defect of light. That these are generally the causes is certain, for those who make a study of damping off know that in some years it is by no means easy to find the fungus even in boxes of seedlings which have been purposely subjected to adverse conditions, whence it is to be inferred that ill-treatment without the fungus is not enough to bring about the symptoms of the disease. Again, the symptoms familiar to most gardeners—a softening at the collar of the plant and a bending or falling over of the seedling—are sometimes observed even though the *Pythium* is absent. The reason appears to be that damping off may be caused not only by *Pythium*, but also by another fungus—a species of *Rhizoctonia*. Mr. J. JOHNSON, who is responsible for this observation (*Bulletin* No. 31, University of Wisconsin Agricultural Experimental Station), has observed the *Rhizoctonia* as well as the *Pythium* on seedlings of many different plants—Cress, Tobacco, Lettuce, Tomato, etc. By treatment with formalin 1 : 50 the soil to be used may be sterilised and the disease prevented. A cheaper means of effecting this purpose is steam sterilisation, which method has the further advantages of destroying weed seeds and insect pests, and in inducing a more vigorous growth of the seedlings.

"EXPLOSIVE FORCE" OF DECAYED IVY.—A report appears in the Press that the ARCHDEACON OF NOTTINGHAM, in his visitation address at Southwell, stated that when the "roots and tentacles" of the Ivy undergo decay they exercise a powerful explosive force. Inasmuch as the main point insisted upon—that Ivy is apt to damage masonry—is undoubtedly correct, it may seem unnecessary to point out that the foregoing statement appears to contain two fallacies. First, Ivy does not possess tentacles, and second, that the decaying roots do not exercise explosive force. The damage done by Ivy is to be ascribed not to the decaying, but to the living roots and stems. Like other plant tissues, those of the Ivy roots are capable of setting up enormous pressures—pressures of the order of 300 to 600 lbs. to the square inch—and it is pressures such as these exercised by the roots which penetrate into the masonry which set up cracks and do damage. This damage is, of course, rendered all the more certain by the condensation and accumulation of moisture due to the luxuriant mass of foliage. That the aerial roots of the Ivy serve not only as holdfasts but also as absorbing



COLLERETTE DAHLIA "TUSKAR"
(RAISED BY MESSRS. DOBBIE & CO.)

organs appears probable from the fact that even after the main stem is severed Ivy firmly attached to a wall may continue to live for some years. During this period it must obtain all the water and mineral substances which it uses from the water condensed on the walls. Hence there would appear to be some justification for Shakespeare's analogy:—

"The Ivy which hid my princely trunk,
And suck'd my verdure out on't."

The idea that plants possess tentacles seems very widespread among well educated people. We remember, for example, hearing a K.C. descant in court upon the dry-rot fungus, and describe in harrowing terms how the fungus spread wide its deadly tentacles, crushing the walls of houses in its cruel embrace.

THE HORTICULTURAL TRADES' ASSOCIATION.—At a dinner of the Horticultural Trades Association of Great Britain and Ireland, which took place on Tuesday last at the Hotel Windsor, Mr. W. CUTHBERTSON presided and Sir HARRY VEITCH was the principal guest. In the course of the evening Sir HARRY spoke of the nursery and seed trade during the past fifty years.

CEMETERY SUPERINTENDENTS' ASSOCIATION.—The First Annual Congress of the United Kingdom Association of Cemetery Superintendents will be held in London on July 15 and 16. On the first day five of the largest Metropolitan cemeteries will be visited, and in the evening a dinner and the annual meeting will be held at Anderton's Hotel, Fleet Street. On the second day, at the invitation of the President, the members will visit the City of London Cemetery and Crematorium at Ilford.

YORKSHIRE GALA.—The Grand Yorkshire Flower Show and Gala will be held on Wednesday, Thursday, and Friday, June 17, 18, and 19, in the Bootham Park, York. We are informed that the exhibition promises to be unusually successful. The collection of cactaceous plants which was formed at Cannes by the late Mrs. VYNER, and recently brought from there to England, will be exhibited by Mr. R. C. VYNER. Amongst them there are some very rare and unique specimens that were bought from the Abbé BENGUIN shortly before his death.

PRESENTATION OF A PORTRAIT OF LINNAEUS.—A framed portrait of LINNAEUS has been presented to the Herbarium of the Royal Botanic Gardens, Kew, by Sir ARTHUR CHURCH, K.C.V.O. It is a very good impression of an old French colour-print by P. M. ALIX after A. ROSLIN. The portrait is half-length, and represents LINNAEUS clad in wig and dark fawn-coloured coat and vest. Through the opening of the latter protrudes a delicate white frill, while on the left-hand side of the coat hangs the Order of the Polar Star, with a sprig of *Linnaea borealis* above it.

THE DISCOVERY OF OLD METHODS.—The complacency of the world is disturbed from time to time, but not for long, by the discovery that this or that contrivance or method which it thought was its most recent invention was known to the ancients. Only the other day elaborate steel surgical implements were found which show that the Greeks were deft and advanced surgeons. Dry farming has of recent years been rediscovered in several parts of the world. A system of manuring fruit trees by adding the manure to holes at some distance from the bole of the trees is now enjoying considerable prominence in the horticultural Press. How old is this method may be judged from the concluding passage in LINDLEY'S *Theory and Practice of Horticulture*, 2nd edition, 1855: "The Dutch, who are admirable gardeners, had in the Great Exhibition an instrument called 'earth borer,' for manuring fruit trees without digging the ground. A circle of holes is bored round the tree at 2 feet distance from the tree and a foot from each other. . . . They are 18 inches deep (where there is enough depth of soil) and slanting towards the centre; are filled with liquid manure, diluted more or less in dry

weather, and stronger as the weather is wetter." Truly, *tout passe, tout lasse, tout casse: et tout repasse.*

NURSERY STOCK IMPORTS, U.S.A.—The *National Nurseryman* publishes a list of the annual importations of nursery stock by the United States. They total 44 millions all told. Of fruit trees the total is about 4 millions, of which number France supplies about 3½ millions; of other countries Germany sends a mere 73,000, and England and Scotland some 6,000. Fruit tree stocks number 17 millions, of which France supplies no fewer than 16½ millions, Holland comes next with half a million, England a bad third with ¼ million, and Ireland with 65,000 beats Scotland, which can only spare 41,000. Of the 167,000 Grape vines which emigrate, 164,000 are of French descent. England and Scotland, however, beat the rest of the world in the matter of bush fruits, England's yearly parcel being 81,000 and Scotland's 75,000 out of a total of 200,000. With a courtesy which does credit to us and to her America buys the major part of her Roses from England—1,632,252 out of a total of some 2 millions. In the supply of Rose stocks England is also first with upwards of 2 millions, as against less than a million sent by France and about half a million by Scotland. Ireland sends of Roses 107,000, and of Rose stocks 470,000. In the year under review that island also sent two Grape vines and one forest tree. France occupies a position of amazing pre-eminence, with a grand total of 30 million plants exported each year, as compared with 2½ millions from England; Scotland ¾ million and Ireland not far short of that number.

BOTANICAL PROGRESS IN BRITISH COLUMBIA.—It is interesting to learn that botanical work in British Columbia is making rapid progress. A complete botanical survey is to be made, and a herbarium is being formed. In the past three years several thousand specimens have been obtained, some being new species. Specimens and information are supplied from the various neighbourhoods by local residents; or, if there are no such correspondents, exploration trips are made. The Surveyor-General, whose men are exploring new regions of British Columbia, allows them to collect material and data for the botanical survey. Last year the formation of a botanic garden and arboretum was begun, and over 1,500 native seed plants are to be cultivated. Already 500 species are established, and it is hoped that the collection will increase the interest of the public in the wealth and beauty of their native plants. It is expected that another botanic garden will be started this summer in connection with Stanley Park on the Pacific coast.

THIELAVIA ROOT-ROT OF VIOLETS.—In the course of an account of the diseases which affect Violets, Mr. D. REDDICK, Professor of Plant Pathology, Cornell University, describes in detail (*The American Florist*, March 28, 1914) the symptoms set up by *Thielavia basicola*, the fungus which causes root-rot. The disease, which was recognised in Europe 60 years ago, causes an arrest of growth of the leaves, which become dwarfed, wrinkled and yellow. The underground stems of affected plants are cracked and rough, brown or black lesions occur on the roots, sometimes girdling them completely. They may be recognised readily by their contrast with the whiteness of unaffected roots. Similar lesions may appear on the leaf petioles and runners. In its earliest stage the lesion appears as a small water-soaked spot, but as it increases the centre becomes whitish and the margin black. For the prevention of the spread of the disease Professor REDDICK recommends care in the selection of cuttings, advising that no plants which show the characteristic lesions should be used for propagation. He further recommends that the cuttings be struck in fresh sand, or if old sand—used previously for the purpose—be employed, sterilisation of the sand by means of formalin (1 pint to 12½ gallons of water). The solution

should be sprinkled over the cutting-beds at the rate of 1 gallon per square foot, and the bed covered with oilcloth for 12 hours. The covering should then be removed and the sand or soil stirred in order to facilitate the evaporation of the formalin. Soil in the houses should also be disinfected—if possible, by steam. As shown by Mr. CHITTENDEN, the disease is encouraged by careless and excessive watering.

THE FRENCH LAVENDER INDUSTRY.—According to the *Journal of the Royal Society of Arts*, May, 1914, the continuous rise in the price of Lavender essence has resulted in a considerable increase in the acreage devoted to the cultivation of this plant in the Marseilles district. The fact that barren soils, unproductive for other purposes, may be successfully utilised renders the industry particularly attractive to the farmers of Southern France. Thin rocky soils well exposed to the sun, situated at an altitude of 1,300 to 4,000 feet, are best adapted for the purpose. Experience shows that Lavender cultivated at altitudes of 3,000 feet produces the best essence. The flowers are gathered during August. In the Department of the Vaucluse, where about 10,000 acres are under cultivation, the gatherers receive about five shillings and eightpence per 100 kilogrammes (220 lb.), which represents somewhat less than one day's work. Immediately after the flowers have been gathered they are placed in a cylinder pierced with holes, which in turn is placed in a boiler, the diameter of which is only slightly greater than that of the cylinder. In the boiler is a tripod upon which the cylinder rests. Water is introduced to a level with the top of the tripod, and the steam therefrom passes into the cylinder containing the flowers and thence into a serpentine pipe, where it is condensed.

LIGULARIA SPECIOSA AND L. STENOCEPHALA.—Mr. A. PURPUS, Inspector of the Botanic Garden in Darmstadt, describes, in *Möllers Deutsche Gärten-Zeitung* (No. 14, 1914), two most promising plants which he has had the good fortune to raise from seed sent from Eastern Asia. They are *Ligularia speciosa* (Fisch. and Mey.), and *L. stenocarpa*. From the description it appears that both of these species are superior as garden plants to *Senecio (Ligularia) Wilsonianus*. The former is native of Manchuria, Korea and other Far Eastern regions; the latter occurs in Manchuria and Japan. Both are massive plants, bearing flower-stalks which reach a height of about 2 yards, and hence are only suitable for growing in masses in large gardens. *L. speciosa* is a most imposing plant; its leaves are large, dark-green, heart-shaped and long-stalked. The flower-stalk is green, somewhat hairy, and bears slender pyramids of deep-yellow flowers. *L. stenocarpa* has a similar habit, but its smooth leaves and flower peduncles are red-brown, and the latter taller and more slender than those of the other species, and its flowers are of a yet darker yellow. They do well in moist, well-manured ground, flower from the beginning of July until the middle of August, and are not susceptible to frost. The relation between *Ligularia* and *Senecio* is close, but good authorities hold that the genera should be maintained. This is the more to be desired in that there are already known *Senecio speciosus* (Willd.) from South Africa and *S. stenocephalus* (Boiss.) from the Caucasus.

PUBLICATIONS RECEIVED.—*My Garden in Summer*. By E. A. Bowles, M.A. (T. C. and E. C. Jack.) Price 5s.—*Makers of Modern Agriculture*. By W. Macdonald, D.Sc., London. (Macmillan and Co., Ltd.) Price 2s. 6d. net.—*Bulletin of Popular Information*. (Arnold Arboretum Harvard University, Jamaica Plain, Mass., U.S.A.) May 7, 1914. No. 53.—*Le Bon Jardinier*. (Librairie Agricole de la Maison Rustique, 26, Rue Jacob, Paris.) 150th edition.—*Journal of the Board of Agriculture*. May, 1914. Printed by J. Truscott and Son, Suffolk Lane, E.C. Price 4d.

ROYAL HORTICULTURAL SOCIETY

EXHIBITION AT CHELSEA,

May 19, 20 and 21.

THE show held on the above dates surpassed by common consent any previous exhibition arranged by the Royal Horticultural Society. The season appears to have been particularly favourable to most plants, and exhibitors and those responsible for the management of the show have had the benefit of two years' experience of the Chelsea site, with the result that the arrangement this year was a great improvement on that of

more effective, than those of the old style. The space also provides opportunity for the exhibition of features which are not strictly floral, but which add greatly to the beauty of the show; pergolas covered with climbing Roses, summer-houses with cunning little chairs which invite to repose, fountains with clear running water and wise maxims, and many other "garden delights."

At the Spring Exhibitions, Orchids have

Secretary, the Rev. W. Wilks; the Assistant Secretary, Mr. Gaskell; the Superintendent, Mr. S. T. Wright, and his assistant, Mr. Bisset; and also to the office staff, from Mr. Frank Reader downwards.

Orchids.

AWARDS.

FIRST-CLASS CERTIFICATE.

Miltonia J. Gurney Fowler (*vexillaria Memoria G. D. Owen* × parent unknown) from Messrs. ARMSTRONG AND BROWN, Tunbridge Wells. A very large flower of clear rose pink, with ruby-red mask to lip.

Miltonia The Baroness (*vexillaria Memoria G. D. Owen* × parent unknown), from Messrs. ARMSTRONG AND BROWN. A fine white flower, with dark crimson mask, changing to ruby-red.

Miltonia vexillaria Laelia Sander, from Messrs. SANDER AND SONS. A sterling novelty, the flower being florally perfect and new in colour. The ground colour is primrose yellow, the mask of the lip being purple, and a rose-purple flush showing at the bases of the petals.

Miltonia vexillaria Solum from Messrs. SANDER AND SONS. Flowers large bluish-rose, with white margin and very dark mask to the lip.

Miltonia Princess Victoria Alexandra, from Monsieur CHAS. VUYLSTEKE, Ghent. A charming white form, with dark plum-coloured mask.

Odontoglossum Queen Alexandrina (parentage unrecorded), from Messrs. CHARLESWORTH AND Co., Haywards Heath. A beautiful hybrid of the *O. illustrissimum* class. Flowers of deep claret colour, with white margins.

Laelio-Cattleya Medina Excelsior, from Messrs. FLORY AND BLACK, Orchid Nursery, Slough. A very handsome *Laelio-Cattleya* with the broad, flat petals of a good *C. labiata*, sepals white, front broad, dark ruby-red, with yellow lines at the base. (*L.-C. Canhamiana alba* × *C. Mrs. Myra Peeters*.)

Laelio-Cattleya Haroldiana Bronze King, from Messrs. STUART LOW, Bush Hill Park, and Jarvisbrook, Sussex. A fine form of the favourite hybrid of good shape. Sepals and petals bronzy-yellow, with a pale rose-shade; lip claret-purple.

Odontioda Bradshawiae Perfection, from Messrs. J. AND A. McBEAN, Cooksbridge. One of the best of *Odontiodas*, and far in advance of others of its class. Flowers large, bright scarlet with a mauve shade, the broad lip being lighter.

AWARD OF MERIT.

Brasso-Cattleya Shilliana (*C. Mossiae* × *B.-C. Digbyano-Mossiae*), from Messrs. ARMSTRONG AND BROWN. A charming flower nearest to *C. Mossiae* in shape, but with an amply-fringed lip. Flowers rose-pink, with yellow disc to the lip and some rose-coloured lines.

Odontoglossum Chantecler (parentage unrecorded), from Messrs. ARMSTRONG AND BROWN. Flower distinct in colour, orange-red with white margin, and white front to the lip.

Laelio-Cattleya Fascinator-Mossiae var. Purity, from Messrs. CHARLESWORTH AND Co. A true albino. Flowers white, with lemon-yellow disc to the lip.

Odontoglossum Dusky Monarch (parentage unrecorded), from Messrs. CHARLESWORTH AND Co. Flowers of fine shape and deep claret colour with a few white markings and margin.

Laelio-Cattleya Sunstar (*Andromeda* × *Myra*), from Messrs. CHARLESWORTH AND Co. A very fine yellow hybrid, larger than either of the parents.

Odontonia Roger Sander (*Miltonia Warszewiczii* × *Odontoglossum percultum*). A most floriferous hybrid, with upright spikes of mauve-



THE CHELSEA SHOW.

FIG. 154.—BRASSO-CATTELEYA SHILLIANA (*C. MOSSIAE* × *B.-C. DIGBYANO-MOSSIAE*).

(See Orchid Awards.)

last year and of the International Exhibition of 1912. The beauty and spaciousness of the Chelsea Hospital grounds, and the comfort and pleasure attending the exhibition, provide a satisfactory contrast to the conditions that were inseparable from the exhibitions held in the gardens of the Inner Temple. One marked result of the change of site has been a wonderfully rapid development in the outdoor exhibits, especially the rock garden. We may recall the old type of rock garden, introduced and faithfully copied year after year; a pool in the middle, stiff, regular banks, rising at the back to an uncomfortable-looking eminence crowned with unnatural Bamboos and showy, misplaced Rhododendrons. Now that the Chelsea site has provided so much scope for artistic effect, the rock gardens resemble "corners of the Alps"; much less pretentious, and, in consequence, far

always taken a prominent place, and the exhibits of these flowers were as grand as ever. They were massed at either end of the large tent, in a position in which they could be seen at a convenient distance.

The other exhibits were all so beautiful that it is difficult to know on which to bestow the highest praise, but the Roses, Rhododendrons, Carnations, Salpiglossis, Calceolarias, Fuchsias, Begonias, Japanese trees and shrubs, groups of stove plants, and masses of lovely foliage plants, were prominent features. The Floral Committee granted 15 awards to novelties, including one First-class Certificate and 14 Awards of Merit.

The weather was warm and bright, and it may be safely predicted that the attendance will constitute a record. For the admirable arrangements the thanks of all present are due to the

purple flowers two inches across. The broad labelum has a blush-white front.

Cattleya Magali Sander (*Dusseldorfei Undine* × *Mossiae Wageneri*), from Messrs. SANDER AND SONS. A pretty, pure white *Cattleya* with chrome yellow front to the lip.

Cymbidium Venus (*Holfordianum* × *insigne*), from Messrs. STUART LOW AND CO., Bush Hill Park. Flower of fine shape and substance, and indicating *C. grandiflorum* obtained through *Holfordianum*; white, with very small dark violet spots on the lip.

Miltonia Adonis (*Bleuana* × *M. G. D. Owen*), from Monsieur CHAS. VUYLSTEKE. Flower white, with deep maroon mask to the lip. A very pretty flower.

Odontioda Prince de Galles (*Od. Mirum* × *Oda. Vuylstekeae*), from Monsieur CHAS. VUYLSTEKE. The flower is of the *O. Coronation* class, blush white, handsomely blotched with red.

CULTURAL COMMENDATION.

To Sir JEREMIAH COLMAN, Bart. (gr. Mr. Collier), for *Odontioda Bradshawiae* Fire King with several spikes of bright scarlet flowers.

To Sir J. COLMAN, Bart., for *Dendrobium Lyonii* with five spikes of rose-coloured and white flowers.

To F. J. O. MONTAGU, Esq., Lynford Hall, Mundford (gr. Mr. E. Hill), for an immense specimen of the white *Cattleya intermedia alba* with 16 spikes, 55 flowers.

Orchid Groups.

The Orchids were arranged along the two ends of the large tent which gave such an expanse of colour at the International Show.

The proportionately narrow staging did not admit of their being arranged to the best advantage, but the skill of the exhibitors in grouping and breaking the line of their groups by carrying the taller plants upward in conical form went far to meet the difficulty. As usual at great shows there were many prominent exhibits of similar character, but as each group had a different setting the disadvantage of "sameness" was not apparent.

At the entrance of the Hospital end of the tent Messrs. CHARLESWORTH AND CO., Haywards Heath, had a fine group with a frontage of about 70 feet, the exhibits throughout being in splendid vigour and with finely-developed flowers. The middle consisted of a conical arrangement of scarlet *Odontiodas*, with white *Odontoglossum ardentissimum xanthotes*, *Odontioda Charlesworthii*, *O. Zephyr*, *O. Bradshawiae*, the very fine *O. Joan*, *O. Madeline* and *O. Patricia*. On each side at a lower level were the charming *Oncidium pulchellum*, *Vanda teres*, *Phalaenopsis Rimsteadiana* and *P. Stuartiana*, with interesting species, including *Cyrtopodium Andersonii*, *Oncidium monachicum metallicum*, some very fine *Cattleya Skinneri*, *Coelogyne pandurata*, etc. The end portions, made up in sections, were of *Laelio-Cattleyas* and *Brasso-Cattleyas*, the beautiful *L.-C. Fascinator* and *L.-C. Martinetii* showing well beneath the sprays of *Oncidium Marshallianum*. The new *Brasso-Cattleya Princess Elizabeth* was one of the best. Masses of *Miltonia vexillaria* and hybrids raised by Messrs. CHARLESWORTH followed, and the extreme ends were of *Odontoglossums* in every form of colouring known to the genus, arranged with scarlet *Renanthera Imschootiana*. Among the best novelties in the group were *Cattleya Mendelii* White Swan, a clear white of fine shape; *C. Mossiae* Queen Alexandra, a fine white-petalled form; *Odontoglossum crispum* Nell Gwynne, a model white form; *O. Dusky* Monarch, *O. Queen Alexandrina* and *O. l'Agillon* Princess Mary. For other fine Orchids in the group see Awards.

His Grace the Duke of MARLBOROUGH, Blenheim Palace, Woodstock (gr. Mr. Hunter), showed a very tastefully-arranged group, the highest points being of *Renanthera Imschootiana*, *Epidendrum radicans*, etc. At the ends *Cattleya Schröderae* and *C. Mendelii* were grouped in great variety, with white *Phalaenopsis*, brightly-coloured *Masdevallias*, and well-flowered *Cypripediums*. *Laelio-Cattleya Hyeana*, *L.-C. G. S. Ball*, a selection of *Dendrobiums*, including a number of the pure white *D. nobile virginale*, and some fine *Brasso-Cattleyas* were also included. *Dendrobium Dearei*, with its profusion of white flowers, was well shown, and a selection

of *Cypripediums*, *Odontoglossums*, and other showy Orchids were tastefully arranged.

MESSRS. SANDER AND SONS, St. Albans and Bruges, had a very extensive and remarkable group, replete with good things effectively arranged. The centre was a mass of soft rose and white colour given by the numerous home-raised specimens of *Miltonia vexillaria*. *M. Bleuana*, *M. Hyeana*, *M. vexillaria Solum*, *M. v. Laelia Sander* (see Awards), *M. v. Dreadnought* and *M. v. Our Princess* were novelties of great beauty and new colouring. On each side were *Laelio-Cattleyas* and *Brasso-Cattleyas*, the most prominent being a large number of *L.-C. Hyeana splendens* divided into two sections, the *Ruby Gem* class showing it as one of the darkest and brightest in colour, and *L.-C. Fascinator* in great variety of tint and good shape. Scarlet and scarlet and white *Odontiodas* were ar-

decorative plant (see Awards). The frontage of rose and white *Trichopilia suavis* and the pure white *T. Backhouseana*, with their large, fragrant blooms, two elevated masses of white *Phalaenopsis*, with bright red *Renanthera Imschootiana*, and the marvellous beauty of the *Miltonia vexillaria* crosses, were prominent features in the group. The variation in the large and beautiful flowers of the last-named was a source of great attraction, especially the primrose-yellow-tinted *M. vexillaria Laelia Sander*, quite a new departure in colour, and florally perfect in every respect. *M. v. Dreadnought* was a very large rose-coloured flower; *M. v. Our Princess*, white with light disc, and intermediate forms of all tints known to the genus, were present. A suggestion of future development was given by Messrs. SANDER'S new type, *Miltonia Isabel Sander* (*Roezlii* × *Hyeana*), a large, white flower with dark mask, some of the little seedlings now



THE CHELSEA SHOW.

FIG. 155.—HYBRID IRIS RAISED FROM A CROSS BETWEEN *I. CHRYSOGRAPHES* × *I. DOUGLASIANA*.

(See p. 364.)

ranged with white *Phalaenopsis*, and at the end masses of *Cattleya Schröderae*, the beautiful var. *Queen Empress*, which won the Davidson Cup, a superb flower, *C. Mendelii* and fine forms of *C. Mossiae* showed well beside the red *Renanthera Imschootiana*. Throughout the group the good quality of the hybrid *Odontoglossums* was noticeable, the size and shape of the blooms being of the best, and some unusual tints were displayed in some of the newer forms. *O. Albion* (*Rossii* × *percultum*) was a pretty novelty of a rare class. The attractive hybrids of *Miltonia Warszewiczii* raised by the firm, which have already secured awards, were present in pans of *Odontonia Laelia Sander*, *O. St. Alban*, *O. Magali Sander*, and others, together with the latest novelty, *O. Roger Sander* (*M. Warszewiczii* × *O. percultum*), a floriferous hybrid of good shape, and, like others of its class, an excellent

flowering being said to have a nearly black centre.

MESSRS. ARMSTRONG AND BROWN, Tunbridge Wells, completed the side with a very fine group, in which *Odontoglossums*, *Odontiodas*, *Laelio-Cattleyas*, *Brasso-Cattleyas*, *Miltonias*, and the other great classes flowering at this season were finely represented. White *Phalaenopsis*, *Coelogyne pandurata*, and hybrid *Cypripediums* drooped their graceful sprays over the group.

Brasso-Cattleyas were well displayed, the best novelties being *Brasso-Cattleya Shilliana* (*B.-C. Digbyano-Mossiae* × *C. Mossiae*), shown at the International as a small plant, and figured in the *Horticultural Record*, and *Brasso-Laelio-Cattleya Prince of Wales* (*B.-C. Digbyano-Mossiae* × *L.-C. Dominiana*), a charming flower. The best of a fine lot of crosses of *Miltonia vexillaria Memoria G. D. Owen* were the varieties

Miss Louisa Fowler, J. Gurney Fowler (see Awards), and The Baroness, large flowers with the characteristic showy mask to the lip. *M. Hycana* Orchidhurst variety was a beautiful and distinct flower. Of the batch of brilliant red *Odontiodas* the best were *O. Cooksoniae* Orchidhurst variety; three fine forms of *O. Coronation*, *O. Chantecleer* var. *Armstrongae* (a

and petals and ruby-tinted lip; *L.-C. Fascinator* Invincible, a magnificent plant; and varieties of *L.-C. callistoglossa*. Among the *Miltonias* were the true *M. vexillaria* Memoria G. D. Owen, *M. The Marquis*, with large flowers, having a dark mask to the lip, *M. Bleuana*, etc. Others noted were *Oncidium McBeanianum*, *Onciodia Cooksoniae*, some showy *Masdevallias*

showy *Odontiodas*, *L.-C. Dominiana* with white sepals and petals, and a pretty form of *L.-C. luminosa*. Among *Brassavola* crosses *Brasso-Laelio-Cattleya Hylas* (*B.-L. Digbyano-purpurata* × *C. Aclandiae*) was remarkable, and *Disa Luna* and a good selection of finely foliaged *Anoetochilus* gave a distinguishing character to the group. The gem of the collection was the new *Laelio-Cattleya Medina Excelsior*. (See Awards.)

Mr. C. F. WATERS, Balcombe, came next with a group of *Odontoglossum crispum*, *Cattleya Mossiae*, *C. Mendelii*, *C. Schröderae*, *Lycastes*, *Laelio-Cattleyas*, etc., a representative collection of Orchids for cut flowers and decorative purposes. The plants were finely bloomed, and in small pots.

Messrs. STUART LOW AND CO., Bush Hill Park, and Jarvisbrook, Sussex, completed the side with an extensive and well-arranged group of showy Orchids. Many fine forms of *Cattleya Mossiae*, *C. Mendelii*, and *C. Schröderae* were arranged with tall spikes of red *Renanthera* *Imshoohtiana* and white *Odontoglossums*, being very representative of the best decorative Orchids of the season.

Cymbidium Venus (*Holfordianum* × *insigne*) is a charming new hybrid with white flowers of fine shape, the lip having very small violet spots. *Laelio-Cattleya Haroldiana Bronze King* (see Awards) is certainly the most beautiful of this favourite hybrid, and the numerous *Dendrobiums* and other Orchids were well displayed.

Mr. HARRY DIXON, Spencer Park, Wandsworth, showed a group of *Miltonia vexillaria*. His *Cattleya Mossiae* included the bizarre variety *marmorata*. Of *C. Mendelii* one pretty blush form had a white lip. There were also a splendid form of *C. Trianae*, *C. intermedia alba*, and various *Laelio-Cattleyas* and *Odontoglossums*.

Messrs. J. CYPHER AND SONS, Cheltenham, had a very pretty ornamental arrangement of Orchids and foliage plants, in which well-flowered *Dendrobium Wardianum*, *D. Devonianum*, showy *Masdevallias*, *Odontoglossums*, *Cymbidiums*, *Laelio-Cattleyas*, *Calanthe veratrifolia*, and other good things were displayed.

OTHER NOVELTIES.

There were 65 novelties submitted to the Orchid Committee for award, and the best of those not already enumerated are *Brasso-Laelia Madame Irene Mavrocordato Brackenhurst* variety (*L. Iona nigrescens* × *B. Digbyana*); *Odontioda Fowleriana* (*Oda. Bradshawiae* × *Odm. percultum*), a fine flower with white ground heavily marked with dark purple and with light rose front to the lip; and *Oda. Rubens* (*Oda. Charlesworthii* × *Odm. eximium*), with cerise red



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FIG. 156.—LAELIO-CATTELEYA HAROLDIANA BRONZE KING. (See Orchid Awards.)

deep scarlet of good shape); *O. beechense* (*O. Rolfeae* × *C. Noezliana*), and *O. The Baron*. Among the *Odontoglossums*, *O. hylandianum*, *O. Queen Mary*, *O. Chantecleer* and *O. King Emperor* were distinct hybrids of great beauty, the parentages of which are unknown; *O. Aglaon Sandhurst*, a variety richly blotched; and *O. harvengtense* Orchidhurst variety, an excellent yellow-ground hybrid of good shape. Some pretty *Cypripediums*, including a beautiful cross between *C. Fairrianum* and *C. glaucophyllum* and a fine lot of seedling *Odontoglossums*, were included.

Messrs. MANSELL AND HATCHER, Rawdon, Yorkshire, had a fine and artistically-arranged group, the centre of long, white sprays of *Phalaenopsis Rimestadiana* overhanging bright-red *Renanthera Imshoohtiana* being one of the best effects in the show. A good selection of *Odontoglossums*, *Miltonias*, *Odontiodas*, *Laelio-Cattleyas*, etc., occupied each side, and the ends were furnished with a large selection of good *Cattleya Mossiae* and *C. Mendelii*, varying considerably in colour, some pretty *Cypripediums*, an interesting selection of *Dendrobiums*, and some uncommon species now seldom seen in show groups.

Messrs. J. AND A. McBEAN, Cooksbridge, had a very fine group, containing a large proportion of plants of extraordinary merit, and especially rich in brightly-coloured *Odontiodas*, including *O. Bradshawiae* Perfection, a great beauty, fine forms of *O. Charlesworthii*, *O. Lambeanum*, *O. Bradshawiae*, *O. Keighleyensis*, *O. Diana*, *O. Enterpe*, and *O. Vuylstekeae* of the newer dark-coloured strain. The *Odontoglossums* comprised some of the best white forms of *O. crispum* and spotted forms, both imported and home-raised, good *O. illustrissimum*, *O. ardentissimum*, *O. Gladys*, *O. Phoebe* and some pretty new seedlings. The *Cattleyas* were very fine, one good *C. Mossiae* bearing 27 flowers. *C. M. Anak* was very large and beautiful in form; *C. M. aureola* had an almost entirely yellow lip. A good *C. Mendelii*, the white *C. Susannae* Hye de Crom, the albino *C. Skinneri*, and other white *Cattleyas* were also noted. Among the *Laelio-Cattleyas* the best were several *L.-C. Helius* (*G. S. Ball* × *Mossiae* *Wageneri*), with clear yellow sepals

and *Dendrobiums*. The *Cattleyas* were remarkable for their enormous pseudo-bulbs and fine flowers. All were examples of the results of good culture.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. Collier), showed a beautiful group of the brightly-coloured *Odontiodas* raised at Gatton, some of the plants having five or six spikes of scarlet flowers. Over these were hybrids of *Odontoglossum Edwardii*, and among other beautiful *Odontoglossums* was the handsome *O. crispum* *Pride of Gatton*.

Messrs. FLORY AND BLACK, Orchid Nursery,



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FIG. 157.—ODONTIODA BRADSHAWIAE PERFECTION. (See Orchid Awards.)

Slough, staged an excellent group of hybrids. At the back were *Odontoglossums*, above *Miltonia vexillaria*, *M. Hycana*, and *M. Bleuana*. In front were some good spotted *Odontoglossums*, one blotched *O. crispum* being spotted with dark chocolate-purple. Specially noteworthy were the forms of *Cattleya Mendelii* and *C. Mossiae*, some

flowers. These three from J. GURNEY FOWLER, Esq.

Miltonia vexillaria alba with large pure white flowers, the best large white yet shown, from W. R. LEE, Esq., Plumpton Hall, Heywood.

Miltonia vexillaria alba, from Monsieur Jules Hye de Crom.

Odontoglossum eximium Boltonii, from J. J. BOLTON, Esq., Pendleton, Manchester. A large flower finely blotched.

Miltonia vexillaria Woburn, a large bright rose-pink; and *M. v. leucoglossa*, from ERNEST MOCART, Esq., Woburn Place, Addlestone, Surrey (gr. Mr. Stevenson).

Odontioda Queen Mary Westonbirt variety, from Lieut.-Colonel Sir Geo. L. HOLFORD, K.C.V.O. (gr. Mr. H. G. Alexander). A splendidly-flowered plant, bearing a fine spike of large red flowers, with white spaces between the blotches.

Cypripedium bellatulum R. Ashworth from RICHARD ASHWORTH, Esq., cream-white with vinous red blotches and flush.

Stove Plants.

Messrs. J. VEITCH AND SONS, Chelsea, exhibited four large groups of stove and greenhouse ornamental foliage and flowering plants in the large tent. Two of the groups were composed solely of splendidly-grown *Caladiums*, which bore large, highly-coloured leaves. Very rich colour was supplied by the varieties *Madame E. Pynaert*, *Louis van Houtte* and *Emperor Alexander III.*, whilst the best of the lighter-coloured sorts which have more transparent leaves was a splendid plant of *Rose Laing*. In the other two groups there were miscellaneous collections of the high-class plants which are associated with Messrs. VEITCH. Brilliant foliage colour was supplied by single-stemmed *Codiaeums* (*Crotons*), *Ananassa sativa variegata*, *Bertolonia Comte de Kerchove*, and *Dracaenas*, whilst the flowers of the *Crozy Cannas*, of *Kalanchoë flammea*, and the spathes of *Anthuriums* were of tropical brilliance. On tall pillars and draped with sprays of *Asparagus Sprengeri*, the pitchers of *Nepenthes Curtissii superba* and of *N. Mastersiana* excited the interest and admiration of the visitors.

Messrs. JOHN PEED AND SONS, West Norwood, contributed a magnificent collection of *Caladiums*. The many plants were perfect specimens and displayed an almost bewildering variety of colours. A large plant of *Triomphe de Comte* glowed with warm red colouring. The large leaves of *Silver Queen* were of such transparent texture and contained so little green colouring that one wondered how they continued so healthy and flourishing. *King George* is another fascinating variety which bears crumpled leaves of scarlet and green.

Messrs. J. CYPHER AND SONS, Cheltenham, arranged a charming group in the style we have become accustomed to see at the Shrewsbury Show, but at Chelsea we were able to admire it from all sides instead of merely from the front. A light arch spanned the group and supported a spreading *Palm*, yellow-leaved *Crotons*, *Anthuriums* and *Asparagus*. The dominant feature of the plants on the grass was the rich colour of the *Ixoras*, and of *Metrosideres floribunda*. At the corners were circular little groups of such plants as *Erica Cavendishiana*, *E. ventricosa* *magnifica* and *Ixora Williamsii*.

Roses.

Messrs. W. PAUL AND SON, Waltham Cross, showed *Roses* even better in quality than at the Spring Rose Show. As at Vincent Square the tall pillars bore wonderful displays of beautiful blooms. Of these the very finest were *Sodenia*, *Tausendschön*, *White Tausendschön*, *Delight* and *Hiawatha*. The dwarf *Roses* included magnificent plants of *Frau Karl Druschki*, Mrs. John Laing, *General MacArthur*, *Dr. William Gordon* and *D. R. Williamson*, each bearing over a dozen blooms, and smaller, but equally vigorous, examples of *Magnolia*, *Souv. de Gustave Prat*, *Viscountess Enfield*, *Margaret* and *Ulrich Brunner*.

Although Messrs. WM. CUTBUSH AND SON, Highgate, employed only cluster *Roses* in their exhibit, they made an exceedingly charming display. A moss-covered basket, raised 7 feet high, and filled with long, graceful sprays of *Dorothy Perkins*, was poised just above the tall pillars of *Crimson Rambler* which alternated with the pink variety, *Mrs. F. W. Flight*. Other varieties used with good effect were *Ellen Poulsen*, *Joan of Arc*, *Mrs. Cutbush* and *Jessie*.

Messrs. HOBBIES, LTD., Dereham, divided their exhibit of *Roses*, and made as the central feature

of each group a dainty little pergola completely covered with such *Roses* as *Dorothy Perkins* and *Lady Godiva*. Outside the pergolas there were large rustic baskets filled with *Polyantha Roses* and vases of exhibition sorts. Of the latter were *Souv. de Gustave Prat*, *Lady Pirrie*, *Marquis de Sinety* and *Countess of Shaftesbury*.

Messrs. PAUL AND SON, Cheshunt, had a wealth of bloom in their group of *Roses*. The customary tall pillars of *Minnehaha*, *Excelsa*, *Dorothy Perkins* and *Ethel* were placed gracefully above a large variety of well-grown dwarf *Roses*, chief of which were *Gustave Grunerwald*, *Edward Rawley*, *Rayon d'Or*, *Ulrich Brunner*, *Cherry Ripe*, *Lady Hillingdon* and *Hugh Dickson*. Adjoining the *Roses* Messrs. PAUL arranged a very bright collection of hybrid *Rhododendrons*.

The group, principally composed of *Wichuraiana* hybrids, arranged by Mr. CHARLES TURNER, Slough, was graceful and attractive. In addition to the usual tall pillars of *Dorothy Perkins*, *Minnehaha* and *Hiawatha* there were weeping standards of *Farquhar* and *Ethel*, and a few standard *Tea Roses*.

Mr. GEORGE PRINCE, Oxford, arranged a group of *Roses* which was especially rich in the massed

and Mrs. Wemyss Quin (yellow) were presented for Award.

Messrs. R. J. BARNES AND SON, Malvern, exhibited the fine climbing *Rose American Pillar* as a background to specimen blooms in vases, the most conspicuous variety being *Rayon d'Or*, one of the best of all yellow *Roses*.

Messrs. B. R. CANT AND SONS, Colchester, staged, on a table, a superb exhibit of *Roses*, the varieties of all types being splendid. At the back were pillar varieties, with flowers falling as though in cascades or hanging in festoons and bunches, *Minnehaha*, *Goldfinch*, *Lady Gay*, *Blush Rambler*, *White Dorothy* being especially good. *Bamboo epergnes* filled with specimen blooms of *Liberty*, *Lady Reay*, *Anna Olivier*, *Hugh Dickson*, *Mme. Edouard Herriot*, *St. Helena*, *Richmond* and *Mrs. John Laing* were equally as attractive as the climbers.

Messrs. FRANK CANT AND CO., Colchester, were the exhibitors of *Roses* in great numbers and variety. Their standard-trained plants of such varieties as *Delight*, *Jessie*, *White Dorothy*, *Orleans Rose*, *Dorothy Dennison* and others were especially attractive. The ground of the exhibit was comprised of a wealth of most of the popular varieties in cultivation. We noticed



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FIG. 158.—PRIMULA SECUNDIFLORA.

(See Floral Committee's Awards, p. 364.)

pillars of *Excelsa*, *Dorothy Perkins*, *Lady Godiva*, and *American Pillar*. This profusion of graceful trusses towered above the groundwork of *Mrs. Cutbush*, *Erna Teschendorf*, and such *Teas* and *H.T.* varieties as *Sunburst*, *Richmond*, and *Duchess of Shaftesbury*.

Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, had a small group of *Roses* near their exhibit of greenhouse shrubs. The predominant feature was a vase of highly-coloured *Mme. Edouard Herriot*, next to vases of *Mrs. John Shawyer* and *Frau Karl Druschki*.

Messrs. GEORGE MOUNT AND SONS, Canterbury, covered the back of their tent space with magnificent clusters of bright red and deep pink *Roses*. The tall plants of *Excelsa*, *Hiawatha* and *Dorothy Perkins* provided an extraordinary amount of bloom, and formed a splendid foil to the dwarf masses of *Sunburst*, *Gustave Grunerwald*, *Richmond*, *General MacArthur*, *Ulrich Brunner* and a host of equally beautiful and desirable varieties; whilst at each end there were pillars of *Minnehaha* and *Crimson Rambler*.

Messrs. ALEX. DICKSON AND SONS, LTD., Newtownards, Co. Down, exhibited *Roses*, mostly novelties. The new varieties *Killarney*, *Brilliant* (rose-pink), *Christie Mackellar* (apricot-salmon),

amongst these the beautiful *Mrs. J. H. Welch* (bright rose), *J. J. L. Mock*, *Edward Mawley*, *Viscountess Enfield*, *Mrs. H. Stevens*, *Duchess of Wellington*, *Geo. Dickson*, *Mrs. Muir MacKean*, *Richmond*, *Redhatte* (a beautiful single bedding variety), *Melody*, *Mrs. Foley Hobbs* and *Lady Ursula*.

Mr. ELISHA J. HICKS, Hurst, Berkshire, showed a group containing the new *H.T.* *Mrs. Edward Alford*; the flower is pink, and it was the feature of the stand. There were also choice blooms of *Richmond*, *Lady Hillingdon*, *Sunburst*, *Mrs. Geo. Shawyer* and *Mrs. Chas. Reid*.

Messrs. G. AND W. H. BURCH, Peterborough, also showed *Roses* in variety.

Carnations.

Mr. C. ENGELMANN, Saffron Walden, set up tall stands filled with fragrant *Carnations*, and also draped the back and end of his tent space with fine blooms. The large vase of the orange-buff *Electra* just behind a dozen splendid blooms of *Scarlet Carola* and flanked by *Snow-storm*, provided a centre to the group. The tall stands contained *Enchantress*, *Sunstar*, *Queen Alexandra* and *Scarlet Glow*. Amongst the front row varieties *Rose-pink Enchantress*, *Harlequin*,

Rose Dorée, and a seedling were especially prominent.

Messrs. ALLWOOD BROS., Haywards Heath, covered a tall centre-piece with an enviable profusion of the deliciously-scented Carnation Mary Allwood. This, crowned with a perfect specimen of Phoenix Roeblinii, below which hung vases of especially good May Day Carnations, was very delightful. Other varieties which evidenced equally skilful culture were Carola, in intense colour; Wivelsfield White, in unusually good form and purity; and Baroness de Brien.

Messrs. YOUNG AND Co., Hatherley, Cheltenham,

a very elegant group of cut Carnations, in which the perpetual-flowering Malmaison hybrids were the chief feature, but there were also many vases of delightful blooms of Carola, May Day, Pink Enchantress and Mary Allwood in this very artistic display.

Mr. JAMES DOUGLAS, Edenside, Great Bockham, staged Auriculas and border Carnations. This splendid exhibit was representative of the best varieties of these florists' flowers. Of Carnations we remarked Hercules (Clove), Renown, Rosy Morn (rose), Kate Nickleby (white), Jean Douglas (scarlet) and Mrs. Robt. Gordon (pink).

hibited by Mr. E. J. WOOTTEN, Eastleigh, Hampshire, and Mr. H. BURNETT, Guernsey.

Begonias.

Messrs. BLACKMORE AND LANGDON, Bath, brought magnificent double-flowered tuberous Begonias. All the plants were models of cultural skill, and bore huge round blooms of Camellia-like proportions, but without exhibiting the slightest trace of coarseness. The range of colours was very great, but perhaps the most noteworthy shades were the rich golden and orange yellows and the deep crimson. A series of Begonias of pendulous habit placed on stands added grace and lightness to this splendid exhibit.

Messrs. T. S. WARE, LTD., Feltham, showed superb Begonias of the tuberous-rooted section. In the front was a bank of the fine King George V. variety, the plants having up to a dozen beautiful orange-salmon coloured flowers, with crimped petals. Other varieties that were specially notable were Lady Cromer, Lady Sarah Wilson, soft salmon blush; Thomas Rooney, white; and Lady Gladstone, yellow.

Mr. A. LL. GWILLIM, Sidcup, Kent, exhibited a group in which the wide range of beautiful colours, the large imposing flowers, and the general fine quality of the plants stamped the exhibit as one of much excellence.

Pelargoniums.

The dazzling brilliancy of the bedding Pelargoniums arranged in a circular group by Messrs. H. J. JONES, LTD., Rycroft, Lewisham, overpowered several of the other exhibits, and made them appear almost dowdy. Particularly noteworthy were Pink Pearl, a variety which will undoubtedly be as popular a pink as Paul Crampel is amongst the scarlets, and a white seedling. Many of the plants shown were in three-inch pots, and each of them bore trusses fully six inches across, whilst the larger plants were proportionately floriferous.

Messrs. GODFREY AND SON, Exmouth, Devon, showed a splendid collection of fancy, show and scented Pelargoniums. The show and fancy varieties were of very sturdy habits, and bore large trusses of rich blooms.

Mr. PHILIP LADDS, Swanley Junction, displayed bedding Pelargoniums in a "flower bed" which was edged with Ageratum and lightened by pyramid Fuchsias. The varieties Elsie Ladds, Captain Flayelle, and Maxime Kovaleski were of superior merit to some of those used for summer bedding.

Messrs. H. CANNELL AND SONS, Eynsford, exhibited plants of show and bunches of Zonal Pelargoniums; also pyramidal plants of blue, white, and pink Myosotis, charming little specimens in pots.

Varieties of Zonal Pelargoniums were displayed by Mr. VINCENT SLADE, Taunton.

Uncommonly well-flowered Pelargoniums of the show and Regal types were exhibited by A. P. BRANDT, Esq., Bletchingley Castle, Surrey (gr. Mr. J. W. Burks). This exhibitor also showed a fine strain of Streptocarpus.

Mr. A. H. COLE, Swanley, Kent, showed fancy Pelargoniums and a good strain of greenhouse Calceolarias with the yellow-flowered C. Clibranii at the back.

Sweet Peas.

Messrs. DOBBIE AND Co., Edinburgh and Marks Tey, exhibited thirty-six varieties of Sweet Peas, the blooms being the finest in the show. The long, stout stems bore three and four large, fresh flowers of clear colours. The chief of the pink-flowered varieties were Frilled Pink (see fig. 159), Duchess of Portland, Norma, Audrey Crier and Doris Usher; of the whites Elsie Herbert, King White and Etta Dyke were especially pure; whilst of the blush-whites Elsie Herbert was the very best. Amongst the darker shades of colour Dobbie's Orange and Dobbie's Scarlet were very prominent.

Messrs. SUTTON AND SONS showed a representative collection adjoining their exhibit of vegetables. Edrom Beauty, Royal Rose, Barbara, Orange Perfection, Thos. Stevenson and Doris Usher are a few of the more noticeable varieties.

Messrs. E. W. KING AND Co., Coggeshall, Essex, showed a dainty exhibit. A gallery at the back was furnished with big



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FIG. 159.—SWEET PEA FRILLED PINK, ONE OF THE BEST OF THE NEWER VARIETIES.

ham, also exhibited a collection of well-grown Carnations. The centre stand of Mikado and Cecilia was a daring experiment in colour combination, but it was not unpleasing. The body of the group was composed chiefly of tall stands of such varieties as Hon. Lady Neeld, Rose Enchantress, May Day, Scarlet Glow and Carola.

Mr. A. F. DUTTON, Iver, Bucks, showed many fresh and good Carnations in vases. The principal varieties were Winsor, Mrs. C. F. Raphael, Chelsea (a new variety in which the white ground is striped with pink), Triumph and Mikado.

Messrs. WM. CUTBUSH AND SON, Highgate, had

Messrs. STUART LOW AND Co., Enfield, showed baskets of blooms suspended overhead. The varieties Mrs. C. F. Raphael, cherry red; Baroness de Brien; Salmon King and Satin Robe are a selection. In the large tent Messrs. STUART LOW AND Co. exhibited a circular group of pot plants, chiefly of the hybrid perpetual and Malmaison varieties.

Mr. BERTIE E. BELL, Castle Nursery, Guernsey, showed varieties of perpetual-flowering Carnations. A seedling of darker pink colour than Empire Day is a very promising variety.

Perpetual-flowering Carnations were also ex-

epergnes of the varieties James' Box, Kathleen, R. F. Felton and Inspector. Other varieties shown well were Anglican, Royalty (new, maroon), Lavender Geo. Herbert, Morning Mist (new, faint crimson blush), Anglican Brilliant (rose) and Anglican Orange.

ROBERT SYDENHAM, LTD., Birmingham, showed the beautiful orange-coloured variety Robert Sydenham, and there were also good vases of Rosabelle, Princess Mary (pale blue), Edrom Beauty and other varieties.

Mr. J. STEVENSON, Wimborne, showed a selection of most of the best varieties in cultivation.

Messrs. R. H. BATH, LTD., Wisbech, showed a small but choice collection. The vases of Thos. Stevenson, Glow, Agricola and Florence Wright Spencer attracted special notice.

Mr. J. D. WEBSTER, Chichester, exhibited Sweet Peas, Carnations and Spanish Irises.

Messrs. S. BIDE AND SONS, Farnham, made a dainty exhibit; the vases were staged on a white ground beneath a canopy of white drapery. Their novelty, Phyllis Bide (orange-salmon), was afforded a conspicuous place in the collection.

Sweet Peas were also exhibited by Mr. JAMES AGATE, Havant.

Tulips.

Fifteen collections of May-flowering Tulips were shown. The Darwins predominated, and the various collections naturally showed a great deal of duplication. Distinction was found mainly in tasteful arrangement as in the case of Messrs. SUTTON, in novelty of arrangement as in the design of Messrs. DICKSON AND ROBINSON, or in quality of blooms.

Messrs. SUTTON AND SONS, Reading, showed tastefully against black velvet a small collection of the best sorts. The blooms were of specially fine quality. Plutarch, Mahony, Turenne, Dom Pedro and other Breeders were notable for their large size.

Messrs. R. AND G. CUTHBERT, Southgate, N., had some very fine flowers, among which Le Petit Blondin, Ouida, Giant, Duchess of Westminster, and King Harold stood out well among the Darwins.

Messrs. HOGG AND ROBERTSON, LTD., Dublin, gave character to their group by their fine Cottage varieties. Queen Alexandra is a Darwin-shaped yellow, shaded outside lightly with bronze when young. Doris is one of a little group remarkable for its art shades of rose on yellow.

Messrs. A. DICKSON AND SON, Newtownards, showed one of the largest, and at the same time choicest, collections, using small pails to hold the very large bunches by which most of the varieties were represented. The varieties Clara Butt, Melicette, Sophrosyne, Chameleon, and Princess Juliana were notably good.

Mr. A. DAWKINS, King's Road, Chelsea, staged a useful collection of Darwins, including the varieties Duchess of Westminster and Purple Perfection.

Mr. C. BOURNE, Simpson, Bletchley, staged prettily against a grey background a number of good sorts. We were especially impressed by Louis XIV. and Zulu, whilst Inglescombe Yellow and Velvet King stood out well.

Mr. W. A. WATTS, St. Asaph, showed some good flowers, but the arrangement of tall columns much overtopping the baize background was unsatisfactory. The varieties Dal Ongaro, Ellen Willmott, Clara Butt and Gustave Dore were noted as good.

Messrs. R. WALLACE AND Co., Colchester, arranged a large group in a scheme of soft shades, including Inglescombe Yellow, Massenet Lantern, Beauty of Bath and Boadicea, with a touch of purple from the self-coloured Fashion.

Messrs. WATERER, SONS AND CRISP, LTD., also staged a collection on tabling. The varieties La Tulipe Noire, Marconi, King Harold, Duke of Edinburgh and Turenne were well shown.

Messrs. DICKSON AND ROBINSON, Manchester, carried out a scheme of planting in formal beds of varying shape on the ground. Thus, Rawenboff and Whistler in one bed were used over Veronica diosmifolia, La Tristesse was over Phlox canadensis, Jaune d'Oeuf over pink Thrift, and Gesneriana spathulata was mixed with Columbines. The experiment was worth trying, but on the whole the combinations were rather disappointing in such small plots.

Messrs. DOBBIE AND Co., Marks Tey, staged a large batch of good flowers. Bartigon, La

Tulipe Noire, Rev. H. Ewhank, Walter T. Ware and some specially fine blooms of Inglescombe Yellow were conspicuous.

Messrs. R. H. BATH, LTD., Wisbech, had two square-based pyramids on the ground in the big tent, edged with Violas and brightened by the clear blues of Scillas. The fine variety Clara Butt formed a pleasing centrepiece, and Louis XIV., Edmée and Salmon King were also good. Many of the blooms, however, were on the small side.

Messrs. BARR AND SONS, Covent Garden, showed one of the richest and most effective collections, arranged in two large square plots. They included the best collection of Breeders and the only Florists' varieties. Rose Hill (crimson-rose) and Music (purple) were espe-

cially good. No matter whether the plants were dwarf bushes or tall, clean-stemmed standards, all were covered with deliciously-fragrant blooms. The range of colour was surprisingly great—rich warm pinks, orange and orange-scarlets, and the pale blush pinks, as well as pure white, all provided a wealth of rich colouring and fragrance.

Messrs. WATERER, SON AND CRISP, LTD., Liverpool Street, London, exhibited three beds of gorgeous Rhododendrons. In one a large breadth of the popular variety Pink Pearl attracted attention, and enhanced the rich reds of Doncaster, Charlie Waterer, and Frederick Waterer. In the opposite bed the new variety, Alice, similar to Pink Pearl, but of a deeper pink and slightly smaller trusses, glowed with



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FIG. 160.—CAMPANULA TOMENTOSA MAUD LANDALE.

cially good. Of the Darwins we were struck by the beauty of Sophrosyne and Ronald Gunn.

Messrs. CARTWRIGHT AND GOODWIN, LTD., Kidderminster, designed a pleasing arrangement on the ground with a central pyramid leading to lesser domes of flowers at the corners of the group. The deep mahogany-coloured André Doria, Baronne de la Tonnaye and Suzon were notably good.

Messrs. JEFFERIES AND SON, LTD., Cirencester, showed Geefs, Ouida, Blue Bird, Ant. Roozen and other good Darwins on the floor of the big tent.

Rhododendrons and Azaleas.

Messrs. R. AND G. CUTHBERT, Southgate, massed Ghent Azaleas in a charming profusion

warm colouring, and was a delightful foil to such pale sorts as Gomer Waterer, Delicatissimum, and Lady Clementina Walsh. In corners of the beds batches of Corona, a charming coral red variety, were particularly charming.

Mr. G. REUTHE, Keston, Kent, included several uncommon Rhododendrons in his groups of hardy plants. The chief Rhododendrons were R. Falconeri, bearing large trusses of delicate flowers, R. Roylei, with almost cinnamon yellow blooms, R. Dalhousei, and R. Thomsonii. Other notable items were vases of Magnolia Watsonii, and of Anopterus glandulosus.

Messrs. FLETCHER BROS., Chertsey, Surrey, showed groups of well-grown Rhododendrons, of which Mrs. John Waterer, Prometheus, Kate Waterer, and W. E. Gladstone amongst the

dwarf bushes were especially noteworthy. The standards of Pink Pearl, Cynthia, Lady Grey, Egerton and other sorts, were also of more than ordinary quality.

Although the popularity of trained plants has waned in this country, the excellent examples of *Azalea indica* and varieties shown by Mr. CHARLES TURNER attracted a great deal of admiration, and revived old memories.

Messrs. J. VEITCH AND SONS filled a circular space with dwarf and standard Azaleas. This exhibit was noteworthy for the mass of colour; but the *Azalea indica* varieties are not suitable plants for the style of arrangement adopted.

Messrs. VEITCH also had an imposing group of hardy flowering shrubs. Hybrid Rhododendrons, Ghent Azaleas and Clematis predominated; and of the first-named the bushes of Pink Pearl bore very large trusses of rich colour.

Flowering Shrubs.

Messrs. J. PIPER AND SONS, Bishops Road, Bayswater, used the space around the Obelisk and its base for a floral display. Around the lower portion of the plinth they massed panels of *Azalea amoena* with cornices of *Acer negundo* variegata, whilst on a platform around the base were displayed a large number of miniature

were many colour varieties and a double-flowered form.

Brooms in a great variety were the outstanding feature of the group of shrubs displayed by Mr. R. C. NOTCUTT, Woodbridge. Amongst these *Cytisus purpureus incarnatus*, *C. Butterfly*, *C. Daisy Hill*, *C. Beanii*, and *C. purpureus alba* were very beautiful.

Near to their beautiful Rose exhibit Messrs. WM. CUTRUSH AND SON had an equally admirable group of hardy flowering shrubs. Here Hydrangeas were the dominant feature, and they harmonised well with the secondary batches of Pink Pearl Rhododendrons, of *Cytisus Andreanus*, and the Mollis Azaleas.

Messrs. W. PAUL AND SON, Waltham Cross, included several little groups of *Pyrus angustifolia* fl. pl., a variety which bears large and very fragrant flowers, in their exhibit of hardy flowering shrubs. *Jasminum revolutum*, *Cistus purpureus*, *Rubus deliciosus*, various Rhododendrons, and Clematises in an interesting collection of shrubs.

Mr. CHAS. TURNER, Slough, showed exceptionally fine bushes of Lilacs, chiefly of such double-flowered sorts as Charles Sargent, Mme. Casimir Périer, Mme. Lemoine and Charles Joly.

Mr. L. R. RUSSELL, Richmond, exhibited a

palmatifidum represented the section with finely-divided leaves.

The DONALD NURSERY Co., Newcastle, County Down, Ireland, had splendid bushes of the red-flowered *Leptospermum bullatum Nichollii* and the pink variety *Chapmanii* in their group of uncommon trees and shrubs. Other valuable species were *Tricuspidaria lanceolata*, *Enkianthus cernuus*, *Pittosporum Tobira variegata*, *Olearia Gunnii* and *Myrtus bullata*.

Mr. C. W. CHANTLER, St. Mary Cray, Kent, showed Conifers, Ghent Azaleas, and other hardy shrubs.

Messrs. W. AND J. BROWN, Peterborough, displayed a large group of Lilac bushes bearing large trusses of fragrant flower. A new Heliotrope, named The Speaker, was included in the exhibit.

Ferns.

Messrs. H. B. MAY AND SONS, Upper Edmonton, exhibited magnificent stove and greenhouse Ferns in a great variety. A dozen or more perfect plants of *Nephrolepis Willmottae*, each as dense as woodland moss and of fascinating pale green colour, relieved by graceful little pillars of the "Climbing Fern" (*Lygodium japonicum*), formed a charming feature.

Towards the other end of this monster collection, a magnificent specimen of *Davallia solida* superba was equally delightful in richer, darker green. Colour is not usually associated with Ferns; one's mental impression of these plants is that of fronds of cool graceful green in a great variety of form, but Messrs. MAY always introduce bright colour—much brighter than would be expected—in their exhibits. *Gymnogrammas* of gold and silver hue, the reddish-purple young fronds of *Osmunda palustris*, *Adiantum Veitchii* and *A. macrophyllum* were very bright and attractive; whilst bronzy-red was supplied by the graceful trails of *Selaginella caesia* and the erect, fertile fronds of such *Osmundas* as *regalis purpurascens* and *japonica furcans*.

Messrs. J. HILL AND SON, Lower Edmonton, exhibited a large bank of stove and greenhouse Ferns, arranged with great skill and taste. Tall tree Ferns (*Cyathea dealbata* and *Hemitelia Smithii*) spread their long, graceful fronds over the dwarfier species. Of these latter *Gymnogramma elegantissima*, *Polypodium Mandianum*, *Davallia fijiensis elegans*, *Gleichenia rupestris glaucescens* and *Microlepia hirta cristata* were shown as large and exceedingly well-grown plants, which were characterised by healthy green fronds.

Mr. AMOS PERRY, Enfield, arranged in the Lime avenue the only representative collection of hardy Ferns in the show. Some of the plants were specially fine specimens, and among those particularly admired we noted the forms of *Polystichum angulare* named *decompositum*, *longipinnatum* and *grande*; and *Athyrium filix femina todeoides* and *plumosum axminsterense*. An effective touch was given to the whole by the bolder clumps of foliage provided by *Funkias* in the foreground.

Hardy Flowering Plants.

More than fifty exhibits of herbaceous and Alpine plants were staged under canvas. The largest groups found place on the ground in the big tent, but the majority were on staging in the special tabling tent to the east of the tent which contained the sundries. A few groups were exceptionally fine, but, on the whole, the quality and the methods of staging were a little disappointing. There was too much flat banking of flowers and much too frequent evidence that nurserymen were endeavouring to show a little of everything, in season or out of season, so long as it could be induced to give a touch of flower-colour. There is need for more specialisation. Good examples of such specialisation were the Primulas of Dr. McWATT and LISSADELL, the new Chinese plants of Messrs. BEES, LTD., the Delphiniums of BLACKMORE AND LANGDON, Messrs. R. WALLACE AND Co.'s Lilies, Messrs. GUNN AND SONS' Phloxes, and Mrs. LLOYD EDWARD's mossy Saxifrages; but there is room for a much further development of it.

Sir EVERARD HAMBRO, Hayes Place, Kent (gr. Mr. J. Grandfield), sent a magnificent collection of pot-grown Alpines which was quite un-



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FIG. 161.—ROCK GARDEN EXHIBITED BY MESSRS. WALLACE AND CO.

rock gardens, dwarf plants of Tree Paeonies, pigmy Cypressess, Hydrangeas, and many Tulips and other cut flowers.

Messrs. GEORGE JACKMAN AND SON, Woking, displayed a magnificent collection of Clematis which bore exceptionally large flowers of superb quality. Of the double-flowered sorts Belle of Woking and Duchess of Edinburgh were magnificent. The very best of the singles were Crimson King, Impératrice, King Edward VII., King George V., Lasurster, Mrs. Spencer, Castle, and Sensation. Messrs. JACKMAN also displayed very valuable late spring flowering shrubs in a large group. Besides floriferous bushes of Weigelas, Kalmias, Spiraeas, Philadelphuses, and various Rhododendrons, there were neat examples of *Ledum latifolium*, *Andromeda speciosa*, *Cistus ladanifera*, *Vaccinium pennsylvanicum*, and several Japanese Maples of bright colour.

Messrs. J. PIPER AND SONS, Bishops Road, Bayswater, exhibited three large groups of Wisterias. Many of these standards, which were imported from Japan and were growing in the native vases, were apparently of very great age, and it was interesting to note the revivifying influence of grafting young shoots on the old stocks. From these gnarled old trunks long vigorous racemes of charming flowers hung in great profusion. Besides the common species (*W. sinensis* and *W. multijuga*) there

very large collection of hardy shrubs. The excellent Ivies for which Mr. RUSSELL is justly noted were shown fully as well as in former years, and embraced a surprising number of distinct varieties. Japanese Maples of good shape and in diverse forms and colours, many Vitises, of value for furnishing pergolas, pillars, walls, etc., standard Brooms, grafted with the pendulous forms, and several species of *Ceanothus* were also included in this splendid group. In another part of the grounds Mr. RUSSELL massed with great effect a large collection of Ghent Azaleas. Mr. RUSSELL also showed a variety of hybrid Clematis and a few plants of *C. montana rubens*. The most attractive of the hybrids were Nelly Moser, Lady Londesborough, The Queen, Edouard Desfosse, and President. Adjoining the Clematis a very creditable group of *Caladiums* made a bright and attractive display.

Messrs. FROMOW AND SONS, Chiswick, Middlesex, arranged very many Japanese Maples outside the opposite end of the large tent. Here was displayed a very interesting assortment of these ornamental shrubs. Of those with golden leaves *Acer japonica aurea* was exceedingly well coloured. Bright red colour was supplied by *Acer pulmatum atropurpureum*, and delicate rose by neat bushes of *A. p. roseum* and *A. p. corallinum*, whilst such sorts as *A. dissectum*

rivalled, whether from the point of view of fine culture or rich variety. *Saxifraga pyramidalis*, *longifolia* and *latifolia*, *Grandfieldii* and other encrusting *Saxifragas* formed a too strongly emphasised feathery mass of white to screen the harsher colours of Azaleas at the back; but the gems were "on the line," or "in front." *Erinacea pungens*, a mass of lavender flowers. *Pentstemon Davidsonii*, *Asperula Athoa*, *Haberlea Ferdinandii-Coburgii*, *Dianthus callizonus* and *Jankae Heldreichii* formed special points in which interest focussed.

Mr. AMOS PERRY, Enfield, arranged a good group on the ground with well-proportioned masses of tree *Paeonies*, German *Irises*, and the Oriental *Poppies* in which he specialises. The silvery-white of Perry's White was the most notable of these—a large showy flower with crimson-black basal blotches.

Messrs. T. S. WARE, LTD., Feltham, staged a large, but rather formal, bank of good flowers; *Antirrhinums*, *Paeonies*, *Pyrethrums* and *Eremuri* were the principal plants represented.

Mr. JAMES BOX, Lindfield, showed a pretty group in which the fine plants of *Lilium canadense* and *L. Grayi* were, perhaps, the best features. The *Anchusas* in the wings gave force to the yellows and buffs of *Trollius* and *Verbascum*. *Azalea rosaeflora* was a notable plant, and *Cypripediums* were well represented.

Messrs. G. GIBSON AND Co., Leeming Bar, Bedale, showed hardy border flowers in a square-based pyramid: too solid and flat-faced to be effective. Alpines lined the base. *Thalictrums*, *Lupins*, *Astilbes*, etc., formed the walls, which were crowned at the top with *Verbascons*.

Messrs. BLACKMORE AND LANGDON, Bath, showed an admirable, though small, batch of *Delphiniums*. Yard-long spikes of the soft lilac *Statuaire Rude* formed the centrepiece, while a dark purple-blue band of *Rev. Lascelles*, W. T. Ware, and R. Cox led to the front row plants or *Moerheimii* and other varieties of *Belladonna* type.

Messrs. G. BUNYARD AND Co., LTD., Maidstone, made effective use of *Lilium longiflorum* over *Astilbe Ceres*, and there were good masses of *Pyrethrums*, *Irises*, *Verbascons* and *Eremuri*.

Messrs. CARTER, PAGE AND Co., London Wall, showed annuals, *Paeony*-flowered *Dahlias* and *Violas* in variety.

Messrs. BEES, LTD., Liverpool, made a valuable exhibit of the best things that we owe to the Chinese collections of Forrest. *Primula secundiflora* (see fig. 158), *Roscoea cautloides*, *Incarvillea brevipes* and the dwarf silver-leaved *Potentilla fruticosa nana argentea*, which is new, stood out as conspicuously good. These, alas! were arranged on a cork rockery!

Messrs. GUNN AND SONS, Olton, showed fine plants, 3 to 4 feet high, of a few of the best varieties of *Phlox decussata*.

Messrs. BARR AND SONS, Taplow, exhibited a floor group. Columns of *Anchusa* occupied the four corners, and led up to a central mass topped with yellow *Tree Lupins*, *Sparaxis*, *Irises*, *Ixias*, early *Gladioli*, and similar plants.

Messrs. W. CUTBUSH AND SON, Highgate, introduced into a ground group a little streamlet, which provided good places for masses of *Trillium*, *Primula pulverulenta* and other water-loving plants. Spanish *Irises*, *Arum Dracunculoides* and *Spiraea Aruncus Kneiffii* showed the varied character of the collection.

Messrs. JACKMAN AND SONS, Woking, had a prettily-arranged square-based pyramid of hardy flowers. The brilliant yellows of *Verbascum densiflorum* and *Isatis glauca* brightened the pale blues of the *Delphiniums*. *Lupin* hybrids formed an interesting corner-piece, and *Lilium umbellatum erectum* was boldly massed.

Mr. JOHN FORBES, Hawick, showed *Violas* and *Delphiniums*.

Messrs. W. WELLS, LTD., Merstham, showed a striking mass of the fine pink-coloured *Antirrhinum Nelrose*.

The IGHAM ALPINE NURSERY, Igham, Kent, showed a small batch of Alpines in which the fine masses of the tiny *Viola Slieve Donard* was a centre of attraction.

The BURTON HARDY PLANT NURSERIES, Christchurch, Hants, staged a small, but interesting, collection of Alpines. *Dianthus alpinus albus* and *Mertensia echioides* were its gems.

Messrs. HARKNESS AND SONS, Bedale, York-

shire, showed International and other new *Verbascons* in a square ground plot, with a fine strain of Iceland *Poppies* and other hardy flowers.

Messrs. R. WALLACE AND Co., Colchester, showed a unique collection of *Lilies*. Its best features were *L. regale*, *L. davuricum luteum*, *L. dalmaticum*, *L. Szovitzianum* (a difficult *Lily* to force well), *L. Martagan album*, *L. tenuifolium Golden Gleam* and *L. Krameri*, but in all some twenty species and varieties were included, and a more representative batch has never been shown at a spring show. Japanese *Maples* formed a pleasing foil. *Eremuri*, *Irises*, etc., gave a touch of variety to a very pretty decorative scheme.

Messrs. PHILLIPS AND TAYLOR, Lily Hill Nurseries, Bracknell, designed a little oblong water garden to give point to their exhibit of *Trollius*, *Primula*, *Astilbe*, *Orontium* and other moisture-loving plants.

Messrs. ARTINDALE AND SON, Nether Green, Sheffield, showed a grand plant of *Tree-Paeony Louis Mouchelet*, with *Eremuri*, *Primulas*, *Violas*, etc.

Messrs. REAMSBOTTOM AND Co., Geashill, King's Co., showed *Anemones*.

Mr. REG PRICHARD, West Moors, Wimborne,

Mr. W. LAWRENSON, Yarm-on-Tees, made a feature of the Yarm hybrid between *Primula pulverulenta* and *Primula Cockburniana*.

Messrs. J. VEITCH AND SONS, Chelsea, showed an interesting batch of *Primulas*, of which, perhaps, *P. japonica alba Unique* and *P. pulverulenta Mrs. Berkeley* were the more noteworthy.

Messrs. LISSADELL, Sligo, show a pretty series of *Primula* hybrids in which *Beesiana*, *pulverulenta*, *Bulleyana* and *Cockburniana* influences are shown. The richest scarlet was *Red Hugh*. The varieties *Asthore* and *Alannal* were pretty shades of salmon-pink. With these were fine plants of the rare species *P. deorum*, *P. Forrestii*, *P. longiflora* and *P. muscarioides*.

Dr. MACWATT, Morelands, Duns, exhibited a unique collection of *Primulas*. A catalogue of them would be interesting, but we can only mention the little known *P. Gambeliana*, *P. Wardii*, *P. elongata*, *P. Littoniana*, *P. heucherifolia* and *P. Giraldiana* among a host of better known species and garden forms.

Messrs. WHITELEGG AND PAGE, Chislehurst, made one of the most pleasing small rockwork exhibits under canvas, but their best plants were shown out of doors.

Messrs. KELWAY AND SON, Langport, exhibited several pretty new *Pyrethrums*, with a selection



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FIG. 162.—MESSRS. R. AND G. CUTBERT'S EXHIBIT OF RHODODENDRONS.

gave an example of the interest that can be concentrated in even so small a space as four feet of tabling. His group was a collection of little gems, of which *Phlox Douglasii*, *Tanakea radicans*, *Reseda sesamoides*, *Sedum pilosum*, *Asperula suberosa* and *Galium olympicum* are but a few.

The KING'S ACRE NURSERIES showed a few Alpines on tabling, of which *Tiarella unifoliata* best deserves mention.

Mr. STUART MAPLES, Stevenage, staged *Globularia trichosantha*, *Silene Hookeri*, *Campanula Alleni* and other choice plants in a little piece of rockwork.

Mr. VERNON T. HILL, Mendip Nurseries, Bristol, included such good plants as *Alyssum spinosum roseum*, *Lithospermum graminifolium*, *Sedum pilosum*, *Veronica E. C. Howell* and forms of *Linaria alpina*.

Messrs. G. AND A. CLARK, LTD., Dover, showed a collection of border plants in which the eye was at once caught by the brilliance of the *Pyrethrums* and the good clumps of *Iris* and *Eremurus*.

Messrs. THOMSON AND CHARMAN, Bushey, staged a small collection of rock and meraine plants, *Lewisias*, the *Warley Aethionema* and others. *Thunbergia Gibsonii* was also included in the collection.

of the best *Delphiniums*. *Anchusa italica Mrs. J. Kelway* is a name they have given to the true "opal"-coloured variety which seems to have occurred in several gardens now.

Mr. WM. ICETON, Putney, displayed a large group of *Lily-of-the-Valley* and *Palms*. The *Convallarias* bore unusually large spikes of pure white flowers.

Messrs. GILBERT AND SON, Dyke, Bourne, Lincolnshire, showed their well-known strain of *Anemones*.

Messrs. BACKHOUSE AND SON, LTD., York, arranged a number of delightful Alpines in a small but prettily arranged piece of rockwork. The *Ramondia*, *Haberlea*, *Onosma* and *Dianthus* merited special notice.

Mrs. LLOYD EDWARDS, Bryn Verog, Llangollen, showed seedling messy *Saxifragas* and *Aubrietias*.

Messrs. J. COCKER AND SONS, Aberdeen, had an especially good batch of *Anemone sulphurea* with *Aquilegia glandulosa* and the newer *Globe-flowers*.

Messrs. RICH AND Co., Bath, showed a collection of *Pyrethrums* with *Geums* and other hardy plants, but the plant that pleased us most was the old-fashioned little *Viola Jackanapes*.

Messrs. FRED SMITH AND Co., Woodbridge, Suffolk, arranged Eremuri, Lupines and other herbaceous flowers over a foreground of Alpines.

Messrs. B. LADHAMS, LTD., Southampton, had the only good collection of Heucheras we noticed in the show, with a mass of *Thalictrum aquilegifolium superbum* and other hardy plants.

Mr. FRANK LILLEY, St. Peter's, Guernsey, had the best collection of early-flowering bulbs—*Sparaxis*, *Ixia*, *Broadiaea*, etc.—with a centre-piece of the noble *Watsonia coccinea*, and patches of the lovely little Peacock Iris which we have come to look for in his exhibits now, so regularly does he show it well.

Mr. G. W. MILLER, Clarkson Nurseries, Wisbech, showed the double *Pyrethrum Queen Mary*, with batches of Harkness' new hybrid *Verbascums*, *Lady Alison*, *Imperial*, etc. The unblotched *Papaver Princess Ena* was another pretty feature.

Mr. T. R. HAYES, Keswick, showed a collection of rock plants. *Polemonium carneum* is uncommon, and we noticed a good form of *Lychnis alpina*.

Mr. E. C. BOWELL, Cheltenham, exhibited a small bank of Alpines, principally *Saxifrages* and *Primulas*, with patches of *Viola* and *Linaria*.

Mr. H. HEMSLEY, Crawley, showed his hybrid Alpine *Antirrhinums*, with *Matthiola*

Mr. WOOD achieved such admirable results last year. Excavation was not allowed, but 300 tons of soil were brought in to make up the banks, and the total amount of stone employed must have exceeded that weight.

Nothing was so keenly looked forward to as the award of the *Daily Graphic* Cup. This is a beautifully proportioned trophy, valued at 75 guineas, which the proprietors of the *Daily Graphic* have presented to the society to be awarded annually in open competition for the best rock garden, judged not from the point of view of size, but for the natural artistic grouping of the stones, for evidence of design in construction and for suitability to the growth of Alpine plants. The rarity or otherwise of the plants themselves was to carry but little weight. The special judges appointed for this class were Mr. Alfred Parsons, R.A., as an artist; Sir Frank Crisp, as an owner of a rock garden; and Mr. E. A. Bowles, as "a gentleman accustomed to the planting of rockwork."

Starting from the main entrance on the Embankment, we treat of the gardens in the order in which they occur. Of the best groups we cannot say that they were better than last year. They seem to have reached a point beyond which a nearer approach to the actual and to nature is impossible. But the average of the exhibits was much higher than at any preceding show, and it

Mr. REUTHE, Keston, used the Cheddar stone, but failed to gain any connected effect with its arrangement of it and his plants, although many good and rare specimens were included. *Androsace pyrenaica* and *A. helvetica*, *Plantago nivalis*, *Olearia Lyalli* and *Helichrysum frigidum* were notable.

Messrs. R. TUCKER AND SONS, Brookside Nurseries, Oxford, were placed in a square plot on one level. They broke this up by a mound at one corner, crowned with Swiss Pines, and two lesser mounds connected by paved paths. A local Oxfordshire stone was used which, having no natural stratification, presented considerable difficulties in the way of achieving a natural effect in laying it. There were many good plants in the exhibit—*Daphne rupestris*, *Wahlenbergia vincaeflora*, *Silene Veleskyi*, etc., and a cool bog on the north side was well planted with Ferns and *Primulas*.

Miss HOPKINS, Mere, Shepperton, arranged a small group on a curved mound built up with Cheddar stone. It included a number of characteristic plants like the Dresden Daisy, which she has helped to make popular, with good *Sedums* and mossy *Saxifrages*, but the standard *Brooms* seemed out of place, and the moisture-loving *Primulas* were unhappily planted on the crest of a ridge.

The GUILDFORD HARDY PLANT NURSERY, Millmead, Guildford, were a little unfortunate in their use of the raw, unweathered yellowish Bargate stone, and in the too formal disposition of their group as an amphitheatre round a crescent bed in the foreground. *Azalea rosaeiflora* was beautifully shown, and *Sempervivums*, *Oxalis enneaphylla*, *Antennaria dioica*, *Cypripediums*, and *Anthemis* helped to make the group interesting in its plants, but an offending patch of crimson *Mimulus* was planted at the top of a slope.

Messrs. R. WALLACE AND Co., Colchester, essayed a diversified effect in a limited area, with the result that the group had many pleasing pictures in it, and yet lacked cohesion as a whole. On the left were two outcropping bluffs in bold pieces of Cheddar stone, the back one in the shade planted with pale yellows, blues and whites, the nearer one warmed up with a mass of *Phlox Vivid* and sprays of *Saxifraga aizoon rosea*, with *Campanula Stevensii nana* at a lower level. On the right a little stream dropped down from pinewoods over Fern-clad stones to a small pool in the foreground at the base, giving appropriate sites on its way for *Primulas*, *Cypripediums*, and other moisture-loving plants. Much of the planting was very cleverly done, but one felt that the use of rock garden Conifers was overdone, and that there was a weakness in linking up the whole into one scheme.

Mr. J. WOOD, of Boston Spa, York, using again the weathered mountain Yorkshire limestone which delighted so many visitors last year, built up a rock garden which excelled all others in its restful naturalness and finish. This grey stone is much deeper in tone than the Cheddar, and though it lacks the warmth that the browns and yellows of Lichens give to the long-exposed Somersetshire stone, it has a special beauty in its weathering in deep parallel lines, which connect up easily with neighbouring stones, and whose constant easy repetition gives a feeling of restfulness. Mr. WOOD is an artist, a fact which one appreciated on looking at the little trout beck that tumbled down from the left-hand corner to a deep pool in the foreground. The *Primula farinosa* and *Gentiana verna* in the grass were added touches of perfect taste. The planting scheme was kept low, and though appropriate and beautiful it was felt to be subsidiary, or rather so harmonious with the design that nothing distracting caught the eye. *Sedums*, mossy *Saxifrages*, *Alyssum*, *Erinus*, *Sempervivums*, *Androsaces*—all common things—were used in profusion on the ledges and slopes. But three things seemed out of place: an immense plant of *Azalea rosaeiflora* which made an isolated patch of strong colour on the left, the double *Meconopsis* which almost overtopped the mountain Pines which were just trying to give the effect of distance, and *Veronica salicornoides*, which was used as a plant to line and overhang the water's edge.

Messrs. PULHAM AND SON, Oxford Street, W., made excellent use of a deep plot of ground in creating a miniature rocky glen with bold bluffs:



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FIG. 163.—PORTION OF MESSRS. J. CARTER AND CO.'S EXHIBIT IN THE LARGE TENT.

vallesiaca, *Campanula Stevensii nana* and other good Alpines.

Messrs. BARRIE AND BROWN, King William Street, E.C., staged a few hardy herbaceous plants and May-flowering Tulips.

Violas in many pretty arrangements were shown by Mr. G. UNDERWOOD, Leicester; Messrs. SEAGRAVE AND Co., Sheffield; Messrs. GUNN, Olton; Messrs. DOBBIE, Marks Tey; and Mr. H. H. CRANE, Highgate.

Mr. S. MORTIMER, Rowledge, Farnham, exhibited a group of his fine white Stock, named All the Year Round.

Rock Gardens and Formal Gardens.

There were eighteen rock gardens in the open. They stretched along the whole southern boundary of the grounds, Messrs. PIPER'S alone being isolated in a delightful spot near the formal gardens by the main avenue. The exhibits varied in area from over a thousand square feet to less than 300 feet. In character and arrangement the stone used showed a great advance on the exhibits of last year, and the fashionable colour was distinctly grey, several exhibitors utilising the mountain limestone of Yorkshire, with which

it is impossible to have looked at the skilful groupings of stone and careful efforts in planting without feeling that the standard of excellence in rock gardening has been raised to a higher level through the show.

Mr. CLARENCE ELLIOTT, Stevenage, contributed a pleasing piece of work in Cheddar stone, in which a rocky bank was cut through by a path at a low level to give good north and south aspects in a small area. The planting of the encrusted *Saxifrages*, *Ramondias* and *Primulas* was particularly good; but an irregular arrangement of stone on end in the centre of the group rather marred the effect, which large even-sized masses at the base emphasised. *Pentstemon Davidsonii* and *Oxalis enneaphylla rosea* were among the choicest plants.

Messrs. KENT AND BRYDON, Darlington, designed a pleasing little piece of grey Westmorland rockwork. A runnel of water was included at the upper right corner, and was held up by a bog at the bottom. This gave an opportunity for much good planting, and the *Trilliums*, *Gentians*, *Campanulas* and Ferns grouped round it formed a very pleasing picture. *Butterwort*, *Primula farinosa* and *Gentiana verna* in the grass were lively touches of nature that relieved the foreground.

of rock designed in their characteristic style. The stream which traversed the length of the plot was one of the best pieces of water in the rock gardens, but the design was weakened by the unequal planting. Cotton-easters, Lithospermums, and Brooms were well placed, but the large bank of Lilacs and the striking bed of Azaleas in soft shades of pink and cream, however beautiful in themselves, seemed out of place. The German Iris, again, was hardly the right plant for the water's edge. The group, however, was very much admired for its broad conception. It was worked out in the grey Derbyshire limestone.

The show included half a dozen examples of various styles of formal gardening, too different in treatment to allow of easy comparison. They varied from the realistic little Azalea garden of Mr. NOTCUTT, free from stone except in its paving, to the balustraded court and fountain in artificial stone of Messrs. PULHAM. The efforts in this direction greatly exceeded those of any preceding show. It must be remembered that the Society's rules forbade any excavation, and this probably accounts for the raised gardens, which alone would permit of the quiet use of water.

MESSRS. J. CARTER AND Co., Raynes Park, based their design around a central rectangular pool, with spouting dolphins in the centre. On three sides this was surrounded by cross-patterned Horscombe balustrading, clothed with Clematis. The fourth was open to the west, and gave a little low walling for treatment with Alpines. An upper garden was treated with Rhododendrons in rich colours, which bordered the balustrading. The lower was kept quiet with the more restful colours of Darwin Tulips and green turf, and was very pretty. As other examples of the use of Horscombe facing in the garden two styles of garden houses had been erected, the half-open hexagonal one being especially pretty, and near the little lawn was a dovecote.

MESSRS. R. WALLACE AND Co., Colchester, had the adjoining and similarly shaped plot. It was a garden of quiet colours. At the lower level a border of Irises and Violas, in shades of pale blues and yellows, surrounded a little grass court, overlooked from a well-proportioned garden house. The Roman arches of the house were echoed in the doorway through a Wistaria-covered wall, which led to an upper paved garden. Here three specimen Japanese Wistarias overhung a quiet Lily pool, and Tulips, in shades of mauve and yellow, formed a border bounded by a 3 feet hedge of box. The different levels were opportunities for exhibiting good work in loose walling, and various designs of steps and other work of an architectural character.

Mr. R. C. NOTCUTT, Woodbridge, arranged a very pretty little paved Azalea garden under the shade of the old trees, and governed in its outlines by the existing paths and timber. Standards and dwarfs were used, and the colours cleverly and effectively grouped in the various beds, with Japanese Maples as a foil of foliage. One bed was furnished with R. amoena hybrids and their allies.

MESSRS. J. CHEAL AND SONS, Crawley, showed the uses of their "salignum" arches and temples in a little rectangular garden scheme. The centre piece was a Rose temple, and Rhododendrons, Azaleas, Viburnums, and coloured foliage were allowed to dominate the little formal beds on either side the paths leading up to it. At one end was a paved court, with seats overlooking the whole.

If to be much talked of is a criterion, Messrs. PIPER AND SON, Bayswater, had one of the most effective exhibits of the show in their formal Wistaria garden. It was an attempt to treat an irregularly-shaped piece of ground in an architectural manner, but the object in view was largely defeated by the necessity of maintaining two irregular paths which crossed at the centre and cut the design into four unequal portions. Steps on four sides led up to a central column crowned with Wistaria. Specimen bush Japanese-trained Wistarias stood at intervals on the balustrading, and narrow borders of Lilies and grass plots helped to give some body to a design which was really the "problem picture" of the show.

MESSRS. PULHAM AND SON, Oxford Street, con-

structed a large raised water basin in the centre of a paved court. Balustrade, pergola, fountain, sundial, statuary and other ornaments gave scope for the exhibition of the possibilities of the Pulhamite stone, of which the whole, with the exception of the flag paving, was built. Planting, however, was made subsidiary, and the beds of Lavender and Rosemary were, perhaps, its most important feature.

THE YOKOHAMA NURSERY COMPANY, Kingsway, showed a collection of small Japanese model gardens, dwarfed trained trees in pots, a Japanese tea-house and Shinto temple, and, better than any of these for our Western gardens, some very lovely old pot-grown Wistarias.

MESSRS. LIBERTY AND Co., Regent Street, also showed model Japanese gardens, Wistarias, dwarf Conifers, and various examples of Eastern art in stone lanterns, Bamboo shelters and other garden ornaments.

MESSRS. BARR AND SONS, Taplow, dealing with an awkward, oblong piece of ground, produced an interesting rock garden in the grey limestone from N.W. Yorkshire. At the back it was well and pleasingly planted with such plants as *Gentiana verna*, *Anthyllis montana rubra*, and the Munstead variety of *Cheiranthus mutabilis*. In the foreground, however, we thought the group weakened as a rock garden by the large bed of German Irises, by a large oblong bed, almost exclusively devoted to a rich collection of Orchids with no ground cover, and by using tender *Sarcocodias* on a steep bank above the pool on the left. *Iris gracilipes* was specially fine.

Mr. MAURICE PRICHARD, Christchurch, Hampshire, also dealt with a rather difficult oblong area of ground, and used the same stone as Messrs. Barr, the grey Yorkshire limestone. The design represented a central moraine, with steep banks on either side, and at the south end; but the planting was hardly in harmony with it. It was really a collection of first-rate plants, each placed in as conspicuous a position as possible, irrespective of its cultural requirements. *Primula pulverulenta* Mrs. Berkeley was especially fine. *Scutellaria indica*, *Cytisus kewensis*, *Androsace primuloides*, *Trollius pumilus*, and *Linaria origanifolia* were a few other things that filled good pockets. Several solid masses of colour provided by *Azalea amoena* seedlings showed how brilliant these little rock shrubs can be; but, at the same time, how dangerous their harsh colours are when let loose among purer shades of the true Alpines.

MESSRS. T. S. WARE, Ltd., Feltham, used the raw Bargate stone. At the best it is difficult to use pleasingly, and in this case was not benefited by the failure to provide any governing plan. It was a collection of good plants—*Astilbe simplicifolia*, *Aquilegia Stuartii*, *Lithospermums*, *Lewisia*, double *Meconopsis*, *Aizoon Saxifragae*, dwarf Phloxes, and many others.

MESSRS. WHITELEGG AND PAGE, Chislehurst, were other workers in the grey mountain limestone. The group was a little flat in its arrangement, and lacked character, except in the very pretty sunless cleft on the left, which formed an ideal site for the cluster of richly-flowered *Ramondias*. There was a showy central mass of *Edelweiss*, and *Stachys corsica*, *Saxifraga longifolia* var. *latifolia*, and the rose-coloured form of *Saxifraga Aizoon* were well placed.

MESSRS. BAKER'S, LTD., Codsall, Wolverhampton, had good plants rather than a good rock garden. The stone was the white Kentish rag, washed over to bring it into the fashionable grey. The *Primulas* were perhaps the best feature, *P. Veitchii*, *P. sikkimensis*, *P. Lissadell* Hybrid, and others being well represented, but there were plenty of well-grown plants.

Mr. T. H. GAUNT, Farsley, Calverley, built, like so many others, in the Yorkshire stone. At the back it seemed a little overpiled, but this was led up to prettily by drifts of mossy *Saxifragae* and *Veronicas*, and in its deepest face still left good ledges for Alpine plants. There were good clumps of *Dracocephalum nutans* major and *Armeria maritima alba* major.

MESSRS. WATERER, SONS, AND CRISP, LTD., Twyford and Bagshot, had a pretty corner on the extreme east of the gardens, and made good use of it with a steep but well-planted bank, built up of Derbyshire limestone. If it had a fault it was the way in which evenly sized masses were piled stone on stone, each an inch

or two behind the other, and the Conifers used were dotted along at curiously regular intervals. There were, however, plenty of good plants to make a careful examination worth while—*Arenaria juniperina*, *Phlox Douglassii*, *Dianthus arvensis*, *Campanula Allioni*, and *Aethionema saxatilis*.

MESSRS. CHEAL AND SONS, Crawley, confined their rock gardening to planting with rock plants the three outer slopes of a little rectangular formal garden, walled within and topped with Yew. It was a practical suggestion, but not very effective rock gardening.

MESSRS. PIPER AND SON, Bayswater, had a delightfully isolated site near the formal gardens, with a path leading round three sides of it. The foreground was a series of shelves kept so low that 20 feet from the central path the levels had not risen 2 feet. There was much pretty planting here, sheets of *Campanula muralis*, *Saponaria splendissima*, etc., and a lovely little ravine of *Myosotis*, *Pratia* and *Mazus*, shades of blue between whites and purples, especially of *Erinus* (in a flat pocket, where it would almost certainly die of overfeeding!). At the back the stone rose steeply to a crest of Swiss Pines, cut here and there for moraine and drift plants, but both in conception and planting this portion failed to carry on the beauty of the foreground. The general effect was good, but too much of the planting was a colour scheme in carpeting. The work was carried out in Cheddar stone.

AWARDS.

FIRST-CLASS CERTIFICATE.

Adiantum grossum.—This handsome Fern is from tropical South America. It has a vigorous, wiry, black leaf-stalk, clothed with large trapezoid or ear-shaped pinnules of a very leathery texture and bronze-shaded when young. Some of the pinnules are as much as 2 inches in length by 1½ in breadth, and with the black spore-case lining at the under-edge make the Fern a handsome and distinct plant. Shown by Messrs. H. B. MAY AND SONS.

AWARDS OF MERIT.

Pteris flabellata plumosa.—Messrs. MAY found this interesting form in a batch of sporelings from the type. Each little segment of the bipinnate fronds becomes over-developed and lacerated, so that the delicate, almost flat tracery shown by the young fronds becomes with age a richly plumose and dense mass of greenery, reminding one of some of the *Nephrolepis*. Like the type, the variety is an erect-growing plant, reaching 2½-3 feet, and the branchlets come away from the main rachis at the same curiously acute angle. The form is barren, but has been found in some quantity.

Platyserium Cordreyi.—A distinct plant, comparable, perhaps, only with *P. Veitchii*, but quite distinct from that species in its broader fronds. It is a stout grower, reaching 2½ feet high, with very leathery, firm, grey leafage, which spreads and branches richly at the tip, erect at first, but arching over at length with its own weight. The barren, branched, light-brown fronds are erect and about 1 foot in height. These two were shown by Messrs. H. B. MAY AND SONS.

Iris Goldcrest.—This variety was selected for award from an interesting collection of seedling Irises to which special reference is made below. It is a pallida × *Cengialtii* seedling, resembling some of those raised by the late Sir Michael Foster, growing about 3 feet in height, flowering early and freely, and having very characteristic unveined, self-coloured flowers of a bright shade of violet-blue and a good size. The spathes are white and papery. An unbranched spike has sometimes so many as five flowers. The bright yellow beard gives the variety its name. Shown by Mr. W. R. DYKES, Godalming.

Pittosporum Mayi Silver Queen.—The dark-brown stems and grey-green foliage of the type have an added beauty in this variety (to those who love variegation in plants) in the narrow silver edging to each leaf. Shown by the DONARD NURSERY COMPANY.

Calceolaria Stewartii (see fig. 153).—This is a variety of American origin recommended for its qualities as a bedder. It has large, round, flat pouches an inch across, of the richest yellow colour, and borne in the greatest profusion in close, rounded heads. The large (3 by 1½ inches),

rugose, serrate foliage keeps near to the ground, and the freely-branched heads reach a height of about 1 foot. Shown by Messrs. J. VEITCH AND SONS, LTD.

Campanula tomentosa Maud Landale (see fig. 160).—Silvery downy leaves in rosettes at the base and trailing or erect 12-inch spikes of large, pale lavender flowers make this a very pretty plant. The wide cylindrical tube of the corolla is an inch long, and the lobes recurve prettily to show a darker line down the centre of each. Developed spikes carry a dozen flowers. Shown by Miss MAUD LANDALE.

Pinguicula Reutheriana.—A new plant from the Dauphiné. The leaves are oval, about $1\frac{1}{2}$ by $\frac{3}{4}$ inch, disposed flat and with incurved margins as in our British species. The flowers rise on slender 3-inch stems. As shown they were a pale flesh-pink thinly lined with rose and with a violet spur, but in the open flowers are said to be a bright rose-pink. Shown by Mr. G. REUTHE.

Adiantum gloriosum Lemkesii.—This is a garden form, said to have been derived from *A. scutum roseum*. It was shown with *A. Farleyense gloriosum*, and in habit and form it is very close to that variety. Its distinction lies in the pretty salmon-rose shading that suffuses the tender pale green of the young fronds. Shown by Messrs. LEMKES AND SONS, Alphen, Holland.

Oxalis adenophylla.—A pretty species, closely allied to *O. enneaphylla*, but differing in its large rose-coloured flowers and branched stems. The foliage is a pale, silvery green, divided finely into about nine fish-tail segments arranged in a circle. It flowers very freely, each stalk carrying two or three flowers just above the level of the foliage. Shown by Mr. REUTHE and Messrs. BEES, LTD.

Begonia Lady Carew.—One of the most beautiful varieties of the tuberous-rooted section, with flowers carmine-rose coloured, a little deeper within, of large size, with perfect centre and unusually smooth, saucer-shaped petals. Shown by Messrs. BLACKMORE AND LANGDON.

Primula secundiflora (see fig. 158).—One of the most beautiful Chinese Primulas in cultivation, having the habit of *P. sikkimensis*, with large, nodding bell flowers of deepest rose-purple, borne in trusses of as many as twenty. After fertilisation has taken place the corolla falls and the pod rises erect to display in a curious fashion the white lines of the calyx. Comparing it again with the well-known *P. sikkimensis*, the leaves, though similar, are smooth, unserrated, and spreading in flat rosettes; the flower stems are shorter and stouter; and the plant as a whole is unfortunately a less satisfactory doer. Shown by Messrs. BEES, LTD.

Clematis Queen Mary.—This is a beautiful variety belonging to the lanuginosa group and, like them, flowering on both old and young wood in summer and autumn. Its value lies in its colour, which is a distinct shade of heliotrope with a sheen of carmine, most marked in bars down the centre. The flowers are about 7 inches in diameter and are more or less intermediate in size, form and colour between its parents, *Ville de Lyon* and *Fairy Queen*. Shown by Messrs. G. JACKMAN AND SONS.

Carnation Scarlet Carola.—A very fine perpetual-flowering variety, with glowing scarlet flowers the size of *Carola*. We noted this variety as a fine novelty at the R.H.S. fortnightly meetings last year, but it has not been exhibited so numerously before. Shown by Mr. C. ENGELMANN.

Lilium regale, shown by Messrs. WALLACE AND Co. This lovely Chinese species received an Award of Merit in 1912 under the name of *L. myriophyllum*, and was now again recommended the same distinction.

Telopea speciosissima (see fig. 152) (The Waratah).—A striking evergreen shrub or tree, with a densely flowered, terminal inflorescence in the shape of a flattened cone, subtended by crimson bracts. The wing-like perianth is blood-red and supports the sessile anthers near the tip; the style is pink, and curves out beyond it, adding to the beauty of the effect. The leathery, evergreen foliage is lanceolate, richly toothed, and new shoots break out just beneath the inflorescence. Shown by the Rev. A. T. BOSCAWEN.

CULTURAL COMMENDATION.

This award was made to the *Telopea*, in recognition of the fact that this was, so far as is known, the first inflorescence to have developed in this country. [This is not the case. A specimen flowered in Sir Geo. MacLeay's garden at Pendell Court in 1882, and was figured in *Gard. Chron.* May 20, 1882, p. 676.—Eds.]

Other Novelties.

Mr. W. R. DYKES, Godalming, sent a very interesting collection of seedling Irises. *Iris chrysographes* × *I. Douglasiana*.—This strange hybrid (see fig. 155), between an American and a Chinese species, was perhaps the most remarkable. The seed was sown in 1911, and the plant, now flowering for the first time, bears 11 flower-stems. The form of flower reminds one of *I. sibirica orientalis*. The colour of the falls is a charming pink shade of lilac, a little purplish under the yellow throat patch; the standards also are pale lilac, and are held nearly erect. The stems are solid, wavy in outline, and bear long, leafy, grassy-green bracts which reach up to the flower. *I. Douglasiana seedlings*.—From the typical species, seedlings had given a range of colour from white to violet, an intermediate pale lilac shade being very pretty. *I. Tenax seedlings*.—These also showed an extraordinary range of colour, some self-purple, others pale lilac with darker veins, still others shaded with yellow. *I. Douglasiana Alpha*.—One of the prettiest seedlings: a light-cream colour, lightly veined near the throat with crimson and touched there with golden yellow. A very pretty garden plant, having large spathes shaded with crimson and sometimes holding a second flower. The foliage is grassy, the stems a little straggly. Flowers of *I. Watsoniana* were also shown.

From the Edinburgh Botanic Garden Prof. BAYLEY BALFOUR sent some interesting new Chinese plants recently flowered there. They included *Primula dryadifolia*, a large-flowered gem an inch high; *Saxifraga pentadactylis*, *S. chionophylla*, *S. oranensis*; and a Poppy, probably a form of *Meconopsis rudis*.

Greenhouse Plants.

Messrs. CARTER AND Co., Raynes Park, filled a very large ground space with splendid collections of greenhouse plants. The central mound was composed of *Cineraria stellata* (cactus), of which the quite tiny flowers were a direct contrast to the round blooms of the large-flowered sorts. The outer circles of sweet-smelling Stocks, of Schizanthuses, white Petunias, Gloxinias, Clarkias and herbaceous Calceolarias linked up the exhibit and made it an exceedingly harmonious whole, which contained especially good strains of the various plants.

Messrs. H. B. MAY AND SONS, Upper Edmon-ton, displayed an attractive group of weeping standard *Wichuraiana* Roses, *Astilbes*, *Hydrangeas*, *Petunias*, bedding *Pelargoniums*, and *Violas*.

Messrs. SUTTON AND SONS, Reading, enclosed their exhibit of greenhouse plants with a series of pillars connected by chains of *Myrsiphyllum asparagoides*, which gave it a secluded and desirable appearance. Inside the boundary several beds surrounded by broad grass walks contained an assortment of splendid plants. In each bed little groups of exceedingly good *Salpiglossis* lightened the more lowly groups of *Schizanthuses*, *Stocks*, *Primula obconica* hybrids, *stellata* *Cinerarias* and herbaceous *Calceolarias*. All these plants were of exceptional quality, and the tuberous *Begonias* were remarkably fine.

Messrs. STUART LOW AND Co., Bush Hill Park, Enfield, placed in each of the four corners of their group of greenhouse shrubs specimens of *Metrosideros floribunda*, which bore unusually large, crimson inflorescences. *Leptospermum bullatum*, *Ceanothus Veitchii* and *Hydrangeas*, in many varieties, were also included in quantity. The Australian *Boronia polygalifolia*, not so fragrant as *B. megastigma* but of easier culture and of soft pink colour; *Erica Bergiana glauca* and *Azalea rosaeiflora* (a charming little double flower of salmon-pink colour) were also noteworthy.

The exhibit of Messrs. E. WEBB AND SONS, Wordsley, Stourbridge, was in the form of three large mounds, composed respectively of *Cineraria stellata* edged with *Primula obconica* hy-

brids, *Schizanthus compacta* hybrids with *Gloxinias*, and herbaceous *Calceolarias* with *Hippeastrums* and tuberous *Begonias*.

A beautiful exhibit of *Schizanthus* was made by ERNEST G. MOCATTA, Esq., Woburn Place, Addlestone (gr. Mr. Thos. Stevenson). The plants were shapely and literally smothered in blossoms. It is to be regretted that owing to late entry this splendid exhibit was not included in the official list, and consequently received no award.

ALFRED J. WALEY, Esq., Stone House, Reigate, Surrey (gr. Mr. W. A. Dobson), exhibited a group of *Schizanthus* which was composed of exceptionally well-grown plants of a variety of colours.

Mrs. V. A. LITKIE, Clarendon, Maidenhead (gr. Mr. W. Hulbert), also showed a very creditable group of *Schizanthus*.

The collection of *Sarracenias* and allied plants arranged by Mr. A. J. A. BRUCE, Chorlton-cum-Hardy, Manchester, was one of the most distinct and noteworthy exhibits in the large tent. For general elegance and interest nothing could be better, and the design of the group was distinctly good—far better than the average. Low moss-covered arches over a pretty little rivulet spanned by cork bridges made a dainty setting for the many insectivorous plants, and grace and lightness were provided by the slender culms of *Bamboos* and the stems of *Fulalias*. Amongst the *Sarracenias* most prominent were *S. Ashbridgei*, *S. Brucei*, *S. Sanderiana*, *S. rubescens*, *S. Farnhamii*, *S. Drummondii* alba and *S. picturata*, all of which bore fascinating "pitchers."

Messrs. JAMES VEITCH AND SONS, LTD., Chelsea, had *Fuchsias* trained on iron supports to form archways, making a novel and pleasing feature, rising from a table containing splendidly grown *Astilbes* (*Spiraeas*), *Ferns*, *Gentiana verna*, *Aquilegia Stuartii*, *Trillium grandiflorum* and other fine Alpines and border flowers. This firm also exhibited a large batch of *Hippeastrums*, all of magnificent quality, and *Begonia Rex* in variety, in front of a broad row of the yellow *Calceolaria Clibranii*.

Rev. H. BUCKSTON, Sutton Hall, Derby (gr. Mr. Arthur Shambrook), showed magnificent *Calceolarias* of the florists' type, the profusion of blossoms quite hiding the foliage. The group was attractively arranged with *Adiantum Ferns* as an edging.

Messrs. KER AND SONS, Liverpool, showed *Hippeastrums* (*Amaryllis*) and *Anthuriums*. The varieties *Hippeastrum Crimzon King*, *Nestor*, chocolate-crimson with white tips; *Alba magna*, white with carmine veins; *Pink Gem*, old-rose colour; and *Fascination*, reddish-apricot with white stripes, were all remarkably good.

Mr. H. N. ELLISON, West Bromwich, showed *Ferns* in variety, and *Cacti* in tiny pots. The latter were exceptionally healthy; these tiny *Cactuses* make admirable subjects for decorative purposes indoors.

Messrs. J. PEED AND SON, West Norwood, showed a large collection of *Streptocarpus* and another of *Gloxinias*. The plants of both kinds were splendidly flowered.

Blue, pink and white-flowered *Hydrangeas* were shown by LEOPOLD SALOMANS, Esq., Dorking (gr. Mr. Geo. Kent). The inflorescences were exceptionally good and evidenced first-class cultivation.

Mr. G. R. SMITH, New Thundersley, Essex, exhibited *Cacti* in variety.

Greenhouse *Calceolarias* were well shown by J. J. WARD, Esq., Rocklands, Finchley (gr. Mr. J. Willis).

Topiary.

Many visitors found much to admire in the large exhibits of topiary, and even those who do not admire the art were compelled to appreciate the great amount of skill and patience which had been expended on the specimens displayed outside the Embankment end of the large tent. The customary forms—birds, beasts and reptiles, barrels, chairs, spirals, and columns fashioned in Yew or Box were shown in large numbers by Messrs. J. PIPER AND SONS, Bayswater; Messrs. WM. CUTBUSH AND SON, Highgate; and Mr. J. KLINKERT, Richmond, whilst Messrs. WILLS AND SEGAR, Onslow Crescent, London, showed standard Bay trees.

Fruit.

Hon. J. WARD, C.V.O., Hungerford (gr. Mr. Chas. Beckett), exhibited 26 fine fruits of Melons, the varieties including Royal Favourite, Superlative, Royal Jubilee, Hero of Lockinge and Scarlet.

Messrs. GEO. BUNYARD AND CO., LTD., Maidstone, showed 50 varieties of Apples and very large fruits of Uvedale's St. Germain Pears, Apples Smart's Prince Arthur, Hambleton Deux Ans, New Bess Pool, George Neilson, Annie Elizabeth, Alfriston and Striped Beening were surprisingly good for a May show.

In the large tent the KING'S ACRE NURSERY Co., Hereford, exhibited a good collection of pot fruits. In the centre there were many healthy trees of Nectarine Cardinal bearing good crops of nearly ripe fruits. Such Plums as Blue Rock and July Greengage were equally vigorous and fruitful. The front of the exhibit was composed of an unusually good collection of Figs of such varieties as St. John and Negro Largo.

Messrs. LAXTON BROS., Bedford, included a very large quantity of ripe Strawberries in their exhibit. The varieties so well shown were International, Bountiful, King George and The Earl; all the fruits were of splendid appearance. Standard Red and White Currants, Gooseberries and trained plants of the Loganberry were also shown in good condition. In the open Messrs. LAXTON arranged excellent espalier and grid-iron-shaped and fan-trained trees.

Near the topiary exhibits Messrs. G. BUNYARD AND Co., Maidstone, set up a fruit tree collection, of which the predominant feature was the splendid arches of Pear trees.

Vegetables.

The collection of vegetables shown by the Hon. VICARY GIBBS, Aldenham House, Elstree (gr. Mr. Ed. Beckett), was without its equal in the show. It contained superb dishes of Broccoli Late Queen; Cauliflower Magnum Bonum; Peas Duke of Albany and Early Giant; Vegetable Marrows Custard Table Dainty and The Sutton Asparagus; Potatoes May Queen and King Edward VII.; Carrots Favourite, New Red Intermediate and Champion Scarlet Horn; Turnips White Gem and Early Milan; Cucumbers of superb quality, also Radishes, Tomatoes, Mushrooms, Beets, Kohl Rabi; Beans, Lettuces, Spinach, Sorrel, Chilian Beet, Globe Artichokes and other kinds.

Messrs. J. CARTER AND Co., Raynes Park, had a magnificent exhibit of vegetables arranged in a very attractive manner on stands of varying heights and ground of black velvet. Peas Early Morn and Eight Weeks; Lettuces Tom Thumb, Brown Dutch and Capucine; Cucumbers Improved Telegraph, Carter's Frame and Ideal; Broccoli Model; Cauliflowers Defiance, Forcing and Forerunner; Turnips Red Top Milan and Long Forcing; Cabbage Springtide; Tomato Perfection; also Radishes, Asparagus, Beets, Beans, Carrots, Marrows and Celery were all shown in superb condition.

Messrs. SUTTON AND SONS, Reading, arranged an exhibit of vegetables on original lines, the group having an imposing background of arches in polished mahogany, some of the dishes being arranged in the recesses on shelves. It was pleasing as much for the style as for the fine quality of the produce. The chief dishes were Broccoli Late Queen, Model and Latest of All; Peas Early Giant, First of All, Green Gem, Duchess of York and Pioneer; Rhubarb The Sutton; Potatoes Stirling Castle, Balmoral Castle and others of the "Castle" race; Tomatoes Abundance, Dwarf Red and Maincrop; Marrows Green Bush; Cucumbers Satisfaction, Lord Roberts, Unique and Telegraph; also fine Beets, Turnips, Carrots, Beans, and Spinach.

Mr. Bucks, Tresco Nurseries, Ipswich, showed his prolific Tomato, "Buck's Tresco." The fruit trusses were of enormous size, and it is computed that a single truss would develop about 8 lbs. of fruit, and plants 30 to 40 lbs. each.

THE THATCHAM FRUIT AND FLOWER FARM, Newbury, exhibited vegetables in great variety, the various kinds being all excellent produce.

Messrs. H. CANNELL AND SONS, Eynsford, Kent, exhibited a collection of vegetables showing Potatoes, Lettuces, French Beans, Tomatoes, Cucumbers, Asparagus, Cabbage and other kinds.

Awards made by the Council.

The following is an official list supplied by the Secretary:—

Gold Medals.

Sir Jeremiah Colman, Bart., for Orchids; Charlesworth and Co., Haywards Heath, for Orchids; Sander and Sons, St. Albans, for Orchids; Barr and Sons, Covent Garden, for Tulips; Blackmore and Langdon, Bath, for Begonias; Cutbush and Son, Highgate, for Roses; May and Sons, Edmonton, for Ferns; Sutton and Sons, Reading, for florists' flowers; Veitch and Sons, Chelsea, for stove plants and Azaleas; Webb and Sons, Stourbridge, for flowering plants; Wallace and Co., Colchester, for herbaceous plants, Lilies, etc.; F. Cant and Co., Colchester, for Roses; Dobbie and Co., Edinburgh, for Sweet Peas; Hon. Vicary Gibbs, Aldenham House, Elstree, for vegetables; Sir Everard Hambro, Hayes, for Alpines and Primulas; L. R. Russell, Richmond, for trees and shrubs.

"Daily Graphic" Cup.

J. Wood, Boston Spa, for a rock garden.

The Davidson Cup.

Messrs. Sander and Sons for Cattleya Schröderae var. "Queen Empress."

Silver-Gilt Cups.

C. Engelmann, Saffron Walden, for Carnations; G. Mount and Son, Canterbury, for Roses; W. Paul and Son, Waltham Cross, for Roses; J. Piper and Son, Bayswater, for Wistarias, Hydrangeas, Azaleas, Paeonies, Maples and Tulips; Kent and Brydon, Dartington, for rock garden; R. Wallace and Co., Colchester, for rock garden; J. Wood, Boston Spa, for rock garden; R. Wallace and Co., Colchester, for formal garden; the Duke of Marlborough, Blenheim, for Orchids; Armstrong and Brown, Tunbridge Wells, for Orchids; Cypher and Sons, Cheltenham, for Orchids.

Standard Cup.

W. Cutbush and Son, Highgate, for clipped trees; J. Piper and Son, Bayswater, for formal garden; Maurice Prichard, Christchurch, for rock garden; Alwood Bros., Haywards Heath, for Carnations; A. J. A. Bruce, Chorlton-cum-Hardy, for Sarracenia; R. and G. Cuthbert, Southgate, for Azaleas; A. F. Dutton, Iver, for Carnations; Fletcher Bros., Chertsey, for Rhododendrons; W. Icton, Putney, for Lily-of-the-Valley; G. Paul and Son, Cheshunt, for Roses; Phillips and Taylor, Bracknell, for herbaceous plants, Alpines, etc.; T. Rivers and Son, Sawbridgeworth, for pot Citrus, fruits, and vines; Dickson and Son, Newtownards, for Roses and Tulips; Hon. J. Ward, Hungerford, for Melons; James Horlick, Esq. (gardener, W. H. Smith), for Vanda teres and Richardia; J. and A. McBean, Cooksbridge, for Orchids.

Large Silver Cups.

J. Carter and Co., Raynes Park, for florists' flowers; Bunyard and Co., Maidstone, for herbaceous plants and Rhododendrons; G. Jackman and Son, Woking, for Clematis, flowering shrubs, and herbaceous plants; Waterer, Sons, and Crisp, Twyford, for Rhododendrons; B. Cant and Sons, Colchester, for Roses; Veitch and Sons, Chelsea, for greenhouse flowering plants; Mansell and Hatcher, Rawdon, for Orchids; Fromow and Sons, Chiswick, for Japanese Maples; J. Carter and Co., Raynes Park, for formal garden.

Silver Cups.

Cutbush and Son, Highgate, for herbaceous plants; Dobbie and Co., Mark's Tey, for Tulips, Antirrhinums, and Violas; Amos Perry, Enfield, for Paeonies and herbaceous plants; G. Reuthe, Keston, for hardy perennials and shrubs; C. Turner, Slough, for Roses, Azaleas, and Lilies; Backhouse and Son, York, for rock and Alpine plants; Smith and Co., for herbaceous plants; Sutton and Sons, Reading, for Sweet Peas; Sutton and Sons, Reading, for vegetables; Stuart Low and Co., Enfield, for Orchids; Pulham and Son, Oxford Street, for formal garden; Clarence Elliott, Stevenage, for rock garden.

Silver-Gilt Flora Medals.

Artindale and Son, Sheffield, for herbaceous plants; Barr and Sons, Covent Garden, for herbaceous plants; Blackmore and Langdon, Bath, for Delphiniums; J. Bex, Lindfield, for hardy plants; Cartwright and Goodwin, Kidderminster, for Tulips; G. and A. Clark, Dover, for herbaceous plants and Alpines; Cutbush and Sons, Highgate, for Carnations; Cypher and Sons, Cheltenham, for flowering and foliage plants; Dickson and Robinson, Manchester, for Tulips; Gunn and Sons, Olton, for new Phloxes; Hill and Son, Edmonton, for exotic Ferns; Stuart Low and Co., Enfield, for Roses; R. C. Notcutt, Woodbridge, for Rhododendrons, flowering plants, etc.; W. Paul and Son, Waltham Cross, for hardy flowering plants; Peed and Son, West Norwood, for Caladiums; G. Prince, Oxford, for Roses; T. S. Ware, Feltham, for herbaceous plants; Young and Co., Hatherley, for Carnations; Barr and Sons, Covent Garden, for rock garden; T. H. Gann, Farsley, for rock garden; J. Klinkert, Richmond, for clipped and trained trees; R. C. Notcutt, Woodbridge, for Azalea garden; Donard Nursery Co., Newcastle, Co. Down, for flowering trees; Bide and Sons, Farnworth, for Sweet Peas; Elisha J. Hicks, Twyford, for Roses; E. W. King, Coggeshall, for Sweet Peas; L. Salomons, Esq., Dorking, for Hydrangeas; J. Stevenson, Wimborne, for Sweet Peas; R. Sydenham, Birmingham, for Sweet Peas; T. S. Ware, Feltham, for Begonias.

Silver-Gilt Knightian Medals.

King's Acre Nurseries, Hereford, for fruit trees in pots; Laxton Bros., Bedford, for pot Strawberries and fruit trees.

Silver-Gilt Banksian Medals.

J. Piper and Son, Bayswater, for Topiary and cut trees; Tucker and Sons, Oxford, for rock garden; Waterer, Sons, and Crisp, Twyford, for rock garden; Bees, Ltd., Liverpool, for Alpines; Cutbush and Son, Highgate, for flowering plants; G. Gibson and Co., Bedale, for hardy plants; Harkness and Sons, Bedale, for herbaceous plants; Hobbess, Ltd., Dereham, for Roses; L. R. Russell, Richmond, for foliage plants, Caladiums, Clematis; J. Backhouse, York, for herbaceous plants; R. J. Barnes, Malvern, for Roses; R. H. Bath, Wisbech, for Sweet Peas; C. Bourne, for Tulips; G. and W. H. Burch, Peterborough, for Roses; H. Burnett, Guernsey, for Carnations; Cannell and Sons, Eynsford, for fruit and vegetables; J. Douglas, Great Bookham, for border Carnations; H. Hemsley, Crawley, for Alpines; Vernon T. Hill, Langford, for Alpines; Kelway and Son, Langport, for hardy plants; Ker and Sons, Liverpool, for Amaryllis; Latham's, Ltd., Shirley, for hardy plants; F. Lilley, Guernsey, for Gladioli and Iris; Stuart Low and Co., Enfield, for Carnations; J. MacWatt, Morelands, for Primulas; G. W. Miller, Wisbech, for herbaceous plants; Paul and Son, Cheshunt, for Lilies; Sutton and Sons, Reading, for Tulips.

Silver Flora Medals.

Amos Perry, Enfield, for Ferns; J. Cheal and Sons, Crawley, for formal garden; Baker's, Ltd., Wolverhampton, for rock garden; Guildford Hardy Plant Nursery, for rock garden; J. Piper and Son, Bayswater, for rock garden; Pulham and Son, Oxford Street, for rock garden; T. S. Ware, Ltd., Feltham, for rock garden; Whitelegg and Page, Chislehurst, for rock garden; R. H. Bath, Wisbech, for Tulips; J. Box, Lindfield, for Sweet Peas; Bertie E. Bell, Guernsey, for Carnations; Cocker and Sons, Aberdeen, for herbaceous plants, Trollius, and Anemones; H. H. Crane, Highgate, for Violas and Violettas; Gunn and Sons, Olton, for hardy plants; A. L. Gwillim, Sidcup, for Begonias; Miss Hemus, Tipton-on-Severn, for Sweet Peas; Hogg and Robertson, Dublin, for Tulips; Ightham Alpine Nursery, for rock and Alpines; J. Peed and Son, West Norwood, for Gloxinias and Streptocarpus; Reamsbottom and Co., Geashill, for St. Bridgid Anemones; Scargear and Co., Sheffield, for Violas; Thomson and Charman, Adam Street, London, for Alpines; H. Dixon, Wandsworth, for Orchids; Flory and Black, Slough, for Orchids.

Silver Knightian Medals.

G. Bunyard and Co., Maidstone, for fruit trees in pots and Strawberries; Bunyard and Co., Maidstone, for stored Apples; Carter and Co., Raynes Park, for vegetables; Thatcham Fruit and Flower Farm, for vegetables and salads.

Silver Banksian Medals.

Barr and Son, Covent Garden, for Japanese pigmy trees; W. and J. Brown, Peterborough, for Lilies and Gaillardias; Jefferies and Son, Cirencester, for Tulips; H. J. Jones, Lewisham, for Pelargoniums, Fuchsias and Phloxes; Mrs. V. A. Little, Maidenhead, for Schizanthus; C. Waley, Reigate, for Schizanthus; Misses Hopkin, Shepperton, for rock garden; G. Reuthe, Keston, for rock garden; C. F. Waters, Balcombe, for Orchids; Barrie and Br-wan, King William Street, for herbaceous plants; A. P. Brandt, Blethingley, for Pelargoniums; H. B. Brandt, Nutfield, for Streptocarpus and foliage plants; Rev. H. Buckton, Etwell, for herbaceous Calceolarias; Carter, Page and Co., London Wall, for Dahlias, Violas and annuals; A. H. Cole, Swanley, for herbaceous and flowering plants; Mrs. Lloyd Edwards, Bryn Aerog, for Alpines; H. N. Ellison, West Bromwich, for Ferns and Cacti; J. Forbes, Hawick, for herbaceous plants; Gilbert and Sons, Dyke, for Anemones; W. Lawrenson, Yarm-on-Tees, for hardy Primulas and Alpines; Lissadell, Sligo, for hardy Primulas; J. Macdonald, Harpenden, for Grasses; Stuart Maples, Stevenage, for Alpines; R. Prichard, West Moors, for Alpines; Rich and Co., Bath, for hardy plants; G. R. Smith, New Thundersley, for Cacti; G. Underwood, Leicester, for Violas and Pansies; Waterer, Sons, and Crisp, Twyford, for Tulips; J. D. Webster, Chichester, for Sweet Peas; W. Wells, Merstham, for Antirrhinums; Whitelegg and Page, Chislehurst, for Alpines in pots; E. J. Wootton, Eastleigh, for Carnations.

Bronze Flora Medals.

E. C. Bowell, Cheltenham, for Alpines; Burton Hardy Plant Nursery, for Alpines and rock plants; J. J. Ward, Finchley, for Calceolarias; Godfrey and Son, Exmouth, for flowering plants; P. Ladd, Swanley, for flowering plants.

Bronze Banksian Medals.

C. Chantler, St. Mary Cray, for flowering trees, foliage, etc., trees and shrubs; Wills and Sagar, Onslow Crescent, for Bay trees; Laxton Bros., Bedford, for trained fruit trees.

HORTICULTURAL SUNDRIES.**Standard Cups.**

Jas. Carter and Co., for scientific seed testing, drawings, etc.; Sutton and Sons, for garden tools, cutlery, and other garden requisites.

Silver-Gilt Banksian Medals.

J. Bentley, Ltd., for chemical specialities' exhibit; Four Oak Spraying Machine Co., for exhibit of spraying apparatus, etc.; Fowler, Lee and Co., for exhibit of fruit, etc., bottling apparatus, and bottled fruits; The Union of South Africa, for exhibit of South African produce; Walter Voss, for exhibit of insecticides and fertilisers.

Silver Flora Medals.

"Country Life," Ltd., for garden papers; the Elsenham Jam Co., for exhibit of jams, preserved fruits,

and lavender water: Headley Bros., for exhibit of garden books and pictures.

Silver Banksian Medals.

Acme Patent Ladder Co., for exhibit of steps, ladders, etc.; Barr and Sons, for exhibit of garden tools; Blake and Mackenzie, for exhibit of flower pots, seed pocket filling machines, etc.; Boundary Chemical Co., for exhibit of weed killer, syringes, etc.; the Dryad Cane and Metal Works, for exhibit of Conservatory furniture; the En-Tout-Cas Co., for exhibit of garden seats, etc.; Hartjen and Co., for exhibit of spraying machines; Hartley and Sugden, for exhibit of sectional boilers, etc.; Vernon T. Hill, for exhibit of slug traps; London Provincial, Etc., Building Co., for exhibit of portable garden house; Mrs. Miller, for exhibit of Molyen confections; H. Pattison, for exhibit of horse boots, tools, etc.; J. Pither, for exhibit of mushroom spawn; Pullen-Burry, Ltd., for exhibit of transverse travelling; Robinson Bros., for exhibit of spraying apparatus; Robinson Bros., for exhibit of fertilisers, insecticides; Mrs. Sewell, for exhibit of Elmhurst preserves.

Branze Banksian Medals.

Abbott Bros., for exhibit of Osterley Table Tray, etc.; J. Bradley, for exhibit of the Bunty Tea House; Garden City Trug Co., for exhibit of trugs; Jeyes', for exhibit of insecticides and sprayers; Arthur Key, for exhibition of miniature lawn; C. P. Kinnell, for exhibit of heating apparatus, etc.; C. A. Peters, for exhibit of wood preservatives; J. Pinches, for exhibit of horticultural labels; Prentice Bros., for exhibit of fertilisers; H. C. Slingsby, for exhibit of ladders, barrows; J. Unit, for exhibit of garden tents and chairs; Vipan and Headley, for exhibit of garden seats, arbours, etc.; Mrs. Webb, for exhibit of nesting boxes; H. E. Wemyss, for exhibit of reversible garden chairs; A. Casbmore, for exhibit of garden ornaments.

Standard Cup.

The Yokohama Nursery Co., for exhibit of miniature Japanese Gardens.

PICTURES, STATUARY, ETC.

Silver-Gilt Cup.

Bromsgrove Guild, for pictures and statuary.

Silver Cup.

Trowther and Sons, for garden ornaments.

GARDEN PLANS.

Silver Banksian Medal.

L. White.

Bronze Banksian Medals.

Wallace and Co., and Cheal and Sons.

SOCIETIES.

NATIONAL TULIP.

MAY 20 AND 21.—The annual exhibition of the above society was held at the Royal Hospital Gardens, Chelsea, on the second and third days of the R.H.S. Spring Show. The competition and the flowers were much better than of recent years.

Twelve varieties: 2 Feathered and 2 Flamed of each class.—The 1st prize exhibit of Mr. C. W. NEEDHAM, Hale, Cheshire, was so good that all the flowers are worthy of mention. He showed Samuel Barlow (flamed bizarre), Annie McGregor (flamed rose), Ravenshoe (feathered bybloemen), George Hayward (flamed bybloemen), Mrs. Collier (feathered rose), Chancellor (feathered bybloemen), Stockport (feathered bizarre), Sir Joseph Paxton (flamed bizarre), Mabel (flamed rose), Geo. Edward Schofield (feathered rose), Garibaldi (feathered bizarre), and Mrs. Atkin (feathered bizarre). Mr. J. W. BENTLEY, Stakehill, Middleton, who won the 2nd prize, showed good blooms of Annie McGregor, George Edward, Chancellor and Samuel Barlow; 3rd, Mr. A. D. HALL, Merton, Surrey.

Six varieties: 1 Feathered and 1 Flamed of each class.—The flowers in this class were not quite so good as in the former, but Mr. C. W. NEEDHAM'S 1st prize exhibit included very good examples of Sir Joseph Paxton and Annie McGregor; 2nd, Mr. A. D. HALL; 3rd, Mr. J. W. BENTLEY.

Three Feathered varieties: 1 of each class.—The 1st prize exhibit of Mr. C. W. NEEDHAM was especially good; he showed Mrs. Collier, Stockport, and John Moodie; 2nd, Mr. J. W. BENTLEY; 3rd, Mr. A. E. CHAFER, Cambridge.

Three Flamed varieties: 1 of each class.—The best bloom in this class was that of Adonis in the 1st prize exhibit of Mr. J. W. BENTLEY; 2nd prize, Mr. C. W. NEEDHAM.

Six Breeder varieties: 2 of each class.—The competition was very good. Mr. J. W. BENTLEY won the 1st prize with splendid blooms of such varieties as Alfred Lloyd, Mrs. Barlow and Lady Grosvenor; 2nd, Mr. A. D. HALL, who had a beautiful Rose seedling; 3rd, Mr. C. W. NEEDHAM.

Three Breeder varieties: 1 of each class.—Although Mr. C. W. NEEDHAM, who won the 1st prize, showed a very fine bloom of Samuel Barlow, the flowers in this class were not of equal merit to the foregoing; 2nd, Mr. J. W. BENTLEY. In the class for six varieties restricted to growers of fewer than 400 blooming bulbs, Mr. A. E. CHAFER won the 1st prize with a collection which included a good bloom of Adonis; 2nd, Mr. Mr. H. S. BARTLEET, Shooter's Hill. Mr. BARTLEET was awarded the 1st prize in the class for three varieties.

The Samuel Barlow prizes were won by Messrs. A. D. HALL and C. W. NEEDHAM in the order named.

SINGLE BLOOMS.

Mr. A. D. HALL won the 1st prizes offered in the classes for single blooms of bybloemen breeder with a good seedling rose breeder with Miss Willmott, and flamed rose with Mabel. Mr. C. W. NEEDHAM was similarly successful in the classes for bizarre breeder with Dr. Hardy, feathered bybloemen with Talisman, feathered bizarre with G. Hayward, and feathered rose with Miss Collier. Mr. J. W. BENTLEY won 1st prizes offered for flamed bybloemen with Talisman, and for flamed bizarre with Alfred Lloyd.

The competition in the Open Class for 20 vases of garden Tulips, 7 blooms of each variety, was much better than last year. Messrs. BARR AND SONS, Covent Garden, won the 1st prize with a beautiful display; 2nd, Messrs. HOGG AND ROBERTSON, Dublin; 3rd, Mr. C. BOURNE, Simpson, Bletchley.

LINNEAN.

MAY 7.—At the meeting held on this date Professor E. B. Poulton, F.R.S., president, in the chair,

Mr. H. N. RIDLEY gave an account of "The Botany of the Utakwa Expedition, Dutch New Guinea," which had been worked up by various botanists. He stated that the extensive collection of plants made by Mr. C. B. Kloss during Mr. Wollaston's expedition to Mount Carstensz, Dutch New Guinea, in 1912-13, is the most important collection of New Guinea plants brought to this country. In spite of the large collections made by Dutch and German collectors, there are upwards of five hundred new species and eight new genera in the collection, many of great interest.

The plants were collected at various heights, from sea-level to an altitude of about 13,000 feet, where vegetation ceased. The areas explored may be divided into four botanical regions:—(1) The Coastal region, where the flora was largely of Malayan affinity. (2) The foothills, ranging from 500 to 3,000 feet elevation, an area of dense forest, the flora still typically Malayan, but containing a distinct Australian element. (3) The Frontal mountain belt, from 3,000 to 8,000 feet elevation, the Begonia and Balsam region. Here cultivation ceased. Palms disappear, and the first of the Palaearctic forms are met with, such as Viola, Ranunculus, Hypericum and Galium. (4) The main mountain range. Here the big forest trees disappear and herbaceous plants show a marked increase.

Casuarinas, Pandani and Violets form a conspicuous part of the flora. The highest tree is Podocarpus papuanus, sp. nov. This attains an altitude of 10,500 feet. Above 11,000 feet the rocks became too steep for most plants, the only plants being Rhododendron bushes, a daisy (Myriactis), some grasses and mosses. The flora of this upper region from 8,000 feet upwards comprised many Palaearctic forms, Geranium, Thalictrum, Astilbe, Euphrasia, Potentilla, Gentiana, etc., with the Australian types Pterostylis and Corysanthes.

Mr. A. F. R. Wollaston exhibited a series of photographs of the scenery and vegetation taken during the expedition, and Major Gage, Dr. A. B. Rendle, Mr. E. G. Baker and Dr. Otto Stapf discussed the paper.

SCHEDULES RECEIVED.

Yorkshire Agricultural Society's Annual Show at Bradford, on Wednesday, Thursday, and Friday, July 22, 23, and 24. Manager of Horticultural Section, Mr. Peter Blair, Trentham Gardens, Stoke-on-Trent.

Richmond Horticultural Society. — Annual Flower Show, Wednesday, June 24, 1914.

MARKETS.

COVENT GARDEN, May 20.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	a. d.	s. d.		a. d.	s. d.			
Arums (Richardias), per doz.	2	6	3	Orchids, per doz.:				
Carnations, per dozen blooms, best American varieties	1	3	2	— Cattleya	12	0	15	0
— smaller, per doz. bunches	12	0	15	— Odontoglossum crispum	3	0	4	0
— Carola (crimson), extra large	4	0	5	Paeonies, per dozen bunches	4	0	6	0
— Malmaison, per doz. blooms:				Panacratium, per dozen blooms	2	0	2	6
— pink	9	0	10	Pelargoniums, per doz. bunches, double scarlet	5	0	6	0
Cornflower, English, per doz. bunches	2	6	3	— white, per doz. bunches	4	6	5	0
Eucharis, per doz.	2	0	2	Pyrethrum, white, per doz. bun.	3	0	4	0
Forget-Me-Not, per dozen bunches	2	0	3	— single, coloured	3	0	3	6
Gardenias, per box of 15 and 18 blooms	1	6	4	Roses: per dozen blooms, Bridesmaid	1	6	2	0
Gladiolus, Blushing Bride, per doz. bunches	6	0	8	— Caroline Testout	2	0	2	6
— Ne Plus Ultra, per doz. spikes	1	6	1	— Frau Karl Duschki, per doz. blooms	2	0	3	0
— Peach Blossom, per doz. bunches	6	0	8	— General Jacqueminot	1	0	1	3
— The Bride	9	0	15	— Joseph Lowe	2	0	3	0
Gypsophila, pink, per doz. bun.	5	0	6	— Kaiserin Augusta Victoria	1	6	2	6
— white	3	0	6	— Lady Hillingdon	1	0	1	6
— white, large bunches, each	1	0	1	— Liberty	2	0	3	0
Iceland Poppies, p. doz. bunches	2	0	3	— Mme. Carnot	2	0	2	6
Iris, Spanish, per doz. bunches	6	0	9	— Madame A. Chateau	1	6	3	0
Lilium auratum, per bunch	—	—	—	— Melody	1	6	2	0
— longiflorum, per doz. long	1	9	2	— My Maryland	1	0	1	6
— short	1	6	1	— Niphetos	1	3	1	6
— lancifolium album, long	2	0	2	— Prince de Bulgarie, per doz.	1	6	2	6
— short	2	0	2	— Richmond	1	6	3	0
— rubrum, per doz. long	2	6	3	— Sunburst	1	6	2	0
— short	1	0	1	— Sunrise	1	0	1	6
Lily-of-the-Valley, per dozen bunches:				— W. A. Richardson	0	9	1	6
— extra special	12	0	15	— White Crawford	2	0	3	0
— special	9	0	10	— Yellow Souvenir	1	6	2	6
— ordinary	8	0	9	Spirea, per doz. bunches	5	0	6	0
Margarites, per dozen bunches	1	6	2	Statice, mauve, per doz. bunches	3	0	4	0
Mignonette, per dozen bunches	3	0	4	Stephanotis, per 72 pips	1	6	2	0
Narcissus, Poeticus, per doz. bun.	1	6	2	Stocks, English, white, per doz. bunches	4	0	6	0
— double white, flore pleno	2	6	3	— coloured	5	0	6	0

Cut Foliage, &c.: Average Wholesale Prices.

	a. d.	s. d.		a. d.	s. d.			
Adiantum Fern (Maidenhair), best, per doz. bunches	3	0	4	Croton foliage, doz. bunches	12	0	15	0
Agrostis (Fairy Grass), per doz. bunches	2	0	4	Cycas leaves, per doz.	2	0	9	0
Asparagus plumosus, long trails, per half-dozen	1	6	2	Eulalia japonica, per bunch	1	0	1	6
— medium, doz. bunches	12	0	18	Lichen Moss, per dozen boxes	9	0	10	0
— Sprengeri	6	0	12	Moss, grossa bunches	6	0	—	—
Carnation foliage, doz. bunches	3	0	5	Myrtle, doz. bunches, English, small-leaved	8	0	—	—
				— French	1	0	—	—
				Smilax, per bunch of 6 trails	1	0	1	3

REMARKS.—There is a good demand for white flowers, mostly for double white Narcissus and English-grown Stock, which is somewhat scarcer. Double white Narcissus is arriving from Guernsey, but better quality flowers are being received from growers in Lincolnshire. White Pelargonium is selling well. Carnations are more plentiful, and their prices are lower. Malmaisons are arriving in good condition, and trade in these flowers has improved. Darwin Tulips are practically over. Large numbers of Gladioli are arriving from Guernsey, and The Bride variety is in much finer condition. Fine inflorescences of yellow Richardias (Arums) are coming to hand from this quarter, and their prices have fallen; there seems to be no demand for them, and they are only purchased by the chief London florists. Roses are only of a medium quality, but Sweet Peas are arriving in a splendid condition, and they can be had at prices

ranging from 2s. to 12s. per dozen bunches. Iceland Poppies, Paeonies, white and coloured Pyrethrum, Cornflowers, blue-flowered Statice, and white and pink Gypsophila are all being sent in large consignments.

Plants in Pots, &c. : Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Aralia Sieboldii, dozen ..	6 0-7 0	Geonoma gracilis 60's per dozen..	6 0-8 0
Araucaria excelsa per dozen ..	18 0-21 0	— larger, each ..	2 6-7 6
Asparagus plumosus nanus, per dozen ..	10 0-12 0	Heliotropes, 48's per dozen ..	6 0-7 0
— Sprengeri ..	6 0-8 0	Hydrangeas, Pink, per doz. 48's ..	10 0-18 0
Aspidistra, per doz., green ..	18 0-30 0	— White ..	12 0-15 0
— variegated ..	30 0-60 0	— Blue ..	18 0-36 0
Cacti, various, per tray of 15's ..	4 0 —	Kentia Belmoreana, per dozen ..	5 0-8 0
— tray of 12's ..	5 0 —	— Forsteriana, 60's, per dozen ..	4 0-8 0
Cinerarias, 48's ..	6 0-8 0	— larger, per dozen ..	18 0-36 0
Cocos Weddelliana, per dozen, 60's ..	6 0-12 0	Latania borbonica, per dozen ..	12 0-30 0
— larger, each ..	2 6-10 6	Lilium longiflorum, per dozen ..	18 0-24 0
Croton, per dozen ..	18 0-30 0	Lily-of-the-Valley 18 0-21 0	
Dracena, green, per dozen ..	10 0-12 0	— 48's, per dozen ..	21 0-30 0
Erica persoluta, per dozen 48's ..	18 0-24 0	Marguerites, in 48's, per doz., white ..	6 0-8 0
— candidissima ..	12 0-15 0	Pandanus Veitchii, per dozen ..	36 0-48 0
— Cavendishii ..	21 0-24 0	Pelargoniums, 48's, per dozen ..	10 0-12 0
— coccinea ..	12 0-15 0	— Zonal, 48's, per doz. ..	5 0-6 0
— Willmorei ..	12 0-15 0	— Ivyleaf, 48's ..	6 0-9 0
Ferns, in thumbs, per 100 ..	8 0-12 0	Phoenix rupicola, each ..	2 6-21 0
— in small and large 60's ..	12 0-20 0	Rodanthe ..	5 0-6 0
— in 48's, per dozen ..	5 0-6 0	Spiraea japonica, per dozen pots ..	6 0-8 0
— choicer sorts, per dozen ..	8 0-12 0	Stocks, white, 48's per dozen ..	6 0-8 0
— in 32's, per doz. ..	10 0-18 0	— pink ..	6 0-8 0
Fuchsias, 48's, per dozen ..	7 0-9 0	— red ..	6 0-8 0
		Verbenas, Miss Willott, 48's, per dozen ..	8 0-9 0

REMARKS.—Business in this department is more brisk, especially among bedding plants. There is a good demand for blue-flowered Hydrangeas, and Ferns also are selling better. Asparagus Sprengeri in pots is selling freely. The scarlet Salvia Pride of Zurich is very popular, also the pink Verbena Miss Willmott.

Fruit : Average Wholesale Prices.

s. d. a. d.		a. d. s. d.	
Apples, Australian, per case ..	10 6-14 6	Lemons, Messina, per case ..	8 6-15 0
— cooking, case ..	9 0-11 0	— Naples, case ..	20 0-27 0
— Cox's, case ..	16 0-20 0	Lychees, box ..	1 6 —
Apricots, box ..	1 2-1 4	Mangos, Cape, doz. ..	5 0-8 0
— cases ..	4 3-4 9	Melons, English ..	1 3-2 6
Bananas, bunch: — Double Ex. ..	11 0-12 0	Nectarines ..	24 0-30 0
— Extra ..	9 6-11 0	— Belgium ..	12 0-24 0
— Extra-medium ..	10 0 —	Nuts: — Almonds, sack ..	64 0-65 0
— Giant ..	14 0 —	— Barcelona, sack ..	44 0 —
— Medium ..	6 6-7 6	— Brazils, cwt. ..	46 0-50 0
— Red, per ton ..	£23 —	— Chestnuts, Naples, per bag ..	16 6-20 0
— Jamaica, p. ton ..	£15 —	— Coco-nuts, per 100 ..	18 0-22 0
Cherries, French, box ..	1 2-1 7	Oranges: — Californian ..	16 0-18 0
— per 1/2 sieve ..	5 6-6 6	— Navel, per case ..	18 6-18 0
Dates, dozen boxes ..	4 0-4 6	— Denia, per case ..	18 6-40 0
— per cwt. case ..	20 0 —	— Jaffa, per case ..	12 6 —
Figs, English, p. doz. ..	4 0-18 0	— Mercia, p. case ..	12 0-16 0
— Kadrowi, cwt. ..	11 0 —	— Palermo Blood, case ..	9 6-10 6
Gooseberries, strike ..	4 0 —	Peaches, English, per doz. ..	10 0-36 0
Grapes: — Australian, per box ..	16 0-20 0	— Belgian, p. doz. ..	8 0-20 0
— Belgium Gros Colmar, per lb. ..	2 0-3 0	Pears, Australian, tray ..	6 0-9 0
— Cape, box ..	7 0-8 0	— Cape, box ..	7 0-8 0
— White Muscat ..	5 6-6 6	Pineapple, St. Michael ..	2 6-3 0
— Red Muscat ..	6 0-7 0	Plums, Australian, per case ..	14 0 —
— Raisin Blanc ..	3 6-4 6	Pomegranates, case ..	6 0 —
— English, New, per lb. ..	2 6-5 0	Strawberries, Worth- ing, per lb. ..	1 6-3 0
— Canon Hall ..	10 0-18 0	— First quality ..	1 6-3 0
— Muscat, lb. ..	10 0-18 0	— Second quality ..	0 9-1 0
— Alexandria, lb. ..	10 0-17 6	— Hampshire p. lb. ..	1 0-2 6
Grape Fruit, case: — 90's ..	14 0-20 0		
— 80's ..			
— 64's ..			
— 48's ..			

REMARKS.—Shipments of fruit from Australia and Tasmania to land this week consisted of 173,000 packages, including Apples, Grapes and Pears. There are large supplies of Strawberries, including baskets, each containing about 4lb. weight of fruit, from French growers. The supply of Peaches and Nectarines from English and Belgian growers is increasing daily. The market is well supplied with both Melons and Figs. English-grown Grapes are available in fairly large quantities. The crops of Cherries and Apricots on the Continent are both very heavy this year. Gooseberries have been a shorter supply this week. Mushrooms are very plentiful, and selling badly, but forced vegetables are scarcer. Asparagus has not been very plentiful during the past week, and supplies of all ordinary vegetables are considerably shorter.—E. H. R., Covent Garden, May 20, 1914.

Vegetables : Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Artichokes, Globe, per dozen ..	1 3-1 6	Lettuce—continued: — Cos, French, per doz. ..	5 0-6 0
— ground, 1/2 sieve ..	1 0-1 6	Marrows, per doz. ..	5 0-10 0
Asparagus: — Cavillon ..	0 9-0 10	Mint, per doz. ..	2 0-4 0
— Sprue ..	0 4-0 6	Mushrooms, cultivated, per lb. ..	0 6-0 8
— Giant ..	4 0-8 0	— Broilers ..	0 4-0 6
— Victorian ..	1 9-2 0	— Buttons ..	0 9-1 0
— Toulouse ..	1 3-1 6	Mustard and Cress, per dozen punnets ..	0 10-1 0
— Lauris ..	1 0-1 6	Onions, picklers, per bushel ..	3 0-4 0
— English bundle ..	0 9-3 0	— Spring, per doz. ..	2 6-3 6
Batavia, per doz. ..	3 0-3 6	— Egyptian, bags ..	17 6-18 0
Beans, Guernsey, lb. ..	0 8-0 9	— Lisbon, box ..	13 6-16 0
— English ..	0 7-0 8	Parsley, per dozen bunches ..	2 6-3 0
— Broad, French, per pad ..	4 0-4 6	Parsnips, per bag ..	2 0-2 6
Beetroot, per bushel ..	4 0-4 6	Peas, Guernsey, lb. ..	1 0-1 2
Cabbages, English spring, per hamper ..	4 0-4 6	— French, pad ..	5 0-6 0
Carrots, (English), bags ..	6 0-6 6	Radishes, per doz. ..	1 6 —
— (French), pad ..	3 0-4 0	Rhubarb, Leeds, forced, dozen bundles ..	1 6 —
— New, bunch, round ..	0 5-0 6	— Natural, per tally ..	6 0-7 0
— long ..	0 7-0 8	Sage, per dozen ..	1 6-2 0
Canflowers, per hamper ..	4 6-5 0	Seakale, Natural, 1/2 bush ..	2 0-2 6
Chicory, per lb. ..	0 4 1/2 —	Spinach, per bushel ..	2 6-3 0
Cucumbers, per doz ..	2 6-3 0	Spring Greens, bag ..	2 6-4 0
Endive, French, per dozen ..	2 0 —	Stachys tuberosa, lb. ..	0 4 —
Garlic, per strike ..	3 0-4 0	Swedes, bag ..	1 6-2 0
Horseradish, 12 bundles ..	18 0-24 0	Tomatos, Canary, bundle ..	16 0-20 0
Leeks, per dozen ..	2 0-3 0	— English, per lb. ..	0 7-0 8
Lettuce, Dutch, round, per crate ..	2 6 —	— Guernsey, per lb. ..	0 6-0 7
— English, Cos, per score ..	6 0 —	Thyme, per dozen bunches ..	2 0-6 0
— English, round, per score ..	1 0-1 3	Turnips (English), per bag ..	3 6-4 0
— French, round, per doz. ..	1 3-1 6	— (French), long, dozen bunches ..	12 0-13 0
		— round ..	7 0-8 0
		Watercress, per doz. ..	0 4-0 6

s. d. s. d.		s. d. s. d.	
Blacklands ..	3 6 —	Lincoln—King Edward ..	4 3-4 9
Dunbar—Red soil ..	5 3-6 0	— Evergood ..	3 9-4 0
— Grey soil ..	4 0-4 3	— Up-to-date ..	3 9-4 0
		Scotch—Grey soil ..	3 9-4 3

s. d. s. d.		s. d. s. d.	
Jersey, per cwt. ..	15 6-18 0	Spanish, per cwt. ..	11 0-13 0
Lisbon, per case ..	4 3-4 6	Teneriffe ..	9 6-11 0

REMARKS.—Trade in old tubers will soon be finished, but their prices remain fairly firm. New Potatoes also are realising good prices. The supply is quite equal to the demand.—Edward J. Newborn, Covent Garden and St. Pancras, May 20, 1914.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending May 16, is furnished from the Meteorological Office:—

REMARKS ON WIND AND WEATHER.

May 19, 1914. The centre of a depression of moderate depth travelled eastward across Scotland on Sunday and Monday, and rain, mostly slight, was experienced in nearly all parts of the Kingdom. In various localities in the north-west, north, and east some rain fell on Tuesday also. At some Scottish stations, and also at Rounton, thunder was heard early in the week, and a few places reported snow, sleet, or hail. An anticyclone, which had extended to Ireland from the Azores on Tuesday, subsequently stretched eastward across the United Kingdom, and by the end of the period its central area was situated over the south-west of Norway. This system was accompanied by fair, dry weather, and towards the end of the week, when it came more directly over the Kingdom, the temperature rose from its low figure of the earlier days and became high for the time of year. Until Thursday the main wind current was between west and north-west, and its force light to moderate, but on the following days it was light and variable—mostly easterly in the south, and westerly in the north.

THE WEATHER IN WEST HERTS.

Week ending May 20, 1914. A Very Hot, Dry, and Sunny Week.—The present term of hot weather came in very suddenly, the previous six days having been as unseasonably cold as the past week has been hot. On the coldest day of the former period the temperature in the thermometer screen never rose higher than 47°, whereas on the warmest day of the past week the highest reading was 75°—a difference of 28°. The difference on one day between the highest and lowest temperature in the thermometer screen was as much as 36°. The ground is at the present time 3° warmer at 2 feet deep, and 4° warmer at 1 foot deep, than is seasonable. No rain has now fallen for eight days, and no rainwater has come through either percolation gauge for six days. The sun shone on an average for nine hours a day, which is three hours a day longer than is usual in the middle of May. On the first day of the week no sunshine at all was recorded, whereas on each of the past four days the sun was shining brightly for between eleven and thirteen hours.

Light airs and calms alone prevailed during the week, the direction of these light airs being mostly some point between north and east. The mean amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by as much as 12 per cent. A selected bush of Hawthorn first came into blossom on the 14th inst., which is eight days earlier than its average date in the previous twenty-three years, and four days earlier than last year.—E. M., Berkhamsted, May 20, 1914.

GARDENING APPOINTMENTS.

Mr. A. H. Campin, for the past 20 years Gardener at The Manor House, Alton, Hampshire, as Gardener to W. H. HERBERT, Esq., Whetstone Pastures, Leicestershire.

Mr. H. W. JACK, of University College, Cork, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, an Assistant Agricultural Inspector in the Federated Malay States.

Mr. M. FREE, formerly a member of the Gardening Staff of the Royal Botanic Gardens, Kew, has been appointed Gardener of the Brooklyn Botanic Garden, New York.

Mr. H. E. DOWNER, formerly a member of the Gardening Staff of the Royal Botanic Gardens, Kew, has been appointed, on the recommendation of Kew, Gardener at the Botanic Gardens, Smith College, Northampton, Mass., U.S.A.

LAW NOTE.

TENANTS' CLAIM FOR COMPENSATION.

BEFORE His Honour Judge Mackarness at the Worthing County Court, Mr. G. F. Page, arbitrator under the Agricultural Holdings Act, asked for the Judge's decision, on a point of law, whether the words in a lease, "And any other crops then growing on the said premises," would properly cover bulbs, Paeonies, and Rhubarb. The lease was one which the executors of the late Mr. H. Pullen-Burry and Mr. A. Pullen-Burry held under the Provost and Fellows of Lancing College. That lease terminated last September, and the tenants made a claim under the lease for £9,900, of which £8,180 was in respect of bulbs planted among the fruit trees at Malthouse Farm. When the lease was granted in 1892 it was stipulated that nine-tenths of the farm was to be planted with fruit trees of which there were to be 320 standards to the acre. Terms were arranged of compensation to the tenants for the fruit trees at the end of the lease. Field bulbs were little cultivated, if at all, in England 21 years ago, but it was stated that before the expiration of the lease the tenants had planted some 10 million bulbs on this farm. The claim for compensation for these bulbs was described in Court as twice the value of the freehold of the land. What the County Court Judge was asked to do was to give definite legal construction to those words in the lease, "and any other crops then growing on the said premises." Mr. Barrington Ward (instructed by Messrs. J. E. Dell and Box) appeared as counsel for the tenants; Mr. John Flowers, instructed by Messrs. Freeman and Son, as counsel for the landlords; and the arbitrator was legally represented by Mr. C. J. Sherwood. There was much legal argument over the word "crop." Did crop necessarily mean food? The lease in particular words had mentioned fruit trees; must the words, "any other crops," have some relation to the particular words that had gone before? If so, then as bulbs were clearly not fruit, although the flowers might possibly be described as the fruit of the bulbs, the tenants' claim might not be good in law. But, argued the other side, what does the word "other" mean? Evidently not the "same," more likely something of the opposite. For the landlords it was also argued that the question of movability was important. It was necessary for the arbitrator to find, as a matter of fact, whether the bulbs were movable or not in order that he could put the case properly before the Judge. Landlords did not pay compensation. Mr. Flowers insisted, for things that were in an ordinary sense movable; and there was an affidavit before the arbitrator that the bulbs could be moved without injury between July and September. Another point raised by Mr. Flowers was whether the cultivation of bulbs was detrimental to fruit culture. Mr. Barrington Ward urged that as a matter of fact there were two crops—the crop of blooms and the increase of

the bulbs themselves. This increase of the bulbs was a valuable crop. In the end His Honour decided to take ten days to think over his judgment. What he was going to do, he indicated, was simply to answer the question whether bulbs came within the meaning of the words in the lease.

Judgment was delivered on the 14th inst. His Honour said there could be no doubt that bulbs came under the head of flowers. There were also bulbs producing food plants. The landlords were bound to pay for fruit trees and not merely fruit. They must, therefore, pay for the bulbs and not merely the blooms. His decision was that bulbs, Rhubarb, and Paeonies were included in the words "other crops."

CLAIM FOR COMPENSATION.

At the Redhill County Court on Monday Frederick Humphreys, Norwood Hill, gardener, sued Miss Christabel Ellis, of Little Mynthurst Farm, Leigh, for compensation arising from an alleged accident.

The applicant, aged sixty, had an accident thirty-five years ago, suffering injury to the spine, and since then he had been weak in the right leg and arm. For twenty years he was employed by the late Rev. C. J. Lucas, and never had a holiday or an illness. At the end of October he asked Wright, the gardener to the respondent, for a job, which he gave him. His wages were £1 a week. On January 16 he was carrying a plank across a meadow, and stepped into a hole and sprained his knee. He did not see the hole as it was covered over with grass. Witness continued work for a day or two, but owing to the condition of his knee he had to leave his work on January 21. He went to a doctor and received treatment. Up to April 23 he was resting. About a month after the accident respondent's butler called and paid him 10s. for three day's wages, and he (witness) told him the Prudential Insurance Company would not pay him when he applied, as the claim had first to be made to the employer under the Workmen's Compensation Act. His left knee was much better, but not quite so strong as previously. Witness applied to the Prudential Insurance Company for insurance money. The notice was given by the company, and the notice stated that the accident was on January 21.

Dr. C. F. Wakefield, of Norwood Hill, said the applicant had a weak right side, but he could do his work all right. On January 21 applicant came to him, and his left knee joint was hot, painful, and swollen. It was just such a condition that might have been caused under circumstances told by the applicant.

Respondent's counsel submitted that the applicant was a casual workman, and that no notice of the accident was given until March 20, and that the notice was incorrect, so that the respondent was prejudiced.

The respondent said she received the notice on March 20.

His Honour said, in spite of the able argument of applicant's counsel, he had come to the conclusion that the claim must not succeed. It was quite clear that it was the duty of the applicant to satisfy the Court that he had given a written notice to his employer as soon as practicable after the accident was said to have occurred, and if he had not done so he must show that the employer had not been prejudiced owing to his neglect. There was not the slightest doubt that the written notice was not given as soon as practicable. As to whether the employer had been prejudiced, he had lost the opportunity of investigating the facts connected with the alleged accident. There would be judgment for the respondent.

His Honour made an order for costs, on Scale B, against the Prudential Approved Society.

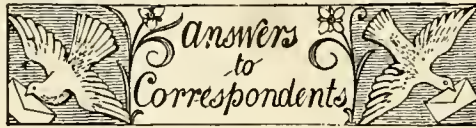
CLAIM FOR COMPENSATION.

At the Clerkenwell County Court, under the Workmen's Compensation Act, an award was made on Friday last, by agreement, of £110 to Mary Dobson, widow, of Aberdeen Road, Highbury, against William Clinton, of Aberdeen Park Nurseries, Highbury Grove, in respect of the loss of her husband.

It was stated that the deceased man, a gardener, met with a fatal accident whilst in the employ of Mr. Clinton at Spencer's Yard, Highbury Grove, on February 10 last.

TRADE NOTE.

MR. H. JENKINS, who for the past six years has been nursery manager for Messrs. Michie and Co., of Alnwick, Northumberland, has been appointed by Messrs. Alfred Spring and Co., Ltd., of London, as their representative for the Midland Counties for the sale of their manure "Stimuland." [Thanks for contribution to R.G.O.F. Box.—Eds.]



ANGULOIA CLIFTONII: *B. D. K.* *Anguloia Cliftonii* grows best in the shady end of an intermediate house. The plants should be watered freely when growing actively, and partially dried off for a time after growth is completed.

AVOCADO PEAR: *C. G. B.* We have not seen seedlings of the Avocado Pear (*Persea gratissima*) "growing like Hyacinths in water, and up to 6 feet in height," but as Chestnuts and acorns will germinate and grow to a goodly size when treated similarly it is quite possible that your information is correct, although the height may perhaps be somewhat exaggerated. The seeds of the Avocado Pear should be sown as soon as they are received, and placed in a tropical temperature. A soil similar to that used for *Codiaeums* (*Crotons*) will be found suitable.

FIGS FALLING: *C. A. B.* There is nothing whatever the matter with your Figs; the only reason for the failure in the first crop is that it appears too early in the year to be fertilised by the agency of insects.

GARDENERS' NOTICE: *H. J.* In the absence of any agreement to the contrary a head gardener is entitled to a month's notice or a month's wages in lieu of notice, and the mere fact that he is paid weekly for the sake of convenience does not alter his rights. You cannot demand from your present employer any correspondence which he had with your former employer as to your character. If, however, testimonials were given to you personally, and you handed these to your present employer when he engaged you, you can demand them back again.

MELON ROOTS UNHEALTHY: *C. I. N.* Your Melons are suffering from "Tomato canker." There is no cure for this disease, and the affected plants should be removed and burnt immediately. Careful watch should be kept on plants which now appear to be healthy, and on the least sign of the disease the parts should be cut off and destroyed, or the canker will spread.

NAMES OF PLANTS: *W. F. Godwin.* 1, *Bougainvillea spectabilis*; 2, We do not recognise the variety; 3, *Arctostaphylos Uva-ursi*; 4, *Eunymus nanus*.—*L. B. Pulkinghorne.* *Berberis Hookeri*.—*M. E. Bathe.* *Cydonia japonica* *Moerlesii* *Salvia officinalis purpurea* variegata. The seedling Broom is near one of the parents of *Cytisus praecox*, namely *C. purgans*.—*A. B. C.* *Bromus mollis*.—*W. B. S.* *Chieranthus Allionii*.—*L. D.* 1, Send in flower or fruit; 2, *Halesia tetraptera*; 3, *Prunus Padus*; 4, *Berberis Darwinii*.—*Hortus.* *Lonicera tatarica*.—*W. H., Bromley.* Both specimens are "The Loquat," *Eriobotrya japonica*.—*C. J. E.* 1, *Prunus Padus*; 2, *Crataegus punctata*; 3, *Staphylea pinnata*; 4, *Pyrus salicifolia*; 5, *Tsuga canadensis*; 6, *Caragana* sp.?: better specimen desirable.—*G. W.* 1, *Laelia purpurata*; 2, *Dendrobium chrysoeum*; 3, *Epidendrum cochleatum*; 4, *Maxillaria Harrisoniana pubigera*.—*O. T. S.* 1, *Dendrobium cretaceum*; 2, *Bulbophyllum auricomum*; 3, *Dendrobium Pierardii*; 4, *Masdevallia caudata*.

NARCISSUS: *R. L. F.* 1, *N. Poeticus* variety; 2, *N. biflorus*; 3, unrecognised. We cannot advise you how the varieties have been introduced to your garden.

NECTARINES, CRACKING: *Anxious.* The cause of the cracking of your Nectarines is the presence of too much water at the root. The plants absorb more water than the fruits will hold, and the delicate skins burst under the pressure.

NOTICE OF DISMISSAL: *J. R. L.* In the absence of any agreement to the contrary a head gardener is entitled to a month's notice or a month's wages in lieu of notice. He should give up occupation of the lodge on the same day that his notice expires. In cases of gross misconduct a gardener, like any other servant, can be instantly dismissed, but as you do not mention the reason for dismissal it is not possible to express an opinion as to whether your conduct would have entitled your employer to take such drastic steps. Your son who is working under you would, as a general rule, be entitled to a week's notice. The fact that he was paid fortnightly would not necessarily alter this rule; but it is somewhat unusual to pay wages every fortnight, and this might possibly justify a presumption that a special arrangement of a fortnight's notice was contemplated. Your son could not claim anything for the hire of the bird-cage. No doubt it was understood that the cage would be lent without making any charge, and in the circumstances an agreement to pay for the hire of it would not be presumed.

ONIONS TURNING YELLOW: *Inchicone.* The Onion fly is no doubt the cause of your Onions failing. Syringe the young plants with paraffin twice weekly immediately they show above ground, using a wineglassful of paraffin to 4 gallons of water, keeping the mixture well stirred. Soot used freely is also a good preventive of Onion fly. Plants raised in boxes in a cool house or frame during January and planted out in April seldom suffer from attacks of Onion fly.

RAMBLER ROSES BUDDED LAST SUMMER: *A Reader All the Year Round.* As a rule Roses of the *Wichuraiana* section require no pinching back, as they break freely and naturally at the base and become bushy enough. Those of the multiflora group should be cut back to three or four eyes, and this should be done at once.

TOMATO PLANT DISEASED: *W. G.* Your plant has been killed by the "Sleeping Disease." No cure is known for this pest, but the infected soil must be sterilised by heat before it is again used for Tomatos, or the next year's crop will be affected by the disease.

TREATMENT OF SOIL: *An Amateur.* The advice to bring the subsoil to the top when digging needs qualifying. In such cases as yours, where the subsoil is pure clay, such a procedure, without a considerable amount of after-treatment, would render the garden infertile, for pure clay in its natural state is incapable of supporting vegetation. We are well aware that several successful vegetable growers advocate, and no doubt practice, annual trenching of the kitchen garden soil, but these gardeners are in a position to expend a considerable amount of labour on the soil after the trenching has been done, and to ameliorate it by adding various substances, thus making it very fertile. But the majority of gardeners, who are not placed so fortunately, find bastard trenching to be best, and it is this method that we advise you to follow.

VINE LEAVES: *I. F. B., Elmwood.* There is no *Phylloxera* present in the Vine leaves. The spots are known as "sap-warts"; they are produced by the double condition of an excess of atmospheric moisture and too bright a light. We do not make any charge for replies to enquiries, and have therefore placed the remittance you sent in the collecting box for the Royal Gardeners' Orphan Fund.

Communications Received.—*A. H.—R. M. (C.G.A.)*—*S. C. A. A.—B. B.—Inquis.—J. Lynn—H. W.—W. B. W.—W. K.—W. H. W.—E. B.—S. A.—H. W. T.—E. A. B.—Miss T.—White Rose—H. & Sons—Rev. D. R. W.—Roy. Met. Soc.—H. W. W.—A. J. B.—W. T.—H. S.—W. E.—Dr. E.—J. D. M.—T. H.—S. & S.—Dorset Gardener—Perplexed.*



THE

Gardeners' Chronicle

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THE RED AND BLUE PIGMENTS OF FLOWERS.

THE most beautiful colours in nature—the reds, blues, and purples of flowers and fruits—have withheld the secrets of their composition longest; but, as the result of the work which Professor R. Willstätter (of the Kaiser Wilhelm Institute for Chemistry, Berlin) and his collaborators have carried out during the last three years, the chemistry of these pigments is now known.

So long ago as 1905 incentive to this work was given by H. Molisch, the distinguished Viennese botanist, who proved that these pigments—which were generally looked upon as amorphous substances—not only exist in many flowers in a crystalline condition, but may be isolated as microscopic crystals.

A paper published last year by Willstätter and Everest foreshadowed interesting developments in this field, but the rapidity with which the investigations have advanced must have surprised even the investigators themselves. Proof has now been obtained that, in all investi-

gated cases, these colouring matters (the anthocyanins) are members of one class of chemical compounds, and, moreover, that they are closely related to the colouring matters of many yellow flowers. This latter result is a confirmation of similar conclusions arrived at independently by various other workers.

To the flower-lover there are many points of interest which arise from this work, and a few such may be mentioned.

It has been shown that most of these pigments—which in themselves are purple—have the power of combining with acids to form substances which vary in colour from bright red to magenta, whereas, on the other hand, by uniting with alkalis, they give rise to blue colouring-matters. The horticulturist who for years has striven to obtain a blue Rose will be interested to know that these researches have shown that the colouring matter present in the red Rose is identical with that which imparts to the Cornflower its fine blue colour. The only difference between them is that in the red Rose the pigment is united with a plant acid, whereas in the Cornflower it is combined with potash. From this it appears that there is no reason why success should not ultimately attend the efforts of those who may devote themselves to the production of this novelty.

In like manner it has been observed that the pigment of the ordinary Poppy does not seem to possess the power of combining with alkalis to produce a blue compound, hence it would appear useless to attempt the production of a blue flower in this case—a variation from red to purple only being obtainable.

For years the deep red Hollyhock has been grown on a large scale in various Continental countries, and the dried flowers have been used extensively for improving the tint of poorly-coloured wines. This adulteration led to many attempts being made to discover a method of detecting the presence of the adulterant, but in view of the very close resemblance between the pigments it seemed almost impossible to expect success, and previously all such attempts had failed. The work of Professor Willstätter, however, has shown exactly how the pigments of the Grape and of the Hollyhock are related to each other, and has led to a successful method—involving the use of ferric chloride—for distinguishing between these pigments.

In most cases the method of obtaining pure crystalline pigments from flowers has been reduced to a few very simple operations, e.g., it is often sufficient to extract the colour with alcohol containing either hydrochloric or acetic acid, precipitate it from this extract by the addition of ether, then take up the solid so obtained in dilute hydrochloric acid, from which it separates in crystals. From the red Rose, crystalline pigment equal to 1 per cent. of the weight of dried petals can thus be obtained, whereas the Cornflower only contains about 0.6 per cent. of pigment, and it is far more difficult to obtain it from this flower. In the Pelargonium zonale the amount of pigment rises to 6½-7½ per cent. of the weight of the petals.

It has been shown that the power which these pigments possess of combining with acids is dependent upon oxygen, and not, as is so often the case in organic compounds, upon the presence of nitrogen in them. They contain no nitrogen.

For a long time differences of opinion have arisen as to whether or not these colouring matters—like so many naturally occurring compounds—exist in the plants in chemical combination with sugars. The researches above mentioned prove conclusively that they do.

Thus is added to the credit of the scientist the discovery of one of the most obscure of Nature's secrets, but, like most such work, it leads him on to further problems. His work has shown what these beautiful substances are; the problem now arises, How are they produced in the plant laboratory? Let us hope that ere long this question, too, may be answered. *Arthur E. Everest.*

THE BANANA.

TO many people the Banana as put on the table in this country has only one merit—it is easily peeled, and so does not distract the brilliant causeur from his work of setting the table in a roar. But by the travelled man the Banana is always welcomed. Though he may pass it by and take an English fruit, yet he loves to see it, for it recalls memories of hot and hungry tropic mornings when, after a scrimmage through jungle, he came upon a native village and ate the delicious fruit ripe and succulent, fresh gathered by his coolies.

Of those pyramids of yellow-golden fingers touched at the base with emerald which adorn the coster's barrows of all our cities, of their origin, cheapness, nutritive value, Mr. Fawcett tells in excellent manner in his book on "The Banana."* From the preface, by Sir Daniel Morris, to the last page of the volume, there is not a dull page, for Mr. Fawcett has put his thirty years' experience of planting in Jamaica into the making of this book.

Incidentally, he destroys some of our illusions: for instance, that which held that the Banana, cultivated as it has been for countless centuries, had lost altogether its power of setting seed. Though this is true of many and perhaps of most varieties, seed has been obtained by fertilising the female flowers of the Gros Michel (*Musa sapientum*) with pollen from *Musa Basjoo*, a Japanese species. Moreover, the commonest Philippine Banana, the Saba, not infrequently produces seed.

From the recent experiments by d'Angremond in Surinam it is established, moreover, that, whereas the seedless fruits of the Canary (*M. Cavendishii*), Jamaican (*M. sapientum*) and Apple Bananas are produced without pollination, pollen is necessary for the production of seed in the fertile species *M. Basjoo* and *M. ornata*. As is so commonly the case, the best fruits find their way but rarely into the

* *The Banana: Its Cultivation, Distribution, and Commercial Uses.* By W. Fawcett, B.Sc., late Director of Public Gardens and Plantations, Jamaica. Published under the auspices of the West India Committee by Duckworth, 7s. 6d. net.

market. The big, coarse fruit of the barrow is a plebeian which triumphs over the smaller, better-flavoured Chinese or Canary Banana, and it owes its triumph to the fact that it can stand the long journey—from Central America or Jamaica—better than the finer fruit of the Canaries.

Another illusion, or error rather, which Mr. Fawcett demolishes is that which imputed synonymy to the Banana and the Plantain. They are distinct. The Plantain is the fruit of *Musa paradisiaca*, and good as a cooked fruit—a tropical substitute for the Potato, and

remains that in most plants pollination gives rise to fruit and seed, and without pollination neither fruit nor seed is produced. It still remains to explain the relatively few aberrant cases in which an unpollinated plant, though it produces no seed, nevertheless produces fruits. The rapidity with which the Banana has established itself on the European market is described vividly by Sir Daniel Morris in his brief but excellent preface. Fifty years ago Jamaica exported fruit to the annual value of £728; to-day the value of its exports of fruit, chiefly Bananas, amounts to 1½ million pounds sterling. In the



FIG 164.—IRIS GOLDCREST: FLOWERS BRIGHT VIOLET-BLUE, BEARD COLOURED GOLDEN.

(See p. 382.)

the Banana is the fruit of one of the almost infinite varieties of other species of *Musa*, the chief of which have been named already.

Those who grow Musas in houses in this country will find in Mr. Fawcett's pages many useful hints, as, for example, the fact well known to travellers that the lower parts of the leaves are so channelled as to conduct rain-water falling upon them towards the base, and the application of the fact that water supplied in this way is important for the proper shooting of the flower-stalk. On one point we find ourselves in disagreement with Mr. Fawcett. He observes (p. 16) that there is no difficulty whatever in understanding how the seedless Banana arrives. To account for the phenomenon continuous selection of poor seeders is invoked. But the fact

economic development of the West Indies Sir Daniel, as is well known, played an important part, and it must be a source of real and legitimate satisfaction to him that the enterprise which he helped to foster has in literal sense borne such a rich harvest of fruit.

As was remarked at the beginning of this account of Mr. Fawcett's excellent work, the book is full of matter, and we may conclude by drawing attention to the account given of attempts to dispense with cold storage in the carriage of this fruit. Experiments appear to show that Bananas may be "shipped" successfully by packing them in peat or other absorbent material, such as well-dried husks of maize. Herein lies a useful hint for those who wish to preserve fruits or seeds of plants generally.

ORCHID NOTES AND CLEANINGS.

ORCHIDS AT JARVIS BROOK.

A FEW years ago the firm of Messrs. Stuart Low and Co. purchased a large holding of land on the east side of Crowborough, in the highest part of the Weald of Sussex, a district favourable for the culture of Orchids. The object of acquiring the new land was twofold—to find space for the cultivation of decorative plants and general nursery stock which had become crowded at the main establishment at Bush Hill Park, Enfield, and to remove the large collection of Orchids which had increased rapidly by hybridisation and importation to a locality distant from London and known to be favourable for their culture.

In the open ground are planted large quantities of Roses of all kinds, and large blocks of houses are devoted to the culture of perpetual-flowering Carnations. Our visit, however, was made for the purpose of inspecting the Orchids, which occupy twenty-four spacious houses in two blocks, joined together at the ends by long corridors and heated by seven Robin Hood boilers. The firm specialises in importations of showy Cattleyas, Laelias, Dendrobiums, and other decorative Orchids, and their reputation is well sustained in the collections at the new establishment, for there are thousands of specimens, from the batches imported this spring to the established plants in flower. *Dendrobium Wardianum* is one of the best represented, the large-flowered type often called *Lowii* partly filling several houses, the new importations breaking into from three to nine growths to a plant, ensuring them over the difficulties of the early stage. The extraordinary long-bulbed, free-growing type of *D. formosum giganteum*, which is certainly a new type, with very fine white flowers with yellow centres, gives growers who have experienced difficulties with the old type a fresh chance of success; the dark-flowered *D. nobile*, and a batch of the white form, *D. crepidatum*, *D. dixanthum*, *D. clavatum*, *D. fimbriatum*, *D. crassinode*, *D. crystallinum*, *D. Phalaenopsis*, and other showy species, *D. thyrsoiflorum*, *D. Jamesianum*, and the dwarf floriferous type are all giving bloom. A house of *Renanthera Imschootiana* gives a brilliant display of tall spikes of deep red butterfly-like flowers, and shows it as one of the best plants for the exhibition season. An interesting phenomenon in this house is the presence of a plant of larger growth, but with similar flowers, imported before *R. Imschootiana* was known and probably to be found in the Reichenbach herbarium under another name.

The houses of *Cattleya Mossiae* and *C. Mendelii*, containing thousands of fine specimens, many of them in bloom, are in themselves worthy of a visit. Both species are of the best type, and the variation in the colouring of the flowers is remarkable, the *C. Mossiae*, numerous as they are, scarcely having two exactly alike. A large batch of white and white-petalled forms is present, the forms of the *Reineckiana* section, one of the best of which is *C. M. Magaliae*, and *C. M. Lady Dorington* being specially good. Among remarkable plants in these houses are *C. Mossiae Wageri*, with five flower-sheaths; *C. Mendelii* alba, *C. M. alba* Stuart Low, *C. Warszewiczii* alba Firmin Lambeau, of the F.C.C. and Gold Medal stock; *C. maxima* alba, *C. O'Brieniana* alba, *C. Loddigesii* alba Stanley's variety; and a small batch of white-petalled forms of *C. Percivaliana* and white *C. labiata*. Houses of *C. labiata*, *C. Schröderae*, *C. Harrisoniana*, *Vanda coerulea*, and other standard Orchids, in most of which some fresh arrivals were being acclimatised, were noted; and in many of the houses small lots of rare species imported with the showier things were present.

To mention some of the batches most prominent by their evidence of good culture and free flowering, we found specially good a fine

lot of *Miltonia vexillaria* and hybrids densely set with flower; a lot of *Roezlii* and variety *alba*; some fine tufts of *M. Phalaenopsis*, with one pure white form; a house of *Cattleya Trianae* with most of the famous forms; two houses of *Odontoglossums*, chiefly of the best variety of *O. crispum*, in flower or bud, with some excellent blotched forms; one large home-raised variety being of extra merit. Of a number of hybrid *Odontoglossums* some were in flower, and a large lot of *Odontiodas* had fine spikes of brilliant red blooms, chiefly on plants of *O. Vuylstekeae*, *O. Bradshawiae*, *O. Cooksoniae* and *O. Devossiana*.

A small warm house was plentifully furnished with sprays of the white Moth Orchid, *Phalaenopsis Rimestadiana*, with smaller lots of *P. Aphrodite*, *P. Schilleriana*, and a plant of the

leopardinum, and other *Bulbophyllums* and *Cirrhopetalums*, *Dendrobium Victoria Regina*, *Odontoglossum platytilum*, and some very fine scarlet forms of *Sophronitis grandiflora*. Two houses of *Cypripediums* have some plants in bloom, one hybrid between *C. Leeanum* *Clinkaberryanum* and *C. Mrs. Wm. Mostyn* being a fine novelty of perfect shape and rich colouring.

The hybrid Orchids occupy suitable places in many of the houses devoted to the species, and some long ranges are devoted to them entirely. Mr. Jack, who so ably manages this department, showed us batches of *Brasso-Cattleya*, *Laelio-Cattleya* and various other crosses in all stages of development, a very large number being due to flower this and next year. An interesting batch was of *Cattleya Whitei*, both home-raised and imported natural hybrids, the home-raised

For watering purposes rain-water is preferred, but at such an elevation provision has to be made in case of drought, and a pumping apparatus and reservoir have been installed to pump and store the fairly soft water of the district.

THE ROSARY.

SEASONABLE WORK IN THE ROSE GARDEN.

Roses of all kinds are exceptionally early this season. Already at the end of April *Irish Brightness* was in flower, and *Rosa Hugonis* is now in full bloom. This last is a beautiful species, and often a few days earlier than *R. xanthina*, another beautiful yellow-flowered species. It is welcome news that the National Rose Society has officially recognised the name "*Pernetiana*" for the valuable race originated by M. Pernet-Ducher. This group will probably become a very important one. *Madame Edouard Herriot*, one of its best representatives, is fully two weeks earlier than the majority of Hybrid Teas out-of-doors, and if the raisers can give us greater variety of colour in this section, we may expect to have Roses out-of-doors in full bloom by the end of May in favourable seasons. Owing to the heavy rains of March, much of the manure applied earlier in the season has been washed away, and it will be necessary to apply fresh dressings, giving a little at frequent intervals rather than heavy mulchings very seldom. If preferred, the grower can make his own fertiliser instead of buying it. The recipe is as follows:—Two parts dissolved Peruvian guano, one part fine bone-meal, half a part sulphate of potash, one part dried blood, half a part nitrate of soda. All these ingredients should be well mixed together and applied at the rate of 5 ounces to the square yard. The best time to apply it is in the early spring, but even now it would be beneficial, especially in northern districts. Another good mixture is kainit, bone-meal, and blood manure (about 1 cwt. of each) well mixed with three barrowfuls of rather dry potting soil. Leave for two days and then apply a dressing to all the Rose beds; another dressing should be made a month after, and a third after the first blooming. The surface soil should be kept well stirred, and for this reason no small plants should be placed between the Roses. Hybrid Perpetuals should be thinned of all superfluous shoots, especially in the centre of the plant. It is well sometimes to tie out the main growths a little so as to admit the air. Tea Roses on walls will soon be in bloom. They require plenty of liquid nourishment. Rambler Roses, especially *Wichuraianas*, should not be grown too thickly and may be opened out with ropes. Rose pests will be busy this month, and search should be made for the caterpillars of the winter moth and mottled amber moth. Spray with nicotine or tobacco wash, or apply arsenate of lead paste, to destroy caterpillars. The bushes should also be sprayed with potassium sulphide to prevent attacks of fungus. Handpicking is the best method for the eradication of Rose beetles, cockchafers, slug-worms, green Rose maggots, and other grubs. Damaged foliage is often the result of hail or cold winds, but it is sometimes caused by a disease known as black spot. There is no certain cure for this troublesome fungus disease: it is said by Dr. Waddell that the application of formaldehyde will check it. He describes the method of application in the *National Rose Annual* for 1913.

The budding of stocks will now need attention. They should be supported by a small cane or they will soon be blown over. The soil between the stocks and also between the rows should be stirred. If bushy plants are desired for potting in autumn, pinch back the plants at once to about 2 inches. Stocks to be budded



FIG. 165.—LAELIO-CATTELEYA MEDINA EXCELSIOR: SEIALS WHITE, LIP DARK RUBY-RED WITH YELLOW LINES AT BASE.

(See p. 382.)

rare *P. intermedia* *Portei*. In the next division in bloom were several plants of the elegant blue *Vanda coerulescens*, some *Rhyncostylis retusa*, *Coelogyne asperata* (*Lowii*), *C. speciosa*, with good plants of *Vanda Sanderiana*, *Aërides odoratum album*, *Luisia Amcsiana*, some fine forms of *Vanda tricolor* and other warm-house Orchids. A house of *Cymbidium*s has a fine lot of the known species including *C. insigne* and hybrids. Some are in flower: one flowering for the first time, *Cymbidium Venus* (*Holfordianum* × *insigne*) has a charming blush-white flower of perfect shape, with small purple spotting on the lip.

Among interesting and rare plants in bloom were the red and purple *Cryptochilus sanguinea*, a small batch of the pretty and fragrant *Ornithocephalus grandiflorus*, *Bulbophyllum*

having the better flowers. *Laelio-Cattleya Dominiana* of very rich colour gave promise for the batch with which it was raised, and *L.-C. St. Gothard*, *Brasso-Cattleya heatonensis* and other *Brasso-Cattleyas*, and the pretty rose and orange-tinted *Brasso-Laelio-Cattleya Fowleri* were in bloom.

In a retired corner of the block is the seed-raising house with its cases of freshly germinated seedlings and store pots of healthy little seedlings, the house itself being filled with plants in their first pots.

In one corner is a sturdy batch of *Sophronitis* crosses, some of which have flowered, *S.-C. Doris*, *S.-C. Thwaitesii*, *S.-C. Blackii*, *S.-C.-L. bletchiflora*, and the pretty and interesting *Lowiana insignis* (*Brasso-Laelia Helen* × *Sophronitis grandiflora*).

must be kept hoed. If red rust or orange fungus shows itself the affected parts must be immediately cut off and burnt. Gaps in the beds can

tions. For instance, the ordinary Niphetos and Perle des Jardins are more useful than the climbing sports of these varieties, and are in bloom

eyes and will be especially fine. From Banksian Roses the old wood should be removed, but the fine spray-like growths can be retained. Indoor climbing Roses should be grown somewhat on the lines of a vine, providing plenty of heat and moisture, so that the new wood is produced early. Then in the autumn the houses can be thrown open and the wood well ripened. *Experience.*



FIG. 166.—MILTONIA J. GURNEY FOWLER: FLOWERS CLEAR ROSE-PINK, WITH RUBY-RED MASK.
(See p. 382.)

now be filled with pot-grown plants, preferably those which were taken from the open ground last autumn. The rest of these autumn-potted plants should be set out in rows about 2 feet apart and 15 inches apart in the rows. Plunge them down to the rim of the pot and keep them moist. They will bloom in July or earlier, and Polyantha Roses especially treated in this manner are very useful for decoration.

The culture of Roses under glass is a very interesting pursuit, and now is a very good time of year to make preparations for planting out. This method is better than that of pot culture, as the stems of the blooms are much longer. Good, deep soil is necessary, with plenty of bone-meal and well-decayed manure. The best plants to treat will be those grafted this season and obtainable in 48-sized pots. Plant in rows a yard apart and about 2 feet apart in the rows. As they develop cut out every alternate plant; those remaining will soon attain a height of 5 or 6 feet. Melody is a good variety for planting under glass; Richmond makes a fine blaze of colour and Sunburst is extremely attractive. Lady Pirrie would also be most suitable, and so would Cherry Page, which is a lovely shade of pink with a suffusion of golden-yellow. Plenty of heat and moisture is necessary for greenhouse Roses. The flower-buds should be removed in the summer. Hybrid Perpetual pot Roses which have finished blooming should be hardened off, but Teas and Hybrid Teas should be kept indoors until June. A top-dressing of good artificial manure is of considerable benefit to the second growth. Any re-potting which is necessary should be done next month, so that the roots may be well established by the autumn. Rambler Roses in pots which are now showing colour should be watered twice a day on very bright days. They should be placed in a cool situation, as they will thus develop a finer colour. Roses for covering walls and low roofs can be selected from the non-climbing sec-

for a longer period. Climbers such as Fortune's Yellow and Yellow Banksian should be severely pruned after flowering. In the case of the former cut back all side-shoots close to the main

growth.

ILEX CORALLINA has slender, drooping branches, and is in habit very unlike the majority of Hollies. The leaves are 4 inches to



FIG. 167.—ADIANTUM GROSSUM.
(See p. 382.)

growths. Thin out the main shoots where necessary, and in autumn, when the growth has finished, prune back the growths again. The flowers will then be produced from the basal

5 inches long, and about 1 inch wide; they are thin in texture, and bear spines along the edges.

ILEX FARGESII bears long, narrow leaves of a leathery texture, 5 inches to 6 inches

long, and 1 inch to 3 inches wide. They are of a paler green than those of either of the foregoing species. The plant grows slowly and forms a well-shaped shrub.

LONICERA MUPINENSIS forms a bush of about 4 feet in height. The flowers are small, dark red in colour, and are carried on long peduncles.

LONICERA THIBETICA bears long, thin branches and small leaves. It forms a spreading, open bush upwards of 6 feet in height. The flowers are blue, or bluish-purple, and the fruits orange-yellow.

OSTEOMELES SCHWERINAE bears small foliage, and is a neat, compact species. In China it grows to a height of 4 feet.

PIPTANTHUS No. 885 is a much hardier plant than *P. nepalensis* and flowers and fruits freely here in an exposed position. It forms a well-shaped bush.

RIBES LONGERACEMOSUM is remarkable on account of the length of its pendulous racemes of flowers. The blossoms are shaped like an urn and are of a greenish-brown colour, set rather widely apart on the rachis. The raceme, which develops in May, is 18 inches to 20 inches long.

RIBES LAURIFOLIUM is a low-growing, evergreen shrub, with thick, leathery leaves, borne on red petioles. It flowers towards the end of January, and the blossoms (which are of a pale yellow shade) last a long time, and are uninjured by frost. The species is dioecious, and the flowers of the male plant are the more showy. It is a very interesting species, being unlike any other of the genus.

RUBUS LAMBERTIANUS is a strongly-growing Bramble, suitable for growing up poles or pergolas. It is semi-evergreen; part of the foliage falls in the autumn, first assuming a brilliant scarlet hue. The flowers, which are white, are followed by bright yellow fruits.

RUBUS GIRALDIANUS is conspicuous in winter by reason of its gleaming white stems. It grows to a height of 8 feet to 10 feet, and the foliage is very graceful—quite unlike the rather coarse foliage of *R. biflorus*. It should be planted in bold masses, for winter effect.

RUBUS ICHANGENSIS has long, slender stems, which require support. Its chief attraction lies in the curious, steely-blue colour of the leaves. See *Gard. Chron.*, Oct. 25, 1910, fig. 114.

SPIRAEA (*SORBARIA*) *ARBOREA* VAR. *GRANDIS* is a beautiful *Spiraea* which flowers in late summer. It is remarkable for the size of its inflorescences, which attain a length of 18 inches and a width of 15 inches across the base. The flowers are white.

SPIRAEA SARGENTIANA flowers in June. It produces in great abundance large, flat corymbs of white blossoms.

STRANSVAESIA DAVIDIANA VAR. *UNDULATA* is an interesting evergreen shrub with a rather variable habit of growth, some plants growing much closer to the ground than others. The leaves are long, of a dark, shining green. The flowers are suggestive of the Hawthorn, and the berries are bright red.

STYRAX WILSONII is a very pretty species. The leaves are small, the stems thin and delicate; the latter bear quantities of white flowers at a very early stage of growth.

VIBURNUM FOETIDUM is evergreen, and has a dense habit of growth. The leaves are light green and thin in texture.

VIBURNUM PROPINQUUM is also evergreen, but the foliage is dark and glossy.

VIBURNUM THEIFERUM (6 feet) is deciduous, and bears large, shining leaves. Its chief beauty is said to lie in the large, bright red fruits, but these have not yet appeared on our specimen.

VIBURNUM DAVIDII is an evergreen shrub of low growth and neat habit. The leaves are about 6 inches long. The flowers are white.

CLIMBING PLANTS.

The following section consists of climbers of various kinds, which we have cultivated with success.

VITIS ARMATA VAR. *CYANOCARPA* is an excellent climbing plant, with deep green leaves which assume brilliant colours in autumn.

VITIS HIMALAYANA VAR. *RUBRIFOLIA* is a clinging variety. It bears dark purple leaves with silver-white veinings, and has a very attractive appearance.

ACTINIDIA No. 1029A is a fast-growing species with rough, green leaves. Unfortunately it does not seem to be quite hardy.

ARISTOLOCHIA HETEROPHYLLA is an interesting plant. The leaves are not so large as those of *A. Siphon*, but it bears an abundance of reddish-brown flowers of the same curious shape as those of the last-mentioned species—a shape which gave rise to the name of "Dutchman's Pipe."

ADVANTAGES AND DISADVANTAGES OF LATE WINTER PRUNING.

APRIL has often been recommended as the best time for pruning Apple trees, particularly young ones; but there are disadvantages as well as advantages in this late work. Fruit buds are liable to be knocked off by the pruner, as the least touch brushes them off at that period. On the other hand, the pruner is tempted to leave shoots intact that should be cut, because of fruit buds being at or near the ends. The advantages are, particularly with young trees, that the best wood buds to cut above can be seen late better than early, and, more important, that many buds which looked like wood buds in the winter have-



FIG. 168.—*BEGONIA LAOY CAREW*: FLOWERS CARMINE-ROSE COLOUR.

(See p. 382.)

CLEMATIS GOURIANA VAR. *FINETII* is an autumn-flowering *Clematis*, which bears large panicles of little white flowers.

CLEMATIS MONTANA VAR. *RUBENS* is a beautiful variety of *C. montana*, and one of the best of spring-flowering climbers. The deep rose-coloured flowers are borne in great profusion, and are slightly larger than those of the type. The foliage and the young stems are rather darker in colour than those of *C. montana*, and by this means the variety can be recognised when not in flower.

CLEMATIS MONTANA VAR. *WILSONII* has much larger flowers than the type, and blooms in late summer.

SINONEMIUM ACUTUM VAR. *CINEREUM* is a pretty climbing plant with shining green leaves and stems. *E. Beckett, Aldenham House Gardens, Herts.*

developed into fruit buds by April, so that pruning can be done by cutting below them where extension is needed. *A Southern Grower.*

SCOTLAND.

GLASGOW'S NEW PARK.—The Glasgow Parks Committee has recommended the Town Council to accept the generous offer of Lord Glenconner to give 15 acres of land on Garngad Road, Glasgow, as a public park, and a sum of £1,000 to meet a portion of the expense of laying it out.

LEITH PUBLIC BOWLING GREENS.—The various public bowling greens in Leith were opened for the season on May 9 by Provost Malcolm Smith. No fewer than 40,000 players used the greens in 1913.

THE BULB GARDEN.

PROSPECTS OF THE LILY SEASON.

THE heavy rains experienced in the beginning of May, and the abundant July-like sunshine which followed so unexpectedly and beneficently in their train, have had a marvellous effect upon the development of Oriental Lilies. This influence has, in south-western Scotland, been especially observable in such fine species as *L. candidum* (which has a deservedly wide circulation in my garden this year), *speciosum*, particularly *magnificum* and *Kraetzeri*, which I account the two grandest

in growth of all my Lilies is *Hansonii*, with its flower-beds distinctly formed, as if its intention were to reveal its golden radiance quite early in June; *Lilium Burbankii*, a vigorous and effective derivative from the famous "Panther Lily" of far California; *L. Henryi*, which, notwithstanding its pendulous habit, has, as Mr. Grove has expressively indicated, high artistic capabilities; and *L. monadelphum* var. *Szovitzianum*, which grows stronger here, and reaches a greater height than I have found it attaining almost anywhere else. By far the grandest grower of all the longiflorums, which are especially adapted for conservatory cultivation,

endured for much longer than two years. I cannot, therefore, recommend them very highly for garden cultivation. *David R. Williamson, Manse of Kirkmalden, Wigtownshire.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

INSECT PESTS IN THE GARDEN AND ORCHARD.

—In reading the articles on the "Market Fruit Garden" by *A Southern Grower*, which are so practical and so frank that they are always full of interest, even to those who do not grow fruit to any extent, one cannot but notice how large a part of the labour and expense in the growing of fruit successfully nowadays is taken up in combating the insect and fungous pests—in the struggle between "the grower and the grub." I think, too, that one can hardly avoid the impression that there must be a flaw in the methods adopted. One paragraph of *A Southern Grower's* recent article (p. 310) is headed "The Forlorn Hope of Spraying." "Fruit-growers," he writes, "keep on spending large amounts of money in spraying without any hope of more than partial benefit." "Spraying against the leaf-curling aphid after an attack has caused the curling is a waste of time and money." "In the case of the apple-sucker . . . it is doubtful whether a single spraying, however well done, kills more than one sucker in ten; at any rate, before the blossom falls." "On examination, two days after the operation (of spraying with a strong soft-soap wash), I find at least half a dozen live pests to one dead enemy." Such expressions of experience could be continued almost indefinitely from other growers and writers. Of course, one would not advocate the abandonment of spraying, but it might be suggested whether more discrimination is not needed. So far as fungous pests are concerned, spraying and washing as at present practised seems to be the most obvious and effective method, and information as to the appropriate fungicides, and the times of their application, is for the most part available. But with regard to spraying for insect pests it seems that perhaps enough consideration has not been paid to the question of the possible destruction at the same time of their natural enemies, and that that may be one reason why the results are so often found to be ineffective and disappointing. To take one insect pest, the most widespread and most protean of all—the aphid. It has many natural enemies, such as the ichneumon fly, and so on. But to consider only one, the lady-bird and its larvae. It seems very likely that indiscriminate spraying might in destroying the aphid also destroy the lady-bird and its larvae, and with the enormous powers of reproduction of the aphid it would matter little whether only one or a thousand were missed by the spraying, if by the destruction of its natural enemies at the same time it was left practically a free field for the rest of the year. As I now grow nothing but Daffodils, Iris and Gladioli I hardly ever even see an aphid, but some years ago, when trying to grow something of everything, including fruit, following a "black Easter" in the spring, my garden was visited with a devastating plague of aphid. I sprayed, but with much the same ineffective results as *A Southern Grower* describes, and gave it up in despair. Later in the year, however, I chanced to observe a colony of lady-bird larvae feeding on the aphid on some badly infested *Lilium candidum*, and I was very greatly impressed with two things—one, the speed with which they cleared off the aphid, and, secondly, that no more aphid reappeared on those plants, as was invariably the case after spraying. Thereupon I went out into the high-ways and the byways and, provided with a suitable box, I compelled them to come in. I liberated hundreds of lady-birds and their larvae in my garden in this and subsequent years, and though, of course, I can only give it as my impression, I was satisfied that it was at least as effective and more lasting than spraying—and a thousand times cheaper. My experience, however, also seemed to show that even for the aphid only it was unlikely we should be able to dispense with spraying entirely. For the lady-bird

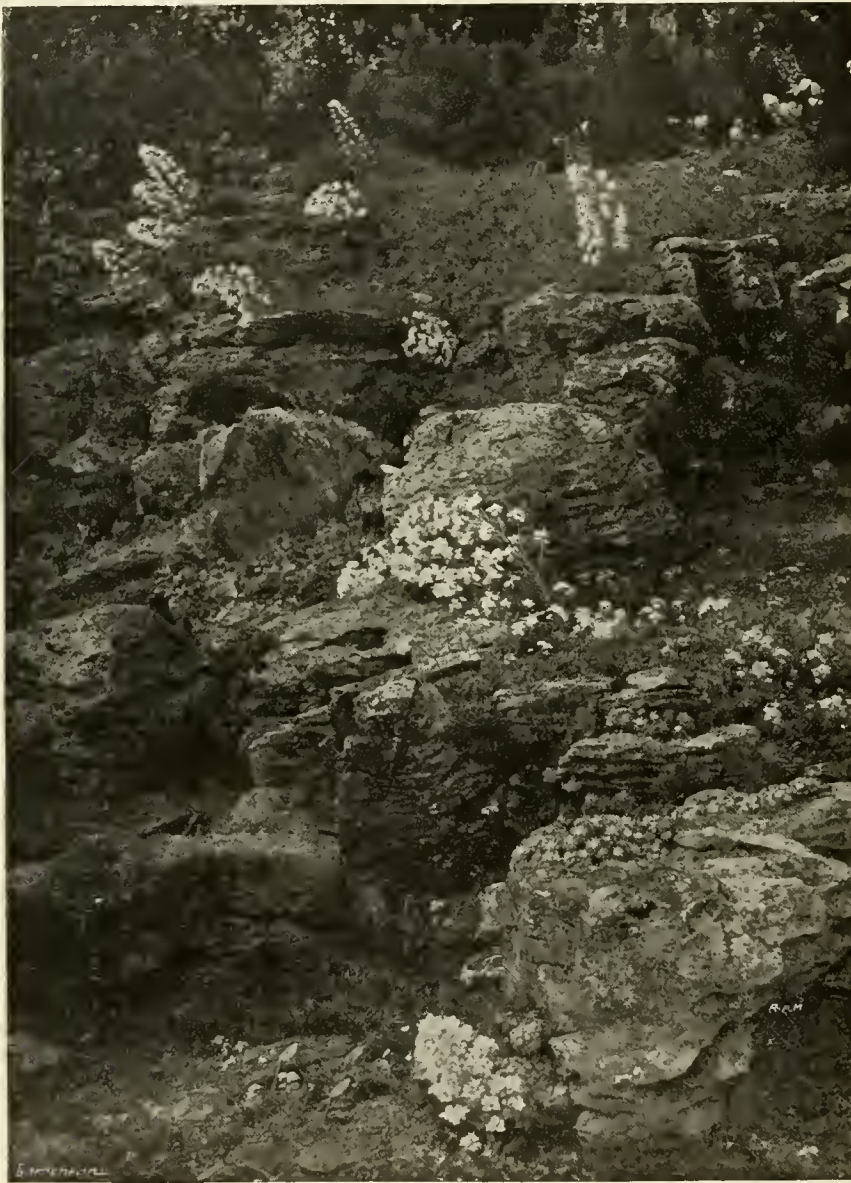


FIG. 169.—PORTION OF ROCK GARDEN EXHIBITED BY MR. WOOD AT THE CHELSEA SHOW.

representatives of this richly fragrant and refined Eastern Lily, *giganteum Szovitzianum*, *Henryi*, *Hansonii* (the extremely graceful "Yellow Martagon"), *Chalcedonicum*, *davuricum*, and *longiflorum Wilsonii*. *Lilium Washingtonianum*, one of the loveliest and most admired of Californian introductions, whose odour is nearly as powerful and pervasive as that of a *Magnolia*, has also developed with marvellous rapidity; but on the contrary such members of the superbly-endowed *auratum* family as *platyphyllum*, *Wittei*, and *virginale* have been much more deliberate in their growth, though growing in the finest garden loam enriched with leaf-mould. At present (May 20) by far the most advanced

though they also succeed wonderfully in the open garden (if the soil is fibrous in character, and the situation moderately sunny and sheltered), is the variety called *giganteum*, which must not be confounded by any of my readers with the great Himalayan Lily that proudly bears that name. It has been probably so denominated, not on account of its possessing any gigantic attributes, but because it is more vigorous in its growth and somewhat more commanding in its aspect than other varieties of this exquisite Japanese Lily.

For some years I cultivated *Lilium Kramerii* and *Lilium rubellum*, but I found that though they were precious by reason of their delicate distinctive colouring, they seldom

larvae never appeared, or got to work as early as I could wish, and there was always a period when I awaited its advent with some anxiety. This, to a great extent, might be met by specially breeding them under conditions that would bring them out rather earlier, and it seems that there is an opening for a profitable business in breeding these, and other natural enemies of our insect pest, for distribution to fruit-growers and others. The whole subject of discrimination in spraying for insect pests in relation to their natural enemies is one which, I think, might very well be taken up by the new research committee of the R.H.S., and in due course information might be obtained: (1) Whether in any cases an insecticide could be found which would destroy the pest without injury (or with a minimum of injury) to its enemy; (2) at what times it would be safe (or safest) to spray with this consideration in view; (3) as to the possibilities of breeding the natural enemies of the various insect pests, with a selection of those which would be likely to prove most suitable for this purpose, and how far it would be possible or advisable to replace spraying by these methods. *A. J. Bliss.*

SLUGS IN THE GARDEN.—For years I have been thoroughly disheartened by the damage which has been caused to plants, etc., by slugs. The district in which I live seems to be peculiarly suitable for this garden pest, and I have tried all manner of suggestions for getting rid of them, without success, and the rheumatic idea of going out to gather them up on a damp night I have long since given up. However, I have just discovered a method which has proved a great success. A short time ago I read an article on the slug in a local magazine, and the writer suggested placing pieces of thin board round the garden and examining them next morning. I tried this with the same disheartening disappointment. However, an idea struck me to try scattering a little bran underneath these boards, and on the first morning when I examined them I found about 200 underneath six pieces of board. The slugs seem to have gorged themselves, and the boards being there for shelter they had remained under them. I should be very interested to know if any of your readers could answer the question how the slug discovers from a distance that the bran is underneath these boards. *R. W. Potts, Highfield, Eaglescliffe, Co. Durham.*

THE SOURCE OF YELLOW ROSES.—When my eye caught the heading of the able article of *White Rose* in the *Gardeners' Chronicle* (p. 343) I thought surely now someone has at last discovered how we can produce Roses of the type of Cloth of Gold and Maréchal Niel, and imagine my disappointment at being left as much in the dark as before. Shall we ever know the truth of the origin of Maréchal Niel? Some have asserted that it was derived from Isabella Gray, a Rose introduced by Gray in 1855, and Maréchal Niel was introduced by Pradel in 1864. Of course, this is quite possible. Probably Isabella Gray was obtained from Lamarque, a Rose introduced by Maréchal in 1830, and Cloth of Gold, another derivative from Lamarque, was introduced in 1843. But what I should like to get at is to what species we are indebted for these climbing and dwarf-growing yellow Teas and Noisettes? Can we, I wonder, trace them all to the yellow China Rose (*Thé Jaune*)? I cannot find any date of its introduction, but Wm. Paul says in his *Rose Garden*, p. 303, that "although a fertile seeder it never produces varieties worthy of notice." But supposing it was introduced anterior to Lamarque, may it not through hybridisation by insects have produced some of our yellow Teas and Noisettes? I am afraid the origin of such Roses as Maréchal Niel will now remain a mystery, for I imagine there is no one living who can give us its origin, and certainly old writers are discreetly silent upon the subject. How, then, are we to obtain Roses of the type of Maréchal Niel and Duchesse d'Auerstaedt? Will it not be from the Teas and Noisettes themselves? And will not some of our Continental raisers turn their attention again to their production as their fathers did, instead of continually striving for Hybrid Teas, beautiful and useful though these

Roses are? It is quite evident if we go to the various yellow species mentioned by *White Rose* we shall obtain briar-like nature in our crossings, and can we improve on what Pernet Ducher has done and is doing in this direction? Of course, it is possible for some hybridist to obtain from a blending of these yellow species with some other type as distinct a break as Pernet Ducher obtained with Soleil d'Or, and I would say good luck to his efforts, but what I should prefer to see would be more additions to our Roses of such varieties as Maréchal Niel and Cloth of Gold but lacking their erratic behaviours. *Experience.*

—I do not quite comprehend what *White Rose* means when he says that Rose sulphurea, or hemisphaerica, is always single flowered. Here the flowers are produced in large numbers on elongated sprays of the previous year's wood, and two flowers on one of the peduncles are not at all unusual, whilst sometimes there are three. Parkinson's note shows that he and his contemporaries understood the peculiarities of this beautiful Rose to a remarkable extent. It merely requires the shoots to be severely thinned, the Rose buds less severely, and there is no lack of its glorious blooms. It succeeds equally well here at the foot of a south wall and as a bush partially protected, and I have seen it thriving in one of the coldest districts in the United Kingdom where Hybrid Teas and Climbers are repeatedly cut to the ground, and it unscathed. Probably, therefore, where it fails it is treated too kindly, in the belief, as it was that of Parkinson, that it is less hardy than other Roses. *R. P. Brotherton.*

THE LESSER NARCISSUS FLY.—Since my last note we have now, from an authoritative source, a pronouncement which distinctly assists us to a conclusion, confirmatory, so far as it goes, of the views which I have expressed in this discussion; and destructive, as I venture to suggest, of the theory put forward by Mr. A. J. Bliss, inferentially backed up by Mr. George St. Ox, that this fly acts only as a "scavenger," and therefore is not to be regarded as a pest and enemy of the Narcissus. I quote from the *Journal of the Board of Agriculture*, Vol. XXI., No. 2, just issued:—"The second species, *Eumerus Strigatus*, which may be known as the small Narcissus fly, has only recently proved a serious pest to Narcissus . . . and as it is an exceedingly destructive insect is likely to prove as serious a pest as *Merodon*" (p. 137). This does not look much like only "scavenger" work. And again, p. 140: "The eggs hatch, and the larvae burrow into the necks of the bulbs. Of these larvae some appear to feed rapidly, and are full grown in August. . . . In an advanced stage of the attack the interior of the bulb is entirely destroyed, and is full of a semi-liquid decaying mass." I need not further quote, but I strongly recommend growers of the Narcissus to procure this number of the *Journal of the Board of Agriculture* which deals with the subject in considerable detail, and is admirably illustrated. I may mention that the preventive measures recommended are those which I have already indicated in my notes. *Charles E. Shea.*

IRIS VERNA.—This pretty little Iris, which hails from Virginia and neighbouring States of North America, has just flowered. It appears to have enjoyed the spell of dry, warm weather, and to have done better than is often the case. It is essentially a May flowerer, usually during the third and fourth weeks; but this year it began to open its flowers on the 11th, partaking of the hurry which is so conspicuous this season with our early summer flowers, which have overtaken the legitimate spring flora. *Iris verna*, the spring Iris, is one of the smallest species. It has narrow bright green, tough leaves, 3 or 4 inches long, the flower rises just above on a short, leafy stalk; the long perianth-tube lifting it well above the sheaths. The flower is a brilliant violet-blue, 2 inches in length, rather conical in shape, as the standards are upright and the falls spread downwards. Both are the same colour, but the latter has a broad orange-gold median blotch edged with white, which sets it off extremely well. Thus it catches the eye of man, as no

doubt it is intended to attract the insect visitor. Another point in its favour is the delicious scent of Violets. Parenthetically I may say here that the scent distribution in Irises is very irregular. *Iris Haynei*, which has just flowered, has a strong scent of Lily-of-the-Valley, and is, so far as I know, the only *Oncocyclus Iris* which has a perfume; and among the *Regelias I. Leichtlinii* is very sweet, and *I. Korolkowii* scentless. *Iris verna* is seldom seen in cultivation; it is a slow grower and not an easy one. It needs well-drained soil, not too dry in summer, preferably a loam, rather on the stiff side, but warm. *Eleonora Armitage.*

ROADSIDE BEAUTY.—Mr. E. Molyneux's general eulogy of tarred roads is easily confuted by my own particular experience. In his view the tar is "a boon to plants, especially fruit-growers. . . ." I own two cottages by the side of the main road here; one is not at all beautiful, so I screened it with pillars of *Wichuriana* Roses. The other is occupied by my gardener, who has trained similar Roses up the side of the cottage. An outlying part of my own gardens comes down to the road, from which it is bounded by a low wall covered with Roses. In every case the Roses have been killed or crippled by the tarring of the road. Two fine Plum trees, planted as a screen to the road, have been badly injured. There is no doubt about this at all; the fine particles of tar at the time of its application were carried by the wind and covered the wood and the foliage. I could quote other instances in this neighbourhood. *G. H. Engleheart, Little Clarendon, Dinton, Salisbury.*

THE R.H.S. AUTUMN FRUIT SHOW.—The new regulation (No. II.) issued by the Royal Horticultural Society for competitors at the Autumn Fruit Show in September next has come as a great surprise to a large class of exhibitors who have hitherto shown as "amateurs" or "private gardeners" in Divisions 1, 4, 5, and 6 at this annual show, and it seems likely that such a drastic alteration of the former regulation must seriously, and perhaps injuriously, affect the whole character of the exhibition, as well as the actual exhibitors and their gardeners. Of course, the Council of the R.H.S. is within its rights in classifying so-called "amateurs" as "market-growers" if they grow fruit for sale even in the smallest area, and although the fruit so grown may not be of the kind suitable for exhibition at this autumn show such growers can have no real ground for complaint, and must bow their heads to the alteration; but what about their gardeners? Their case appears to me a hard one where they have only their gardens to look after and grow fruit for show, while the fruit orchards for market purposes are under the independent charge of a bailiff or head farm man. Such cases must be fairly numerous in the fruit-growing districts. These gardeners, many of them distinguished and most capable men, will now lose the small and well-deserved extra emolument arising from the winning of money prizes; their employers will cease to show, and there will be no further need in many gardens for the skilful cultivation of the best sorts, both old and new, of Pears and Apples, and the nurserymen will suffer seriously in consequence. Surely it would be a pity to thus endanger the stability of this important annual show in this sudden, and, in my opinion, ill-considered way. If we are all, both small and great, to be classified as "market growers" cannot something be agreed upon in the shape of a sliding scale, and the prizes formerly allotted to the amateur divisions be readjusted accordingly? This should certainly be possible if approved of and taken in hand by the Fruit Committee, and I would suggest a classification of all market growers according to the acreage of fruit grown by them, commencing, say, at 10 acres up to a total area of 250 acres and over. This would, I think, increase instead of diminish the interest in the show, and would at any rate stimulate the smaller growers and their gardeners to continue their present useful work. The prizes might at the same time be judiciously restricted to the very best well-flavoured Pears and Apples to the exclusion of the large showy and in many cases tasteless varieties now unfortunately so much in favour for exhibition purposes. *Savile G. Reid.*

The Week's Work.

THE ORCHID HOUSE

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

THE CATTLEYA HOUSE.—Many of the plants that flowered early in the year in this house are developing their new growth, whilst those that flowered late last summer and autumn are also well advanced. Afford the plants every encouragement to grow freely in plenty of sunlight, but take care that the sun's rays do not cause scorching. Plants in flower include *Cattleya Mendelii*, *C. Mossiae*, *Laelia purpurata* and the numerous primary and secondary hybrids from these. Afford the roots plenty of moisture whilst the flowers are expanded, but as soon as the spikes have been removed reduce the amount to just sufficient to keep the pseudo-bulbs plump until such time as the new breaks have grown well beyond the base of the old stems. Many of the plants need to be repotted during the next few weeks, but not such as are producing their flowers, unless the flower-buds are cut off. It is better to defer the work of repotting until the flowers are removed or until new growth commences. Shade carefully all newly-potted plants until the roots are re-established, and afford very little water to the soil, for the growth is best kept moist by spraying or sprinkling through a fine rose on the water-can. If sprayed once or twice a day in favourable weather, and the stages are kept moist, there will be no danger of the plants shrivelling. To keep insect pests in check spray with an insecticide regularly once a week during the next few weeks.

PERISTERIA ELATA.—Plants that are not developing their flower-spikes are starting into growth, and the work of repotting should be done as soon as growth commences, as roots develop rapidly, contemporary with the new top-growth. It is not desirable to repot the plants annually; once in two years should suffice. For that reason compost of a lasting nature should be used; it may consist of one-half fibrous loam, the remainder of peat, leaf-mould, sand and broken crocks or charcoal. See that the pots are clean and filled to about one-third their depth with material for drainage. When the plants have been turned out of the old compost back pseudo-bulbs that are not of service may be removed and repotted to increase the stock. Make the compost firm, and shade the plants carefully from strong sunlight for a few weeks afterwards.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl Beauchamp, K.C.M.G.,
Madresfield Court, Worcestershire.

THE FORMAL GARDEN.—Just now is the busiest time of the whole year in the flower garden, for the beds have to be cleared of the spring-flowering plants, made ready, and replanted with their summer occupants. It is now safe to make a start with the summer bedding, but it is always wise to reserve the more tender subjects, such as *Begonias* of various types, *Heliotropiums*, *Dahlias*, *Ageratums*, *Coleus*, *Cannas* and *Celosias*, for planting last. If standard plants of such subjects as *Plumbago capensis*, *Streptosolen Jamesonii*, *Lantanas* and *Fuchsias* are used as "dot" plants, it is essential to have them well hardened by exposing them to the night air before they are set in the beds. Such plants cannot easily be afforded protection when in the beds, but, should the weather turn cold, it is easy to protect dwarfier bedding plants by sticking short branches of Yew, Box, Laurel or other evergreens in the ground about them. These sprays of evergreen have not only the advantage of protecting the plants from high winds and low temperatures, but they also shade them, and thus keep the atmosphere about them humid, which is a great advantage before the roots are re-established. If the plants can be kept from flagging by this means there

will be no need to resort to frequent waterings, which not only may cause the soil to become cold and sour, but also entail a great expenditure of labour.

COLOUR SCHEMES.—One of the most pleasing examples of bedding that I noted last year was a pair of medium-sized beds arranged with two shades of the same colour. The ground was composed of *Ageratum Malvern Beauty*, of a beautiful lavender-grey colour, and at intervals were arranged standard plants of the strong-growing *Ageratum mexicanum* of a deeper tone. The effect, and especially at twilight, was enchanting. Another arrangement that pleased me consisted of *Viola Bullion*, as a ground to standards of *Calceolaria amplexicaulis*. A further design had a groundwork of *Heliotropium Lord Roberts*, with standard plants of the darker variety *President Garfield*.

HERBACEOUS BORDER.—Hardy perennials are growing rapidly, and attention must be paid to such details as watering the roots and staking the shoots; it is a good plan to stick a stout branching stake, such as is used for the support of Sweet Peas, in the middle of a clump and allow the plants to grow through the loose branches, which will afford them support in a more natural manner than when tied to an ordinary stake. Arrange the sticks so that they lean outwards, for if growth is directed inwards the interior of the plant will be crowded and the appearance will be too rigid.

MICHAELMAS DAISIES.—The remarks on staking apply especially to perennial *Asters*, and these plants should be well thinned; in the case of large-leaved and strong-growing kinds, 1 foot apart is not too much space for the individual shoots.

ANNUALS.—These plants are growing rapidly, and if evergreen branches had been placed amongst them for protection they may be removed. *Nemesis*, *Verbenas*, *Salpiglossis*, *Scabious* and certain other kinds should be stopped with a view to securing plenty of side-shoots for flowering. Most annuals are shallow-rooting plants, therefore in dry weather do not neglect to water them freely. A little soot scattered over the soil before watering will benefit the plants, causing the foliage to assume a deep green colour. Sprinkle a little artificial manure on the soil occasionally and place twiggy sticks to support the growth, allowing the plants to grow naturally through the sticks.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of Derby,
Knossley Hall, Lancashire.

LILIAM.—Liliums on which flower buds are forming should be removed from the pits to an intermediate house, and the shoots secured to stakes. Give the roots copious waterings of liquid manure and weak soot-water. Guard against green fly, which attack the points of the shoots. Later batches of *L. auratum*, *L. speciosum album* and *L. s. rubrum*, also *L. s. Melpomene* are developing roots on the stems close to the bulb; top-dress the plants with equal parts of good loam and decayed manure, but allow space for watering. Gradually inure the plants to more air and a lower temperature, and where local weather conditions permit, stand them out-of-doors on a bed of coal ashes in partial shade. Afford water very carefully, for an excess may cause the soil to become sour. When roots appear on the surface and flower buds show, feed the plants twice weekly until the blooms develop, removing to an intermediate house when the flowers begin to show colour. Stake each shoot securely.

RICHARDIA AFRICANA.—These plants are showing signs of maturity, and should be placed out-of-doors in a position where they may receive full sunshine to complete their ripening. Withhold water from the roots gradually until early in August when the plants may be overhauled and repotted. This applies to such as are grown all the year round in pots. Plants showing signs of deterioration will benefit if hardened off and planted out early next month in a well-prepared, richly-manured trench. Remove all

suckers from the main root-stock, and place the latter 15 inches apart.

BEGONIA.—Continue to pot rooted cuttings of fibrous-rooted *Begonias*, using a light porous compost. Tuberous-rooted *Begonias* grown from seed in January require larger receptacles; enrich the compost with a little pulverised cow manure, and pick off the early flowers to throw all the strength into the plants for the present. Afford weak liquid manure to established plants showing flower, and support the shoots to neat stakes. Frequent light fumigations will keep mite in check.

CHRYSANTHEMUMS.—The composition and preparation of the compost for the final potting of *Chrysanthemums* are details of importance. The loam mellow from storage should be broken up into pieces, and mixed with mortar rubble, sand, leaf-mould, and bone-meal. Mix the materials well, and after a week turn the heap again. Use clean pots, and let them be well drained, placing moss or some of the coarser portions of the compost on the crocks. Before the final potting securely stake the plants, and harden them to enable them to be placed outside. To check rust, add a wineglass of petroleum to four gallons of warm water, and syringe the plants once a week with this specific, which should be kept in a state of agitation, so as to mix the oil with the water. To destroy aphid dust the foliage with tobacco powder.

FRUITS UNDER GLASS.

By W. HEOLEY WARREN, Gardener to the Aston-Clinton
Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buck-
inghamshire.

THE VINERY.—Attend to the vines in the succession houses, as formerly directed, and thin the bunches and berries in later vineries. Bunches that are required to hang on the vine during the greater part of the winter should be thinned more freely than those that are intended to be cut when ripe. Special attention should be given to vines planted in March or April, and every encouragement given so that they make a rapid, healthy growth, and in this way cover the allotted space with good, strong foliage. Young vines growing freely in a well-prepared border are benefited by copious waterings and a warm, moist atmosphere. When the leading growth has attained to a length of 8 or 10 feet it should be stopped, thus concentrating the energy of the vine in the main rod, that it may become properly matured. This will also allow the foliage to develop more freely, and the tendency of the leaves to fall will be eliminated in a way that is not so apparent when the main and side-growths are allowed too great a freedom. Muscat varieties that are swelling their berries require plenty of heat and moisture: it is therefore necessary to damp the paths, staging, etc., during the early morning and again several times during the day when the weather is bright and sunny. The house should be closed in the early part of the afternoon, and the night temperature not allowed to fall below 70°. If exposed to the direct rays of the sun Muscat Grapes are somewhat liable to scald, especially those on the upper side of the bunches; therefore, if necessary, during the hottest part of the day in very hot weather lightly shade that side of the house on which the sun is shining. Probably a light temporary shading will suffice, as it is only necessary to break the fiercest rays of the sun, at the same time allowing of the admission of sufficient light. The roots of Muscat vines should be generously nourished, and at least every three weeks suitable quantities of food should be applied to the roots. If the vines are extra vigorous and carry a heavy crop of fruit, and the borders are well drained, it may be necessary to feed them even more frequently. The borders of a Muscat vinery must never be excessively wet nor sodden, for this would be fatal to good results. Vigorous vines may be allowed to carry a reasonable quantity of lateral growths, which will do no harm, but rather assist in maintaining an equal balance between root and foliage and ensure a healthy state of root activity. Early varieties, such as Black Hamburg, require a temperature

not lower than 60°, and artificial heat must be employed. Let the air circulate freely both day and night, for when the atmosphere is in constant motion moisture does not condense on the berries. The soil in the borders does not require to be as moist as it was when the vines were in full growth, but it should not be allowed to become so dry that the surface cracks. It is an easy matter to keep the border in a correct state of moisture with but little watering if a suitable mulch of dry litter or leaves is employed.

MELONS.—The plants, if healthy and clean, should not be destroyed when the early fruit is cut. If the bad leaves are removed, the growth regulated, and the plants well watered with liquid manure made tepid, a fresh crop of fruit equal in all respects to the first will soon develop. If, however, the plants have become infested with red spider, thrips, etc., any attempt at successive cropping would be useless, and the plants should be uprooted and destroyed. Pollinate the flowers of plants in pits and frames daily, and place the fruits that have set on pieces of slate, tile or glass, to prevent rotting. A bottom heat of 70° will suffice at this time of the year, and the atmospheric temperature should range from 70° to 80°. Guard against infestations of red spider by damping the surface of the bed frequently, admitting plenty of air, and close the lights early in the afternoons.

THE KITCHEN GARDEN.

By R. P. BROTHERTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

ENDIVE.—A small sowing of this vegetable for cropping early in autumn should be made now or very soon. It is important to transplant Endive when the seedlings are very small, and the plants will do well in almost any kind of soil. Usually a finely-divided variety is chosen for earliest use, and Broad Batavian for subsequent sowings.

POTATOS.—The haulm is growing very strong this year, and no delay should occur in preparing the ground for the final earthing-up of mid-season and late varieties. Satisfactory crops can be produced without drawing soil to the stems, but, except in ground of a very light nature, unless earthing-up is practised some of the tubers are sure to become green through exposure, and where the growth is vigorous the haulm is apt to be partially prostrated, both of which are obviated by proper earthing.

TOMATOS. It is safe to plant Tomatos that have been properly hardened in the open in districts where they succeed. Even in the north Tomatos will furnish fair crops provided the plants are well advanced at time of planting, and not more than two or three clusters of fruit left, the tips being pinched beyond the third truss. But the fruit is always deficient in flavour, and much of it fails to colour till picked and matured under glass. Very serviceable fruits may be grown by affording the plants the protection of ordinary cold frames, the plants in this instance being planted close to the fronts and trained near to the glass, and very slightly ventilated. In glass structures growth must be regulated carefully and frequently to prevent crowding, nor should side-growths be left to grow beyond an inch or so. Should the white fly make an appearance vaporise the plants with nicotine at once, and again at brief intervals till all the insects are destroyed. Plants bearing heavy crops must be fed with stimulants, either dissolved in water or sprinkled among the plants and washed in the soil.

BROCCOLI AND OTHER BRASSICAS.—It is the practice of some growers to prick the seedlings into beds to gain strength before finally putting them into their permanent positions. I find they succeed equally well transplanted direct from the seed bed, and at this period most of the plants are large enough to handle. The roots are drawn through a solution of soil and water, planted deeply in drills, watered, and afterwards left to themselves. Firm ground is very important for this crop, so that growth may be slow and hard enough to endure the cold of winter. This is one reason why the plants should have a long season. Nor does early planting affect the time of cutting. At

present we are using late varieties which were planted a year ago. Later than this Broccoli is not wanted, because Cauliflower is ready to cut from plants set in the autumn.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORFHCOTE, Eastwell Park, Kent.

GOOSEBERRIES.—The crop is very early this year, and a large proportion of the fruit may be picked when green for preserving, and for uses in tarts, etc. If choice Gooseberries are required for dessert, the fruits should be well thinned, leaving only the best berries to ripen. A mulch of decayed manure will assist the bushes and ensure clean, healthy growth. If extra fine fruit is desired, afford the roots copious waterings during hot, dry weather, and feed them with liquid manure and concentrated fertiliser alternately; when the fruit is ripening use only clear water. Nets will be required to protect the fruit from the birds, unless the bushes are grown in a wire enclosure. Guard against caterpillars, red spider, and other insect pests; red spider is often a source of trouble to Gooseberries, especially those growing in very light, hot soils, and the bushes will soon become unhealthy if prompt measures are not taken to destroy the pest.

CORDON AND STANDARD GOOSEBERRIES.—The fruit on cordon-trained Gooseberries can be picked easily, and at the same time the trees produce very fine fruit. To ensure a succession of berries early and late varieties must be planted. Attend to the pinching of the shoots, so that plenty of light and air can reach the fruit. Pinch back the side growths to four or five leaves, and these will form fruiting spurs for next season. Should they start to grow again, remove the secondary shoots. Tie the top shoot to the support early, extending it to its full length. Cut away all shoots as they appear at the base of the tree. Standard Gooseberries are an attractive novelty, and help to break up the uniform appearance of the kitchen garden. Take care to support the heads by the use of strong stakes.

PEACHES.—Our trees have set a good crop. Attend to the preliminary thinning of the fruit, leaving the final thinning until later. Remove all badly-placed and twin fruits, and a moderate number of the others, according to the crop and state of the tree.

THE "FRENCH" GARDEN.

By PAUL AQUATIUS.

CLOCHE BEDS.—The Cos Lettuces have been cleared from the beds and the cloches removed. The Carrots growing as an intercrop should soon be ready for pulling. Let the Carrots be well watered, also the crops growing in unheated beds, so that they may be marketed from late in June to the end of July. Make arrangements for successive cropping for the autumn. The main crops are Cauliflowers, Celery and Carrots for the manure beds; late Celery, Endive or Beans for the cold ground. Cos Lettuces, Cabbage Lettuces, Endive, Radishes, or Spinach may be grown as intercrops; the selection may be regulated in accordance with the local demand.

MELONS AND CUCUMBERS.—Most of the Melon beds are completed. The beds for Marrows may be made immediately and the soil covered with a row of cloches, which will shelter the young Melon plants till frames and lights are at liberty during the next fortnight. The weather has been very favourable to this crop, and full ventilation should be afforded from 8 a.m. till 5 p.m., except for those planted last, which need to be shaded carefully for a time. Stopping of the main stems while the plants were in the nursery beds has resulted in two laterals developing, which should be stopped at the fourth or fifth leaf, care being taken to have 3 or 4 inches of clear stem from the collar of the plants. As the side shoots develop stop them after the second leaf; this will cause other shoots to form, and these are stopped after the first leaf. These shoots will bear female flowers in great numbers and always produce the best fruits. Though the plants are kept moist at the roots, watering should not be excessive to obtain a hard and

sturdy growth, but after the fruits are set water may be afforded liberally. Cucumbers are planted in similar beds as for Melons. The plants are set 1 foot from the front of the frame, slanting the stem towards the top. Keep the lights closed and shaded, with mats preferably. Though moisture-loving plants, Cucumbers grown in frames find plenty of moisture in the damp ground, and the grower should regulate the watering according to the growth of the plants and the state of the weather.

OUTSIDE CROPS.—The Cabbage Lettuces are being marketed daily, and these will be followed closely by the Cos varieties (autumn sown). They are best pulled early in the morning and placed in the shade of a shed until the evening, when they should be dipped once in clear water and packed in hampers. As soon as the ground is cleared of the crop hoe and rake the surface in preparation for the Cauliflowers, which are set as an intercrop. If the plants are heavily mulched it will save much labour in watering and the produce will be of better quality. Carrots and Turnips sown in March and April need copious waterings, for the roots are forming and should be ready for marketing from the third week in June. The crops of Onion, Cabbage and Spinach set in the autumn have been marketed; the ground is available for growing Kidney Beans, Witloof Chicory Turnips, Cauliflowers and Red Celery. Once the space is prepared for either of these crops no plant or seed should be inserted till the ground is thoroughly soaked either by heavy waterings or rains. The planting of the Tomatos is completed and the plants will be benefited by the shelter of cloches until the middle of June. Kidney Beans should be set from the seed-bed in rows at 18 inches apart. A succession can be obtained by inserting seeds direct into the ground, taking care not to plant them deeply. A second sowing of Witloof Chicory should be made before the second week in June to produce roots for forcing after Christmas in succession to those sown in May. If cloches are available ridge Cucumbers may be set in the open ground and covered with the cloches until well established.

MANURE BEDS.—The crops of Carrots and Turnips have been marketed and the beds should be hoed and well raked. The Cauliflowers will soon occupy the whole space, especially if they are watered freely. The plants should be examined daily with a view to covering with the leaves such inflorescences as are exposed to the light. Some of the heads should be ready for cutting within a few days; the crop should be disposed of at the earliest opportunity, as they are valuable in the first fortnight in June.

THE APIARY.

By CHLORIS.

WATER.—I have often strongly recommended the supply of water during dry weather in the breeding season. Some weeks ago I came across an excellent idea. The drinking water had a little salt added (about a teaspoonful to a pint); this was done to prevent bees getting their saline water from a contaminated source, such as drains from a manure heap. Then the water was placed under a shelter, made by placing four bricks on end and putting a piece of board on top just larger than the water vessel. The idea had occurred to my friend because the faeces of bees have been reported by the Board of Agriculture experts to be a fruitful source of spreading the infection. All apiarists ought to be aware of the fact that bees drop their faeces whilst on the wing, hence the point of covering over the water supply. There is only one further suggestion I would add in carrying out the idea; wash out the drinking vessel several times during the week with disinfectant.

SUPERS.—In fruit districts the supers should be put on, even if it be necessary to crowd the bees on seven or eight frames by using the divider. To secure good work the supers should be very warmly wrapped up and packed so that no heat may escape or draught enter, as this is fatal. An old beekeeper once said, what will keep the heat in will keep it out, and so for this purpose use plenty of non-conducting material.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our correspondents would oblige by delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are mis-directed.

APPOINTMENTS FOR JUNE.

TUESDAY, JUNE 2—
Scottish Hort. Assoc. meet

WEDNESDAY, JUNE 3—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. on "Iris.") B.G.A. Ex. Council meet.

THURSDAY, JUNE 4—
Nat. Hardy Plant Soc. Sh. at R.H.S. Hall, Westminster. Linnean Soc. meet

FRIDAY, JUNE 5—
Dundee Hort. Assoc. meet. Soc. Française d'Hort. de Londres meet.

MONDAY, JUNE 8—
United Hort. Ben. and Prov. Soc. Com. meet.

WEDNESDAY, JUNE 10—
Birmingham Bot. and Hort. Soc. Orchid Sh. (provisional).

SATURDAY, JUNE 13—
Stirling Hort. Assoc. outing to Greenfield, Alloa. R.H.S. Gardens Club outing.

TUESDAY, JUNE 16—
Roy. Hort. Soc. Coms. meet, and Nat. Gladiolus Soc. combined show. (Masters Memorial Lecture by Prof J. Breland Farmer, F.R.S., D.Sc., at 3 p.m.)

WEDNESDAY, JUNE 17—
Yorkshire Gala (3 days).

THURSDAY, JUNE 18—
Linnean Soc. meet.

WEDNESDAY, JUNE 24—
Richmond Fl. Sh. Croydon Hort. Soc. Fl. Sh.

THURSDAY, JUNE 25—
Isle of Wight Rose Soc. Sh. at Ryde (provisional). Roy. Botanic Soc. meet. Sherbourne Floral Fête. Canterbury, Kent Rose Show.

SATURDAY, JUNE 27—
Windsor, Eton and District Rose and Hort. Soc. Sh.

TUESDAY, JUNE 30—
Roy. Hort. Soc. Summer Sh., Holland House, Kensington (3 days). Roy. Agricultural Soc. Ex. at Shrewsbury (4 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 57.2°.

ACTUAL TEMPERATURES:—

LONDON, *Wednesday*, May 27 (6 p.m.) Max. 59°. Min. 40°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, May 28 (10 a.m.): Bar. 29.7; Temp. 64°. Weather—Bright Sunshine.

PROVINCES, *Wednesday*, May 27; Max. 55°, Scilly; Min. 47°, Aberdeen.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Hardy Bulbs and Roots, at 1. Palms and other decorative plants, at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

FRIDAY—

Orchids. At Protheroe and Morris's rooms, at 12.45.

A valuable contribution to the subject of the influence of radio-active substances on plant growths has been made by M. Georges Truffaut, the results of whose experiments are published in *Jardinage* (May, 1914).

M. Truffaut's record of his investigations is prefaced by an interesting account of the progress of knowledge with respect to radio-activity and radio-active substances.

Knowledge on this subject dates from 1896, in which year Becquerel discovered

that uranium salts, although themselves non-luminous, give off emanations which pass through sheets of black paper and act on photographic plates enclosed therein.

The investigations of Professor and Madame Curie on radium led to the introduction of the term radio-activity to express the facts which they discovered concerning the emanations which are given off by radium. These emanations have remarkable properties, and produce remarkable effects. They pass through metals such as aluminium, but are arrested by sheets of the heavier metals—lead, for example. They cause diamonds and rubies to fluoresce, and they induce obscure but profound changes in living tissues.

The discovery that a radio-active substance such as radium renders the air or other medium in which it is contained a better conductor of electricity, provides an electrical method whereby the existence of radio-active substances may be discovered, and as a result of the application of this method it is now possible to obtain from various minerals supplies of radio-active substances. By this means compounds of thorium, polonium, and actinium have been isolated, and their radio-activities investigated. Moreover, it has been found possible to compare the radio-activities of these various substances, the unit (U) of comparison being the radio-activity of a gram of black oxide of uranium.

Measured by this standard, the radio-activity of radium is two million units and that of mesoradiothorium four million.

As an indication of the enormous amount of energy liberated in the emanations from radium it may be mentioned that one gram (about 15 grains troy) of radium liberates in the course of its disintegration some three million million heat units—i.e., about as many units of heat as are liberated during the combustion of over 1,000 lbs. of coal.

Beside affecting the electric conductivity of the air, the emanations from radium and similar bodies possess potent chemical properties. They decompose water into its elements, and thus setting free oxygen bring about oxidation processes.

That radio-activity affects the growth of plants was demonstrated by Stoklasa, who showed some years ago that seedlings treated with water containing radio-active substances develop more rapidly than normal seedlings.

Later experiments in France showed also that radio-activity produces an effect on vegetation, and that on a soil of low fertility and poor in nitrogen the effect is but slight. These experiments also indicated the most serviceable quantity of radio-active substance to use for horticultural purposes.

M. Truffaut's first series of experiments was based on these facts, and involved the use of radium bromide as the radio-active manure. The experiments were carried out with Haricot noir de Belgique, Tropaeolums, Sweet Peas (in pots), Anthemis, and Chrysanthemums.

The soil used was rich in nitrogen and in mineral substances. The results of the

experiments were remarkable. They showed that the radio-active substance had exerted a marked influence on growth, but that this influence, instead of resulting in an increased yield, brought about a decreased yield.

This fact, though at first sight disconcerting, is by no means fatal to the prospects of radio-active manures. For M. Truffaut observed that the crops treated all showed conspicuous evidence of having enjoyed a surfeit of nitrogenous food, and those which had the largest doses of radio-active manure were found to suffer most from this excess of nitrogen.

That this conclusion is correct seems possible from the fact that in the case of the Haricot noir the later crops taken from the treated plants were somewhat larger than those from the untreated plants; indicating perhaps that as the stores of nitrogenous food material in the soil became less copious the radio-active substances produced a beneficial effect. Somewhat similar results were obtained with Anthemis, except that with them the best plants were those which received $\frac{1}{2}$ per cent. manure containing $7\frac{1}{2}$ per cent. of radio-active substance. More manure or more radio-active substance produced a less good result.

In a second series of experiments carried out by M. Truffaut and Dr. Szilard the relative values of different radio-active substances were investigated.

The materials employed were:—

- (1) Insoluble radio-active compounds—viz., oxides of uranium.
- (2) Insoluble minerals of low radio-activity.
- (3) Soluble compounds of low radio-activity.
- (4) Strongly radio-active compounds.
- (5) Radio-active residues from the commercial extraction of radium and mesothorium.

The experiments were carried on with Chrysanthemums in pots, and each pot received so much of one or other radio-active manure that the number of units was the same in all the pots. The soil used was well supplied with nitrogen, but less rich than that used in the preceding experiments: $\frac{1}{2}$ per cent. of a complete fertiliser was added to the potting soil.

In the early stage of the experiment symptoms of excessive nitrogenous feeding, similar to those exhibited by the Haricot noir, were observed. But by August, when the plants were flowering, those treated with certain radio-active substances were manifestly superior to those which received manure only.

Of the treated plants the best were those which received $\frac{1}{2}$ per cent. manure (i.e., 1 part manure to 100 of soil) together with an amount of carnotite equal to $7\frac{1}{2}$ per cent. of the manure.

That is to say, the proportions were:—Soil, 20,000; complete fertiliser, 100; radio-active substance (carnotite), $7\frac{1}{2}$.

Each pot received about $\frac{1}{3}$ gram (5 grains) of carnotite, which is a mineral of low radio-activity. Next in order of excellence were the plants which received 5 per cent. instead of $7\frac{1}{2}$ per cent. of carnotite. Those to which black oxide of uranium



KALMIA LATIFOLIA (NAT. ORD. ERICACEAE)

(From a photograph taken in the R.H.S. Gardens, Wisley, Surrey.)

was added (11 milligrams per pot) were also good, but less so than the foregoing. M. Truffaut concludes from these experiments that (1) radio-active substances produce a definite effect on vegetation; (2) the insoluble radio-active substances give at least as good results as those given by soluble radio-active substances; (3) radio-active minerals or oxides give the best results; (4) the use of black oxide of uranium is practicable; for the results are good and the price low. This substance costs about £1 per pound, and one pound suffices for about a ton of soil; (5) it may be dangerous to use radio-active residues of commercial manufactures, since these residues may contain poisonous substances — e.g., salts of barium, sulphuric acid.

In conclusion, it is to be observed that experiments carried out by M. Truffaut with Spinach in the open gave no well marked results.

Our Supplementary Illustration.—

Kalmia latifolia is a native of the mountainous districts of North America, and may be ranked amongst the most beautiful of the hardy evergreen shrubs. It belongs to the Ericaceae, and thrives best in a moist, peaty soil, although it will grow in a sandy soil that does not contain lime. The fine specimen illustrated in the Supplement is growing in the gardens of the Royal Horticultural Society at Wisley, and measures slightly over 5 feet high by about 7 feet broad. The flower buds are just commencing to open, and are somewhat in advance of those on plants of the same species growing in other parts of the garden. This is probably due to the shelter which is provided on the north by a Holly hedge and on the east by large Rhododendrons. Our photograph was obtained in July last.

Coloured Supplement for next week.—

The subject of the Coloured Plate to be published with our next issue is *Philesia huxifolia*.

NEW SUPERINTENDENT OF PUBLIC PARKS AT SHREWSBURY.—Mr. ARTHUR WARD, who has held the office of foreman in the Birmingham City Parks for the past six years, has been appointed Park Superintendent of the borough of Shrewsbury. Mr. WARD, who is a son of Mr. JAMES WARD, Superintendent of Public Parks at Norwich, gained experience under his father in the Norwich parks for some years, and has also been employed in the Royal Gardens, Windsor, Welbeck Abbey Gardens, Warren House, Stanmore, and elsewhere. His fellow employees at Birmingham have made him a presentation as a souvenir on the occasion of his taking up his new post.

NATIONAL ROSE SOCIETY.—PRIZES OFFERED IN AMATEUR CLASSES.—A correspondent writes as follows upon the new regulations of the National Rose Society:—"A new feature of the N.R.S. schedule of prizes for the summer show to be held at the Botanic Gardens, Regent's Park, is that each of the 1st prizes to be awarded to amateurs consists of a piece of plate instead of the money prizes heretofore offered in the majority of the classes, save that where challenge cups have been offered in former years these, with their money prizes, some three or four in all, are still maintained. As this leaves nearly seventy classes for which these pieces of plate are to be provided, it will clearly give a good deal of work to those deputed to select the prizes, and it will also be an interesting question whether the alteration will be

appreciated, and the exertions of the selection committee appreciated. Exhibiting Roses is an amusement by no means free from expense, and there can be little doubt that in the past many exhibitors, especially those who come from a distance, have been in the habit of looking to the prizes they may secure either to recoup themselves some of this expenditure, or to furnish new Roses for the next season's campaign. Clearly the seventy pieces of plate will be of little service in this respect, and more than one intending exhibitor has already been heard to say he would prefer to secure the second rather than the premier position. Possibly the Society may have been thinking less of the convenience of its members than of carrying into effect something of the nature of a self-denying ordinance to accompany the increased stringency in its definition of an amateur which takes effect this year. Or again, it may be regarded as a form of economy. In the case of the notable classes, such as the Amateur Champion class or the Metropolitan Champion class, the offer of a cup or permanent trophy of some kind is reasonable enough, but they are scarcely likely to be thought of equal value when multiplied to the extent indicated above. Pieces of plate distributed in this quantity may even become rather a burden than an acquisition. However, it is only by experiment that progress is effected, and perhaps by its new departure the Society may be enabled to ascertain in what direction a move may best be made. Exhibitors as a class are not wont to be reticent in expressing their views, and it scarcely admits of doubt that they will cause their opinions to be known before the summer is over."

FLOWERS IN SEASON.—We have received from Mrs. INA SCOTT-ELLIOT, of Teviot Lodge, Hawick, a number of fine, long-spurred Aquilegias. For the past fifty years Mrs. SCOTT-ELLIOT has been at work improving the strain of these attractive flowers, and has produced some extremely fine varieties. Among those she has now sent us, those with red flowers are especially noteworthy; the collection also includes mauve and pink flowers of very delicate tones. From Messrs. KELWAY AND SON, of Langport, Somerset, comes a box of Pyrethrums, showing the latest developments in this flower obtained by this well-known firm. Wilson Barrett is a fine double flower of a bright rose-pink colour. General Buller is a single flower, of which the petals are deep, flaming crimson, lighter on the reverse, while the centre is bright orange-yellow. Mary Anderson is an attractive double variety, the outer petals being a pretty shade of rose-pink, and the inner ones tipped with yellow. Queen Alexandra is a white double flower.

AGE OF HEATHS.—From the *Pharmaceutical Journal* we learn that the monks of the Great St. Bernard Hospice have gathered, for purposes of micro-examination, several specimens of Ericaceous plants growing at altitudes from 2,000 to 2,400 metres. As a result, the following ages have been attributed by F. KAMGESSER, the well-known scientist, to the plants he examined:—*Vaccinium vitis-idaea*, thirteen years; *Vaccinium myrtillus*, two years; *Calluna vulgaris*, thirty-three years; *Rhododendron ferruginosum*, one hundred and three years.

APPOINTMENT.—The County Council of North Wales has appointed Mr. WM. WILLIAMS, of Hengrave Hall, Bury St. Edmunds, as Horticultural Instructor, University College, Bangor, North Wales.

THE WORLD'S CORN CROPS.—The Board of Agriculture and Fisheries has received the following telegram from the International Agricultural Institute:—"A condition premising an average yield being represented by 100, the condition of crops in certain countries on May 1 was as follows:—Wheat: Spain, 110; Roumania, 115. Winter Wheat: United States,

112. Rye: Spain, 110; Denmark, 106; Netherlands, 105; Roumania, 115. Barley: Spain and Roumania, 110; Japan, 106. Oats: Spain and Roumania, 110. The condition of cereals in Belgium, Russia and Sweden was good, and in Italy and Algeria, average.

MATTHIOLA INCANA.—Herr SPRENGER describes (*Osterr. Garten Zeitung*, Heft 5, 1914) the variations exhibited by *Matthiola incana* in the wild state. On the rock cliffs at Gaeta it bears pure white flowers. In the vicinity of Naples it is dark blue. On the coast of the peninsula of Sorrento Herr SPRENGER has seen it blue and white striped. In Majori its flowers are red, in Liguria blue or violet, in Silesia sometimes violet and sometimes red, as it is also on the inhospitable coasts of Corfu. Whether the white form in Gaeta is a true wildling or whether it be an escape from cultivation is hard to say. If the latter, Herr SPRENGER says that we should expect to find the double form as well; but this is scarcely so, since, as is now well known, only some individual singles carry the power of producing doubles. In the Mediterranean the wild Stock is a shrubby plant with woody stem. It lives for five or six years, branches vigorously, and may reach a yard in height. The smooth leaved *M. incana glabra graeca* is, however, dwarfier.

A NEW WINTER-FLOWERING BEGONIA.—

A promising addition to the numbers of winter-flowering Begonias is *Melior*, a plant described by Messrs. J. A. PETERSON AND SONS, of Cincinnati (U.S.A.), in *Möllers Deutsche Gärtner Zeitung* (No. 13, 1914). The plant is the result of a cross between Lonsdale's Light Pink (a sport from *Begonia Gloire de Lorraine*) and *B. socotrana*. The hybrid is a strong grower, from 1 to 2 feet high, with dark-green, roundish leaves. It flowers profusely and its male flowers, which are from 1½ to 2 inches across, possess each four petals. The female flowers, which are formed rarely, have five petals. In colour *Melior* is of a delicate rose, somewhat lighter than *Glory of Cincinnati*. Flowers are produced from November to March, and are at their best in December and January. During flowering-time the plant should be kept at a temperature of about 58°. Propagation is easy, and cuttings root well in a mixture of equal parts of turfy loam and leaf-mould, to which some sand is added.

CITROPSIS, A NEW GENUS ALLIED TO CITRUS.—The Citrus-like plants of equatorial Africa, hitherto classed in the genus *Limonia*, have been investigated recently by W. T. SWINGLE and MAUDE KELLERMAN, of the U.S. Bureau of Plant Industry (see *Journal of Agricultural Research*, Vol. 1, No. 5, 1914). The plants in question have fruits of from 2 to 3 centimetres in diameter, in groups of 2 to 5 borne on the axils of the leaves. ENGLER has grouped these African species of *Limonia* in a new section, *Citropsis*, thus distinguishing them from the true *Limonias* of the Asiatic mainland. The authors above cited conclude, however, that these plants must be separated from *Limonia* and placed in a new genus *Citropsis*. The relation of the African plants is said to be closer to *Citrus* than to *Limonia*, and in this conclusion the authors are confirmed by the fact that the plants may be budded easily on commonly cultivated species of *Citrus*.

THE WILD SNAPDRAGON.—An article by Herr SPRENGER on "The Snapdragon at Home" (*Osterr. Garten Zeitung*, 4, 1914), describes the variation exhibited by this plant in the wild state. As in gardens, so in nature, the *Antirrhinum* shows great variety. In Corfu its flowers are violet-purple with yellow lip; but white-flowered forms are not uncommon. On the walls of the King's palace at Rome the flowers are of a delicate lilac-rose tint; but Herr SPRENGER has not seen a wildling with pure yellow flowers. The wild plants, though they blossom sparingly, have flowers which are not

smaller, but if anything larger, than those of the cultivated plant. A wild, small-leaved form exists. The Snapdragon which is common in Corfu is in Greece confined to the islands Hydra, Tenos and Naplia.

SPRING FORAY IN THE FOREST OF DEAN.—The sixth informal spring foray of the British Mycological Society will be held in the Forest of Dean from Friday, May 29, to Tuesday, June 2. Daily forays will be made from the Saturday to the Tuesday inclusive, and the various places to be visited will be selected on the previous evening. The hon. secretary and treasurer is Mr. CARLETON REA, 34, Foregate Street, Worcester.

A RUST-PROOF STOCK FOR ROSES.—M. LOUIS WEIGAND, writing in the *Handelsblatt für den Deutschen Gartenbau*, claims that he has obtained a stock, which he names Weigand Rust-free Canina, that is completely resistant to rust. It arose among the firm's stock of *R. canina*, and is said to have other valuable qualities—e.g., freedom from spines, wood which is hard, not brittle and with little pith, hardy with well-developed, compact root system. All the varieties which have been budded on it develop vigorously.

ROSES AND DAHLIAS.—We learn from the *Board of Trade Journal* that H.M. Consul-General at New York (Sir C. W. BENNETT, C.I.E.) reports an enquiry from New Jersey for the names of the leading English and Irish growers of Roses and Dahlias for export. The name and address of the enquirer may be obtained by United Kingdom growers of Roses and Dahlias for export on application to the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, London, E.C. Any further communications regarding the enquiry should be addressed to the British Consulate-General, New York.

GRAPES FROM ARGENTINA.—According to the *Board of Trade Journal*, H.M. Legation at Buenos Aires reports that the first trial shipment of Grapes from Argentina to the United Kingdom left Buenos Aires on April 17. The fruit, which is stated to be of first-class quality, comes from the vine-growing district of the Province of Mendoza, and the consignment consists of 1,336 boxes of about 7 kilogs. each (a kilog. equals 2.204 lbs.), and 290 boxes of about 3½ to 4 kilogs. each. The fruit is packed in skeleton boxes and is laid within wooden shavings. Should this trial shipment prove a success there is a possibility of a large trade in Grapes between the Argentine Republic and the United Kingdom.

THE HEMP PLANT AND ITS PRODUCTS.—The Hemp plant (*Cannabis sativa*), though sometimes grown as a garden plant, is pre-eminent for its economic uses. In cool countries the durable fibre contained in its stems is employed in the manufacture of rope, etc. In hot countries it is grown for the narcotic resin deposited on the leaves, flowers and fruits of the growing plants. In India three distinct products are thus produced, namely, Ganja, which consists of the tops of the female inflorescences that are covered with the resin, Charas, which is the resinous substance itself, and Bhang, the mature leaves. They are all used for smoking; but Bhang is also used as an infusion in the preparation of an intoxicating drink. Ganja is known as a drug in this country, and comes into English commerce under that name, or as "hashish," and is usually in compressed dark-green masses. In English medicine it is employed either in the form of a tincture or extract. Little is known about these products, except by those who trade in them; but some interest was recently aroused by a report in the daily Press of proceedings having been taken by the depart-

ment of Customs and Excise against a Greek merchant trading in London for making a false statement of the contents of some barrels sent by him to Port Said. To quote from the report, "It was observed that at an address near Holborn a number of barrel staves and other parts of barrels were being taken in. Later, twenty empty casks were removed to the place of an earthenware dealer, and subsequently they were sent to Port Said. The specification stated the contents of the barrels to be 'toilet sets,' unrated value £30. The Egyptian Government was communicated with, and on the barrels being examined at Port Said it was found that each of the staves had a slot in which was packed hashish amounting to 456 pieces, and weighing 267 pounds. The consignment was confiscated by the Egyptian Government, and the importer proceeded against under their Customs Act, a fine of £1,215 being imposed. Numbers of staves similar to those in the confiscated barrels were found in the London warehouse, but in a broken condition. It was stated by the prosecuting counsel that hashish could be bought in this country at 9s. for 5 ounces, but in Egypt the same quantity would cost from 25s. to 30s. The defending counsel asked the magistrate to dismiss from his mind 'that hashish was the deadly stuff it was made out of. It was simply Hemp seed or cake made from Hemp seed, and there was no prohibition in this country. Even a canary might eat as much of it as it liked, and, further, it was not a question of defrauding the revenue.' The full penalty of £100 or three months' imprisonment was imposed."

PROPOSED NEW PARK FOR ABERDEEN.—The proposal to acquire the estate of Keppelstone, to be utilised as a west-end park for the city of Aberdeen, is meeting with general approval. The estate, which extends to about 15 acres, is situated in the environs of the city, partly without and partly within the city boundaries.

THE ANGLO-AMERICAN EXPOSITION.—The following is a programme of conferences to be held during the season at the Anglo-American Exposition, Shepherd's Bush. The conferences will be held at the Palace of Music, commencing each day at 2.30 p.m. —On Wednesday, June 10, the following gentlemen will read papers on hardy plants:—Mr. S. ARNOTT, on "June-flowering hardy perennial plants, natives of America"; Mr. R. W. WALLACE, on "Some aspects of modern gardening." Mr. GEORGE YELD will preside. On Tuesday, June 23, Mr. H. R. DARLINGTON (Vice-President of the National Rose Society) will deliver a lecture on "One hundred years of progress in the development of the Rose"; Mr. E. G. HILL, of Richmond, Indiana, U.S.A., a paper on "The position of the Rose in America." Mr. C. E. SHEA (President of the National Rose Society) will preside on this occasion. On Wednesday, June 8, the conference will be on Sweet Peas. Mr. CHARLES H. CURTIS (late hon. secretary of the Sweet Pea Society) will speak to the subject, "One hundred years' progress with the Sweet Pea in England"; Mr. W. ATLEE BURPEE, U.S.A., will contribute a paper on "The development of the Sweet Pea in America." Mr. LEONARD G. SUTTON will preside. On Thursday, July 16, a conference will be held on forestry, the arrangements for which are not yet complete. The hon. secretary for the forestry section is Mr. WILLIAM DALDMORE, 43, Leyborne Park, Kew Gardens. On Saturday, July 18, the subject will be border Carnations. Mr. ROBERT MORTON will read a paper on "One hundred years' progress in border Carnations"; Captain SMITH will read a paper on "The cultivation of this plant." Mr. H. R. TAYLOR (chairman of the National Carnation Society) will preside. On Tuesday, August 12, Mr. JAMES

KELWAY will contribute a paper on "The Development of the Gladiolus in England." Papers will also be read on the "Progress of the Gladiolus in the United States." Sir FRANCIS BURDETT will preside. There will be a Dahlia conference on September 2, and the following gentlemen have promised to read papers on this subject:—Mr. GEORGE GORDON (president of the National Dahlia Society), on "One hundred years of progress with the Dahlia in England"; Mr. JOSEPH CHEAL, on "The value of the Dahlia as a decorative plant for the garden and park"; whilst the subject "Progress of the Dahlia in America" will be treated by an authority in America. Mr. GEORGE GORDON will preside. On Thursday, October 1, a paper will be read on "Fruit culture in England." by Mr. E. A. BUNYARD; another on "The development of fruit culture in Ireland," by Sir FRED MOORE; and a paper on "The present position and future prospects of fruit culture in British Columbia." The first Temporary Exhibition was held in a spacious building (No. 21) in the Exposition grounds on May 25, Messrs. G. and W. H. BURCH, of Peterborough, showing an excellent collection of Roses, to which a large Silver Medal was unanimously awarded. On Tuesday, the 26th inst., Mr. J. A. BROWN, Peterborough, showed a large collection of hardy flowering plants. Next week Messrs. KELWAY AND SON, of Langport, will hold a large exhibition of their specialties in the same building. These will be on view the whole of the week, commencing on Tuesday. By holding continued exhibitions of this nature the Executive Committee hope and believe (by reason of promises received) that a permanent exhibition of plants, cut flowers and fruit in season will be held during the time the exhibition is open. Owen Thomas, Hon. Secretary of Horticultural and Arboricultural Committee.

"BOTANICAL MAGAZINE."—The following plants are illustrated and described in the issue of this Magazine for May:—

ABIES MAGNIFICA, tah. 8552.—This magnificent Fir is well known in gardens, having been introduced into England so long ago as 1851. The species grows wild in the forest belt of the Sierra Nevada, at an elevation of 6-9,000 feet. At Bayfordbury, Hertfordshire, there is a fine specimen over 60 feet high, with a trunk 6 feet in girth.

ZEPHYRANTHES CARDINALIS.—This is a remarkably handsome plant, with red, funnel-shaped flowers, and thrives under the cultural treatment suitable for *Z. carinata*. The plant flowered at Kew in June, 1893; the bulb had been obtained from the Bahama Islands, where it is cultivated in gardens, but its exact habitat is not known.

MAZUS REPTANS.—This pretty Alpine has been extensively exhibited at recent R.H.S. meetings. It received the Award of Merit of the Floral Committee on March 4, 1913, under the name of *M. rugosus*. Its habit may be likened to that of some of the smaller Lobelias, the prostrate growth making a compact mass which flowers freely.

LONICERA LEDEBOURII.—This shrub, which is of a sturdy, erect character, is a native of California. It bears flowers of a deep orange-yellow colour about the beginning of June, and is very popular as a garden plant in its native country. It was introduced into Britain in 1838, and is common in cultivation, but is often confused with *L. involucrata*.

PITHECOCTENIUM CYNANCHOIDES.—The species described is a native of Brazil and other South American States. It has been in cultivation at Kew since 1884, when the seeds were presented to the Gardens by Dr. DORMER, and it frequently flowers in the summer. It is an attractive twining plant, bearing tubular flowers, which are white on the exterior but yellow inside.



FIG. 170.—MESSRS. SUTTON AND SONS' EXHIBITS AT THE CHELSEA SHOW.

RHODODENDRON EXHIBITION AT WESTMINSTER.

MAY 25-29.—The exhibition of Rhododendrons held during the past few days by Messrs. JOHN WATERER, SONS, AND CRISP, LTD., in the Horticultural Hall, Westminster, created much interest. The large building was filled with a brilliant collection arranged in bold lines and broad masses of colour (see fig. 171). The visitor on entering was confronted with a central group that stretched as far as the opposite wall and extended with undulating fronts on either side almost round to the east and west annexes. Two other large groups, one to the right and the other to the left, were in the body of the Hall, separated from the central mass by pathways, having the effect of sweeping carriage drives, and there were also terraces planted with hardy perennial flowers and Alpines. The most imposing feature was the central bay of the main group, which was composed of a mass of Pink Pearl Rhododendrons, interspersed with standards of Bagshot Ruby varieties, leading to masses of the white and black coloured Sappho,

all three white varieties; Helen Waterer, scarlet with white base; Cynthia, rosy-pink; Strategist, pink; fastuosum flore pleno, the "blue" Rhododendron; and White Pearl. We were pointed out numerous seedlings of great beauty, many being distinct from others in cultivation, but as yet the stocks of these are too scarce for the varieties to be put into commerce. A corner was filled with a striking group, composed of Azalea van Thol, with large salmon-rose coloured blooms. Variety was furnished by groups of other shrubby flowering plants, such as Kalmias, Ericas, and Veronicas.

CHELSEA SHOW.

IN the present issue we publish illustrations of some of the new plants exhibited at the Chelsea Show and described in the last issue.

In fig. 165 is shown the handsome Laelio-Cattleya Medina Excelsior for which Messrs. FLORY AND BLACK received a First-Class Certificate. The flower, in its more Cattleya-like shape and fine colour, shows a marked advance

land in 1890, and many plants of it have been grown during the past twenty years, it remained for Mr. W. H. SMITH, of West Dean Park Gardens, Chichester, to show its full possibilities. The semi-circular group of plants, bearing fully 150 large and richly-coloured spathes, may well be termed the finest exhibit of Richardia Pentlandii that has been staged, and, from the cultivator's point of view, it was a very noteworthy exhibit. Richardias are divided into two natural groups: those in which the leaves are hastate at the base, as in *R. albo-maculata*, and those, such as *R. africana* and *R. Pentlandii*, in which the base of the leaf is cordate; and it is said that *R. Pentlandii* is much the largest-leaved species in the genus. But the plants shown by Mr. SMITH had such exceedingly fine spathes, well set on long stalks, that the foliage by comparison appeared to be small. The story of the introduction of *R. Pentlandii*, of how Mr. Whyte, of Pentland House, Lee, received six tubers from a friend in 1890, with the information that he would probably find a yellow-flowering one amongst them, was told in the *Gardeners' Chronicle* for July 30, 1892, p. 123, by Mr. W. Watson, and another account appeared in the issue for May 12, 1894, p. 590, relating how, in May, 1892, Mr. E. E. Galpin, of Barberton, South Africa, brought to Kew six tubers of a yellow-flowering *Richardia* which had been given him by a gentleman in the Transvaal, who obtained them from a Staats artilleryman, who got them from a Basuto chief whilst on active service. One of the tubers flowered at Kew in 1894, and proved to be identical with Mr. Whyte's *R. Pentlandii*.

As supplementing the report printed last week it should be said that Messrs. T. S. RIVERS AND SONS, Sawbridgeworth, showed fruit trees in pots, including Peach Duke of York, which was raised by them. We have seen good crops on trees of this variety growing against walls in the open in the West of England, and it is well known as a trustworthy early variety for the Peach house. The pot trees shown by Messrs. RIVERS bore fruits almost ripe. Duke of York is a large, well-coloured Peach, and the flesh is of good flavour. Besides Peaches of this variety, this firm showed good Nectarines, Cherries and Plums, which also evidenced the same skilful cultivation.



FIG. 171.—EXHIBITION OF RHODODENDRONS AT THE R.H.S. HALL, WESTMINSTER.

with tall Conifers at the back. Japanese Maples gave the necessary touch of greenery, and our admiration of these splendid foliage plants was equal to our appreciation of the specimen Rhododendrons. The Maples seemed to throw a sheen on the flowers beneath them, making the colours appear softer in the bright sunlight. Of the almost endless number of varieties of Rhododendrons on view, it is difficult to know which to appraise most. Many would acclaim Pink Pearl the gem of the collection, with its trusses of soft pink flowers, that seemed to excel all others in size and grandeur. Others might prefer Alice for its deeper colour, neater habit of growth, and more compact truss. One was heard to give the palm to Gomer Waterer as the Rhododendron of the show, whilst another's fancy was Bagshot Ruby, the finest of all the red varieties, and better even than Doncaster. Where so many are good we can only enumerate a few of those that pleased us most, merely giving the names and their colours as follows:—Prometheus, rosy-crimson; Viscount Powerscourt, rose with very dark blotches; Duchess of Connaught, white and yellow; Mrs. John Clutton, Mme. Carvalho, and Geo. Hardy,

on the earlier Laelio-Cattleyas. *Miltonia vexillaria* J. Gurney Fowler, illustrated in fig. 166, and the beautiful variety "The Baroness" were the two finest plants in the remarkable display of Orchids shown by Messrs. ARMSTRONG AND BROWN. Both plants were exhibited as crosses of *M. vexillaria* Memoria G. D. Owen, the other parent being unnamed; but in the case of *Miltonia* J. Gurney Fowler there seems not to be any departure from *M. vexillaria* Memoria G. D. Owen, and it is one of the best forms of *M. vexillaria*.

Adiantum grossum, fig. 167, shown by Messrs. H. B. MAY AND SONS, is a very desirable addition to decorative Ferns. The handsome green fronds are of thicker substance than those of most *Adiantums*; a desirable quality for cutting.

Iris Goldcrest (fig. 164), shown by Mr. W. R. DYKES, Godalming, received an Award of Merit, and was fully described on p. 363. *Begonia* Lady Carew (fig. 168), shown by Messrs. BLACKMORE AND LANGDON, was one of the best varieties in their remarkable group of these plants.

RICHARDIA PENTLANDII.—Although the "Golden Arum" was introduced from Basuto-

PUBLICATIONS RECEIVED.—*Currants and Gooseberries*. Bulletin 222, Fruit Branch, Ontario Department of Agriculture. By E. F. Palmer, B.S.A.—*La Taille Lorette*. Second edition. By Louis Lorette. (Versailles, Lab. Georges Truffaut, 90 bis, Avenue de Paris, 1914.) *Wholesale Prices of Apples and Receipts of Apples in New York City for Twenty Years*; *The Yellow Leaf Disease of Cherry and Plum in Nursery Stock*; *Scab Disease of Apples*; *Experiments in the Dusting and Spraying of Apples*; *Experiments Concerning the Top-Dressing of Timothy and Alfalfa*; *The Badcock Test with Special Reference to Testing Cream*; *Distribution of Moisture and Salt in Butter*; *A Study of Some Factors Influencing the Yield and the Moisture Content of Cheddar Cheese*; *Some Relations of Certain Higher Plants to the Formation of Nitrates in Soils*; *The Action of Certain Nutrient and Non-Nutrient Bases on Plant Growth*. Ithaca, New York. Published by the Agricultural Experimental Station, Cornell University.—*Annual Report of the Director of the Department of Botanical Research*, Carnegie Institute of Washington.—*Bullettino della Societa Botanica Italiana*. (Periodico Mensile.) 1914. Nos. 1, 2, 3. Raffaello Beni. Firenze, Stab. Pellas.—*Bulletin of Miscellaneous Information*. Royal Gardens, Kew. No. 3, 1914. (London: Wyman and Sons, Ltd., 29, Breems Buildings, Fetter Lane, E.C.) Price 5d.—*Journal of Genetics*. Vol. III., No. 4. April, 1914. (Cambridge University Press.) Price 10s. net.

SOCIETIES.

ROYAL HORTICULTURAL SUNDRIES AT CHELSEA.

Our report in the last issue gave particulars of the exhibits of flowers, fruits and other garden produce, and we now publish details of the horticultural sundries, those indispensable mechanical aids to culture, which were exhibited in a special tent.

The exhibits of Messrs. J. CARTER AND Co., Raynes Park, Messrs. J. BENTLEY, LTD., Barrow-on-Humber, Messrs. CORRY AND Co., Covent Garden, PRICE'S PATENT CANDLE Co., Battersea, Messrs. WALTER VOSS AND Co., Millwall, THE BOUNDARY CHEMICAL Co., Liverpool, Messrs. ROBINSON BROS., West Bromwich, Messrs. COOPER AND NEPHEWS, Berkhamsted, and

in size, possess the great advantage of the larger structure. Messrs. J. WEEKS AND Co., Victoria Street, London, displayed fascinating little models of their well-known glasshouses, which embody the latest improvements. Messrs. CHAS. P. KINNELL AND Co., Southwark Street, London, exhibited their well-known boilers, Messrs. HARTLEY AND SUGDEN, Halifax, displayed various heating appliances, and Messrs. HÖNTSCH AND Co., Twickenham, showed excellent types of hot-house boilers. Garden tools and cutlery were exhibited in a great variety. Messrs. SUTTON AND SONS, Reading, filled a whole length of tabling with a very valuable and interesting collection, in which especial prominence was given to appliances for use on lawns and golf links. A variety of high-class digging and cutting tools, as well as watering appliances, were also on show. Messrs. BARR AND SONS,

CHASE CONTINUOUS CLOCHE Co., LTD., Queen Victoria Street, London, who showed lengths of their handy seed raisers and protectors; and the FRENCH CLOCHE Co., Westminster.

Messrs. H. PATTISSON AND Co., Streatham, demonstrated the ease with which their patent horse boots may be adjusted, and also showed weeding tools and brooms.

Horticultural labels of every shape and size were displayed by Mr. JOHN PINCHES, Camberwell, and there were numerous exhibits of fruit preserves.

ROYAL GARDENERS' ORPHAN FUND. ANNUAL FESTIVAL DINNER.

MAY 21.—The twenty-sixth anniversary dinner of the friends and supporters of this gardening charity was held on the 21st inst. at the Hotel



FIG. 172.—FORMAL GARDEN EXHIBITED BY MESSRS. JAS. CARTER AND CO. AT THE CHELSEA SHOW.

JEYES' SANITARY COMPOUND COMPANY, Cannon Street, London, were interesting and valuable. The spraying appliances of Messrs. H. HARTJEN AND Co., Noble Street, London, THE FOUR OAKS SPRAYING Co., Sutton Coldfield, and Messrs. G. W. PURSER, LTD., Hatton Garden, London, comprised a variety of ingenious contrivances. The "Holder" sprayer, shown by Messrs. HARTJEN, permits the free use of both hands, and is especially commendable.

An interesting mechanical novelty in the show was the Pullen-Burry Transverse Travelling Hothouse. Examples were shown just inside the Sloane Square entrance, where an attendant demonstrated the ease with which the structures can be moved, and indicated their horticultural value. Besides an example of the hothouse described in the *Gardeners' Chronicle* of April 12, 1913, Messrs. PULLEN-BURRY exhibited an amateur's greenhouse, and an "Ideal" travelling frame, both of which, though smaller

Covent Garden, London, also showed many useful tools; their bulb-planting implements are unique and valuable. Mr. V. T. HILL, Langford, Bristol, showed the V.T.H. patent slug trap, which provides an effectual means of catching these pests.

Garden furniture and ornaments were shown in great variety, and many of the summer-houses were of excellent design. The chief exhibitors were THE LONDON, PROVINCIAL AND EXPORT BUILDING Co., Hull; Messrs. J. UNITE AND Co., Edgware Road, London; THE DRYAD WORKS Co., Leicester; Mr. J. BRADLEY, Derby (The "Buntz" Garden Tea House); Messrs. VIPAN AND HEADLEY, Leicester; and Mr. H. E. WEMYSS, London. Messrs. C. H. PETERS, LTD., Derby, showed examples of wood preservatives, and THE GARDEN CITY TRUG Co., Fleet, Hants., exhibited well-made trug baskets, some of them being fitted for carrying tools. French gardening appliances were displayed by the

Cecil, Strand. Baron Bruno Schröder was in the chair and presided over a large gathering. Among those present were Sir Harry J. Veitch, Col. Mark Lockwood, M.P., Col. S. J. Smith-Young, Dr. F. W. Keeble, F.R.S., E. Rochford, Thomas Cox, H. Morgan Veitch, E. Mainwaring, W. E. Churcher, W. A. Bilney, N. N. Sherwood, W. J. Jefferies, Edward Sherwood, Leonard G. Sutton, Martin H. F. Sutton, Edward White, R. Hooper Pearson, J. B. Slade, G. J. Ingram, P. Rudolph Barr, Geo. H. Barr, Donald Anderson, Jas. T. Anderson, E. C. Anderson, G. H. Cuthbert, R. G. Cuthbert, W. Poupart, J. F. McLeod, H. B. May, and D. Ingamells.

The chairman gave the usual loyal toasts, which were received with musical honours, after which he proposed the toast of the evening, "The Royal Gardeners' Orphan Fund." It was, he said, a great pleasure to be present in the capacity of chairman at the festival dinner,

although when their chairman, Mr. May, asked him to preside he felt reluctance in accepting such a responsible position. Not only (he continued) was gardening the oldest profession in the world, it was also the most important, for we may regard agriculture as a branch of gardening, and without agriculture there could be no food and industry would be impossible. The development of every country begins with the cultivation of the land. Apart from its antiquity and utility gardening was also the greatest pleasure a man could enjoy. In England this was especially so, for whether in large towns, suburbs, villages, or hamlets, one could everywhere see the intense love of the Britisher for his garden. To night all thoughts were turned towards the professional gardener, who spent his

sent year £1,868 had been dispensed, and £150 had been paid, at the discretion of the committee, on providing outfits for children leaving the fund and beginning to work. During the past two years it had been possible to place on the funds all children seeking admission; but they could not expect that they would always be enabled to do this, and this year already there were sixteen waiting to be placed in the list next year. The annual subscriptions amount to only £450, leaving more than £1,000 to be made up by voluntary donations. The thanks of the committee were especially due to Lady Ilchester and Sir Frank Crisp, who had been good enough to help the institution by throwing open their grounds to the public for a small fee, and also to the gardening societies and local sec-

tion of the privilege. He spoke of the great honour in which the name of Baron Schröder was held in all gardening circles, and of the fact that it was in great measure due to the late Baron that the R.H.S. now possessed its splendid hall. Baron Schröder then replied briefly with a few words of thanks, and referred to the pleasure it had given him to be among them and to hear such good news of the work of the fund.

The secretary, Mr. Brian Wynne, then announced that the sum subscribed during the evening amounted to a little over £1,200. The principal sums included £100 from the chairman, Baron Bruno Schröder; N. N. Sherwood and his sons, £100; Sir Frank Crisp, Bart., £62; Messrs. Sutton and Sons, £50; Messrs. Rothschild and Sons, £26 5s.; Frank C. Marks, £25; Anthony



FIG. 173.—CINERARIAS AND PRIMULAS EXHIBITED BY MESSRS. ED. WEBB AND SONS AT THE CHELSEA SHOW.

life in ministering to the pleasure of those for whom he worked. If such a man was taken from us in the prime of life, was it not our duty to care for the orphans he leaves behind? This work was done in a splendid manner by the R.G.O.F. There was no more praiseworthy work than aiding the orphan and fatherless; indeed, it was a national duty to support the young, on whose health and efficiency the future depended. He had great pleasure in giving the toast of the fund, coupling with it the name of the treasurer, Mr. Edward Sherwood.

Mr. Sherwood, in reply, said that he had great pleasure in announcing that the fund continued to prosper. Its usefulness became more and more apparent, and the number of applicants greater every year. Nearly £30,000 had been subscribed since it was founded. During the pre-

retaries who had been indefatigable in collecting donations. The shilling subscription fund had this year met with unprecedented success, and it was hoped that it might assume large proportions. He had pleasure in seconding the appeal of the chairman for support of this eminently useful charity.

Mr. N. N. Sherwood proposed the toast of "The Visitors," and appealed to those present to continue to aid in the good work which was being done. He asked them to do their best to support the charity and make it an abiding success. Mr. W. J. Jefferies replied for the visitors, and expressed the great pleasure it gave to him and to all those present to hear such a satisfactory account of the activities of the society. Mr. H. B. May proposed the toast of "The Chairman," and expressed his apprecia-

Waterer, £25; R. B. Leech, £29 18s. 6d.; G. H. Cuthbert, £27 15s.; Sir Jeremiah Colman, Bart., £20; J. F. McLeod, £20; Whitpaine Nutting, 18 guineas; R. Hooper Pearson, £17 (including 5 guineas from the proprietors of the *Gardeners' Chronicle*); David W. Thomson, £15 9s.; W. Poupert, £14 12s.; J. W. Blackburne, £12; F. C. Stanishy, £11; Sir Edgar Speyer, Bart., £10 10s.; Messrs. James Carter and Co., £10 10s.; Messrs. Barr and Sons, £10 10s.; Messrs. G. Bunyard and Co., Ltd., £10 10s.; Wm. Howe, £10 10s.; Edward White, £10 10s.; A. W. Metcalfe, £10 10s.; Sir Harry Veitch, £10 10s.; J. C. Geiselbrecht, £10; Leonard Sutton, £10; Martin H. F. Sutton, £10; Thomas Hay, £9 7s.; H. B. May, £7 7s.; G. Caselton, £7 7s.; T. A. Morris, £6 6s.; T. W. Sanders, £6 6s.

The following each subscribed 5 guineas:—Lady Veitch, Mrs. Tiarks, Reg. R. Cory, L. Foersheim, John Margetson, E. Mainwaring, C. A. Bingel, W. J. Jefferies, Osman and Co., Ltd., Dr. F. Keeble, F.R.S., Col. M. Lockwood, M.P., W. G. Churcher, Corry and Co., Ltd., W. Cuthbush and Sons, J. T. Anderson and Sons, Ltd.

The sum of £5 was contributed by Thos. H. Mann, J. L. Walker and W. A. Bilney.

Covent Garden growers subscribed £170, collected by Mr. D. Ingamells, including Mr. Edmund Rochford, £10; Mr. Jesse F. Smith, £6 6s.; and 5 guineas each from Mr. James Sweet, Mr. John Rochford, Mr. Joseph Rochford, Mr. H. O. Larsen, Mr. O. Hiehlé, Mr. J. Collingridge, J. C. Mee, Mr. G. E. Messer, Messrs. Forster and Robins, and Messrs. C. P. Kinnell and Co., Ltd.

The tables and orchestral platform were beautifully decorated with flowers contributed by the kindness of Sir Harry J. Veitch, Mr. T. Rochford, Mr. G. H. Barr, Mr. T. S. Ware, Mr. A. F. Dutton, Mr. C. Engelmann, and Messrs. Lowe and Shawyer.

The musical programme, which was interspersed with the toasts, was excellent.

HORTICULTURAL TRADES' ASSOCIATION.

DINNER TO SIR HARRY J. VEITCH.

MAY 19.—As announced in our last issue, the members of the Horticultural Trades' Association of Great Britain and Ireland entertained Sir Harry Veitch at dinner at the Hotel Windsor on the above date. The President for the year, Mr. William Cuthbertson, was in the chair, and there was a company present of about eighty.

After the loyal toasts had been duly observed, the President set forth the programme for the evening, by stating that it had been arranged that several members who had been associated with Sir Harry Veitch for a considerable number of years should speak to the toast of his health, which he, the President, had now the privilege of proposing. He referred in the highest terms to the feelings entertained for their guest, and he was sure that the toast would meet with their hearty approval.

The next speaker was Mr. George Paul, one of Sir Harry's oldest friends in the horticultural trade. He stated that their acquaintanceship commenced in 1856, when they were fellow students at the same school at Altona, in Germany, and they had been in touch with each other during the whole period of fifty-eight years that had since elapsed. He was exceedingly proud of the opportunity of standing up before an assembly such as was present that night to testify to the respect he, in common with all horticulturists, felt for Sir Harry Veitch. They had long since recognised Sir Harry as the leading figure in the horticultural trade, and he was glad to be able to say that Sir Harry had always been ready to give advice and help to any of his colleagues who had occasion to seek his assistance. The firm of Veitch was a remarkable business; they often wondered how it was that the firm had been so successful. After speaking of some of the methods that had contributed to their success, Mr. Paul claimed that the firm owed its position no less to its enterprise than to its straightforwardness and integrity.

Mr. N. N. Sherwood, the next speaker, referred more particularly to Sir Harry Veitch's work in connection with the Gardeners' Royal Benevolent Institution, and to his liberal assistance of other charities; also to his interest in religious work, in the prosecution of which he spent considerable time and energy. He said that Sir Harry had been blessed with prosperity, but he had not neglected to help those who had been less blessed than himself.

Mr. Charles E. Pearson, in supporting the toast of the evening, pointed out that Sir Harry was one of the very few successful men who had made no enemies. The firm of James Veitch and Sons was a business that they might all envy, but it was a business of which none could complain, for the success had been obtained by methods that were not open to objection. Sir Harry had achieved his position by hard work, ability, and honesty of purpose. No one in the horticultural trade was jealous of the position

he had obtained, and every one of them rejoiced that he had achieved that position.

Mr. David W. Thomson, who also supported the toast, confined his remarks more or less to reminiscences of the Chelsea nurseries. He stated that he commenced work at those nurseries on May 18, 1873, at six o'clock in the morning, and he was admitted by John Dominy. Mr. Thomson caused considerable amusement by referring to the pot-washing and crocking that he had to perform under Mr. May, one of the foremen, and afterwards proceeded to speak of one foreman after another, until a whole list had been mentioned, and in each case

they could all appreciate the high motives that had led Sir Harry to adopt the course upon which he had decided.

The toast was drunk with musical honours, and Sir Harry Veitch responded in an able and profoundly interesting speech. He started by referring to his great-grandfather, who left Scotland in 1775 to become steward at Kilerton, in Devonshire. After serving in this position for a considerable number of years, the owner of that estate was so satisfied with the service that had been given him that he told Veitch that he might choose any farm on the estate and have it, rent free, for the remainder of his



FIG. 174.—SHINTO TEMPLE AND WISTARIA IN THE "JAPANESE" GARDEN EXHIBITED BY THE YOKOHAMA NURSERY COMPANY AT THE CHELSEA SHOW.

Mr. Thomson stated that "he had passed away." He concluded with a fine tribute to the position attained by the firm of Veitch: "They may ring down the curtain at Chelsea, take down the sign and close the gates through which so many have passed on their way to success, but the name of Veitch will live long after the present generation has passed away, and will be handed down to generations yet unborn."

The President, in putting the toast, referred to Sir Harry Veitch's decision not to sell the good-will of the Veitchian business. He said it was a noble action; it did not appear to be in agreement with general business principles, but

days whilst he retained his stewardship. He commenced to cultivate horticultural crops on this land, and this was the commencement of the business which was started at Exeter, and afterwards extended to London. Many were interested and some consoled to hear that Sir Harry's grandfather smoked thirty pipes of tobacco a day, and lived to the age of 85 years.

Surveying horticulture during the past sixty-three years, Sir Harry asked the company to consider how many nursery businesses had ceased to exist in that time; it showed what extraordinary changes were going on. Amongst others were those of Chandler, Milne, Rollisson, Henderson, Osborne, Kinghorn, Lee of Ham-

mersmith, Parker, Jackson, Standish, Noble, Luckcombe, Prince and Co. (Exeter), Herbst, Palmer, Garraway of Bristol, and Smith's of Worcester. There were doubtless others, but these were sufficient to show the ups and downs that occur even in such a business as the nursery and seed trade.

After referring to the exhibition of 1851, Sir Harry proceeded to relate interesting facts concerning the discovery, propagation, and sale of those new plants which had gone a considerable way towards helping to establish the business. Among others he mentioned *Berberis Darwinii* and *Medinilla magnifica* (easily disposed of at three guineas a plant). In 1860 John Gould Veitch went to Japan, and the collections he made there provided the firm with a wonderful number of novelties, including the ever-popular *Ampelopsis Veitchii*, which now rejoices in thirteen names.

In 1862 Sir Harry visited for the first time the Ghent Quinquennial Exhibition, where his

early days, Sir Harry stated that *Pandanus Veitchii* was shown six times before that committee gave it an award.

In 1867 Sir Harry went to Paris for an important exhibition; 1867 was remarkable for the sale of Bause's seedling *Coleus* at Stevens' Auction Rooms. Sir Harry was deputed by his father to go and examine these *Coleus*, and he bought six of them for £261 4s., and these six plants afterwards gained six First-class Certificates.

In 1869 he went to St. Petersburg, taking with him *Masdevallia Veitchii*, and keeping it in the railway carriage with him, so valuable a novelty was it in those days. About this time the propagation and cross-breeding of *Begonias* was commenced, and the Golden Hamburg Grape was introduced; also *Asparagus plumosus*. Later the hybridisation of Orchids became more and more part of the work engaging the attention of the firm. The Java *Rhododendrons* were also

the President, in replying, stated that the meeting would be adjourned until September 9, in Edinburgh.

KEW GUILD.

ANNUAL MEETING AND DINNER.

MAY 20.—There was a large attendance at the annual general meeting of the Kew Guild which was held at the Holborn Restaurant on May 20. The report and balance-sheet, both of which record satisfactory states of affairs, were adopted unanimously. The members of the committee who retire under rule 4 are Messrs. W. Hales, R. L. Harrow, R. A. Rolfe, and J. Weathers; their places were filled by the election of Messrs. Chas. H. Curtis, F. W. Harvey, A. Hosking, and J. Hutchinson, whilst Messrs. G. F. Glover and C. Boff were elected by the sub-foreman as gardeners. Messrs. A. Osborn and E. Allard are the auditors for the ensuing year. Mr. J. Coutts was re-elected treasurer and Mr. H. Cowley, secretary and editor. The



FIG. 175.—WISTARIA GARDEN EXHIBITED BY MESSRS. PIPER'S AT THE CHELSEA SHOW.

firm showed as a new plant *Alocasia Veitchii*. The same year the firm flowered *Lilium auratum*, Sir Harry relating some very interesting particulars of the manner in which his firm outdid Fortune, who was collecting *L. auratum* for another firm. Mr. James Veitch purchased a large number of *auratum* bulbs at a sale in London, when there was a considerable doubt as to the identity of the bulbs, but they all turned out true.

In 1865 he attended an International Exhibition at Amsterdam. He and one or two others, led by Dr. Masters, invited the foreign nurserymen present at Amsterdam to come to London in the following year, and they would promote an International Exhibition in London. This was the origin of the International Exhibition of 1866, a solitary event of its kind until 1912.

John Gould Veitch returned home from his second trip, which was to the South Sea Islands, in 1865, bringing with him many *Crotons* and *Dracaenas*, and that wonderfully fine plant *Pandanus Veitchii*. In testimony of the discrimination of the Floral Committee in those

hybridised, and Sir Harry stated how, by selecting petaloid flowers for four generations, a variety was obtained with perfectly double flowers.

In regard to Orchids, Sir Harry said that the company knew well enough that the first hybrid was raised by Dominy. He was inclined to think that the paper which he himself read at the Orchid Conference in 1885 had the effect of giving a great impetus to cross-breeding of Orchids in this country.

Sir Harry concluded his speech by giving some amusing particulars of the regulations in the old days of the Chelsea Nurseries, and stated that the young men were compelled to be clean-shaven.

The toast of the United Horticultural Trades Association was proposed by Mr. Arthur W. Sutton in an appropriate speech, in which he not only spoke of the value of the work the Association is doing, but also of the high character and attainments of Sir Harry Veitch.

The concluding toast was that of "The President," proposed by Mr. Alfred Watkins, and

secretary reported that the special appeal made on behalf of Mr. W. Crisp, who was for so many years packer at Kew, has already met with a ready response, but further subscriptions are needed.

Mr. A. W. Hill, M.A., presided at the annual dinner, at which 100 members were present, and the visitors were Sir Frederick Moore, M.A., M.V.H., Colonel Gage, and Mr. J. R. Jackson. Three lady members, the Misses Cope, Gunnell, and Powell, attended, and amongst the members present from abroad were Messrs. H. A. Cannon and T. Hunter (Gold Coast), G. T. Lane, and J. T. Johnson (Calcutta), F. S. Sillitoe (Khartoum), C. B. Usher (Java), and A. H. S. White (E.S.A.).

Mr. C. H. Curtis was deputed to convey the greetings of the Kew Guild to the Carnation Society, who were also dining in the Holborn Restaurant, which greetings were heartily reciprocated.

In proposing "The Kew Guild," Sir Frederick Moore said that his great pleasure in being invited to the dinner was tinged with the

sincere regret that he was not a Kewite. He had often wished that his father had sent him to Kew in his young days instead of to the Continent, for he was convinced from his personal experience that the home horticulture was superior to that abroad, and, speaking from a wide knowledge, Kew was the finest garden in the world. The advantages which Kew offered to her young men were enormous, and he felt sure that this was appreciated by the "Present Kewites." Consider, he said, the staff at Kew—Sir David Prain, the director, who is a wonderful botanist; Mr. Watson, the curator, whose knowledge of plants is unequalled in Europe. Hand him a plant and he will quickly tell you its value and possibilities. To mention only one plant, the *Streptocarpus* of to-day is due to Mr. Watson's intuitive knowledge and foresight; Mr. Bean amongst trees and shrubs, and Mr. Irving in the rock garden are also the leading authorities of the day—no other garden possesses such men. Everything changes, and gardening is no exception; the collections of stove plants have gone, he continued, and in their place we have houses of Carnations, Roses and other plants; whilst in the out-door garden the greatest change is to be seen in the rock garden—such as those wonderful gardens which we have seen at Chelsea. Sir Frederick then spoke of the enormous value of practical experience, and said that it was only by working amongst plants that one could really know them. He was glad to know that the Kew Guild had a Benevolent Fund, for to help their members is the true spirit of a Guild. "No man has a right to take a step up the ladder without holding out a hand to him below." In conclusion he said it was inevitable, but there was a tragic page in the *Journal*; the photographs and records of those members who had gone, some of them pioneers who had, whilst yet young, laid down their lives in the service of their country.

In responding to the toast, Mr. A. W. Hill expressed the honour which the Guild felt at the presence of Sir Frederick Moore, and their pleasure in his speech. He briefly reviewed the reasons of the Guild's existence, and was sure it did good work in welding the bond of friendship around the whole world. He endorsed Sir Frederick's remarks concerning the great value of practical experience, and quoted Aristotle, "If you want to learn to play the harp you must play the harp." Mr. W. Hales proposed the health of the new President, Mr. W. J. Bean, and referred to his great accomplishments and to the esteem in which he is held by the members. Mr. Bean briefly replied.

PERPETUAL-FLOWERING CARNATION.

MAY 20.—The annual dinner of the members of this society was held at the Holborn Restaurant on Wednesday, the 20th inst., Mr. J. S. Brunton presiding. About 60 members and friends were present. After the usual loyal toasts had been given and honoured, Mr. George Monro, junr., gave the toast of "The Perpetual-Flowering Carnation Society." He said that the Perpetual-Flowering Carnation had become popular quickly. Exhibitions, said Mr. Monro, have done more to popularise the flower than anything else, and each provincial show has been followed by a greater demand for the flower. Mr. J. S. Brunton, who replied, referred to the valuable help rendered to the society by the officers and committee.

Greetings were exchanged between the members of the Kew Guild, who were also meeting at dinner in the same building. Other toasts included "The Ladies," proposed by Mr. H. T. Mason, and responded to by Mr. Taudevin; "The Visitors," by Mr. C. Engelmann; "The Dinner Committee and Artists," by Mr. L. J. Cook; and "The Chairman," by Mr. W. H. Page.

CARDIFF GARDENERS'.

FORTY of the members of this association, many accompanied by ladies, recently visited "Lynwood," Penarth, the residence of the President, Mr. J. J. Neale. The visitors were conducted by Mr. Neale through the gardens, where they greatly admired the Orchids and insectivorous plants.

MARKETS.

COVENT GARDEN, May 27.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Arums (Richardias), per doz.	2 6 3 0	Narcissus, double white, flore pleno	2 6 3 0
Carnations, per dozen blooms, best American varieties	1 3 2 0	Orchids, per doz.: Cattleya	12 0 15 0
— smaller, per doz. bunches	12 0 15 0	— Odontoglossum crispum	3 0 4 0
— Carola (crimson), extra large	4 0 4 6	Paeonies, per dozen bu. of 6 blooms in a bunch	5 0 10 0
— Malmesbury, per doz. blooms	9 0 10 0	Pancreatum, per dozen blooms	2 0 2 6
Cornflower, English, per doz. bunches	1 6 2 0	Pelargoniums, per doz. bunches, double scarlet	10 0 12 0
Eucharis, per doz.	2 0 2 6	— white, per doz. bunches	6 0 8 0
Forget-Me-Not, per dozen bunches	2 0 3 0	Pyrethrum, white, per doz. bun.	2 0 2 6
Gardenias, per box of 15 and 18 blooms	2 6 5 0	— single, coloured	2 0 3 0
Gladiolus, Blushing Bride, per doz. bunches	6 0 8 0	Roses, per dozen blooms, Bridesmaid	1 0 1 6
— Ne Plus Ultra, per doz. spikes	1 0 1 3	— Frau Karl Druschki, per doz. blooms	1 6 2 6
— Peach Blossom, per doz. bunches	6 0 8 0	— General Jacqueminot	0 9 1 0
— The Bride	6 0 10 0	— Joseph Lowe	2 0 3 0
Gypsophila, pink, per doz. bun.	5 0 6 0	— Kaiserin Augusta Victoria	1 3 2 0
— white	3 0 6 0	— Lady Hillingdon	1 0 1 6
— white, large bunches, each	1 0 1 3	— Liberty	2 0 3 0
Iceland Poppies, p. doz. bunches	2 0 3 0	— Mme. Carnot	2 0 2 6
Iris, Spanish, per doz. bunches	8 0 10 0	— Madame A. Chateau	1 6 2 6
Lilium auratum, per bunch	—	— Melody	1 6 2 0
— longiflorum, per doz. long	1 9 2 0	— My Maryland	1 0 1 6
— short	1 6 1 9	— Niphetos	1 3 1 6
— lancifolium album, long	2 0 2 6	— Richmond	1 3 2 6
— short	2 0 2 6	— Subburst	1 6 2 0
— rubrum, per doz. long	2 6 3 0	— Sunrise	1 0 1 6
— short	1 0 1 3	— W. A. Richardson	0 9 1 6
Lily-of-the-Valley, per dozen bunches:		— White Crawford	2 0 3 0
— extra special	12 0 15 0	— Yellow Souvenir	1 6 2 6
— special	9 0 10 0	Spiraea, per doz. bunches	5 0 6 0
— ordinary	8 0 9 0	Stative, mauve, per doz. bunches	3 0 4 0
Marguerites, per dozen bunches	1 6 2 0	Stephanotis, per 72 pips	1 6 2 0
Mignonette, per dozen bunches	3 0 4 0	Stocks, English, white, per doz. bunches	4 0 6 0
Narcissus, Poeticus, per doz. bun.	2 6 3 0	— coloured	5 0 6 0
		Sweet Peas, white and coloured, per doz. bun.	3 0 10 0

REMARKS.—Business in cut flowers is only moderate, the best days for trade being Tuesday and Saturday. Supplies of Pyrethrum have increased considerably, both double and single; the double white variety is most in demand. The prices of double white Narcissus have advanced, for these flowers are now nearly over. Blue, white and pink Cornflowers are arriving in a splendid condition, as are Gladioli The Bride (white) and Carnations, which are more plentiful. The chief varieties of Carnations are Enchantress, May Day, Britannia, Scarlet Glow, Beacon, Winsor, White Perfection, White Enchantress, Mrs. Burnett, R. F. Felton and Mikado. Lillium Harrisonii is very cheap, but prices will increase towards the end of the week; this also applies to scarlet Pelargoniums (Geranium) and other scarlet flowers, which will be wanted for church decorations. During this week scarlet "Geranium" usually realises its highest value.

Cut Foliage, &c.: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Adiantum Fern (Maldenhair), best, per doz. bunches	3 0 4 0	Croton foliage, doz. bunches	12 0 15 0
Agrostis (Fairly Grass), per doz. bunches	2 0 4 0	Cycas leaves, per doz.	2 0 9 0
Asparagus plumosus, long trails, per half-dozen bunches	1 6 2 0	Eulalia japonica, per bunch	1 0 1 6
— medium, doz. bunches	12 0 18 0	Lichen Moss, per dozen boxes	9 0 10 0
— Sprengerii	6 0 12 0	Moss, gross bunches	6 0 —
Carnation foliage, doz. bunches	3 0 5 0	Myrtle, doz. bunches, English	6 0 —
		— small-leaved	6 0 —
		— French	1 3 —
		Smilax, per bunch of 6 trails	1 0 1 3

Plants in Pots, &c.: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Aralia Sieboldii, dozen	6 0 7 0	Heliotropes, 48's, per dozen	6 0 7 0
Arancaria excelsa, per dozen	18 0 21 0	Hydrangeas, Pink, per doz. 48's	10 0 18 0
Asparagus plumosus nanus, per dozen	10 0 12 0	— White	12 0 15 0
— Sprengerii	6 0 8 0	— Blue	18 0 36 0
Aspidistra, per doz., green	18 0 30 0	Kentia Belmoreana, per dozen	5 0 8 0
— variegated	30 0 60 0	— Forsteriana, 60's, per dozen	4 0 8 0
Cacti, various, per tray of 15's	4 0 —	— larger, per dozen	18 0 36 0
— tray of 12's	5 0 —	Latania borbonica, per dozen	12 0 30 0
Cocos Weddelliana, per dozen, 60's	6 0 12 0	Lilium longiflorum, per dozen	18 0 24 0
— larger, each	2 6 10 6	Lily-of-the-Valley 48's, per dozen	18 0 21 0
Croton, per dozen	18 0 30 0	Marguerites, in 48's, per doz., white	6 0 8 0
Dracena, green, per dozen	10 0 12 0	Pandanus Veitchii, per dozen	36 0 48 0
Erica persoluta, per dozen 48's	18 0 24 0	Pelargoniums, 48's, per dozen	10 0 12 0
— candidissima	12 0 15 0	— Zonal, 48's, per doz.	5 0 6 0
— Cavendishii	21 0 24 0	— Ivyleaf, 48's	6 0 9 0
— coccinea	12 0 15 0	Phoenix rupicola, each	2 6 21 0
— Willmorei	12 0 15 0	Rodanthe	5 0 6 0
Feris, in thumbs, per 100	8 0 12 0	Spiraea japonica, per dozen pots	6 0 8 0
— in small and large 60's	12 0 20 0	Stocks, white, 48's, per dozen	6 0 8 0
— in 48's, per dozen	5 0 6 0	— pink	6 0 8 0
— choicer sorts, per dozen	8 0 12 0	— red	6 0 8 0
— in 32's, per doz.	10 0 18 0	Verbenas, Miss Willmott, 48's, per dozen	8 0 9 0
Fuchsias, 48's, per dozen	7 0 9 0		
Geonoma gracilis, 60's per dozen	6 0 8 0		
— larger, each	2 6 7 6		

REMARKS.—Business continues to be very good in this department, especially for bedding plants. Fuchsias, Pelargoniums, Heliotropes and Marguerites are more plentiful. Fine specimens of blue-flowered Hydrangeas are to be seen on Messrs. Thomas Rochford's stands, also pink Spiraea Peach Blossom and Rambler Roses, which are now in great demand.

Fruit: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Apples, Australian, per case	9 6 13 6	Lemons, Messina, per case	8 6 15 0
— cooking, case	9 0 11 0	— Naples, case	20 0 27 0
— Cox's, case	16 0 20 0	Lychees, box	1 6 0 —
Apricots, box	1 2 1 4	Melons, English	2 0 4 0
— cases	3 6 4 0	Nectarines	6 0 24 0
Bananas, bunch:		— Belgium	4 0 12 0
— Double Ex.	11 0 12 0	Nuts:	
— Extra	9 6 11 0	— Almonds, sack	64 0 65 0
— Extra-medium	10 0 —	— Barcelona, sack	44 0 —
— Giant	14 0 —	— Brazils, cwt.	46 0 50 0
— Medium	6 6 7 6	— Chestnuts, Naples, per bag	16 6 20 0
— Red, per ton	£23 —	— Coco-nuts, per 100	13 0 22 0
— Jamaica, per ton	£15 —	Oranges:	
Cherries, French, box per 1/2 sieve	5 6 6 6	— Californian Navel, per case	15 0 17 0
Dates, per cwt. case	20 0 —	— Denia, per case	13 6 40 0
Figs, English, p. doz.	2 0 8 0	— Mercia, p. case	12 0 16 0
— Kadrowi, cwt.	11 0 —	Peaches, English, per doz.	4 0 36 0
Gooseberries, 1/2 bushel	6 0 —	— Belgian, p. doz.	4 0 12 0
Grapes:		Pears, Australian, tray	6 0 9 0
— Australian, per box	21 0 22 0	— Cape, box	7 0 8 0
— Belgium Hambros, per lb.	1 3 2 0	Pineapples, St. Michael	2 6 3 0
— English, Hambros, per lb.	1 6 5 0	Pomegranates, case	6 0 —
— Muscat of Alexandria, lb.	3 0 8 0	Raspberries, per lb.	3 6 4 0
Grape Fruit, case:		Strawberries, Worting, per lb.	2 0 5 0
— 36's	14 0 20 0	— First quality	2 0 5 0
— 30's	—	— Second quality	0 9 1 3
— 64's	—	— Southamptons, per lb.	0 9 2 0
— 54's	—		

REMARKS.—Nine thousand cases of Australian Apples have come to hand per s.s. "Orsova," and a few Grapes and Pears arrived by the same boat. Grape fruit is now at an end. Forced Strawberries continue to be plentiful; a few from out-of-doors from Southampton and Cornwall arrived this week, and France is also contributing to the supply. A few small punnets of Raspberries have been received this week. Some very fine fruits of Cherries are arriving from France daily, packed in small boxes, and Apricots are arriving from the same country. Green Figs and Melons are plentiful. Nectarines and Peaches from English and Continental growers are daily increasing in supply. English Grapes are increasing in quantity daily and show a decided improvement in quality. Good samples of Gooseberries are obtainable. Supplies of Tomatoes and Cucumbers from home growers are beginning to increase.—E. H. R., Covent Garden, May 27, 1914.

Old Potatos.

	s. d. s. d.		s. d. s. d.
Blacklands	3 6 —	Lincoln—Evergood	3 3 3 9
Dunbar—Red soil	4 9 5 3	— Up-to-date	3 9 4 0
Lincoln—King Edward	4 0 4 6	Scotch—Grey soil	3 6 4 0

New Potatos.

	s. d. s. d.		s. d. s. d.
Cherbourg, per cwt.	11 0 —	St. Malo	11 9 13 0
Jersey, per cwt.	12 6 13 0	Spanish, per cwt.	10 0 11 0
Lisbon, per case	4 8 4 9	Teneriffe	9 0 10 6

Vegetables: Average Wholesale Prices.

	s.d.	s.d.	s.d.
Artichokes, Globe, per dozen	1 9-3 0	Lettuce—continued:	
— ground, ½ sieve	1 0-1 6	— Cos, French, per doz.	2 6-2 9
Asparagus:		Marrows, per doz.	5 0-10 0
— Cavillon	0 9-0 10	Mint, per doz.	3 0-4 0
— Sprue	0 4-0 6	Mushrooms, cultivated, per lb.	0 6-0 8
— Giant	4 0-8 0	— Broilers	0 4-0 6
— Victorian	2 0-2 3	— Buttons	0 9-1 0
— Toulouse	1 6-1 9	Mustard and Cress, per dozen punnets	0 10-1 0
— Lauris	1 0-1 6	Onions, picklers, per ¼ bushel	3 0-4 0
— English bundle	0 9-5 0	— Spring, per doz.	2 6-3 6
Batavia, per doz.	3 0-3 6	— Egyptian, bags	16 0-16 6
Beans, Guernsey, lb.	0 7-0 8	— Lisbon, box	12 0-12 6
— English	0 6-0 7	Parsley, per dozen bunches	2 6-3 0
— Broad, French, per pad	4 0-4 6	Peas, Guernsey, lb.	0 9-1 0
— wire, French, per pad	4 6-5 6	— French, pad	5 0-6 0
Beetroot, per bushel	4 0-5 6	— English, ½ bus.	2 6-5 6
Cabbages, English spring, per hamper	2 6-3 0	Radishes, per doz.	1 6 —
Carrots, (English), bags	4 0-6 6	Rhubarb, Leeda, forced, dozen bundles	1 0-1 3
— (French), pad.	3 0-4 0	— Natural, per tally	7 6-8 6
— New, bunch, round	0 6-0 7	Sage, per dozen	1 6-2 0
— long	0 8-0 9	Spinach, per bushel	0 9-1 0
Cauliflowers, per hamper	2 6-5 0	Spring Greens, bag	1 6-2 0
Chicory, per lb.	0 4 ½ —	Stachya tuberosa, lb.	0 4 —
Cucumbers, per flat	4 0-6 0	Swedes, bag	1 6-2 0
Endive, French, per dozen	2 0-3 0	Tomatos, Canary, bundle	12 0-16 0
Garlic, per strike	3 0-4 0	— English, per doz. lbs.	6 0 —
Horseradish, 12 bundles	18 0-24 0	— Guernsey, per doz. lbs.	5 0-6 0
Leeks, per dozen	2 0-3 0	Thyme, per dozen bunches	2 0-6 0
Lettuce, Dutch, round, per crate	2 6 —	Turrips (French), long, dozen bunches	7 0-8 0
— English, Cos, per score	0 9-1 6	— round	6 0-7 0
— English, round, per score	1 0-1 3	Watercress, per doz.	0 4-0 6

REMARKS.—Continental Asparagus is still available in limited quantities. English supplies are still fairly plentiful. Outdoor Peas are available in half-sieve baskets.—E. H. R., Covent Garden, May 27, 1914.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending May 27, 1914.

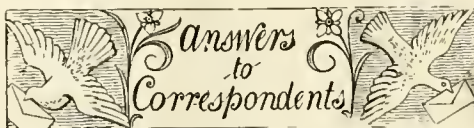
A Sudden Change to Colder Weather.—The recent warm period lasted ten days, and terminated on the 23rd, since which time the weather has been very cold for the time of year. Between the 22nd and 25th the maximum shade temperature fell from 77° to 54°—a fall of 23°. On the last two nights the exposed thermometer has registered respectively 8° and 9° of frost. The ground is now 1° warmer at 2 feet deep, but 2° colder at 1 foot deep, than is seasonable. Rain fell on two days, but to the total depth of only one-tenth of an inch. There has been no percolation through either of the soil gauges for nearly a fortnight. The sun shone during the week on an average for eight hours a day, which is two hours a day longer than is usual at the end of May. On one day the sun was shining brightly for 1½ hours. Light airs and calms alone prevailed during the week. For the first three days the direction of these light airs was some point between south and west, but since then they have come from some point between north and east. The mean amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by 3 per cent. A large bush of the wild Dog Rose came first into flower in my garden on the 26th inst., which is nine days earlier than its average date in the previous 28 years, and, with one exception, 1893, earlier than in either of those years.—E. M., Berkhamsted, May 27.

Obituary.

LAWRENCE DAVENPORT.—We learn from the *American Florist* the news of the death, on April 18, at the age of 78, of Lawrence Davenport, a native of Chorley, Lancashire. Mr. Davenport emigrated to Lawrence, Mass., U.S.A., at an early age, where he engaged in the pursuit of horticulture. He died in the same town, having lived there since 1864.

PETER ROSS.—The death is announced in the *American Florist* of Peter Ross, who was born at Balmagown, Scotland, in 1851. He emigrated early in life to America, and pursued the business of a florist. He settled in Flushing, L.I., and died there on April 27 last.

JOHN SCOTT.—From the *American publication, Horticulture*, comes the news of the death, on May 2, of John Scott, a native of Haddington, N.B. Mr. Scott was an expert gardener of the old school, and had been employed on the estate of the Earl of Dalkeith for over forty years. He finally emigrated to Brooklyn, N.Y., and died there.



BAY LEAVES DISEASED: W. T. M. The Bay shrubs are infested with a fungus known as *Capnodium mangiferum*. The fungus is nourished on the "honey-dew" secreted by aphides, or green flies, and the trees should be well sprayed with an insecticide in order to destroy these insects. When they are no longer present the fungus will die away for lack of encouragement.

BEDDING SCHEMES: A Head Gardener. The undernoted are all effective. For two-colour schemes, groups, or beds: Blue and white; blue and cream; blue and pink; blue and crimson; purple and red; purple and crimson; purple and mauve; purple and white; purple and golden yellow; purple and orange; purple and cream; pink and mauve; pink and lavender; pink and cream; pink and violet; rose and cream; rose and crimson; rose and lavender; yellow and orange; yellow and brown; deep yellow and greeny-white; deep yellow and rose; lavender and creamy lavender and rose. For three-colour schemes: Rosy carmine, pink and mauve; deep crimson, dark blue and lemon; white, blue and crimson; brown, orange and yellow; blue, lemon and white of yellow tint; violet, light blue and pink; salmon, light blue, and pink or cream; dark blue, light blue, and white or cream; purple, mauve and lemon. Mixtures of pink to crimson with blue are satisfactory. One-colour arrangements are accentuated by employing similar plants of different heights—e.g., tall with dwarf *Ageratum*s; tall carmine with intermediate carmine *Antirrhinum*s, and the tones may be dissimilar as well as the heights—e.g., dark yellow intermediate *Antirrhinum*s with tall yellow varieties several shades lighter. Or the plants may be of different kinds as well as different heights—e.g., *Anchusa Dropmore* variety, tall crimson *Lobelia*, and cream *Antirrhinum* or *Ostrich Plume Aster*; deep rose stock-flowered *Larkspurs*, *Lavender* or *Nepeta Mussinii*, and *Pearl Nasturtium*. The newer *Gladioli* of art shades afford splendid material for working among flatter growing plants. The above are examples of the simplest, and at the same time most effective, ways of employing decorative plants for flower gardening. They are certain to give satisfaction, provided the plants are well grown and properly attended throughout the season. The choice of plants ranges through annuals, biennials, and hardy and tender plants of almost endless variety.

FIGS FAILING TO MATURE: W. T. H. There is nothing the matter with the Figs you send for examination. The only reason for their dropping is that they have been forced too early in the season for the flowers to have been fertilised. The "fruits" form and grow to a certain size, but without fertilisation they subsequently drop without becoming ripe.

GRAPES DISEASED: W. B. The berries are affected with spot disease, caused by the fungus *Gloeosporium ampelophagum*. Dredge the vines with flowers of sulphur at intervals of ten days. On the second occasion add a small quantity of quicklime to the sulphur, and increase the quantity on each successive application, but always use a little more sulphur than lime. Next winter, when the vine is resting, drench the rod with a solution of sulphate of iron. Collect and burn all diseased leaves, shoots, and fruit.

LILAC: W. H. W. We do not recognise the variety of Lilac. Send a specimen to some nurseryman, who can compare your variety with those in his collection.

NAME OF FUNGUS: L. C. S. The plant sent is not a fungus, but one of the *Myxogastres*. It arrived in a damaged condition, and hence we cannot give you more detailed information.

NAMES OF PLANTS: R. 1, *Erythronium* sp., and 2, *Papaver* sp. (too much faded to identify); 3, *Ranunculus aconitifolius* var. *flore pleno*; 4, *Trollius asiaticus*; 5, *Tiarella cordifolius*; 6,

Leucojum aestivum. On another occasion please send better specimens.—F. A. Saint-paulia ionantha.—*Down Farm, Westonbirt*. 1 and 2, *Abies brachyphylla*; 3, *Corylus* sp.; send when in fruit.—W. R. P. 1, *Asparagus scandens*; 2, *Rhododendron calophyllum*.—Lynn. 1, *Saxifraga Sibthorpii*; 2, *Fuchsia fulgens*; 3, *Begonia fuchsoides*.—E. F. *Dendrobium lituiflorum*.—C. F. C. We do not recognise the variety of *Horse Chestnut*. The stove plant is *Ruellia Portellae*.—G. H. L. 1, *Cercis Siliquastrum* (*Judas Tree*); 2, *Cistus florentinus*; 3, *Ceanothus Veitchianus*; 4, *Teucrium fruticosum*; 5, *Eschscholtzia californica*; 6, *Trachelospermum* (*Rhynchospermum*) *jasminoides*.—Vincet. 1, *Muscari comosum* var. *plumosum*; 2, *Valeriana Phu*.—*Orchid*. 1, *Cattleya Forbesii*; 2, *Laelia Boothiana*; 3, *Eria tricolor*; 4, *E. convallarioides*.—J. T. *Dendrobium suavissimum*.—*Mimulus*. *Mimulus cupreus*; not rare.—W. H. S. 1, *Vanda Bensonii*; 2, *Cymbidium pendulum*.—W. Parker. *Eccremocarpos scaber*.

PROPAGATION OF DAHLIAS: H. S. Dahlias are very easily rooted. Detach a little of the fleshy tuber with the individual cuttings when about 2 inches high, and insert them singly in 60-sized pots filled with light mould, and surfaced with sand. If watered and kept close in a uniformly moist atmosphere 95 if not 100 per cent. of the cuttings will become rooted within a week or two.

ROSES FAILING: Enquirer, Swansea. The Roses are apparently suffering from the presence of crown-gall, or tumours at the collar or roots. The roots should be exposed and the swellings removed, afterwards carefully covering the wounds thus made with gas-tar. The roots should then be re-covered with suitable soil, and the symptoms will probably cease.

SEEDLING RHODODENDRON: W. C. Midford. Your seedling *Rhododendron* is pretty, but it is not distinct or superior to others already in cultivation of the same colour and showing similar markings. It would therefore have little commercial value.

STRAWBERRIES FAILING TO SET: G. J. Your Strawberries are quite healthy, but they have not been fertilised. Under such circumstances the fruit will not set or swell, and the flowers, after blooming for a while, naturally die.

SWEET PEAS: Bathonian. The roots and stems of the Sweet Peas seem to be perfectly healthy, but the lower leaves look as though they had been eaten by small slugs, which often make the leaves appear skeletonised, the tissue of the under side of the leaves being eaten and the top skin of the leaf shrivelling. One pair of leaves only is burnt on the outside edges, and this is quite distinct from the injury to the lower leaves and might be caused by frost after a damp evening, or to fresh soot sprinkled over them. On the whole we are inclined to think that the injury is caused by unsuitability of cultivation rather than by disease.

TULIPS FOR PROPAGATION: W. T. Allow the bulbs to remain in the ground until all the leaves have died, then lift them all carefully, including the very small ones. Place them in a cool, airy shed, and when dry clean all the soil and loose materials from them with the fingers. In August prepare a plot of ground by manuring with farmyard manure and digging the same well below the surface; early in October plant the Tulips in rows at 1 foot apart, and 6 inches between the bulbs in the rows; the small bulbs may be placed at half the above distances to economise the space.

VINES WITHERING: P. G. W. Examination of the specimens sent failed to disclose any trace of disease. The cause of the withering is probably the absence of sufficient moisture at the root.

Communications Received.—A. E. T.—R. O. S.—H. E., Iodia.—N. H. T., Sevenoaks.—White Rose.—R. A.—H. and S., Winchester.—H. S. T.—H. C., Ltd.—S. L. and Co.—H. E. N. and Co.—A. T. H.—C. N.—Mrs. V. S. J. B. F.—A. MacE.—W. P., Cheshire.—W. I.—G. H.—James Brittain.—F. W. P., Washington, U.S.A.—R. W. P.—F. W. K.—I. W. R. H. S.—J. P.—S. E. F.—J. E., Slough.—H. V.—L. E. A.—T.—G. U., Germany.—Mrs. H. J. T.—W. W. P.—J. J.—E. T. C., Toronto.—Sir H. J. V.

THE

Gardeners' Chronicle

No. 1,432.—SATURDAY, JUNE 6, 1914.

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THE MARKET FRUIT GARDEN.

MAY has proved a month of disaster to fruit-growers and market growers of vegetables throughout a great portion of the country. Large proportions of the Plum, Pear, and early Apple crops were destroyed by the very severe frost which occurred early on the morning of May 2, while Plums, Pears, and Apples to a less extent were further swept away by the frosts which occurred towards the end of the month, the Strawberry crop in some districts being almost entirely destroyed by the later frosts. Comparatively little damage is reported in relation to Gooseberries and Currants, and no mention of decided injury to Cherries has come under my notice. Apparently no great severity of frost occurred in Kent, and a visit to a few districts in that county has not disclosed to me any serious injury to fruit of any kind. Further south, in the Southampton district, however, the Strawberry crop has been greatly damaged. For my own part, no frost has been registered in my orchards since March. The losses incurred by growers in the neighbourhoods of Evesham, Pershore, Wisbech, and great fruit districts further north, are lamentable, and all the more so after the splendid prospect which was presented at the end of April. By way of counterblast to my happy escape from frost, I have been an exceptional sufferer

from drought, having had much less rain than even the small quantity credited to the south-east of England as a whole. From April 11 to noon on May 31, just over seven weeks, my rainfall was only 0.40in.

RESULTS OF THE DROUGHT.

Perhaps the worst result of the drought is the running off of Black Currants, which appears to have been very serious in some districts. Promise of a crop in my orchards was uncommonly good a fortnight ago. It is less good now, but not as bad as might have been expected. Another result of the drought is the failure of the Gooseberries to swell to their proper size. Probably the drought may also be held accountable for the large numbers of Plums which have dropped. Similarly the withering of whole trusses of Apple blossom, which is more common than usual on some varieties, is partly due to the lack of a sufficient supply of sap, which may be traced to the drought. Lastly, there is to notice the extreme difficulty of hoeing the orchards, either by horse or hand power, and the great extra expense of such work as has been done. Against this may be set the lack of the usual growth of weeds, and their speedy destruction when chopped out of the land by the hoe; also the checking of such fungous diseases as brown rot of Plums, Apples, and Cherries, which would have been prevalent if a wet April and May had succeeded the rainy winter and the March deluge.

LADY-BIRDS AND APHIDES.

Mr. A. J. Bliss's suggestion on page 374 that it might be worth while to attempt the breeding of lady-birds as devourers of aphides is worth consideration. But we need to know the conditions under which, what may be called, the intensive culture of lady-birds can be carried on. Last year, when aphid infestation was very extensive, I found great numbers of lady-birds. This season, when I have had no aphides worth notice on Apples, and extremely few on Plums, I have hardly seen a lady-bird or its larva, the "nigger," although I have examined a great number of trusses of blossom and of fruitlets after the blossom had fallen. This is a curious coincidence, and one that raises three questions:—(1) Where does the lady-bird deposit her eggs? (2) If on the trees and bushes upon which she fed on aphides in the spring and summer, how is the dearth of this insect in my orchards this season to be explained? (3) If elsewhere, in what directions should we look for the lady-birds? Apparently, the lady-bird does not feed on apple suckers, which were more numerous this season in my orchards than they have ever been before. It would be well worth while to ascertain by precise experiments to what extent an aphid wash kills lady-birds. I fear it kills some, as I have found dead ones, and it probably kills more "niggers." In spraying against suckers one necessarily sprays also against aphides. But I do not think that the extreme rarity of lady-birds this season can be accounted for by supposing that last year's broods were nearly exterminated by spraying, be-

cause I find the scarcity in young plantations which were not sprayed for sucker or aphid in 1913 or this season. Some other natural enemies of the aphid are probably killed by spraying. But it is hardly possible that a wash fatal to aphides and suckers and harmless to their natural enemies can be discovered. The only hope in this direction seems to lie in taking care to use a wash no stronger than the weakest which is fatal to aphides and suckers. A paragraph below incidentally bears upon this point.

MORE ABOUT THE APPLE SUCKER.

A great portion of my time in May was devoted to the observation of Apple suckers, tests of insecticides, and the strengths necessary to render them fatal, and to taking account of the proportions of infested trusses on trees of different varieties before and after spraying. From none to 18 out of 20 trusses were found infested in the first instance, 3 to 8 out of 20 being more common proportions. The first spraying was on April 18, and other operations were carried out from time to time as the different varieties were ready—that is, when the blossom-buds were well separated, and about to expand. In some cases the proportion of infested trusses was greater after than before spraying, showing that hatching had gone on after the spraying. In the majority of cases, however, the proportion was reduced, in some greatly. It was impossible to tell, however, to what extent the reduction was due to spraying, as the earliest suckers were transformed to the nymph stage somewhat early in May, and began to migrate from the trusses to the foliage. By May 18 many perfect insects were formed, and these soon crept or flew away from the trusses.

The proportions of infestation given above relate to mature trees. They were much less on young trees, examples of from none to 2 infested trusses out of 20 being common. These were not sprayed. Somewhat more success in finding dead suckers than was mentioned a month ago attended the late sprayings; but still the proportion of dead to live ones was small. Much has been written about the necessity of force in spraying against suckers and aphides. In my opinion the quantity of wash applied to a tree is much more important than the degree of force. A coarse nozzle should be used, and the trees so well soured that the wash will run down inside the trusses of blossom-buds, to get to the axils of leaves and buds, where the suckers chiefly congregate. No degree of force with a small volume of wash will effect this object. Certain tests carried out with various washes, however, showed that many suckers wetted with a wash dropped out of the trusses when killed, or crept out to die, as a great number were found dead at the bottoms of boxes in which trusses taken off trees and wetted by dipping them into a wash were kept for 24 hours before being examined for results. Still, the results of spraying with a wash that killed nearly all the pests when trusses containing them were dipped into it were not satisfactory.

INSECTICIDES TRIED.

Being desirous of ascertaining the kinds and strengths of insecticides which might increase the penetrative power of soft soap, I tested carbolic acid, sulphuric acid, washing soda, ammonia, and methylated spirit alone and with soft soap. First it had been ascertained that the best soft soap, at the rate of only 6 lb. per 100 gallons of water, killed all the suckers well wetted by it. Out of twenty-seven suckers found after dipping infested trusses in this wash twenty-two were dead and only five alive, and three of the five were in a particularly compact truss. Of the other insecticides tried only ammonia and carbolic acid were found satisfactory. Sulphuric acid and washing soda proved to be very weak insecticides, as each failed when used alone, infested trusses being dipped, to kill any considerable proportion of the suckers, unless used at a

$\frac{3}{4}$ fluid ounce to a gallon of water proved fatal to nearly all the suckers in trusses dipped in it. With soft soap it was still more satisfactory.

In trials on labelled trusses sprayed well with a syringe the fatalities were less than when dipping was the method pursued, but carbolic acid or ammonia, with or without soft soap, gave good results.

IS DAMAGE BY SUCKERS EXAGGERATED?

My investigations dispose me to answer this question affirmatively. The presence of even minute creatures sucking the sap out of the trusses of blossom must impair their vigour. But does it do much if any more than help a truss to shed some of its superfluous fruitlets? Prolonged efforts to identify sucker damage have given negative results, and I am convinced that much of the damage attributed to suckers is due to other agencies. The complete withering of

weak trusses not infested, and afterwards to compare proportions of completely withered trusses.

After suckers reach the nymph stage it is supposed by some entomologists that they do no harm. But even if this be a certainty it is well worth while to spray against them, where they are numerous, after the blossom has fallen, when they are more exposed to being wetted than they have been earlier, in order to kill a large proportion of them before they reach the winged and egg-laying stage.

THE WITHERING OF APPLE BLOSSOM.

A little more needs to be said about whole trusses of Apple blossom withering instead of setting. Of course, this takes place more or less every season, and in trees of profuse blossoming especially. But the proportion of withering is much greater on some varieties than on others. In some cases it is no more than a salutary thinning of what would be excessive fruiting if all or nearly all the blossom set; but in others it amounts to half the trusses of blossom, and this is excessive. In the case of a piece of Worcester Pearmain on light land it is estimated at 75 per cent., and on another piece of the same variety it is put at 50 per cent. In each case the land has suffered severely from drought. Beauty of Bath on one piece of drought-stricken land, but not elsewhere, has failed to set more than half its blossom, while the failure, though less, is excessive on Lane's Prince Albert and Allington Pippin in one orchard, though not in another. Domino also has suffered, but chiefly in consequence of an attack of brown rot. *A Southern Grower.*

NEW OR NOTEWORTHY PLANTS.

BOMAREA BANKSII.

THIS, I believe, is the first record of a hybrid Bomarea. *B. Banksii* (see fig. 176) is a splendid plant, and I have pleasure in naming it after its raiser, Mr. G. H. Banks, foreman of the Cambridge plant-houses. The female parent was *B. Caldasiana*, one of the best of the Bomareas, profuse in flowers of yellow colour conspicuously spotted with brown; the male plant was the strikingly fine *B. patacensis*, which produces immense heads of scarlet flowers, and has been for several years a feature in the succulent house here. The hybrid is fairly intermediate in character; it has the red flowers and blue pollen of the male parent, but is conspicuously spotted in the way of *B. Caldasiana*, while in size the flowers are inclined to the larger *B. patacensis*. As a red brown-spotted Bomarea it is perfectly distinct. In habit and vegetative characters it can only be described as intermediate; the underground creeping rhizomes go further afield than those of the female parent, but do not travel so far as those of *B. patacensis*. The stems and leaves of *B. patacensis* are distinctly hairy. *B. Caldasiana* is glabrous, and the hybrid while certainly not glabrous does not approach the hairiness of its male progenitor. Whilst this is the first hybrid Bomarea to be placed on record, it is not the first that has been raised, for whilst at Colesborne, the well-known garden of Mr. H. J. Elwes, Mr. Banks raised a hybrid between *B. edulis* and *B. Caldasiana*. At Cambridge, too, he has raised the reverse cross between the parents of *B. Banksii*, and also a hybrid between *B. Caldasiana* and *B. hirtella*. I have myself been interested in trying to cross the nearly allied genera Bomarea and *Alstroemeria*, and a student gardener was set to work, with all the time necessary, but nothing came of the attempt.

It is unfortunate, but nevertheless true, that the right place has not generally been found in gardens for this fine genus, but the plants are very fine ornaments for the corridor and for large greenhouses. *B. Caldasiana* has displayed a number of its pendant, golden masses



FIG. 176.—BOMAREA BANKSII: FLOWERS RED.

strength which scorched the foliage and any open or half-open blossoms, while methylated spirit was not strong enough when used in any proportion which would not render it prohibitively costly.

Carbolic acid proved by far the strongest of the insecticides tried; but it is equally deadly to vegetation if not greatly diluted. Various trials proved that one fluid drachm of the crude acid to a gallon of water was fatal to suckers, and did not scorch foliage at all when sprayed on to it though it browned the leaves of trusses dipped into it. When trusses were dipped into it every sucker was found dead in twenty-four hours. Probably the pests were killed much sooner. This insecticide has been selected for mixing with lime sulphur when spraying against scab if any aphides are on the trees. For mixing with soft soap ammonia is preferred, as it seems to invigorate the foliage. The domestic cloudy ammonia was used, as no other was at hand, and

trusses is often attributed to sucker infestation, whereas it is much more commonly due to lack of pollination, brown rot, the maggot of the pith moth, or failure of nourishment due to drought, or some other cause. In not one of scores of withered trusses examined have I clearly traced the withering to sucker injury. In only a very small proportion of the withered trusses examined were any suckers or traces of their former presence found, while many trusses infested with suckers were seen to have set two or three substantial fruitlets. This is not conclusive evidence to show that none of the withering was caused by suckers, it must be admitted, because an attack which would only thin the fruitlets on a strong truss might destroy all on a weak one. My verdict, therefore, is not to be taken as "not guilty"; it is "not proven." To get a clear verdict next season it will be necessary to label a large number of weak (usually late blossoming) trusses infested with suckers, and an equal number of

in the Cambridge corridor for some time past; it is still fine, and in the succulent house *B. patacocensis* has been magnificent. *Bomarias* are hardier than is generally supposed. *B. patacocensis* has come safely through the past winter in a corner between the corridor and Palm house, and *B. Caldasiana* × *hirtella* against a west wall of the Palm house, after flowering last summer, has not been injured in the least during the past winter, and is now growing freely.

The accompanying illustration is from a photograph taken in the corridor of the Botanic Garden, Cambridge. The inflorescence is not a large one, and for this reason its character can be the better shown, but later inflorescences certainly will be very much larger. The flowers are $1\frac{3}{4}$ inch long and $\frac{3}{4}$ inch diameter at the mouth; outside they are scarlet, and inside they may be described as orange-scarlet. The numerous spots are brown. *R. Irwin Lynch.*

NOTES ON IRISES.

IRIS WATSONIANA.

THIS Californian Iris (see fig. 177), which was first described, though somewhat inadequately, by Mr. Carl Purdy, in *Erythraea*, V., p. 128, is there said to resemble *I. longipetala* Herbert in its growth, but to have flowers more like those of *I. Douglasiana* Herbert. Unless the present plant is something other than Purdy's species, it shows, to my mind, far more resemblance to *I. tenax* Douglas than to either *I. longipetala* or to *I. Douglasiana*. In some ways, indeed, its resemblance to a strong-growing form of *I. tenax* is striking, but it is distinguished by its slightly longer perianth tube, by the more sharply three-sided ovary, and by the fact that strong-growing specimens produce branching stems on which so many as eight or nine flowers develop in succession. In this respect and in its ovary, *I. Watsoniana* closely resembles *I. Douglasiana*, from which, however, it is easily distinguished by the shortness of the perianth tube, by its seeds, by its foliage, and by its divergent spathes, of which the two valves are usually attached an inch or more apart.

Its leaves are of a light and somewhat yellow-green, and grow to a length of about 28 inches by $\frac{3}{4}$ inch in breadth. The upper part droops so that the stems, which vary between 15 and 20 inches in length, are not hidden among the leaves, but show well above them. The foliage dies away almost entirely in winter, and is not persistent, like that of *I. Douglasiana*. The stems are either simple or branched, and are entirely clothed with narrow, reduced leaves. They are suffused with bright pinkish-purple at the base.

The spathes are almost identical with those of *I. tenax*. They are quite herbaceous, narrow, sharply keeled, one being usually set an inch or more below the other. The short pedicel of the first flower springs from the point of attachment of the upper spathe valve. In the later flowers the pedicel is often as much as $1\frac{1}{2}$ inch long. The ovary tapers slightly towards either end, and is neither so rounded as that of *I. tenax* nor so sharply triangular in section as that of *I. Douglasiana*. The perianth tube is short, $\frac{1}{4}$ to $\frac{1}{2}$ inch, but longer than that of typical *I. tenax*.

The flowers are relatively large, of some shade of violet or lavender-purple, usually with a curious suffusion of blue down the centre of both standards and falls. The latter extend almost horizontally and have on the posterior part of the blade a yellow or creamy-white patch veined with deep purple.

I. Watsoniana grows readily and is most floriferous in a well-worked warm, sandy soil. Together with other Californian Irises, it does not lend itself to transplantation, though this operation may be carefully carried out with some success immediately the flowers are over. Any disturbance in late autumn is almost certainly fatal to the plants. The best method of increase is therefore by seeds, which

germinate readily and give rise to large flowering plants in the second year after their germination.

IRIS DOUGLASIANA VAR. ALPHA.

THE seedling form of *Iris Douglasiana* Herbert known as Alpha (see fig. 178) has the sturdy, dark-green foliage of the type. The old leaves persist through the winter and then die away to a curious, almost brick-red colour in spring, when the new leaves are produced together with the flower stems. These are developed freely and reach a height of some 12 inches, standing almost erect in the centre of the plant. The leaves are 18 to 24 inches long and

leaves on the stems are suffused with pinkish-purple. It is possible that this is the result of some chance fertilisation with pollen of some other Californian species. The seed parent, at any rate, was *I. Douglasiana*.

The remarks on the cultivation of *I. Watsoniana* apply also to *I. Douglasiana*. *W. R. Dykes, Charterhouse, Godalming.*

NOTICES OF BOOKS.

THE BRITISH RUST FUNGI.*

OF the many groups of parasitic fungi which have been studied during the last three decades



FIG. 177.—IRIS WATSONIANA.

droop outwards, so that the flowers are not obscured.

The colour of the flowers is a creamy-white. On the blade of the falls near the end of the style branches there are a few deep crimson purple veins, between which the ground is suffused with faint yellow.

Two or three flowers are produced in succession from each spathe, so that the display lasts for a considerable time.

I can see nothing in the plant that is not typical of *I. Douglasiana*, which is so variable a species that, in my experience, no two plants produce flowers exactly alike, except, perhaps, in the fact that the spathes and the sheathing

none has attracted more attention or has been more fruitful of results than the family of the rusts, or Uredinales. As a consequence, we have gradually attained a knowledge of this group, which, though far from complete, is nevertheless considerably in advance of that of the majority of other fungi. Up to the present, however, the only complete systematic account of the native Uredinales was to be found in Plowright's classic treatise. Yet it is twenty years since that was written, and the additions to our knowledge during the interval have been many and important. There was much need,

* *The British Rust Fungi.* By W. B. Grove, M.A. Published by the Cambridge University Press. 14s. net.

accordingly, for a new conspectus of the family, and in the present volume this need has been adequately met.

The major portion of the text is devoted to a systematic account of the British species, some two hundred and fifty in number. In the author's words, "no attempt has been made to give a full synonymy," though sufficient reference has been given in each instance to enable the serious student to elucidate the origin and authority of the names employed. The descriptions themselves are satisfactory, and bear evidence of careful revision. Spore measurements are given in each instance, and text figures added in the majority of cases.

parasites, and no fewer than eighteen to those of the grasses.

The rest of the book—to be precise, the first 84 pages—is occupied with a general discussion of the whole family. In the first chapter an excellent departure from tradition is to be found, for here the author, instead of selecting *Puccinia graminis* as a type, for which it is peculiarly unfitted, outlines the life-history of the Nettle and Sedge rust, *Puccinia caricis*. By so doing he has avoided the dilemma of the writers of conventional text-books, who are invariably driven either to assign this all-important species to its two host-plants without comment or—more scientifically, if less clearly—to qualify

that this region of fruitful investigation was unexploited for a period of twenty years. What do we find?

Brefield (1889) came to the conclusion that the Uredinales were without any trace of sexuality—a point of view accepted by Van Tieghem and others. Schmitz (1880) and Rosen (1892) contributed fragmentary observations on the nuclear conditions, but in 1895 Poirault and Raciborski added materially to this information. In the following year Sapin-Trouffy, in a wide survey of the whole family, outlined the whole cycle of nuclear changes. According to his observations, a mature teleutospore is uninucleate, and gives rise to uninucleate sporidia. These sporidia give origin to a mycelium again with uninucleate cells. In the aecidia produced therefrom the nuclei become paired. As a result the aecidiospores are binucleate, and this condition is retained throughout (mycelia and uredospores) up to the reformation of the teleutospores, which, at first binucleate, become uninucleate by the fusion of the nuclei. This fusion Sapin-Trouffy regarded as a true sexual process. Since the appearance of this paper it was obvious to Blackman that "the critical point of investigation . . . is the early development of the aecidium," though for six years he was reluctantly compelled to leave the problem in suspense. That during that period no other grasped the significance of these facts is a signal tribute to Blackman's acumen, though at the same time it must be abundantly clear that the key to the solution was afforded by Sapin-Trouffy's memoir, and it is a matter for regret that our author makes no reference to this investigator, either in the text or the bibliography.

The later work of Blackman and Fraser, Christman, Olive, Hoffman and others is adequately dealt with.

The chapter of most general interest is that which outlines a number of the most characteristic life-histories, including what are probably the best known, the rust of Wheat and the Hollyhock rust. In the account of the former an interesting synopsis is given of the possible methods by which fresh epidemics are produced each year. Dismissing the Barberry as non-essential in the life-cycle, three possibilities are indicated—the wintering of the fungus, 1, by its uredospores; 2, by a permanent mycelium; 3, by Eriksson's mycoplasma.

The first possibility is shown to be entirely a matter of climate. The second has received definite support from the investigations of Pritchard, who found mycelium both in the grain and in the young seedlings. This discovery—of great practical importance—has since received further confirmation, and may well prove the final solution. As regards the third possibility, our author starts with the diffident statement "it is difficult to come to any definite conclusion." He becomes more courageous, however, as he proceeds, and easily succeeds in quoting definite evidence against the conception. There is a sting in his concluding statement. "As Marshall Ward remarked, Eriksson merely inverts all the stages of a fungus attack on a cell, and supposes the last stage to be the first. This error and a misinterpretation of the microscopical appearances account for the whole wearisome persistence in an inherently improbable hypothesis."

Yet the author himself is not free from error as regards this species. For in the chapter on specialisation a reference is made to recent work on the breeding of immune varieties of Wheat. On page 223, in the specific account of *P. graminis*, we read that the only practicable remedy for this disease is to plant seed shown to be immune, and that "a certain progress has already been made by Biffen and others in the production of these." Now Biffen's work has not dealt with *P. graminis*, but with *P. glumarum*, the yellow rust, which is much the



FIG. 178.—IRIS DOUGLASIANA VAR. ALPHA: FLOWERS CREAMY-WHITE, WITH CRIMSON-PURPLE VEINS. (See p. 391).

It would have increased the usefulness of the text, however, if analytical keys of the various genera and species had been given with reference to the page on which each description occurs. This applies in particular to the larger genera. In the case of *Puccinia*, the species are arranged in the order of the families and genera on which they are parasitic—a simple and legitimate process. In the first section, which deals with the rusts parasitic on the Compositae, there are thirty-one species, occurring mainly on distinct and easily recognisable host-plants. A key would have enabled one to identify any particular specimen without delay. As it is, one may have to read through some fifteen pages before arriving at the species in question. Similarly there are nine pages to the Umbelliferous

their preliminary statement by a series of saving clauses.

A discussion on the sexuality of the Uredinales and the alternation of generations within the group follows. Here somewhat scant justice is done to the earlier investigators. After referring to De Bary's suggestion that "if there was any sexual act occurring in the life-cycle of the Uredinales, it would probably be found in connection with the aecidium," the author goes on to say:—"The first discovery was made by Blackman (1904), who found that, in laying the foundation of the sport-bed of the aecidium of *Phragmidium violaceum*, cells became binucleate by the passing into them of nucleus from an adjoining vegetative cell." Such a statement implies

commoner in this country. The only work dealing with the former species has been done in South Africa and India by Pole-Evens and Butler respectively.

This book, if we may use the phrase, is "of distinguished ancestry." It must take the place of a treatise of outstanding merit, and as such challenges comparison. If, then, we have been inclined to criticism, this must be our justification. Yet what we have urged is mainly a matter of detail, and in its essential features the book worthily fulfils the purpose of its author. *J. M. H.*

THE DISTRIBUTION OF PLANTS.*

The teaching of geography in schools has undergone many changes during the past few years, and its scope has been much enlarged.

Geographers realise nowadays that the vegetation of a country is limited on the one hand with its physical geography, and on the other with human geography and history—with archaeology.

These causes have doubtless contributed to the publication of the Oxford Geographies, of which the Editor, Professor Herbertson, contributes a short preface to Dr. Hardy's book.

Dr. Marcel Hardy is well known to plant-geographers and to ecologists as the author of an unusually interesting study of the vegetation of the Scottish Highlands, and of other works on plant geography.

There are difficulties in teaching plant-geography on a world basis in schools—difficulties proceeding from the same causes as is the case with geography proper when dealing with unknown regions, and to be overcome by the same means.

In two introductory chapters Dr. Hardy deals with general conceptions of vegetation.

This leads up to the idea of vegetation controlled and determined by physical surroundings. Part I. comprises the largest of the three sections of the book, and deals in a descriptive way with the main types of vegetation found all over the world.

The seven brief chapters which form Part II. deal comprehensively, if necessarily somewhat summarily, with the external conditions which are factors in plant growth:—Light, heat, water, wind, soil, etc.

Part III. is a "Survey of the Continents," or more strictly a survey of their vegetation.

It is this section of the book which will appeal most strongly to teachers, because—if we understand the preface aright—it is written to accompany a series of vegetation maps (Oxford wall maps), which have been prepared on the same projection and scale as those showing physical features and rainfall.

In general conception and arrangement of the subject-matter there is not much that is novel in the book, but its value for school and other work is much enhanced when its connection with those vegetation maps is clearly understood. Dr. Hardy is to be congratulated on the clearness with which he has treated a complicated subject in the limited space at his disposal, and we look forward with interest to the more advanced book which he promises on the same subject.

The present volume is profusely illustrated by photographs, drawings and maps, most of which serve their purpose adequately.

WEEDS: A FASCINATING STUDY.†

So many books are written on nature-study from the point of view of the botanist, and so many of them are open to criticism, that it is a special pleasure to read this little book by Mr. Praeger—the fourth of a series of Nature Study Manuals issued by the Cambridge University Press.

Many of these botanical nature-study books convey an impression of "snippets" of information, and there is so often a conscious striv-

ing after effect—a forcible attempt to demonstrate the interest of the facts.

Mr. Praeger has selected his text well, one which will have a practical interest for children in country schools—and most Irish schools are not far from the country!

In these chapters on "weeds" there are brought together many facts about plants and their life-histories which will provide subject-matter for botanical lessons—experimental and observational. There is the nucleus also of a knowledge of field botany, and, best of all and most rare, there is always the larger point of view.

noted in the plates, which are reproductions of some of Mr. Welch's fine photographs.

A detail which invites criticism from the botanist is the description and labelling of the fruits of the Dandelion, Thistle, Elm, etc., as seeds. *M. C. R.*

NOTES ON FRENCH HORTICULTURE.

CLEMATIS VERRIERIENSIS HORT. VILM.

AN interesting new hybrid Clematis (see fig. 179) bearing the above name was exhibited.



FIG. 179.—CLEMATIS VERRIERIENSIS: FLOWERS ROSE COLOUR.

Thus, "Apart from their importance as agricultural pests, weeds are, as such, a fascinating study. The history of weeds is the history of agriculture. Ever since the people of the Stone Age first began to till the ground weeds and crops have gone hand in hand, and man's migratory movements, his work, and later on his trade, have all played their part in assisting the spread of his enemies, the weeds."

It is an interesting departure in a book intended for school work, especially in Ireland, to find the common names of the plants rendered into Erse, and another Irish feature is to be

by Messrs. Vilmorin, Andrieux, at the May exhibition of the French National Society of Horticulture.

It is the offspring of a cross between *C. chrysocoma* and *C. montana rubens*. The female parent, *C. chrysocoma*, is a native of Yunnan, introduced into cultivation by M. Maurice de Vilmorin and figured in the *Botanical Magazine*, tab. 8,395. The male parent, *C. montana rubens*, now well known, comes from Western Hupeh, and was collected by Mr. Wilson, and brought into cultivation by Messrs. Veitch. The new hybrid has the vegetative

* *Introduction to Plant Geography.* By M. E. Hardy, D.Sc. (The Oxford Geographies, edited by A. S. Herbertson.) (Clarendon Press, Oxford), 1913. Price 2s. 6d.

† *Weeds.* By R. Lloyd Praeger. (The Cambridge Nature Study Series, edited by Hugh Richardson, M.A.) Price 2s. 6d.

characters and vigour of *C. montana rubens*; the flowers are of a good, delicate rose-colour, with sepals larger than in *C. m. rubens*. For the most part the characters of the flowers and leaves are intermediate between those of the parents. The hybrid was raised by Messrs. Vilmorin at Verrières le Buisson—hence the specific name.

PEACH BEARING ALMOND BRANCHES.

THE Scientific Committee of the National Society of Horticulture at its meeting in April had before it an exhibit by M. Aubin of shoots of Almond with young fruits taken from the remarkable tree belonging to M. Fromont, of Montreuil. This tree—a Peach—has borne each year since 1908 branches identical with those of the Almond. A second Peach tree growing near, and of the same variety, shows the same phenomenon. These "graft-hybrids" were the subject of a note to the Academy of Science (1911), written by the late Professor Griffon. The two trees are espaliers, and are grafted on the Almond. They are about sixty to eighty years old, and belong to a seminal variety closely resembling "Grosse Mignonne."

The Almond-like branches bear large white flowers, which contrast markedly with the smaller pink flowers borne on the other branches of the trees. The fruits are like young, elongated Almonds, but so far they have always fallen when they have reached a length of about three-quarters of an inch.

The most probable explanation of the phenomenon is that applied by Winkler and Baur to the graft hybrids of the *Cytisus Adami* type. According to this hypothesis, which is described fully in an illustrated article in this journal (*Gardeners' Chronicle*, Vol. L., third series, p. 161), a fusion of tissues of stock and scion arose after the grafting of the Peach on the Almond. In the case under consideration it is probable that in the Almond-like branches the superficial layer is that of the Peach, and the deeper layers are derived from the Almond; hence the absence of colour in the flowers. Microscopical examination of the tissues would probably determine this point.

CHEIRANTHESIMUM CAYEUXII.

ANOTHER interesting exhibit at the May exhibition already referred to was the second generation of *Cheiranthesium Cayeuxii*, the hybrid, raised by Messrs. Cayeux and Le Clerc, between *Erysimum Marshallii*, Hort. (syn. *E. Allionii*, Hort.) ♀ and *Cheiranthus mutabilis* ♂. The female parent, *E. Marshallii*, is itself a hybrid raised by John Marshall, of Limburn, by crossing *E. Perofskianum* Fisch. et Mey. and *E. ochroleucum* D.C. It is figured in the *Floricultural Cabinet* by Harisson (1850, p. 265), and referred to by M. Bois in a recent article in *Revue Horticole* (1913, p. 443). The plants of the first generation of the cross made by Messrs. Cayeux and Le Clerc showed a certain amount of variation—from copper-red to yellow-orange—in the colour of their flowers.

In the second generation the colour-variation is far greater, so great indeed that it is possible to classify the colours into six groups:—Pale yellow, bright yellow orange—of darker tint than in *E. Allionii*—yellow passing to violet, copper-red orange, yellow striped on reddish-violet ground.

Many of the plants have inherited the character of *C. mutabilis*, and bear flowers which open pale and become more and more violet with increasing age.

Among the series are some new colours of considerable interest from a horticultural point of view. *A. Meunissier*.

A CANADIAN GARDEN.

NOTWITHSTANDING the rigours of the Canadian climate, Toronto, the Queen of Canadian cities, has many lovely gardens, and among these gardens those at Craleigh—the residence of Sir Edmund Osler—are supreme in the perfection of their greenhouse flowers. From autumn until spring the houses are brilliant with colour. Among the subjects which are cultivated with such success are Chrysanthemums of the best varieties, Schizanthus, Cineraria, followed by Calceolarias and Gloxinias. The Calceolarias grown at Craleigh are equal to those grown for exhibition purposes in England, which is surely a test of cultural skill. For the first time probably in any Canadian garden those charming little Narcissi, known as *minimus* and *cyclamineus*, have been grown in pots, and they proved a useful aid to the scheme of colour at that season. It is a great joy when the first Darwin Tulips blossom after months of ice and snow—a joy which those who have never visited

from the glare of the summer sun. It is gratifying to find that in England so much interest is taken in the subject of Canadian horticulture; Mr. Allen, the head gardener at Craleigh, to whose skill are due the admirable results achieved at Craleigh, is a native of Ireland. *E. T. Cook.*

EDUCATIONAL GARDENING.

SCHOOL GARDENING AND PUPILS' GARDEN PLOTS.

IN Germany and Switzerland, so long as a hundred or more years ago, many children, of the poorer classes in particular, were systematically instructed in garden cultivation, partly perhaps at the instigation of the famous teacher Salzmann, who in 1801 made an appeal on behalf of the systematic "employment of poor, abandoned children in agriculture and gardening." In his treatise, *Gartenbau für Knaben* (1910), Herr



FIG. 180.—CRAIGLEIGH, TORONTO, CANADA.

this country can scarcely appreciate. At the same time as these early Tulips we also have sweet-scented Hyacinths, and the flower gardens seem once more alive as the Easter festival approaches.

It can easily be imagined how much appreciated the indoor gardens are in Canada, for otherwise not a flower would be seen during the winter months.

Last year complete success was attained with Grape vines, those grown being favourite varieties in England—Black Hamburg, Muscat of Alexandria, Foster's Seedling, and Madresfield Court. These particular vines were among the first of their kind to be grown here, but the bunches of the last-named did not show a single cracked berry, and were faultless in colour and shape. An equally gratifying result is expected in the case of the fruit trees in pots also being cultivated for the first time.

During the summer the out-door garden is full of interest, from the time of the Daffodil and Tulip until the frosts. The lawns are a source of great joy—wide expanses of emerald-green grass, which provide refreshing relief

Peter Schmidt calls attention to an all-but-forgotten three-volume work that appeared from 1836 to 1847, *Feldgärtnerkolonie für Armenkinder*, by Deacon Lange. In it there is to be found a detailed description of the "special educational establishment for gardening and husbandry for boys," connected in 1821 with the charity school of Halle. At the same time gardening for boys was systematically promoted by the "work schools" instituted on the Holstein estates of Duke Peter of Oldenburg. At the "industrial schools" maintained in 420 different places in 1841 (508 in 1843) by the "Charitable Society of the Kingdom of Württemberg," 11,000 boys and girls received instruction in gardening and fruit-growing. The practice, however, has long been dropped. A private institution for "boys' work" founded in 1828 and still existing at Darmstadt makes gardening the chief subject of instruction. Attendance numbered 6 in 1828, 144 in 1860, and 368 in 1880; further increase was impossible as finances would not allow of an enlargement of the institute. After a few years it was taken over by the town autho-

rities and has since continued to grow and flourish. Lately the concourse of pupils has so increased that in 1908 the deficit amounted to almost 3,600 marks. Very minute and interesting information about this model school is to be found in Herr Schmidt's treatise.

These old attempts may be considered as the precursors of the present school-gardening movement started about a decade ago, the results of which must already be recognised as valuable. It is a movement for the establishment of serviceable gardens in connection with secondary, elementary and village schools for the theoretical and practical teaching of gardening, together with individual practice, as well as recreation for mind and body.

It is, of course, difficult to provide gardens for

The latter principle is already generally adhered to in the "school children's gardens," which are not cultivated by all or many children in co-operation, but each bed by one scholar alone. The first attempt of this kind originated in England with Mr. Rooper, the Southampton school inspector. Fifteen years ago he formed the project through small gardening "to awake a love for nature in the children, to interest them in gardening and to tender them a pleasant, healthy and profitable occupation for their leisure hours." He fenced in a piece of not very fertile arable land in the neighbourhood of Bournemouth and divided it into twelve large beds, which were given to as many school boys for cultivation. This experiment was a great success.

them to the next lesson, worked up into an account of the day's doings.

Each of the twelve big beds is divided into fifteen rows, and each boy must plant his fifteen rows with the same vegetables. This is to induce a kind of competition among the lads, to urge them to diligent work and to arouse their ambition. The fifteen rows contain the most common vegetables, Potatoes, different kinds of salads, Tomatoes and Spanish Onions. Each boy may sell the produce of his bed. The sum is handed over to the teacher, who keeps an exact account of each boy's takings. The pupils must also keep accounts. At the end of the year the memorandums are compared and each boy receives one half of his takings, while the other half goes to cover the cost of the seeds and other expenses.



FIG. 181.—CONSERVATORY AT CRAIGLEIGH, TORONTO, CANADA.

schools in the centres of large and crowded towns, but they can easily be provided in suburbs, small towns and villages. In England and Germany the establishment of school gardens has made some progress; it has made more in Belgium, France, Scandinavia, Austria and Switzerland. According to Herr Johann Jordi, the chief object of school gardens is to stimulate the scholars to imitate the school gardens in miniature at home. The teacher should not, therefore, grudge the trouble of occasionally undertaking the supervision of his pupils' gardens. To sustain the interest of the school children in the school garden Herr Gienapp advises, "as a valuable educational momentum, that the product of their joint work should be left to the children themselves in the first place," whether as prizes or at a very low price.

At the entrance to the garden there is a shed containing a large writing-desk and twelve complete sets of gardening implements, to each of which belong a Dutch axe, a spade, rake, dung-fork and shovel. Wheel-barrows, watering-pots, baskets, brooms and bast are common property. Each of the twelve beds in the garden bears the same number as the implements belonging to it. The twelve boys are each under the obligation to keep the tools clean. On three afternoons in the week lectures on gardening are given and each boy must attend a twelvemonth's course. After every practical lesson, given by a gardener appointed for the purpose, there follows a lecture. The gardener explains to the pupils why this and that had been done outside, answers any questions that may be put, and takes care that the boys make notes, which they must bring with

In addition to the twelve numbered beds are other three experimental and early beds. Delicate plants such as Asparagus, Cucumbers and Marrows are planted here, and the needful sowing done in the spring for the planting out into the "personal" beds.

At the east end of the garden are the fruit and flower beds. They contain chiefly Strawberries, Bilberries, Gooseberries, Currants, Raspberries, Plums, Apples, Pears, Roses, Mignonette and Pansies. The boys learn to graft and cultivate fruit trees and Roses. A Mushroom bed has also been prepared for them.

Mr. Rooper's experiment has met with success, as we have already said, and to the joy of their parents the boys have long exercised their skill also at home in their cottage gardens. The objection made that the boys' school work

would be neglected through this occupation has not proved true: on the contrary, they work more diligently than ever, for fear they should be forbidden to touch their beds if their school duties are not wholly and well fulfilled. *Leo-gold Katscher.*

AMERICAN NOTES.

ANTIRRHINUMS FOR CULTURE UNDER GLASS.

OF late years Antirrhinums have come greatly to the fore in the United States for greenhouse culture, and are now procurable in quantity in the large flower markets from early October until the end of June. Owing to the fact that our summers are very hot, and that winds are common, Snapdragons cannot be very successfully cultivated here except near the seaboard and at some of our mountain resorts, but under glass spikes of magnificent quality are produced which bring very good prices in the flower markets. The most popular colour is pink; following this in favour come yellow and white. The darker shades are little favoured.

Whilst very good Antirrhinums can be grown in pots, the usual method of culture is in benches or beds. For mid-winter blooming cuttings should be rooted in April or May, or seed can be sown some time in May. Seedlings are first transplanted into boxes, later placed singly in 2½-inch pots, and from these shifted into 4-inch pots. About the last of August the plants are set out in benches 12 by 10 inches apart; some growers set them even closer. I have found 4 inches of soil ample for a winter crop. The bench becomes well matted with roots before winter sets in, and soon dies out between waterings; feeding with sheep manure, fine bone or Clay's Fertiliser is used after January, and as the weather warms up in spring a mulch of well-rotted cow manure proves beneficial.

From plants set out late in August we commenced cutting spikes early in October, and have had plenty of flowers from that time on. At the present—May 7—our bench is a veritable thicket of spikes, many of them 24 to 30 inches long from the first flowers to the top of the spikes; 24 inches of open flowers is not at all unusual. Antirrhinums, as is well known, keep splendid in water, and grown in blocks of distinct shades are one of our finest of all winter flowers. I was pleased to note that an American Snapdragon secured an Award of Merit on April 21 before the R.H.S. in London. The particular variety, *Nelrose*, showed by Mr. W. Wells, is one of the most beautiful varieties I have ever seen, and should prove very popular both with private gardeners and florists. It is perpetual flowering and bears rose-pink or lilac-rose coloured blooms on stems three feet in length.

A night temperature of 45°-48° in winter suits Snapdragons. They also want plenty of fresh air. In a higher temperature they are not nearly so good. Plants when cut down soon start from near the ground again, and in some cases they throw so many shoots that a little judicious thinning is necessary. Anyone who does not want to try named varieties will do well to try the best strains on the market, for the separate colours come very true from seed. The intermediate strain I find the best for greenhouse culture. In fumigating Snapdragons I would warn growers never to use hydrocyanic acid gas. It does not scorch the foliage, but all the tops hang limp after a light fumigation. I am sure that if some of the big trade growers in Britain will take up Snapdragons and grow them in the same way as our American Carnations, only somewhat cooler, they will find them very profitable. *William N. Craig, Brookline, Mass., U.S.A.*



The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKSON, Oakwood, Wylam-on-Tyne.

REGULATING THE HOUSES.—The weather in May was of an unusual character. During the first three weeks it was dry in the daytime, with frost at night on several occasions. The third week was very dry and warm until the last day or two, when 6° to 8° of frost were registered at night. In these circumstances it has been a difficult matter to regulate the houses, and at a time, too, when many of the plants were at their most tender stage. The cultivator has had to guard against the least excess of moisture in the atmosphere and sudden fluctuation in the temperature or a continuance of low temperatures. But a close examination of the outside thermometer between the hours of 7 and 9 p.m. will show whether at such times extra fire heat will be required or, what is of more importance, if it is necessary to reduce the amount of atmospheric moisture to prevent the new growths being damaged by spotting and other causes. The damping of the houses should be done sufficiently early in the day, so that there will be no danger of moisture condensing on the plants when the cooler evening temperatures are reached. It is essential to have a liberal amount of heat in the hot-water pipes at all seasons before admitting the cool evening air. See that cold draughts do not reach the plants. If the lower ventilators on the leeward side of the house are brought into use there will be less danger from cool draughts, and this is why the ventilators, and especially those used at night, should be situated at or a little above the level of the hot-water pipes, for then the air becomes warmed a little. In the cooler divisions the roof ventilators are rarely used unless the conditions outside are moist and favourable. But the lower ventilators on the leeward side are used freely at night when the conditions are favourable. I find it very beneficial during periods of dry warm weather to run the hose-pipe through a ventilator and damp the outside walls and ground about the *Odontoglossum* houses thoroughly. This is done in the evening, and results in a refreshing atmosphere inside the houses.

INSECT PESTS must be carefully kept in check, and constant observation is necessary to discover any pests and destroy them before they cause serious damage. *Cyrbidiums*, *Sobralias*, *Lycastes* and certain other Orchids soon become infested with red spider when grown in a dry atmosphere. Sponging the plants with clear water and keeping the leaves well syringed is the best method to keep these pests in check. Vaporising and spraying with some safe insecticide at least once a fortnight is the safest method of keeping down thrips and other pests that attack Orchids.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

STEPPING STONE PATHS.—Many of the early dwarf flowering plants are over, but varieties raised from seed in small pots should now be ready for transplanting. Many will flourish in the natural soil during the summer months, and amongst these are *Alyssum*, *Aethionema grandiflorum*, *Androsace*, many of the *Campanula* family, the Australian cress and *Ionopsis aculea*.

HERBACEOUS BORDERS.—All hardy perennials are now making rapid growth, and require daily attention in the matter of staking, watering and thinning. In the early stages a considerable amount of thinning is required, and the strong, robust varieties should stand from 12 to 18 inches apart, to ensure the growth of fine flowers and to prevent the plants from straggling after rain and wind. It is prefer-

able to avoid as much as possible tying the plants, but while they are quite small push firmly into the ground some untrimmed Pea sticks, the tops inclining outwards, the height of the sticks depending upon the height of the plant. The young growths and foliage soon hide these supports.

THE WATER-SIDE GARDEN.—Notwithstanding some sharp frost, Primulas are very gay, especially *P. japonica*, *P. pulverulenta*, *P. Poissonii*, *P. Bulleyana* and *P. capitata*. Plant these species in masses on the margins of water in soil which is not water-logged, but which has plenty of moisture in the lower strata, to which the plants can help themselves at all times. Other flowers to follow these, under similar treatment, are *Iris Kaempferi*, *I. Monnieri*, *I. ochroleuca* and *I. gigantea*; *Spiraea Aruncus*, *S. filipendula*, *S. Ulmaria splendens*, *S. Lindleyana*, *S. venusta* and *S. gigantea*; *Senecio elvorum*, *S. Veitchii* and *S. tanguticus*; for foliage, *Rodgersia podophylla*, *Glyceria spectabilis* and *Saxifraga peltata* should be grown.

CLIMBING PLANTS.—Train the rapidly-made shoots at short intervals, never allowing the growths to intertwine. Especial care should be taken with Clematises. Nelly Moser Clematis is a charming climber, continuously in flower on tree stumps. *Solanum jasminoides* and *S. crispum* in a south, sunny aspect require constant attention.

ROSES—Syringe with Quassia extract on the first appearance of aphids. One gallon is required for 100 gallons of water. It is economical to use this as a preventive.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

FRAMES.—Now that the weather is warmer and most of the summer bedding plants are outside, the frames can be used to protect the young plants for autumn and winter flowering. If the number of heated frames is limited, the more tender subjects should be selected for such protection, and a little heat applied at night if necessary. Cyclamen may now be re-potted, the stronger plants into pots of 5-inch or 6-inch size, the weaker and smaller into those of 3½-inch to 4-inch size. The pots should be placed on a bed of ashes, after being lightly dusted with soot. Shade the plants from strong sunshine, and damp the space between the pots at about 2 p.m., just before closing the frame. When the plants become established in the flowering pots, the lights can be removed on mild nights, and replaced before the sun becomes too strong the following morning. If thrips are troublesome, fumigation should be resorted to. *Celosias*, *Cockscombs*, and tuberous-rooted *Begonias* will do best in a heated frame. They should be re-potted as required, and all flowers removed from the young *Begonias* until they are established in their final pots. *Salvias*, *Torenia*, *Heliotropes*, *Balsams* and *Browallia* species can be placed in unheated pits or frames. Arrange the staging so that the plants may be close to the roof-glass. Close the frames early and make as much use as possible of the heat of the sun. The plants should be re-potted before they become pot-bound. If the least trace of green-fly should make its appearance, spray with a solution of Quassia. The young stock of the berry-bearing species of *Solanums* should be re-potted and placed in a cold frame. They should be syringed daily, and watched carefully for aphids. When the plants flower the syringing should be discontinued, and when the fruit is set an application of liquid manure twice weekly will be beneficial. Year-old plants which have again started into growth may be plunged out-of-doors, or in a frame containing a spent hot-bed. Pinch out the points at the end of June, and then allow the natural growth to continue. The plants will be housed early in September. Cuttings of *Euphorbia pulcherrima* and *jacquinaeflora* may be inserted singly in thumb-pots, the pots being afterwards plunged in bottom heat with a temperature of 75°. They should be kept closely shaded until rooted,

and the cuttings will benefit by being sprayed morning and evening. They should be gradually inured to light and air, and finally placed on a shelf close to the roof-glass. As the cuttings of *Begonia Gloire de Lorraine* become rooted they should be transferred into 3-inch pots, which can be placed on a bed of ashes or a staging covered with ashes or coco-nut fibre. The temperature of the house should be about 65°, and the plants will benefit by being syringed and by a damping of the floors and spaces two or three times a day. Shade the plants and remove all flowers. The spaces between the pots should be dusted with soot and the plants fumigated about once a fortnight. Cuttings may still be struck for flowering in small pots.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

PINES.—In a short time fires can be discontinued, except during cold and unfavourable weather. If the bed is situated over hot-water pipes, the hot water may be made to circulate on hot, sunny days through the beds only, thereby utilising what would otherwise be unserviceable on such occasions. On fine mornings stop the fire early, and never use more fire-heat than is absolutely required. Maintain the temperature and continue the general treatment to fruiting plants as formerly directed. The fruit which developed during last February will be fast approaching maturity. Attend to all the requirements of the plants regularly, and especially in the matter of watering, for neglect in this respect will prove very detrimental. Afford water much more sparingly as the fruit commences to colour. Remove all suckers, as advised previously, excepting the one for stock, and avoid, if possible, the retention of a sucker at the base of the fruit stem, as it will tend to push aside the fruit. Cease overhead syringings, and maintain the requisite atmospheric moisture by damping the paths and staging frequently.

PEACHES AND NECTARINES.—To ensure highly-coloured and richly-flavoured fruit, admit an abundance of air on all favourable occasions, and fully expose the fruit to the influence of the sun and light by drawing aside—not removing—any leaves close to the fruit and those intercepting the direct rays of the sunlight. Lessen the application of water at the roots gradually, but do not allow the soil to become excessively dry. As the fruit ripens, discontinue overhead syringings, but continue to damp the floors and the surface of the inside border. Fire heat is only necessary to maintain a temperature of about 60°, concurrent with a free amount of ventilation. Peaches and Nectarines will benefit from this course of treatment, and the more slowly the fruit ripens the richer will be the flavour and the higher the colour.

STRAWBERRIES.—Whilst the fruit is swelling, afford copious waterings to late varieties, such as *Waterloo*, growing in frames or pits. Applications of liquid manure will also aid in the securing of good-sized berries. Avoid currents of dry air, and maintain the requisite atmospheric moisture by spraying the plants both morning and afternoon. Cease the application of liquid manure directly the fruit commences to ripen, giving sufficient water only to prevent the foliage from flagging.

CHERRIES.—To prevent the fruit cracking, it must be kept free from moisture overhead. Maintain a genial atmosphere by sprinkling the paths and borders with clear water, and allowing the air to circulate freely both by day and night. If necessary, use the hot-water system. Exclude all birds by placing small-meshed netting over the ventilators.

CUCUMBERS.—To grow Cucumbers successfully a steady bottom heat and a warm, moist atmosphere are required. Syringe the walls and paths of the house several times daily and add a little liquid manure to the water, which will benefit the plants and keep insect pests in check. Fumigate the house immediately should these

latter appear. Remove all discoloured leaves, which encourage red spider and thrips. To ensure a regular supply of Cucumbers, raise fresh plants by sowing seed at intervals.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCORE, Eastwell Park, Kent.

APRICOTS.—All Apricot trees should now be finally thinned. Recently transplanted trees, though apparently as strong as older trees, should not be allowed to carry as much fruit as the latter. Keep the soil well watered, for all Nectarine trees, and especially those on walls, require large quantities of water when in active growth. Manure water used at intervals will assist the fruit to swell. Pinch the shoots not required for extension and secure all others to the wall.

WATERING OF FRUIT-TREES.—Should the present drought continue, the watering of fruit trees must have careful attention; indeed, this is essential to prevent the fruit dropping from wall trees of Cherry, Plum, Peach and Nectarine. Give copious waterings. During hot weather syringe the foliage in the late afternoon. Place a mulch of rotten manure around the base of tree, removing same before watering, and replacing afterwards. Never apply artificial manures or manure water to the roots when the soil is dry, but first afford a good watering.

PLUMS.—Regular attention should now be given to these trees. Fasten to the wall or wires all shoots required for extension or for filling up gaps; pinch the remainder at the fourth or fifth leaf. Allow the weaker shoots to grow for the present: these may be stopped later if necessary. These smaller shoots when well ripened usually fruit well. Guard against aphid attacking the tender growths; this pest seems to spread most rapidly during times of east winds, when the atmosphere is dry. Fruits of dessert varieties should be thinned to a reasonable crop; but it must be remembered that many Plums drop at the stoning stage, and this must be taken into consideration. Another cause of Plums and other stone fruits dropping is drought at the roots: therefore see that the roots receive copious waterings. In addition to all this, a mulch may be spread over the soil as recommended above. Young trees need careful training. It is now that the foundation of the tree will be laid, for these shoots will, in time, constitute the main branches of the tree. Remove extra vigorous shoots, as these might grow so vigorously as to make the tree irregular in shape. No stimulants need be applied to the roots, as young trees always grow freely in good soil, and coarse growth is not desirable.

STRAWBERRIES.—The soil in most places is very dry, and Strawberries will fail to give good returns unless they are watered. The early varieties will be benefited by applications of liquid manure, but this will not be necessary if concentrated fertilisers were applied earlier in the season. Manure should not be applied after the berries commence to colour. In order to obtain very early fruits, thin the trusses on some of the plants with a view of throwing all the energies of the roots into the berries that remain.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

LETTUCES.—This is a difficult crop to maintain, and the only way to be sure of a steady supply is to sow a few seeds at intervals of ten days or a fortnight. Transplant while the plants are still small, leaving enough seedlings in the lines to fill up. Lettuces grow best in a friable soil, well enriched, and, unlike a large number of vegetables, succeed best when the soil is not very firm. In gathering do not cut, but twist the whole plant round till the tap root comes away.

LEEKS.—The more forward seedlings will very soon be large enough to transplant. The old-fashioned practice of drawing drills or furrows at 15 to 18 inches apart, and setting the

leeks deep in these cannot be excelled. In dry weather and dry soil it may be necessary to flood the drills with water some time before planting, an essential part of the operation being the forming of deep holes into which to drop the plants. These should be sorted at lifting, and the roots thickly-coated with prepared mud, so that when each is dropped into its hole and watered it may be able to continue growing without further attention. The plants should be arranged so that the leaves when larger will bend over into the furrows.

PEAS.—The second crop will now be well in bloom, and overtopping its supports. Cut off the tops with a hook, to induce freer lateral growth, and an earlier production of pilled pods. If an abundant supply of manure-water can be afforded, it will be of very great benefit. Those who are producing Peas for exhibition must allow the haulm plenty of space. Examine the pods to make sure that those left are full. Thin the pods and laterals to give those left every advantage. Blood-manure has a beneficial effect on the colouring and texture of the pods. If not already done, the second last sowing of late varieties should be put in without delay.

CELERY.—Nothing is gained by allowing this crop to stand too long in beds before final transplantation, large plants being difficult to separate without loss of roots. The trenches having been prepared some time ago, a slight dressing of old Mushroom dung and pigeon manure should be applied. If weeds are in evidence they can be lightly forked into the ground. Set the plants 1½ to 2 inches below the surface, and leave a slight depression to receive water when it is necessary to apply it. In light, free soil, make the soil firm by trampling after the planting is finished. At this time of year, either plant in dull, sunless day; or, if sunny, defer planting until well on in the afternoon. Early celery will benefit by a thin addition of soil mixed with manure spread evenly among the plants; if dry, the ground should be previously soaked with water. Weeds springing up on the sides of the trenches should be destroyed.

VEGETABLES.

CAULIFLOWER MAGNUM BONUM.—During the past three weeks we have been cutting splendid little heads of this variety grown in 8-inch pots. The seed was sown during the middle of September, pricked out into cold frames, potted up at the end of November, and grown on in a cool house. During the last six weeks the plants have been placed in sheltered positions, where they have yielded a splendid return. This year there is a wealth of Broccoli of good quality, but not to be compared with the delicacy of the Cauliflower.

KALE LABRADOR.—This is a delicious vegetable and distinct from any Kale known to me. It is by far the best flavoured, the hardest, latest, and most prolific during the months of April and May. Nearly thirty years ago a lady gave me some seed which she brought direct from Labrador. So well has it been thought of here that we have grown it every year since. This variety is often confused with *Asparagus Kale*, which is absolutely distinct, and very inferior.

CABBAGE.—The Cabbage is a favourite vegetable, especially so in early spring. It has been greatly improved during the past half century. Formerly it was considered that to have cabbages fit to cut by Whitsun was very satisfactory; but nowadays Cabbages of the highest quality may be cut from February onwards. Some cases of failure have come under my notice lately, but experience teaches me that this is due to two main causes, viz., bad stocks, and sowing the seed too early. Three varieties that do especially well here are *Sutton's April*, *Ellam's Early*, and *Flower of Spring*. Out of 1,200 plants of the first-named in one bed only one has been found to fail. The remainder have either been cut or are ready to cut at the time of writing. *E. Beckett, Aldenham House Gardens, Elstree.*

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Special Notice to Correspondents. — The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News.—Correspondents will greatly oblige by sending to the Editors 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 Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, JUNE 8—

United Hort. Ben. and Prov. Soc. Com. meet.

WEDNESDAY, JUNE 10—

Birmingham Bot. and Hort. Soc. Orchid Sb. (provisional).

SATURDAY, JUNE 13—

Stirling Hort. Assoc. outing to Greenfield, Alloa. R.H.S. Gardens Club outing.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 58.2°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, June 3 (6 p.m.): Max. 68°; Min. 48°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, June 4 (10 a.m.): Bar. 29.9; Temp. 67°. Weather—Bright Sunshine.

PROVINCES, Wednesday, June 3: Max. 69°, Bath; Min. 39°, Buxton.

SALES FOR THE ENSUING WEEK.

TUESDAY—

Japanese Dwarf Trees. At Stevens's Auction Rooms, King Street, Covent Garden.

SATURDAY NEXT—

Freehold Market Garden, 19 acres, with modern buildings, stabling, etc. To be offered by Auction on the Estate, Penton Hook, Staines, at 4 o'clock, by Protheroe and Morris.

Fumigating with Hydrocyanic Acid.

The correspondence which has appeared recently in these pages indicates that a diversity of opinion exists as to the value and best mode of application of hydrogen cyanide for the purposes of fumigation. We give, therefore, the results of prolonged tests carried out by M. Paul Marchal, Professor of the National Agricultural Institute of France, and published in the *Vie Agricole*. Inasmuch as the correspondence referred to above showed that some uncertainty exists as to the strength of the ingredients for producing hydrocyanic acid gas, we will deal first with that aspect of the subject. The cyanide of potassium should be practically pure—guaranteed of not less than 98.99 per cent. purity. It should be in the form of small white pieces, and should be weighed out into amounts determined, as indicated below, by the volume of the structure to be fumigated. Each lot should be wrapped in stout paper, and the packets should be kept in a glass-stoppered bottle labelled "Poison." The sulphuric acid employed for generating the gas should be commercial sulphuric acid of

specific gravity 66 Beaumé. It is important that the sulphuric acid should be free from nitric acid, as an impurity in the latter substance is apt to cause burning of foliage.

The proportions by weight in grams in which the ingredients should be used are: Cyanide of potassium 1, sulphuric acid 1½, water 3. When everything is ready the right amount of water should be placed in a glass or glazed porcelain vessel so large that when the acid and cyanide are added it is not more than half full, for the reaction producing the cyanide is apt to cause effervescence, and a vessel deep enough to prevent splashing is therefore to be employed. To mix the ingredients first add the water—for if water be added to the acid rapid boiling is caused, and if the acid be splashed on hands or clothes burns result.

Directly after the acid has been added the packet of cyanide, held at arm's length, should be placed in the vessel, and the operator should leave the house at once, closing the door tightly as he goes out. The more thoroughly the house is closed the more efficacious is the treatment. Hence wherever possible cracks should be sealed and, of course, all ventilators must be closed. Arrangements should be made also for opening ventilators from outside. The operation should be carried out at night, for hydrocyanic acid in the presence of light has an injurious effect on vegetation.

The time of fumigation should be, for plants in activity 40-45 minutes, for plants in a resting stage one hour.

The amount of cyanide of potassium to use is 10 grams per cubic metre. In point of fact, twice that quantity has been used, and the time of exposure extended to two or even three hours without ill-effects to vegetation. Nevertheless, the quantities which should be used in first tests are: For every cubic metre of space 10 grams of cyanide of potassium, 15 grams of sulphuric acid, and 30 grams of water. If the house to be fumigated is of considerable size several glass or glazed porcelain vessels may be used, and the total quantity of the several ingredients divided up between them, always, of course, in such a way that each vessel receives the cyanide, acid and water in the proportions of 1. 1½, and 3. If this latter course be adopted the operator first adds water and then acid to the vessels, and then, starting at the vessel furthest from the exit, he places the potassium cyanide in it, walks quickly to the next, and so on, and when he has added the cyanide to each vessel he makes without delay for the door.

Translated into English measures the above quantities read: For every 100 cubic feet of space in the house use (*in avoirdupois measure*) 1 oz. of potassium cyanide, 1½ oz. sulphuric acid, and 3 oz. of water.

It will be of considerable interest if those gardeners who carry out fumigation with these proportions of materials will keep careful note of the results, and will communicate them to the Editors.

Supplementary Illustration.—*Philesia buxifolia* is found wild in South America from Chili to the Straits of Magellan. It forms a shrub about 3 or 4 feet high, and bears pendulous, red flowers. *Philesia* is closely allied to *Lapageria*, and a hybrid named *Phylageria Veitchii* was raised between the two plants by Messrs. James Veitch and Sons in 1872 (see fig. 182). At that time bigeneric hybrids were rare, and the fact of these plants hybridising appeared to some at the time to be proof that the parents belonged not to two but to one genus. *Philesia buxifolia* is said to be remarkably strong in withstanding the effects of a deleterious atmosphere, for it grows well amid the noxious fumes of the copper-smelting works in Chili, and at one time was considered a useful evergreen shrub for towns. But the plant is seldom seen in gardens; indeed, it is doubtful whether it is hardy out-of-doors in many districts north of the Thames. Another fact which militates against it as an outdoor plant is that it is very slow of growth. But it is suited for the greenhouse or conservatory, and associates well with *Camellias* under glass; it requires a light, peaty soil, and only very little fire heat. Propagation may be effected by means of cuttings of ripened shoots, rooted like those of most hard-wooded plants; but those who attempt this operation must exercise patience, for the shoots are usually several months in rooting.

Coloured Plate.—The subject of the Coloured Plate to be published with our next issue is *Crinum Powellii*.

SALE OF MESSRS. VEITCH'S NURSERY AT CHELSEA.—MESSRS. JAMES VEITCH AND SON'S nursery establishment in the King's Road and Fulham Road, Chelsea, will be offered for sale by public auction by Messrs. PROTHEROE AND MORRIS on Tuesday, June 9. The premises, well known as the Royal Exotic Nurseries, have an area of about 2½ acres, and will be offered in one lot, including the office and warehouse.

ROYAL SCOTTISH ARBORICULTURAL SOCIETY.—Arrangements are afoot in Aberdeenshire and the North for the reception of the members of this society, which this year celebrates its diamond jubilee, in their tour of inspection in Scotland. Assembling in Edinburgh on June 27, the members proceed to Perthshire, visiting the Murthly and Atholl woods. Aberdeenshire will be visited on July 1, by way of the Tay Valley to Braemar, when the fine forests surrounding Balmoral Castle and Mar Lodge will be inspected. July 2 will be devoted to Ballogie—the district which, it is understood, the Royal Commission on Forestry has recommended as a demonstration area for the North of Scotland—Finzean and Durris, where the finest woods in Scotland are to be found. The following day the party will leave Aberdeen for Banffshire and Morayshire, where the Seafield woods and the valley of the Spey will have attention. July 4 will also be devoted to other parts of the Seafield forests and the woods around Aviemore. Sunday will be spent at Inverness, and on the following day the party sail down the Caledonian Canal, inspecting the famous forest of Glen Mor on the way, and thence to Oban. Making this pretty little town their headquarters for the next two days, the party visit Inverliever and Poltalloch. Thence they proceed via Lochgilphead, Inveraray, Strachur and Loch Eck to Dunoon. July 9 will see them at Glenfinart and Benmore, and they will return to Edinburgh in the evening. The Corporation of Edinburgh will entertain the members on Friday, July 10, at lunch, and the proceedings will conclude with a reception and official dinner in the evening in the North British Station Hotel.



PHILESIA BUXIFOLIA

A Liliaceous Shrub from Chili ; hardy in favoured districts in Britain.

DAMAGE BY FROST.—The vagaries of our northern climate, writes an Aberdeen correspondent, have been little short of bewildering during the past two months. Following an April of record warmth, May came in cold and chilly, and during the closing week of the month the thermometer on several occasions registered keen frost. The result is that from all over the North come reports of serious damage to the early crops. Potatoes have suffered considerably, and in some districts the Potato crop has been completely ruined. In the great Strawberry growing district of Aberdeenshire (Deeside) the blossom has suffered serious injury. Gooseberries, which gave promise of an abundant yield, are in some quarters reduced to pulp. The same story has to be told of Plums, Pears and Apples.

CROPS ABROAD.—The Board of Agriculture and Fisheries has received the following information from the International Agricultural Institute:—The quantity of Beet sugar, expressed as raw sugar, produced up to the end of March, 1914, in the following countries:—Germany, Austria, Hungary, Belgium, France, Netherlands, Roumania, Russia, Switzerland, Denmark, Italy and the United States, is 8,174,000 tons against 8,303,000 tons produced in the corresponding period of last season, or 98.4 per cent. The cereal crops are progressing under favourable conditions generally in the greater number of the European countries and in the United States. The condition of crops in Russia and Roumania is good, whilst damage caused by drought is reported in Italy, Algeria, Tunis and Egypt. The Crop Reporting Board of Washington, basing its calculations upon the condition of winter Wheat on May 1, estimates the production in the United States at 337,410,000 cwts., against 280,403,000 cwts. in 1913. The vines and Olive trees have passed through the winter without damage in almost all the countries, and their condition is good in Austria, France, Algeria and Tunis, and fairly good in Hungary and Switzerland. The development of the Flax, sugar Beet and Potato crops is, however, generally not so favourable on account of damage caused by drought and frosts.

FRUIT CROPS IN GERMANY.—His Majesty's Consul-General at Hamburg reports that Cherry, Pear and Plum trees flowered abundantly and good crops may be anticipated. There was also an abundant supply of Apple blossom; but, owing to the cold, wet weather trees in many districts have not ceased blooming, and it is impossible at present to say definitely how the crop will finally turn out. Early Strawberries have suffered injury from frost, but from later varieties a good crop is expected. Gooseberries and Currants promise abundant crops.

SCOTTISH HORTICULTURAL SOCIETY'S CHRYSANTHEMUM SHOW.—The secretary informs us that the dates of the annual Chrysanthemum exhibition have been changed from November 19, 20 and 21, to November 12, 13 and 14.

FRUIT AND POTATO CROPS IN BELGIUM.—His Majesty's Consul-General at Antwerp states that Strawberries under glass, especially around Brussels, are reported as satisfactory, but it is expected that Strawberries grown in the open will suffer from the frosts experienced early in May. Throughout the country fruit trees blossomed unusually well, but frosts caused some damage. Apples promise well in the provinces of East and West Flanders, in the south of Limburg, around Herve, Liège, and Lennick St. Quentin, and in the valley of the Meuse. A fairly good crop is expected in the province of Luxemburg, and in the vicinity of Verviers, Namur and La Hesbaye. The frosts destroyed much Apple-blossom in the region of Maeseyck. Pear trees bore a quantity of fruit in East and

West Flanders, the south of Limburg, the valley of the Meuse, and the districts of Lennick St. Quentin, Alost and Tournai. The Plum crop should be good generally, though medium to fairly good in the south of Luxemburg and the districts of Bruges, Verviers, Huy and Namur. Gooseberries and Currants show considerable promise in Flanders, the districts of Malines and Liège and in the valley of the Meuse; they are fairly promising in the other parts of the province of Liège. In the provinces of Namur and Antwerp and in the vicinity of La Hesbaye the crop is expected to be poor. Grapes under glass appear good everywhere. Early Potatoes have suffered to some extent from frosts.

DUTCH BULB INDUSTRY.—According to the report for 1913 on the trade of the Netherlands, issued by Count CHARLES BENTINCK, second secretary to the British Legation at The Hague, the area under regular bulb cultivation in the country was 14,550 acres. Weather conditions were not favourable, but no disease was reported among

that "is the mother of blight." This ubiquitous lady-bird of ill omen it is that "causes the thousands of pounds' damage done annually by blight." The lady-bird, like so many evildoers, takes on many forms: to-day it is the ordinary lady-bird which, cuckoo-like, broods over and hatches out the germs of "blight"; to-morrow it spends a week-end at the sea and takes on a yellower colour—"as the sea-shore Poppies are yellower than the field Poppies." One touch of nature-study makes the whole world kin! Sitting on nests of seaweed our lady-bird hatches out therefrom more blight. Presently the lady-bird assumes the form of the hannelton—the cockchafer so distressful when it buzzes about you in the evening. In short, it would now appear that the heath whereon MACBETH parleyed with the witches must have been blasted by blight begot by lady-birds. The reticence of the writer astonishes us. Having shown that the lady-bird is the only begetter of blight, why should he not continue his interesting demonstration and prove that the dark lady of SHAKE-



FIG. 182.—PHILAGERIA VEITCHII: A HYBRID OF PHILEZIA AND LAPAGERIA. (See p. 398, also Supplement.)

the bulbs during the year. The total export of bulbs last year was 24,961 tons, of which 10,192 were consigned to the United Kingdom, both figures showing considerable increases on those of 1911 and 1912. The trade in flowering shrubs was also very favourable. Reports from Germany, Denmark and Norway all pointed to good business in this direction.

A LIBEL ON LADY-BIRDS.—We live in an age so conspicuous for its tolerance that none is surprised to find the blackest character white-washed—HAMLET's mother proved to be the model of matrimonial rectitude and Judge JEFFREYS an amiable philanthropist. It is the more surprising, therefore, that there should be found among us men bold enough to denounce the crimes of those whom we, in our blindness, had thought hitherto to be innocent. Yet so it is. The news is announced through the medium of the daily Press that our old and valued friend the lady-bird is a villain in disguise. Does "blight" infect your "Beans, Poppies, Sweet Peas, etc."? Then lay not the blame on the narrow shoulders of aphid, for it is the lady-bird

SPEARE's sonnets is the lady-bird? The most plausible theory with respect to the origin of the communication is that it is a joke designed to test the credulity of the editorial staff. If so, its author must be feeling very happy, for the contribution is hailed by the expert who conducts the gardening page of that journal as "both novel and suggestive," and readers are informed that it is published "with pleasure." The pleasure does not cease there. It will be shared by all who appreciate a jest, and even the lady-birds will laugh at this libel on themselves.

BRITISH-GROWN TOBACCO.—The first or statutory meeting of the Tobacco Plantations Company was held on May 21. The Right Hon. the Viscount HILL, who presided, announced that satisfactory progress had been made in the production of British-grown Tobacco. The committee had in hand over two tons of tobacco for cigarette purposes, manufactured under the supervision of the managing directors, Mr. PULLEN-BURRY and Major WHITMORE. The duty-paid tobacco of the previous crop had been sold at remunerative

prices, and the demand for the company's tobacco was proving most encouraging. In the present year a quarter of a million plants had been raised for the year's planting and for sales, and as soon as rain came they would be planted on the 20 acres of specially prepared land. By sterilisation and the use of the PULLEN-BURRY patent travelling hothouse structure, exceptionally hardy plants had been obtained. Barns had been erected for special curing, but the company would require more capital for further drying sheds to harvest the 20 acres about to be planted.

PARKS AND BOY SCOUTS.—The authorities of the city of Philadelphia, U.S.A., have hit upon the idea of instituting boy scouts as "guardians" of the trees and plants in the public parks. Children, as a rule, seem to take a malicious pleasure in spoiling the flowers and trees, and it may prove the solution of a very difficult problem to institute the boy scouts the official protectors of their playgrounds.

WOMEN GARDENERS IN FRANCE.—A society has been formed at Paris for the furtherance of the agricultural and horticultural instruction of women, by means of lectures and courses of study. The council is composed chiefly of women, but one of the three secretaries, one vice-president, and five members are men.

COLD STORAGE OF FLOWERS.—At Nice a new refrigerating hall has just been constructed in which the temperature can be lowered to 2° above zero. Cut flowers are deposited in this hall as soon as they are gathered, where they are said to retain all their freshness, colour, and perfume for four weeks; in the case of certain kinds, even for six weeks. As they are required the flowers are taken from the store, packed, loaded on refrigerator waggons, and sent abroad. This method goes far to solve the problem of meeting the fluctuating demand of the flower market.

A NEW GARDENING PERIODICAL.—The public will learn with interest of the appearance of a monthly periodical devoted exclusively to gardening. The title of the new monthly is *My Garden Illustrated*, and the pictures of flowers and gardens in the first number fully justify the title. Admirably printed on art paper, the new journal is calculated to appeal to those who contemplate taking up gardening as a hobby, as well as to those who appreciate beautiful garden scenes.

NATIONAL VIOLA AND PANSY SOCIETY.—The first annual exhibition of the National Viola and Pansy Society will be held at Botanical Gardens, Edgbaston, Birmingham, on Wednesday, July 1. The hon. secretary is Mr. J. BASTOCK, Viola House, Springfield Road, Moseley.

FLOWER SHOW AT ALDENHAM PARK.—An exhibition of flowers and vegetables will be held in Aldenham Park, Elstree, on Wednesday, July 8, under the auspices of the Elstree and Boreham Wood Horticultural Society. The hon. secretary is Mr. W. J. PRITCHARD, Elstree.

FREAM MEMORIAL PRIZE.—The Board of Agriculture and Fisheries has awarded a Fream Memorial Prize, of the value of £7 2s. 1d., to Mr. HARRY MUIR MCCREATH, a student of the West of Scotland Agricultural College, Glasgow, who obtained the highest marks in this year's examination for the National Diploma in Agriculture.

PUBLICATIONS RECEIVED.—Circulars from *Purdue University Agricultural Experiment Station*. (LaFayette, Indiana): No. 38, Industrial Clubs and Contests; No. 39, Packing Indiana Apples; No. 40, Report of Poultry Conditions in Indiana; No. 41, Licences for Creameries, and Testers, Laws, Rules and Regulations.—*Agricultural Journal of the Union of South Africa*, Vol. VII., April, 1914. (Pretoria: The Government Printing and Stationery Office.)

OXALIS ADENOPHYLLA.

THE charm of this dainty little Oxalis lies in its relatively large flowers and silvery foliage. Unfortunately, at the Chelsea Show, where the species received an Award of Merit (see page 364), the two plants that were shown persistently refused to expand their flowers after the first day, so that it was unnoticed by the majority of the visitors. In the rock garden, exposed to sunshine, the bright, rose-coloured flowers are produced freely, and stand well above the foliage.

BIGNONIA TWEEDIANA.

THE accompanying illustration (see fig. 186) will serve to draw attention to one of the most beautiful and effective of stove climbers. It is a strong grower, eminently suitable for decorating the roofs of large stoves or warm con-

HOME CORRESPONDENCE.

ERRONEOUS NOMENCLATURE.—M. Correvo's letter on this subject must surely have the sympathy of everyone interested in the cultivation of hardy plants; for nowadays it is almost impossible to visit a nursery ground or even a flower show without seeing something wrongly named. Having alluded to it before, and to the absurd custom some nurserymen have of calling anything that will grow on a rock or in a bog-garden "Alpine," I hesitate to say more; except to remind my friend M. Correvo that it must be really difficult to find men with the various qualifications of a judge (of, say, a series of beautiful rock-gardens), who are acquainted with the correct names of all the numerous hardy plants now cultivated. In the *Gardeners' Chronicle*, November 29, 1913, some wise remarks bearing upon this subject were made by Mr. Dykes, together with an apt quotation from Dr. Stapf, also made in these columns. *H. S. Thompson.*

NARCISSUS EMPEROR.—I am sending you a few blooms of Emperor Narcissus, as they are



FIG. 183.—OXALIS ADENOPHYLLA: FLOWERS ROSE-COLOURED.

servatories. In the Palm House at Cambridge Botanic Garden it has been a source of great attraction for the past three weeks, its long trails of clear, yellow flowers being very effective. Growing on a pillar, it has now extended to the roof, its numerous pendant branches forming a curtain of flowers. The flowers are bell or funnel shaped, $4\frac{1}{2}$ inches long, limb deeply five-parted, $2\frac{1}{2}$ inches wide at the mouth. The specimen is planted out and grows vigorously. One thing should be especially observed—that whenever pruning becomes necessary during the growing season to keep growth within bounds, the work should be performed with judgment and with due regard to flowering. This will be best effected by a total removal of such portion of shoots as is found necessary rather than a general shortening of all the shoots. This thinning will also greatly assist in the thorough ripening of the flowering shoots, without which there will only be a meagre display of flowers. The species is a native of Buenos Aires. *G. H. Banks.*

unusual at this time of year. I kept the bulbs as dry as possible to prevent them growing, and did not plant them in boxes until February 24. Afterwards they were plunged and grown in the usual way. I shall be able to cut Narcissus flowers for the next fortnight. *A. E. Fox, Beechurst Gardens, Fairhope, Lancashire.*

FRUIT PROSPECTS IN NORTH ARGYLLSHIRE.—The fruit crops, which until recently were most promising, have suffered considerable damage by severe frost on the night of the 24th ult., when from 5° to 7° Fahr. of frost were registered. Strawberries were in full bloom, and the crop will be a partial failure; Gooseberries and Currant bushes exposed to the sunshine early in the day have the tips of the young shoots severely damaged. Apples, Pears and Plums, being well set, and having ample foliage to protect them, have suffered but little injury. The shoots of early Potatoes have been blackened. Rhododendrons and Azaleas in bloom are much damaged, as also are the young tips of Bay and Portugal Laurels. Some years have elapsed since so much damage by frost has

been wrought in this locality. *Geo. Haig, Barcaldine Gardens, Ledaig.*

NEW CHINESE PLANTS.—I am sure that many of your readers must feel deeply indebted to Mr. Beckett for his notes on the newer Chinese trees and shrubs, which have appeared from time to time in your columns, and also for his comprehensive list of these plants published on pp. 344, 372. In the case of many of these plants it must be years before their value for garden purposes is proved, and it is a great help to those who, like myself, have charge of a collection, however small (compared with that at Aldenham) to see them described and discussed in your paper by one who is growing them. I trust that in naming these various shrubs and trees no effort will be spared to see that the proper nomenclature is given, so that confusion may not arise later. From one source we have here a plant named *Lonicera nitida*, and from another source what seems to be an identical plant named *Chamaecerasus piliata*. I only mention this in the hope that the question of proper naming will be given due consideration. *A. T. H.*

THE ROYAL BOTANIC SOCIETY.—I have addressed the following letter to the President, Council, and Fellows of the Royal Botanic Society of London:—"I have recently received the April issue of the *Botanical Journal*, notifying the preliminary programme of arrangements for the coming season at the Society's gardens, and referring also to the appointment of secretary which is about to be made, and I should like to draw the attention of all concerned to the nature of these arrangements and to enquire what principle is being adopted with regard to the secretaryship. The arrangements include three dog shows, a theatrical garden party, the country fair of Our Dumb Friends League, a fancy dress ball, an exhibition of Rhododendrons, the Rose Society's Show and a series of lectures by Professor Bottomley. The fancy dress ball is for the purpose of raising funds for the Society and may or may not be considered as a legitimate method of obtaining money; but of the other arrangements—the Rhododendron Show in a minor degree (being a private traders' exhibition), the Rose show to a somewhat greater extent, and Professor Bottomley's lectures alone touch the objects for which a Royal Charter was granted to the Society. It is common knowledge that the Society has been grievously hampered in the past by injudicious management, and that position has been, I believe, so far recognised that alterations are about to be made in the *personnel*. Under these circumstances, I desire to draw the special attention of the Fellows to the very similar circumstances which were existing in the affairs of the Royal Horticultural Society about thirty years ago. That Society has recently suffered a very heavy loss in the death of Sir Trevor Lawrence, its President for nearly thirty years, and in the obituary notice, published in the last number of the Society's *Journal*, I find the following, which is so remarkably apropos to the affairs of the Royal Botanic Society that I think it worth quoting at some length:—"Called to the President's chair in 1885 in succession to Lord Aberdare, Sir Trevor Lawrence found the Society in very troublous times indeed, attributable to two chief causes: (1) The lavish expenditure on buildings at South Kensington erected on land of which the Society had no proper tenure, and (2) the degradation of the Society caused by a turning away from the pursuit of horticulture to the promotion of London Society entertainments. Sir Trevor's inborn love of gardening taught him at once that a sort of imitation German Biergarten was by no means the ideal for the Royal Horticultural Society to aim at." The lesson learnt was that:—"The Society must return to the policy of its original institution—"Horticulture pure and simple" or the Society must die." The outcome of that lesson was that on the basis of 'Horticulture pure and simple' the Royal Horticultural Society has now a magnificent hall valued at £41,000 and other investments approximating to £70,000. Now, for 'Horticulture' read 'Botany,' and the above excerpt is exactly applicable to the position of

the Royal Botanic Society to-day. The false finance of the Council, which has treated life compositions, for instance, as annual income, and which has seized upon casual receipts from dog shows and theatrical garden parties as fulfilling the end of the Society's existence, has rendered the condition of the Society a parlous one indeed, while, as regards its scientific status, it is verily the laughing-stock of the botanical world. The main object of this letter is to appeal to the Council and the President that in the impending appointment which is to be made, a single eye should be given to the scientific side of the work of the Gardens, eliminating as soon as possible the purely social use of the grounds, about which questions have, I think, already been asked in Parliament, and in the second place, that immediate steps should be taken to reconstitute the governing body of the Society upon a basis that would command the respect of



(Photograph by W. Irving.)

FIG. 184.—ANOPLANTHUS COCCINEUS PARASITIC ON CENTAUREA DEALBATA.

botanists and business men. I think that if this were done and members added to the Council really representative (in the words of the Charter) of 'the promotion of botany in all its branches and its application to medicine, arts, and manufactures,' a very effective appeal might be made for funds to those interested in the development of the agricultural resources of the Empire, who would be prepared to recognise the importance of an institution, not wholly official like Kew, not floricultural like the sister society in Vincent Square, but solely and entirely concerned with economic botany and its advancement both at home and overseas." I beg to remain, your obedient servant, *Stuart R. Cope (Fellow).*

"LOCAL NAMES."—In your review of Mr. Horwood's book (p. 347) you refer to the author as having "collected many of the local names of British plants." I shall be glad if you will

allow me to point out that those names are transferred bodily—often incorrectly and always without acknowledgment—from the *Dictionary of English Plant Names*, published by the late Robert Holland and myself in 1878-86. *James Britten.*

—In his review of my book, *Plant Life in the British Isles* [in the *Journal of Botany*], Mr. Britten commented at length upon the English names there given, which were taken from the *Dictionary of English Plant Names*, the main, though not the only, source of information upon this interesting side of botanical knowledge. I regret that by inadvertence the work was not included in my list of authorities consulted. But this is being remedied in a subsequent volume by due acknowledgment, and any misprints in the volume reviewed will be corrected in a subsequent edition. I also wrote to Mr. Britten when his review appeared. *B. R. Horwood.*

WISTARIA AT SYSTON HALL.—The illustration in fig. 185 shows the main stem of an old plant of *Wistaria sinensis* growing in the conservatory at Syston Hall, near Grantham, the seat of Sir John Thorold, Bart. The stem and branches have become a knotted mass, and the former appears to be almost a part of the iron pillar around which it is entwined. The tree is said to be the first plant that was brought to this country; it is certainly of great age and very interesting in appearance. *W. H. Divers, Belvoir Castle Gardens.*

NARCISSUS FLIES.—I can endorse Mr. Shea's recommendation (see p. 375) to Daffodil growers to read the very excellent article on *Narcissus flies* in the May number of the *Journal* of the Board of Agriculture, and the statements he quotes deserve all the consideration due to their authoritative appearance. There are, however, no new facts given in proof. The statements are apparently a reiteration or quotation of the original *ipse dixit*, and they can therefore, I think, hardly be held to be in any way confirmatory of those views. The theory that the Eumerus attacks and feeds on sound Daffodil bulbs is, then, still as much as ever a theory, and if it were allowed to go unchallenged and unverified we might be put to considerable trouble that eventually might prove to have been unnecessary. But after all there is just one new fact mentioned in the above article which I will quote, leaving your readers to form their own conclusions as to its significance. "In the preliminary experiments carried out in 1913, bulbs in the ground, and also uncovered in the store" (presumably sound bulbs) "were exposed to flies of the second brood, but were in no case attacked." *A. J. Bliss.*

ANOPLANTHUS COCCINEUS.

THIS remarkable parasite of the Natural Order Orobanchaceae (see fig. 184) is a native of the Caucasus, where it grows on the roots of various plants, but chiefly on *Centaurea dealbata*. The beautiful silvery foliage of the host plant acts as a delightful foil for the large velvety flowers, which are of a brilliant scarlet colour. They are about 2½ inches in diameter, and are borne singly on reddish-brown stems from 12 inches to 18 inches high. The stems are naked with the exception of two or three bracts on the lower halves. The flowers, which resemble those of a giant *Lobelia*, are five-lobed, with two upper and three lower lobes, the latter forming a lip at the base of which is a large black blotch. The plant illustrated was grown in Kew Gardens from seeds received from Tiffis Botanic Garden in the spring of 1911. The seeds were sown, together with those of the host plant, in a pot. Only the *Centaurea* appeared, and this was planted out in the rock garden the same year. Nothing else came up till this year, when seven stems of *Anoplantus* were noticed early in May, each with a solitary flower bud, the first flower opening about the middle of the month. It is a very attractive plant, and promises to remain in bloom for some time. This is probably the first time that the species has flowered in cultivation, as it has not been recorded before. *W. I.*

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 3.—On account of the Whitsuntide holidays the usual fortnightly meeting was held on a Wednesday instead of the customary Tuesday. The attendance was below the average, but many of the exhibits reached a high standard of excellence. In view of the lecture on Irises by Mr. W. R. DYKES, these flowers were shown by several exhibitors, and shared with *Papaver orientalis*, herbaceous Paeonies, and Sweet Peas the especial admiration of the visitors. More than 50 new plants were submitted to the Floral Committee for award, and of these 19 were recommended for Awards of Merit. This Committee awarded 1 Gold and 31 other Medals to collections.

The Orchid Committee made no awards to new plants.

The Fruit and Vegetable Committee awarded a Silver Banksian Medal to a collection of Melons.

At the 3 o'clock meeting in the lecture room, Mr. W. D. DYKES delivered a lecture on "Irises."

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. G. Reuthe, W. J. Bean, J. Green, J. W. Moorman, J. F. McLeod, Wm. Howe, W. Bain, C. R. Fielder, John Dickson, Chas. E. Shea, J. T. Bennett-Poë, Arthur Turner, W. Cuthbertson, W. P. Thomson, George Paul, E. H. Jenkins, W. A. Bilney, E. A. Bowles, F. W. Harvey, John Jennings, Charles Blick, and R. W. Wallace.

AWARDS OF MERIT.

Iris chrysographes.—A grassy-leaved species introduced recently through E. H. Wilson from China. Its round, hollow stems grow about 2½ feet high and carry flowers of a richer and deeper shade of velvety violet-purple than any other species, with one central line of gold down the falls and a few variable dots of gold at the throat. The form of the flower, with its long, hanging falls, reminds one of *I. Delavayi*, but it is more beautiful. Shown by Mr. W. R. DYKES and Miss WILLMOTT.

Iris Iota.—This is a hybrid between *I. tenax* and *I. Purdyi*. It has long, grassy, arching foliage and very daintily-formed flowers of a lilac shading and veining on a white ground. The standards are lanceolate and erect, the falls oblong-cuneate and horizontal. Each stem bears two flowers, and a two-year-old plant was said to be carrying forty spikes. This was shown by Mr. W. R. DYKES, with a number of other hybrids, of which the most distinct were *Epsilon* (*Bulleyana* × *Forrestii*), the tallest grower, cream and yellow ground dotted blue; *Eta*, a remarkable red bracteata; *Beta* (*chrysographes* × *Forrestii*); *Gamma* (*Forrestii* × *chrysographes*); *Theta* (*tenax* × *Wilsonii*); and *Zeta* (*sibirica* × *Wilsonii*).

Iris laevigata alba.—This is the white form of the true *Iris laevigata* and distinct both in foliage and form of flower from *I. Kaempferi*, which is so often confused with it. The flowers are pure white, showing a tinge of mauve at the base of the standards and style arms. It grows about 18 inches in height and has the same distinctive form as the better known *Iris albo-purpurea*.

Iris sibirica Emperor.—A noble form of *I. sibirica*, of Japanese origin. The falls are large and circular, and the whole flower is of a deep violet-blue. The habit is tall and erect, carrying the flowers well above the foliage. It may best be compared with *I. sibirica orientalis*, which is dwarf-habited and has distinctive red spathes as well as a patch of white at the throat, which *Emperor* lacks.

Iris Kashmir White.—The most beautiful of the white hybrid Irises we owe to the late Sir Michael Foster. The flower-stems rise 4 feet high and carry six large, pure-white flowers. It is a variety of the bearded *Iris kashmiriana*, but is distinct from the so-called Sheldford variety of that species (or Miss Willmott), which flowers less freely and often has its flowers washed with pale blue. In the beard and throat veining it shows a touch of yellow.

These three were shown by Messrs. R. WALLACE AND CO., Colchester.

Lupinus Primrose Dame.—A handsome seedling of *L. arboreus*, with flower-spikes nearly 18

inches long of the palest primrose. Shown by Messrs. BARR AND SONS.

Strain of Lupinus polyphyllus.—Messrs. BARR AND SONS showed a splendidly-grown collection of named sorts of *Lupinus polyphyllus*, which were recommended as a strain for the Award. They varied from palest lavender-white, through lavender to mauve, blue and purple, with some very striking seedlings like *Eastern Queen* showing arboreus blood in the yellow standards above slaty-blue wings. *Nellie*, *Dainty*, *The Bride*, *Taplow Pink* and *Ophir* were among the best-named sorts.

Strain of Aquilegia.—Mrs. SCOTT-ELLIOTT, Teviot Lodge, Hawick, won the Award for her well-known strain of long-spurred Columbinas. They were badly shown, with very short stalks, but included a splendid range of colour through creams, pinks, reds, lavenders, whites and blues.



[Photograph by W. H. Divers.]

FIG. 185.—STEM OF WISTARIA IN THE CONSERVATORY AT SYSTON HALL.
(See p. 401.)

Carnation Mrs. Brotherston.—A white ground fancy border variety, heavily suffused and dotted with crimson. The flowers were large and well formed.

Carnation Robert Bruce.—A distinct self-border variety with orange-salmon or terra-cotta flowers. A fine colour and full of substance.

Carnation Mrs. Griffith Jones.—A warm apricot self border variety, softer in colour than the last, rather thinner and with smoother petal.

These three were shown by Mr. JAMES DOUGLAS.

Strain of Antirrhinum.—A handsome collection of named varieties, shown by Messrs. DOBBIE AND CO., were recommended an Award of Merit. They belonged to the Intermediate section, averaging about 20 inches in height, and showed a range of colour especially rich in yellow

and orange. *White Beauty*, *Yellow Queen*, *Primrose Queen*, *Moonlight*, *Amber Queen*, *Maize Queen* and *Dobbie's Scarlet* were some of the best.

Papaver Lady Frederick Moore.—This is a variety of *P. bracteata* with pale, salmon-pink coloured flowers of the largest size, with dark basal blotches, held finely on stout, erect stems. In colour it is very close to *Princess Victoria Louise*, but in size, form and habit it is a marked improvement. Shown by Mr. AMOS PERRY.

Clematis Sieboldii (see fig. 187).—This is a distinct climber with a neatly-formed white perianth of six segments showing off finely a central mass of purple linear modified barren stamens. The flowers are about 3½ inches in diameter, and the purple centre 1½ inch. They appear to be always solitary in the leaf-axils, but a pair of variably-lobed bracts is borne a few inches below the perianth.

Verbascum Warley Rose.—Flowers bright rose-pink, with purple-haired filaments, held finely well above the foliage in a richly branched panicle. This is the finest perennial mullein we have seen. In habit it reminds one of *vernale*, and the flat, basal rosette of smallish leaves suggests the possibility of phoeniceum influence. The individual flowers are 1½ inch in diameter, and the plant grows about 5 feet.

These two were shown by Miss WILLMOTT, V.M.H.

Mimulus Wargrave Fireflame.—A dwarf moisture-loving Musk, with large, unblotched flowers of a glowing orange-red. The height is only 6 inches. Shown by Messrs. WATERER, SONS AND CRISP, LTD.

Ribes Brocklebankii.—This is a pretty form of the dwarf species, *R. alpinum*, with foliage entirely of a bright yellow. Growing only 12 or 18 inches in height, it should prove useful to give a mass of bright colour in bedding.

Deutzia discolor elegantissima.—A charming dwarf shrub of about 2 feet only, with gracefully arching branches clothed with neat, wrinkled, and finely serrate leaves, from the axils of which rise the corymbose bunches of twenty or more flowers. The blooms are a pretty shade of lilac pink, and are individually about ¾ inch in diameter.

These two were shown by ELIZABETH Lady LAWRENCE, Dorking (gr. Mr. W. Bain).

Erigeron hybridus B. Ladhams.—An interesting form with stiffly erect habit. The flowers are a mauve-pink, about 1½ inch in diameter, borne in few flowered cymes, at a uniform height of about 2 feet. Shown by Messrs. B. LADHAMS, Shirley.

GENERAL EXHIBITS.

R. KEEP, Esq., Woodlet Hall, North Cray, Kent (gr. Mr. S. Pym), showed a group of *Carkias* which evidenced first-rate cultivation. (Bronze Banksian Medal.)

Mrs. A. V. LITKIE, Clarendon, Maidenhead (gr. Mr. W. Hulbert), exhibited *Clarendon Gem Hybrid Calceolarias*. (Bronze Flora Medal.)

Messrs. H. B. MAY AND SONS, Upper Edmonston, showed various *Hydrangeas*, *Verbenas*, *Lantanas*, and *Heliotrope* in small pots. (Silver Banksian Medal.)

Messrs. GODFREY AND SONS, Exmouth, Devon, exhibited especially good show and fancy *Pelargoniums*, and a great many of the scented-leaved varieties in pots. (Bronze Banksian Medal.)

Mr. L. R. RUSSELL, Richmond, showed bedding *Pelargoniums*, *Heliotropes*, dwarf *Lantanas* and *Salvias*. (Bronze Banksian Medal.)

Messrs. JOHN PEED AND SON, West Norwood, contributed *Streptocarpus* and *Gloxinias* of good strains. (Bronze Banksian Medal.)

Messrs. R. AND G. CUTHBERT, Southgate, arranged an effective group of standard *Fuchsias*, Ivy-leaved *Pelargoniums*, *Streptosolon Jamesonii* and other plants in the annexe. (Silver Flora Medal.)

Messrs. WM. CUTBUSH AND SON, Highgate, displayed an interesting collection of *Hydrangeas*, various *Crozy Cannas*, and hardy border flowers.

Mr. H. BURNETT, Guernsey, had a splendid collection of cut *Carnation* blooms. A central vase of *Snowstorm*, flanked by *Pluto* and *Monarch*, was especially charming. (Silver Flora Medal.)

Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, had a bold arrangement of *Carnations*. The chief varieties were *Gorgeous*,

Baroness de Brienen, and Princess of Wales. (Bronze Flora Medal.)

Mr. CHAS. BLICK, Hayes, Kent, had a small collection of good and fresh Carnation blooms.

Mr. J. DOUGLAS, Great Bookham, Surrey, showed especially fine Carnations; his chief varieties were Elizabeth Shifner, Rosy Morn, Cecilia and Virginia. (Silver Flora Medal.)

Mr. C. ENGELMANN, Saffron Walden, also showed a good collection of Carnations. (Bronze Flora Medal.)

Messrs. DOBBIE AND CO., Edinburgh, exhibited excellent Sweet Peas, which were arranged with great skill and taste. The principal varieties were Frilled Pink, Thomas Stevenson, Illuminator, Norma and Royal Purple. Adjoining this exhibit Messrs. DOBBIE displayed Antirrhinums of almost greater excellence. The long spikes, well furnished with large blooms of delightful colours, made a most attractive exhibit, and not only were the varieties uncommonly good, but their names were descriptive. Maize Queen, Bonfire, Cottage Maid, Amber Queen and Yellow Queen are the names of a few of the varieties so well shown. (Gold Medal.)

Messrs. R. H. BATH, LTD., Wisbech, showed an attractive collection, including such Sweet Peas as Glow, Thomas Stevenson and Agricola in very good condition. Next to these flowers Messrs. BATH exhibited Tulips, chiefly Darwin and Cottage varieties, in bright colours and of size. (Silver Flora Medal.)

Messrs. ALEX. DICKSON AND SONS, Newtownards, Ireland, included a new seedling of intense, almost pure scarlet colour in a noteworthy collection of Sweet Peas. (Silver-gilt Banksian Medal.)

Messrs. E. W. KING AND CO., Coggeshall, Essex, arranged a collection of Sweet Peas, said to have been cut from the open ground. The fresh blooms were of good size and clear colours. (Silver Flora Medal.)

Messrs. S. BIDE AND SONS, Farnham, Surrey, displayed many standard varieties of Sweet Peas and included Phyllis Bide, a deep orange-coloured flower. (Silver Banksian Medal.)

Mr. E. J. HICKS, Hurst, Berks, in a large exhibit gave especial prominence to the charming Rose Princess Mary, which received the highest award at the recent spring Rose Show. Stands of Mrs. Ed. Alford, Comtesse de Cayla and Irish Elegance were also very beautiful. (Silver Flora Medal.)

Messrs. H. CANNELL AND SONS, Eynsford, Kent, arranged a very attractive display of Wichuriana Roses, using floriferous plants in relatively small pots. (Silver Banksian Medal.)

Messrs. W. J. BROWN, Peterborough, showed a new pillar Rose, Mrs. Rosalie Wrinch, and other varieties, amongst a collection of hardy herbaceous flowers, which included magnificent spikes of Eremuri.

Messrs. FRANK CANT AND CO., Colchester, contributed cut and pot Roses, specialising with such sorts as Austrian Yellow, Irish Elegance and Rosa sinica Anemone. (Silver Flora Medal.)

Mr. GEORGE PRINCE, Oxford, showed flowering shoots of Rosa hemisphaerica, R. alpina and R. sinica Anemone.

Messrs. B. R. CANT AND SONS, Colchester, contributed a good collection of Roses. Cupid, a very large single-flowered variety, which appears to be unusually free-flowering, promises to be a valuable garden Rose. When fully expanded the colour is blush-pink; in earlier stages the colour is a charming combination of amber and terra-cotta. (Silver-gilt Banksian Medal.)

Messrs. BARR AND SONS, Covent Garden, London, displayed herbaceous Lupins in a wide range of distinct colours. Vases of Liliun monadelphum Szovitzianum, Iris germanica varieties, and a wide bordering of Nepeta Musinii added to the attraction of the group. (Silver-gilt Banksian Medal.)

Messrs. KELWAY AND SON, Langport, Somerset, exhibited a collection of herbaceous Paeonies and Pyrethrums, which, with a few vases of Delphiniums, filled a length of tabling. Most of the Paeonies were single-flowered varieties, and they displayed many beautiful colours. (Bronze Flora Medal.)

Messrs. R. WALLACE AND CO., Colchester, showed many exceedingly good garden Irises. Amongst the germanica section the varieties with blue shades and those with combinations of orange and purple were exceedingly decorative. Vases of Eremuri, Liliun monadelphum

and Habranthus pratensis, the last-named being exceptionally fine, were also admirable. (Silver Banksian Medal.)

Messrs. GODFREY AND SONS, Exmouth, Devon, contributed a collection of new varieties of Papaver orientalis.

Messrs. PHILLIPS AND TAYLOR, Bracknell, Berkshire, grouped Papaver orientalis and Trollius Orange Globe around a small Lily pool, which was margined with moss and rushes. (Silver Banksian Medal.)

Mr. JAMES BOX, Haywards Heath, Sussex, filled a corner of the hall with many desirable border flowers, arranged with taste. (Silver-gilt Banksian Medal.)

Messrs. JOHN WATERER, SONS AND CRISP, Liverpool Street Arcade, London, included several desirable Irises in an attractive exhibit of hardy herbaceous flowers, and in another part



FIG. 186.—BIGNONIA TWEEDIANA: FLOWERS YELLOW. (See p. 400.)

of the hall showed Rhododendrons. (Silver Flora Medal.)

Messrs. J. VEITCH AND SONS, Chelsea, displayed Eremuri, Iris germanica hybrids, Polygonum alpinum, Primula capitata and Thalictrum aquilegifolium roseum in a collection of hardy flowers.

Mr. G. REUTHE, Keston, Kent, exhibited Rhododendrons and other flowering shrubs and Alpines. (Bronze Banksian Medal.)

Messrs. GEO. JACKMAN AND SON, Woking, contributed many good Irises, chiefly germanica varieties, Lupins, Delphiniums, and other hardy flowers.

Messrs. B. LADHAMS, LTD., Southampton, exhibited a large number of Erigeron B. Ladhams, which received an Award of Merit.

Messrs. W. WELLS AND CO., Merstham, Surrey, showed Antirrhinum Nelrose and Carnation Cecilia.

Messrs. J. CHEAL AND SONS, Crawley, exhibited sprays of hardy shrubs. The vases of

Golden Elm (Ulmus Dampieri aurea) and of Kalmia rubra were very effective.

Mr. C. W. CHANTLER, St. Mary Cray, Kent, showed Irises and hardy flowering shrubs in great variety.

Messrs. T. S. WARE, LTD., Feltham, Middlesex, displayed border flowers, chiefly of Irises and Pyrethrums. (Bronze Banksian Medal.)

Messrs. CARTER PAGE AND CO., London Wall, London, anticipated the season and showed Dahlia blooms in variety. (Bronze Banksian Medal.)

Messrs. G. AND A. CLARK, Dover, arranged an attractive group of hardy border flowers on a floor space. (Bronze Banksian Medal.)

Mr. AMOS PERRY, Enfield, showed a great many varieties of Papaver orientalis, of which those with bright red flowers were exceedingly attractive. (Silver-gilt Banksian Medal.)

Mr. G. W. MILLER, Wisbech, included many herbaceous Pyrethrums in his group of hardy flowers.

Mr. C. ELLIOTT, Stevenage, Herts, and the Misses HOPKINS, Shepperton-on-Thames, exhibited rockery plants; and Messrs. GILBERT AND SON, Dyke, Lincolnshire, showed St. Brigid Anemones

Orchid Committee.

Present: J. Gurney-Fowler, Esq. (in the chair), and Messrs. Jas. O'Brien (hon. secretary), Gurney Wilson, De B. Crawshay, W. Bolton, R. A. Rolfe, F. Sander, J. Wilson Potter, T. Armstrong, A. McBean, W. Cobb, J. Charlesworth, W. H. Hatcher, J. E. Skill, C. H. Curtis, A. Dye, E. H. Davidson, S. W. Flory, W. Bolton, Sir Harry J. Veitch and Sir Jeremiah Colman, Bart.

There was a good show of Orchids in the various groups staged, but although about a dozen novelties were entered to go before the Committee, no awards were made.

Messrs. CHARLESWORTH AND CO., Haywards Heath, staged a group composed entirely of well-grown specimens of new or rare plants, the most beautiful of which were the varieties of their new Miltonia Charlesworthii and of their handsome forms of home-raised M. vexillaria named Lyoth. Some fine Odontoglossums, Odontiodas, Cattleya Mossiae Wageneri King Edward VII. (one of the finest white forms of Mossiae), good Laelio-Cattleyas, Sophro-Laelio-Cattleya Niobe and a fine example of the rose-pink Dendrobium acuminatum were also included. (Silver Flora Medal.)

Messrs. SANDER AND SONS, St. Albans, staged a group, rich in new species and finely-flowered hybrids. The centre was of Laelio-Cattleya Fascinator, of excellent shape and tint, and varying much in the colour of the labellums. Good L.-C. Canhamiana and L.-C. Hyeana; a very nice lot of Odontoglossums, Odontiodas, etc., including the finely-coloured O. militaris; a selection of Cattleya Mossiae, Bulbophyllum virescens and other Bulbophyllums, including a very singular, undescribed species from New Guinea, were also noted. Among new and specially interesting things were the pretty red Adioda St. Fnsien, Laelio-Cattleya Sylph (L.-C. Hippolyta x C. Mossiae) of C. Mossiae shape, but of nankeen-yellow colour tinged with rose, and rose-purple lip; L.-C. Dryad (L.-C. Martinetii x C. Schröderae), pale buff flushed with rose and with purple-veined lip. The handsome Cypripedium Roger Sander and other Cypripediums were also shown. (Silver Flora Medal.)

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), staged a very interesting group in which were many species now becoming rare. Anguloa Ruckeri, A. Clowesii, the elegant Oncidium pulchellum and O. phymatocilium, various Masdevallias, among which were two specimens of M. muscosa, with labellums which spring upward on being touched; a good lot of Miltonia vexillaria and M. Bleuana, Chondrorhyncha Chestertonii and Bulbophyllums. The Laelio-Cattleyas and Cattleyas included several pretty things raised at Rosslyn; and a good selection of varieties of Odontoglossum crispum, O. Wiganianum, O. percutum, Odontiodas, etc., were also noted. Cymbidium Sappho (Lowianum Pitt's var. x P'Ansonii), raised at Rosslyn, adheres closely to P'Ansonii. (Silver Flora Medal.)

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, were awarded a Silver Flora Medal for a group in which were examples of their new blotched *Odontoglossum eximillius* and *ardentillus* and other fine hybrids. *O. Leonidas* was a beautiful yellow flower with chestnut-brown blotches and of fine size. A selection of *Miltonias*, *Brasso-Cattleyas*, *Brasso-Laelias*, white-petalled *Cattleya Mendelii*, and pretty *Laelio-Cattleyas* were also included, together with brightly-coloured *Odontiodas*, etc.

Messrs. STUART LOW AND Co., Jarvis Brook, Sussex, had an effective group of fine forms of *Cattleya Mossiae* and *C. Mendelii*, including several white varieties. *C. Mendelii* Fairy Queen was a pretty white-petalled form, and one had an effective purple band on the petals. Their

novelty raised by the firm was *Cattleya Sibyl* (*iridescens* × *aurea*), of the form of *C. Iris*, with fragrant, bronzy-yellow sepals and petals tinged with rose and bright ruby-red lip with yellow disc. (Silver Banksian Medal.)

Messrs. J. AND A. McBEAN, Cooksbridge, had an effective group of finely-grown *Cattleyas*, including the large *C. Mossiae* St. Bernard and the white *C. M. Wageneri* with eight flowers. *Odontoglossum crispum xanthotes* McBean's variety was pure white with some chrome-yellow spots and of model form; *Brasso-Cattleya Irene* (*Mossiae* × *Digbyano-Warneri*) was a fine rose flower; *Laelio-Cattleya Helius*, yellow with a red front to the lip, and some brightly-coloured *Odontiodas* were noted. (Silver Banksian Medal.)

Messrs. FLORY AND BLACK, Slough, staged a

G. W. BIRD, Esq., Manor House, West Drayton (gr. Mr. Redden), showed *Odontioda Phyllis* (*Odm. Lambeauanum* × *Oda. Bradshawiae*), cream-coloured with red markings, and with rose lip having a few red blotches; and *Odontoglossum ardentissimum* Manor House variety, a large, darkly-blotched flower.

Col. S. R. CLARKE, C.B., Borde Hill, Cuckfield, showed *Odontoglossum Ethelreda* Borde Hill variety (*trumphans* × *Edwardii*), with blackish-purple flowers.

Sir MONTAGU TURNER, Bedford, Havering-Essex (gr. Mr. A. Humphrey), sent a light form of *Cattleya Mendelii*.

W. P. BURKINSHAW, Esq., Hessle, Hull, sent *Brasso-Cattleya Rex* (*C. Rex* × *B. Digbyana*), with flowers larger than *B. Digbyana* and with a yellowish-green tint, but closely adhering to *B. Digbyana*.

Fruit and Vegetable Committee.

Present: A. H. Pearson, Esq., in the chair; Messrs. Jos. Cheal, W. Bates, J. Willard, E. Beckett, Horace J. Wright, A. Bullock, Owen Thomas, and Wm. Poupart.

The only exhibit before the committee was a collection of Melons shown by C. ERIC HAMBRO, Esq., Pickhurst Mead, Kent (gr. M. C. Davis). The fruits, which were of the variety *Sedgewick Gem*, were of large size, scarlet flesh, and of rich flavour. (Silver Banksian Medal.)

IMPERIAL HORTICULTURAL SOCIETY OF ST. PETERSBURG.

INTERNATIONAL EXHIBITION.

THIS Society, which was founded in 1862, is distinguished by the patronage of his Imperial Majesty the Czar of Russia. The present International Exhibition is the fourth which has been held since the establishment of the Society. It was intended to hold it last year, to celebrate the Jubilee of the Society, but the fact that the Ghent Quinquennial Exhibition occurred in 1914 led to its postponement.

The permanent exhibition building in the Touride Garden was presented to the Society by the Czar. On either side of the entrance hall were committee rooms, and above it was a restaurant. The main central hall was roofed with glass. Although not yet completed, it was sufficiently finished for the present Exhibition. At the extreme end an annexe has been erected, which will probably be covered with glass. The building, when complete, will be connected with a hall in which will be shown the exhibits from the Imperial schools of horticulture, agriculture, and arboriculture. From one end of the main hall good views of the gardens were to be obtained, and the design, which suggested French influence, was very attractive. There were various smaller halls, many erected by individual exhibitors.

It may be well to preface remarks on the exhibits by the observation that the backwardness of the season, and the exceptional severity of the past winter, have had a serious effect on the outdoor plants. Dutch growers planted about a million bulbs, chiefly *Hyacinths* and *Tulips*, but very few of the former were visible, and thousands of the latter failed. Those plants which have struggled into growth were much below standard and small in flower. Some attempt had been made to cope with this unfortunate situation by planting *Rhododendrons*, which looked at first sight like the common *R. ponticum*, but which closer examination proved to be *R. catawbiense floribunda*. Most British gardeners would probably call them merely good *ponticum* seedlings; but they certainly have done good work in filling the gap left by the bulbs. It was remarkable that everywhere the ground was brown earth or yellowish sand and that grass was almost absent.

The unfinished brick walls of the main hall were effectively screened by scenic paintings, and here and there were grouped magnificent Palms from the Imperial Gardens. One of these plants was a splendid specimen of *Caryota Rumphiana* about 30 feet high, and another a fine example of *Ceroxydon niveum*, 25 feet in height, with eight perfect leaves. The centre of



FIG. 187.—CLEMATIS SIBBOLDII.
(See Floral Committee's Awards, p. 402.)

fine type of *Dendrobium formosum giganteum*, *Phalaenopsis Rimestadiana*, *Renanthera Im-schootiana*, *Miltonia vexillaria* and *Oncidium varicosum* were all effectively displayed. The best novelty in the group was *Laelio-Cattleya Domos* (*L.-C. Dominiana* × *C. Mossiae*), a very large and handsome deep-rose flower with broad claret-purple lip with yellow lines from the base. (Silver Flora Medal.)

Messrs. HASSALL AND CO., Southgate, had a pretty group with *Laelio-Cattleya Fascinator* and other *Laelio-Cattleyas* in the centre, the ends being of the large-flowered type of *Miltonia vexillaria* with some hybrid *Miltonias* and *Odontoglossums*. Among white-petalled *Cattleyas*, *C. Mossiae alba* *Empress Eugenie* was a very fine flower, and *C. M. Hardyana* one of the best of the *Reineckiana* class. A pretty

selection of good hybrids, one of the novelties being *Brasso-Laelio-Cattleya Albatross* (*B.-L. Digbyano-purpurata* × *C. Mossiae*), a broad white flower with a pink tint on the fringe of the lip; *Laelio-Cattleya Aphrodite*, with white sepals and petals, and other *Laelio-Cattleyas*; two *Cattleya Mossiae* *Wageneri*, several *C. M. Reineckiana* and various *Miltonias*.

R. G. THWAITES, Esq., Chessington, Streatham, showed a selection of hybrids including *Odontiodas* and *Laelio-Cattleyas*, together with three home-raised specimens of *Cattleya Mossiae alba*.

Baron BRUNO SCHRODER, The Dell, Englefield Green (gr. Mr. J. E. Shill), showed *Odontoglossum crispum* *The Dell Sunrise*, a remarkable white flower of very thick substance, the petals having a narrow red margin.

The hall was occupied with a very creditable display of Roses in pots, sent by a local nurseryman, Mr. FREUNDLICH, who has one of the largest nurseries in this part of Russia. At the extreme end of this central block an excellent group of Ferns afforded a good setting to masses of Lilacs and Hydrangeas (here known as "Hortensias"). A group of fine Palms from AUG. TROEFFART, Budebrügge, occupied one end, the best plants being *Brahea glauca*, *Cocos Bonnetii*, *Kentia Forsteriana robusta*, and *Phoenix Roebelenii*. DE SMET FRERES also showed several large plants of *Areca Baueri*.

In the left hall on the ground floor a group of Cycads was well arranged, comprising well-grown specimens of *Encephalartos Lehmanni*, *Cycas*, *Dioon edule*, *Encephalartos Hildebrandii*, *E. villosus*, *E. Altensteinii*, *Macrozamia spiralis*, *Ceratozamia mexicana*, *C. robusta*, *C. longifolia*, and others. These fine plants were sent from the Imperial Botanic Gardens. An excellent group of Bromeliads was also shown in this hall, and a bank of good specimens of *Phoenix Roebelenii*. On the floor above there was a mixed group of smaller plants, including *Hippeastrums*. Some fine groups of cut Carnations were shown by Mr. C. ENGELMANN, of Saffron Walden, including about fifty varieties. On the central table there was also an exhibit of Carnations, from a German firm.

In the corresponding hall on the right-hand side of the entrance, the French growers made an excellent display. There were Apples, including *Calville Blanc*, *Grand Alexandre*, and *Reinette Blanche du Canada*, and quantities of Pears of large size and good quality. Boxes of Cherries and preserved fruits also made a good show. These exhibits were chiefly from the *Société Régionale d'Horticulture Montreuil de Bois*. MESSRS. VILMORIN, ANDRIEUX AND Co. showed their strains of florist's flowers, and MESSRS. HENRI VACHEROT AND LECOMTE Orchids. M. GEORGES TRUFFAUT, of Versailles, showed a most interesting exhibit of a scientific nature. The educational side of the French section was generally admirable; and the floral designs were beautifully executed.

The central part of the annexe was filled with huge vases and baskets of Roses and Lilacs. Around the side tables were vegetables in great variety, shown in an attractive and essentially un-British style. Cucumbers were present in large quantities, green, yellow and white; also excellent Cauliflowers, Beetroots, Carrots old and young, and Potatos. Onions were well represented, and Cabbages red and white, but no green ones. Tomatos were numerous and of good quality, and it was interesting to note exhibits of Fennel grown as a culinary vegetable.

Outside the annexe were beds of Show and Zonal Pelargoniums. *Lilium longiflorum* made a brave show, and Hydrangeas provided an attractive piece of colour. There were also beds of *Cocos Bonnetii*, with *Araucaria excelsa* as dot plants; but the prettiest and most graceful exhibit was a bed of common Foxgloves in bloom. They were grown in pots, and made a charming display in the grounds. On the right side of the main path leading from the terrace was an arrangement of a mixed character. A pond had been constructed with edges of cement. There were several small islands, and on the sloping banks a carpet bed, representing a coat of arms, had been made. Above this, further back, was a quantity of virgin cork, furnished with Ivy, Club Moss—*Lycopodium clavatum*—and Hydrangeas, with Ferns, Agaves, and other plants—apparently, anything that came handy. In the centre a small cascade had been arranged, which flowed into the pond.

Throughout the grounds there were numbers of beds of *Lilium longiflorum*, Hydrangeas (in great numbers), *Cinerarias*, *Rhodanthes*, *Spiraea* (*Astilbe*), *Violas* and fancy Pansies, these latter being utilised to fill up spaces where the Tulips had failed. The only attempt at rock gardening consisted of an arrangement in front of the Hall of Agriculture and Horticulture. Groups of Conifers helped to furnish the grounds, and were effective; there were apparently no novelties among them, but some of the specimens were good. Unfortunately, many showed traces of the ill effects of packing and transport. In some cases the young growths were bleached quite white. Trained fruit trees—chiefly from France—were much in evidence, and were uniformly excellent. An interesting outdoor exhibit came

from the Botanical and Experimental Gardens of Stockholm. The plants comprised in this group looked at first sight like small-leaved Laurels, but proved on examination to be Tea plants (*Thea*), some seven or eight varieties of which were represented. The plants are grown out-of-doors in the summer in Sweden. Mixed beds of greenhouse plants, a bed of several species of Citrus, some of them in flower, a bed of Bamboos, and another of fruit trees, were interesting and ornamental.

In a central bed were a number of Agaves, *Opuntias*, and *Yuccas*. Near this exhibit were the sundries; for example, glass-houses, boilers, and various gardening appliances. A curious exhibit consisted of a mound of turf about 10 feet high with sloping front, on which was formed a carpet bed, the design being a portrait of the first of the Romanoffs. It was really wonderfully well done, though "not gardening."

We come now to the Orchid section, one of the most interesting features of the Exhibition. In one house was a large exhibit from the firm of OTTO BEYRODT, of Berlin, excellent in quality and variety. In another part of the same house LOUIS VAN HOUTTE, of Ghent, exhibited stove plants and *Hippeastrums*. In another house M. PAUWELS showed a fine collection of Orchids, in which *Cymbidium Pauwelsii* made a conspicuous show. MESSRS. LAMBEAU and PEETERS also exhibited in this house, and the merit and value of their plants well sustained their high reputation. M. LAMBEAU showed many fine forms of *Odontoglossum*, among them a distinct, darkly blotched form which he has named *H. F. Eilers*; it bears flowers $4\frac{1}{2}$ inches in diameter. M. PEETERS also showed good, unnamed *Odontoglossums*. He included *Cattleya Julietta* in his exhibit, a rarity which is coveted by many Orchidists; and M. LAMBEAU had *Odontioda Beauté de St. Petersburg*, also a favourite. In this latter exhibitor's collection was to be found *Cochlidia Noezliana* var. *Chanticleer*—a brilliant flower—and *Miltonia vexillaria* in many good forms, the best being *Memoria G. D. Owen*. Many good *Cattleyas* and bigeneric crosses were shown, but the heat told badly on the flowers. The long journey and the delay consequent on Customs formalities are a severe test for any plant, but the Orchids came through the ordeal wonderfully well considering all things.

Mention must be made of the hall built and furnished by MESSRS. EILER. It formed a tasteful and charming feature in the Exhibition. A pavilion had been erected for the accommodation of exhibits from the Russian provincial schools. The group from Warsaw was of exceptional interest and variety. In the outer hall an interesting exhibit was shown by the Russian Government of the processes by which the drifting of sand over the railway tracks was arrested. Models of the railway tracks were shown, with sand dunes on either side; and the plants used for binding the sand were shown in dried specimens, with seeds, accompanied by classified tables and full information.

The interest taken by English nurserymen in the Exhibition is not remarkable, only two representatives being here, while there are very many Germans, Danes, Swedes, Dutch, French, Belgians, and even Italians. This is a pity, as the Exhibition is really a good one, and reflects very great credit on all those responsible for its management. *James Whilton*.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MAY 14.—*Committee present*:—Rev. J. Crombleholme (in the chair), MESSRS. R. Ashworth, J. Bamber, J. Cypher, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, W. J. Morgan, C. Parker, W. Shackleton, H. Thorp, Z. A. Ward, G. Weatherby, and H. Arthur (secretary).

A. WARBURTON, Esq., Haslingden (gr. Mr. Dalgleish), was awarded a Silver-gilt Medal, and R. ASHWORTH, Esq., Newchurch (gr. Mr. Gilden), a Silver Medal for groups.

AWARDS.

FIRST-CLASS CERTIFICATE.

Miltonia vexillaria Memoria G. D. Owen, from R. ASHWORTH, Esq.

Odontoglossum Aeroplane × *Exquisitum*, and *O. Jasper "Ashlands"* var., both from R. ASHWORTH, Esq.

O. Prometheus "Merl Dene" var., from A. J. OAKSHOTT, Esq.

ANNUAL MEETING.

At the annual meeting held on the same date Mr. R. Ashworth was re-appointed president and hon. treasurer. The Rev. J. Crombleholme was re-appointed chairman, Mr. Z. A. Ward, vice-chairman, Mr. H. Thorp, hon. auditor, and Mr. H. Arthur, secretary. The committee was also elected.

The prizes were presented to the successful exhibitors as follows:—

The President's Cup was won by R. ASHWORTH, Esq., who presented same to the Society for competition during the coming season.

Mr. J. J. Bolton's Gold Medal, to A. WARBURTON, Esq.; Gardener's Prize to Mr. A. DALGLEISH; and Mr. Bolton's Silver Medal, to R. ASHWORTH, Esq.; Gardener's Prize to Mr. GILDEN.

The Botanic Society of Manchester's Gold Medal was awarded to R. ASHWORTH, Esq.

The *Objet d'Art* presented by Messrs. Charlesworth and Co., to WM. THOMPSON, Esq., and the Gardeners' Prize to Mr. J. HOWES.

The "Cypher" Gold Medal was awarded to R. ASHWORTH, Esq., the "Davidson" Silver Trophy to R. ASHWORTH, Esq.; Gardener's Prize to Mr. W. GILDEN.

"Evans" Gold Medal, to WM. THOMPSON, Esq.; Gardener's Prize to Mr. J. HOWES.

Messrs. Sander and Sons' Prizes were awarded as follows:—1st, Mr. A. DALGLEISH; 2nd, Mr. W. GILDEN; 3rd, Mr. J. HOWES.

The Society's Medals were awarded as follows:—Gold Medal, to Z. A. WARD, Esq.; Silver-Gilt Medal, to Colonel J. RUTHERFORD; Bronze Medal, to the Rev. J. CROMBLEHOLME; and Gold Medal (Small Amateur's), to H. ARTHUR, Esq.

BATH AND WEST OF ENGLAND AGRICULTURAL.

MAY 28—JUNE 2.—Under the able stewardship of the Rev. A. J. Boscawen, who was assisted this year by Mr. V. T. Hill, the horticultural section of this show has grown to be an exhibition of considerable importance. The special tent allotted to horticultural exhibits has for many years been well filled, and this year an enlargement about half as long again was also well furnished with a very creditable display. The date of the show did not clash with the Chelsea Show this year, as has been the case in previous seasons, and this fact enabled the horticultural trade to be represented more fully than usual.

Sir J. T. D. LLEWELYN, Bart., the President of the Society, exhibited *Rhododendrons* and *Primulas*.

MESSRS. JAMES HARRIS AND SON, Blackpill, Swansea, showed *Rhododendrons*, shrubs, and specimens of *Viburnum plicatum*.

MESSRS. GEO. COOLING AND SONS, Bath, exhibited *Roses* and *Clematis*.

MESSRS. R. VEITCH AND SON, Exeter, contributed a fine stand of half-hardy shrubs and New Zealand plants, besides *Roses*, *Carnations* and *Rhododendrons*. *Abelia trifolia* and *A. floribunda*, *Edwardia grandiflora*, and *Olearia insignis* were among the tender shrubs, whilst a variety of *Saxifraga Cotyledon* which originated in the Rev. A. T. Boscawen's garden was conspicuous amongst the Alpines.

MESSRS. WM. CUTBUSH AND SON, Highgate, displayed *Carnations* and climbing and Dwarf *Polyantha* *Roses* in good form.

MESSRS. WALLACE AND CO., Colchester, had a large exhibit, including German *Iris*, *Lupins*, *Aquilegias* and *Hemerocallis*, *Eremurus* and *Habranthus*.

MESSRS. PAUL AND SONS, Cheshunt, showed a fine exhibit of *Roses*.

MESSRS. GODFREY AND SON, Exmouth, exhibited a large bank of *Poppies* and *Pelargoniums*.

MESSRS. J. WATERER, SONS, AND CRISP, LTD., Bagshot, showed *Rhododendrons*, a plant of *Lady Cathcart* being particularly fine.

MESSRS. BLACKMORE AND LANGDON, Twetton Hill Nurseries, Bath, showed *Delphiniums*, par-

ticularly fine spikes of Statuaire Rnde, Capri, and Moerheimii.

Messrs. A. A. WALTERS AND SON, Bath, exhibited climbing and Dwarf Polyantha Roses.

Messrs. JARMAN, Chard, showed Centaureas.

MR. MAURICE PRICHARD, Christchurch, had a creditable exhibit of Alpines, including Malvastrum hypomandrarum, Mimulus radicans, Edrianthus pumiliorum and Stachys corsica.

Messrs. DOBBIE AND Co.'s exhibit of Sweet Peas was much admired, particularly Dobbie's Orange—a fine colour.

Messrs. W. TRESEDER, LTD., Cardiff, showed Pyrethrums and Dahlias.

Messrs. BIDE AND SONS, Farnham, showed Sweet Peas.

Mr. H. N. ELLISON, West Bromwich, showed Ferns and Cacti.

Messrs. REAMSBOTTOM AND Co., Geashill, Ireland, showed St. Brigid Anemones and other flowers.

Messrs. F. F. W. EVANS, Llanishen, near Cardiff, showed herbaceous and Alpine plants.

Messrs. BAKERS, Wolverhampton, had a group of Aquilegias, with Alpines in front.

Mr. J. ANSOLDO (amateur), Sunny Bank, Mumbles, near Swansea, showed an interesting exhibit of Primula amoena, P. pulverulenta, P. Cockburniana and hybrids.

EDINBURGH BOTANICAL.

MAY 14.—Among the specimens shown at the May meeting of this society was a shrub forwarded by Mr. BELL of "The Woll," Hawick. A fruiting specimen had been sent to the Royal Botanic Garden, Edinburgh, last autumn by Mr. W. B. BOYD, with the suggestion that it was probably a hybrid between the Black Currant and the Gooseberry. Comparison in the Royal Botanic Garden Herbarium was, on the whole, in favour of Mr. Boyd's suggestion, but, in the absence of flowers, no definite opinion was arrived at. However, a photograph of the plant was sent to Professor Janczewski, the recognised authority on Ribes, but owing to indisposition he was not able to give the matter full attention. He, however, inclined to the belief that it resembled certain of the species of North America rather than a hybrid between the Black Currant and the Gooseberry. This view had already been taken by Mr. Bennet Clark, a past President of the society, who dissented strongly from its being a hybrid, and considered it much more likely to be an exotic species established for many years near Hawick. In his belief, Ribes divaricatum from North-West America came very near to it.

Flowering specimens obtained this month both from Woll and from cuttings taken by Mr. Bennet Clark, and grown at his garden at Newmills, Balerno, match exactly specimens of R. divaricatum in the Royal Botanic Garden, Edinburgh, and the figure No. 1,359 of the plant in the Botanical Register of the year 1830. It seems then that the name given to it, Ribes wolleense, in a recent issue of the Kew Bulletin (1914, p. 49, with a plate of Mr. Boyd's photograph, where it is described as a new hybrid) will have to give place to the old specific name. After an interesting discussion, Mr. Boyd, who last year strongly favoured its being a hybrid, was understood to acquiesce in Mr. Bennet Clark's determination.

Among the other plants recently exhibited at the society meetings, the following from the Royal Botanic Garden are of special interest:—

Ribes Henryi, Franch.—Male plants of this species were in good flower in March.

Androsace Delavayi, Franch.—A pretty species forming dense cushions and bearing numerous pink and sweetly scented flowers just above the foliage.

Rhododendron Hanceanum, Henry.—A pale yellow-flowered Chinese species which is very floriferous in the young state.

Primula Inayati, Duthie.—A North-West Himalayan plant of the Nivalis section.

Pernettya furens, Klotzsch.—A hardy Chilean shrub suitable for the rockery.

The above were all in flower in March.

Rhododendron fastigiatum, Franch.—A dwarf plant of a few inches in height, with small foliage and bright purple flowers about half-an-inch in diameter.

Rhododendron lutescens, Franch.—A yellow-flowered species of shrub habit, with bronzy foliage, also from China.

Rhododendron Davidsonianum, Rehder and Wilson.

Rhododendron polylepis, Franch.

Roettlera Forrestii, Diels.—An interesting Chinese Gesnerad of neat habit, with hairy foliage and yellow flowers.

Primula redolens, Balf. fil.—A new species of the section Suffruticosae, closely allied to P. Forrestii, Balf. fil. This was raised at the Royal Botanic Garden, Edinburgh, from seed presented by Mr. A. K. Bulley, collected by F. Kingdon Ward on the borders of China and Tibet.

These were all in flower in April.

SOMERSET COUNTY AGRICULTURAL.

MAY 13, 14, 15.—The annual exhibition of this Agricultural Association, which was held at Weston-super-Mare on the foregoing dates, included a section for horticulture, and the floral exhibits were the best in the history of the society. In the class for a group of miscellaneous plants, arranged in a space measuring 75 feet, the 1st prize was won by Messrs. Brooks, of Weston-super-Mare; 2nd, Messrs. GEORGE COOLING AND SONS, Bath. Mr. C. J. ELLIS, Weston-super-Mare, exhibited the best rock garden, and he also excelled in the class for a collection of Carnations. Trade exhibits were shown by Messrs. R. VEITCH AND SON, Exeter; Mr. W. J. GODFREY, Exmouth; Mr. C. J. ELLIS, Weston-super-Mare; Mr. A. F. DUTTON, Ivor; Messrs. G. COOLING AND SONS, Bath; and Messrs. YOUNG AND Co., Cheltenham.

Obituary.

JAMES UNDERWOOD.—We regret to announce the death of Mr. James Underwood on May 25, aged 64 years. Mr. Underwood was head gardener at Enderby Hall, Leicestershire, the residence of the late Captain Drummond. Prior thereto he was gardener at Delapre Abhey, Northampton, and while in that locality was a most successful exhibitor at the flower shows. The funeral took place at Enderby on the 28th ult.

BRIAN P. CRITCHELL.—Mr. Brian P. Critchell, described in The American Florist as one of the oldest and best-known florists of Cincinnati and the surrounding section of Ohio, died at Avondale, U.S.A., on May 11, in his 72nd year. He was born near Liverpool, but removed to Rochester, N.Y., with his parents when four years old. For a period he was Superintendent of Parks at Cincinnati.

JAMES F. SLIMON.—The American Florist also records the death of Mr. James F. Slimon, a native of Scotland, who for more than twenty years was a well-known member of the seed trade of New York.

JULIUS WHITE.—The death on May 10 of Mr. Julius White is recorded in The Florists' Exchange of America. He was born in Somerset, England, in 1850, and settled in America when quite young, learning the trade of a carpenter. Later in life he established a florist's business, which proved a successful undertaking.

ENQUIRY.

CAN any reader inform me if Phlox Van Houttei is still in cultivation? It was a favourite garden plant fifty years ago, was very pretty, quite hardy, but not long-lived. The plant is figured in Bot. Reg. XXIX. 5. E.

SCHEDULES RECEIVED.

Tunbridge Wells and South-Eastern Counties Agricultural Society.—Annual show, including horticultural section, will be held on July 22 and 23, 1914. Secretary, T. E. Collins, 73, High Street, Tunbridge Wells.

Sherborne Floral Fete, to be held on Thursday, June 25, in the Old Castle Grounds, Sherborne. Secretary, Mr. G. M. Ingram, The Abbey Close, Sherborne.

Saltire, Shipley and District Rose Society's twelfth annual exhibition, to be held in Saltire Park, on July 14 and 15.

MARKETS.

COVENT GARDEN, June 5.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Arums (Richardias), per doz.	2 6 3 0	Marguerites, per dozen bunches	1 6 2 0
Carnations, per dozen blooms, best American varieties	1 3 2 0	Mignonette, per dozen bunches	3 0 4 0
— smaller, per doz. bunches	12 0 15 0	Orchids, per doz.:	
— Carola (crimson), extra large	4 0 4 6	— Cattleya	12 0 15 0
— Malmaison, per doz. blooms:		— Odontoglossum crispum	3 0 4 0
— pink	0 0 10 0	Paeonies, per dozen bun. of 6 blooms in a bunch	5 0 10 0
Cornflower, English, per doz. bunches	1 3 1 6	Pancreatum, per dozen blooms	2 0 2 6
Eucharis, per doz.	2 0 2 6	Pelargoniums, per doz. bunches,	
Forget-Me-Not, per dozen bunches	2 0 3 0	double scarlet	6 0 8 0
Gardenias, per box of 15 and 18 blooms	2 6 5 0	— white, per doz. bunches	6 0 8 0
Gladiolus, Akermanii, per doz. bunches	6 0 8 0	Pinks, White, per doz. bunches	3 0 4 0
— Blushing Bride, per doz. bunches	4 0 6 0	Pyrethrum, white, per doz. bun.	2 0 2 6
— Fairy Queen, per doz. bunches	10 0 12 0	— single, coloured	2 0 2 6
— Ne Plus Ultra, per doz. spikes	1 0 1 3	Roses: per dozen blooms, Bridesmaid	1 0 1 6
— Peach Blossom, per doz. bunches	6 0 8 0	— Frau Karl Druschki, per doz. blooms	1 6 2 6
— The Bride	6 0 10 0	— Joseph Lowe	2 0 3 0
Gypsophila, pink, per doz. bunches	5 0 6 0	— Kaiserin Augusta Victoria	1 3 2 0
— white, large bunches, each	1 0 1 3	— Lady Hillingdon	1 0 1 6
Iceland Poppies, p. doz. bunches	1 6 2 0	— Liberty	1 6 2 6
Iris, Spanish, per doz. bunches	6 0 8 0	— Madam A. Chatenay	1 0 2 0
Lilium auratum, per bunch	— —	— My Maryland	1 0 1 6
— longiflorum, per doz. long	1 9 2 0	— Niphetos	1 3 1 6
— short	1 6 1 9	— Richmond	1 3 2 0
— lancifolium album, long	— —	— Sunburst	1 0 2 0
— short	— —	— Sunrise	1 0 1 6
— rubrum, per doz. long	2 6 3 0	— W. A. Richardson	— —
— short	1 0 1 3	— White Crawford	1 6 2 0
Lily-of-the-Valley, per dozen bunches:		— Yellow Souvenir	1 0 1 6
— extra special	12 0 15 0	Spiraea, per doz. bunches	5 0 6 0
— special	9 0 10 0	Statice, mauve, per doz. bunches	3 0 4 0
— ordinary	8 0 9 0	Stephanotis, per 72 pips	1 6 2 0
		Stocks, English, white, per doz. bunches	4 0 6 0
		Sweet Peas, white and coloured, per doz. bun.	3 0 10 0

Cut Foliage, &c.: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Adiantum Fern (Maidenhair), best, per doz. bunches	3 0 4 0	Croton foliage, doz. bunches	12 0 15 0
Agrostis (Fairy Grass), per doz. bunches	2 0 4 0	Cycas leaves, per doz.	2 0 9 0
Asparagus plumosus, long trails, per half-dozen	1 6 2 0	Eulalia japonica, per bunch	1 0 1 6
— medium, doz. bunches	12 0 18 0	Lichen Moss, per dozen boxes	9 0 10 0
— Sprengeri	6 0 12 0	Moss, gross bunches	6 0 —
Carnation foliage, doz. bunches	3 0 5 0	Myrtle, doz. bunches	— —
		— English, small-leaved	6 0 —
		— French	1 3 —
		Smilax, per bunch of 6 trails	1 0 1 3

REMARKS.—Last Friday and Saturday were the busiest days in the flower market since Easter. White and scarlet flowers were mostly in demand and prices rose considerably on the Friday. Scarlet Carnations advanced in value from 2s. to 3s. before the close of the market, whilst the stocks of best quality scarlet Pelargoniums (Geranium) were all bought immediately the market opened. White Carnations, double white Narcissus, white Pyrethrum, white Paeonies and Lilium Harrisii were other subjects that met with a ready sale. Prices continued firm until the close of the market on Saturday. The salesmen found no difficulty in clearing their stocks of single coloured Pyrethrum and all Irises. High prices were realised for white Gladiolus The Bride, and the coloured varieties Ne Plus Ultra, Brilliant and Akermanii of a salmon colour. Double white Narcissus is now practically finished, the supplies coming from Scotland. Pyrethrums appear to be more plentiful than ever. Blue Cornflower, Iceland Poppies and Sweet Peas are being sent in greater quantities, and prices for these flowers are much lower. A few boxes of white Pinks (Mrs. Sinkin) are now on the market. The Rose trade is very

quiet and there is nothing exceptional in the quality of those offered for sale. Blooms of the varieties Liberty and Frau Karl Druschki with long stalks are the most valuable. Lily-of-the-Valley is not so plentiful as hitherto; spikes grown out-of-doors do not find a ready sale, possibly on account of their stems being short.

Plants in Pots, &c.: Average Wholesale Prices.

s.d. a.d.		s.d. a.d.	
Aralia Sieboldii, dozen ..	6 0-7 0	Heliotropes, 48's per dozen ..	6 0-7 0
Araucaria excelsa, per dozen ..	18 0-21 0	Hydrangeas, Pink, per doz. 48's ..	10 0-18 0
Asparagus plumosus nanus, per dozen ..	10 0-12 0	— White ..	12 0-15 0
— Sprengeri ..	6 0-8 0	— Blue ..	18 0-36 0
Aspidistra, per doz., green ..	18 0-30 0	Kentia Belmoreana, per dozen ..	5 0-8 0
— variegated ..	30 0-60 0	— Forsteriana, 60's, per dozen ..	4 0-8 0
Cacti, various, per tray of 15's ..	4 0 —	— larger, per dozen ..	18 0-36 0
— tray of 12's ..	5 0 —	Latania borbonica, per dozen ..	12 0-30 0
Cocos Weddelliana, per dozen, 60's ..	6 0-12 0	Lilium longiflorum, per dozen ..	18 0-24 0
— larger, each ..	2 6-10 6	Lily-of-the-Valley 18 0-21 0	
Crassulas, 48's, per doz. ..	15 0-18 0	— 48's, per dozen ..	21 0-30 0
Croton, per dozen ..	18 0-30 0	Marguerites, in 48's, per doz., white ..	6 0-8 0
Dracena, green, per dozen ..	10 0-12 0	Pandanus Veitchii, per dozen ..	36 0-48 0
Erica candidissima 12 0-15 0		Pelargoniums, 48's, per dozen ..	10 0-12 0
— Cavendishii ..	21 0-24 0	— Zonal, 48's, per doz. ..	5 0-6 0
— Magnifica, 48's 15 0-18 0		— Ivyleaf, 48's ..	6 0-9 0
Ferns, in thumbs, per 100 ..	8 0-12 0	Phoenix rupicola, each ..	2 6-21 0
— in small and large 60's ..	12 0-20 0	Rodanthe ..	5 0-6 0
— in 48's, per dozen ..	6 0-6 0	Spiraea japonica, per dozen pots ..	6 0-8 0
— choicer sorts, per dozen ..	8 0-12 0	Stocks, white, 48's per dozen ..	6 0-8 0
— in 32's, per doz. ..	10 0-18 0	— pink ..	6 0-8 0
Fuchsias, 48's, per dozen ..	7 0-9 0	— red ..	6 0-8 0
Geonoma gracilis 60's per dozen ..	6 0-8 0	Verbenas, Miss Willmott, 48's, per dozen ..	8 0-9 0

REMARKS.—Crassulas in white, pink and red varieties are the latest addition in this department. White Marguerites in 48 pots are seen in fine condition; there are also excellent plants of the double variety, Mrs. F. Sanders. There is a good display of other flowering plants, and business continues very brisk.

Fruit: Average Wholesale Prices.

s.d. a.d.		s.d. a.d.	
Apples, Australian, per case ..	10 6-14 0	Lemons, Messina, per case ..	10 6-15 0
— cooking, case ..	8 6-10 6	— Naples, case ..	20 0-27 0
— Cox's, case ..	16 0-20 0	Melons, English ..	1 3-2 0
Apricots, box ..	1 2-1 4	— Canteloupe ..	4 0-10 0
— cases ..	3 9-4 6	Nectarines ..	6 0-24 0
Bananas, bunch: — Double Ex. ..	11 0-12 0	— Belgium ..	4 0-12 0
— Extra ..	9 6-11 0	Nuts:	
— Extra-medium ..	10 0 —	— Almonds, sack 64 0-65 0	
— Giant ..	14 0 —	— Barcelona, sack 44 0 —	
— Medium ..	6 6-7 6	— Brazils, cwt. ..	46 0-50 0
— Red, per ton ..	£23 —	— Chestnuts, Naples, per bag ..	16 6-20 0
— Jamaica, p. ton ..	£15 —	— Coco-nuts, per 100 ..	18 0-22 0
Cherries, French, box 1 9-3 0		Oranges:	
— per ½ sieve ..	7 0-8 0	— Californian Navel, per case ..	16 0-18 0
Dates, per cwt. case ..	20 0 —	— Denia, per case ..	18 6-40 0
Figs, English, p. doz. 1 6-6 0		— Mercia, p. case ..	12 0-18 0
— Kadrowi, cwt. ..	11 0 —	Peaches, English, per doz. ..	3 0-24 0
Gooseberries, ½ bushel ..	3 0-4 6	— Belgian, p. doz. ..	4 0-12 0
Grapes: — Australian, per box ..	21 0-25 0	Pears, Australian, tray ..	7 6-9 6
— Belgium Hambros, per lb. ..	1 3-2 0	Pineapples, St. Michael ..	2 6-3 0
— English, Hambros, per lb. ..	1 6-3 6	Raspberries, per lb. ..	2 6-3 0
— Muscat of Alexandria, lb. ..	3 0-8 0	Strawberries, Worthling, per lb. ..	1 0 —
Grape Fruit, case: — 96's ..	14 0-20 0	— First quality ..	1 0 —
— 80's ..		— Second quality ..	0 4-0 6
— 64's ..		— Southampton, per chip ..	2 0-3 0

REMARKS.—About 80,000 packages of Grapes, Apples and Pears have arrived during this week from Australia. Forced Strawberries are plentiful and of good quality. Large quantities of outdoor Strawberries, packed in punnets and skips, are received daily from Southampton, Devon and Cornwall, and good samples are now on sale. Larger consignments of Muscat of Alexandria and Black Hamburg Grapes of better colour than of late arrive daily. Continental Apricots and Cherries and English Gooseberries are very plentiful.—E. H. R., Covent Garden, June 5, 1914.

Old Potatoes.

s.d. s.d.		s.d. s.d.	
Blacklands ..	3 0-3 3	Lincoln—Evergood ..	3 3-3 9
Dunbar—Red soil ..	4 0-5 3	— Up-to-date ..	3 9-4 0
Lincoln—King Edward ..	4 0-4 6	Scotch—Grey soil ..	3 6-4 0

New Potatoes.

s.d. s.d.		s.d. s.d.	
Cherbourg, per cwt. ..	10 6-11 0	St. Malo ..	11 6-12 0
Jersey, per cwt. ..	11 6-12 0	Spanish, per cwt. ..	9 0-9 6
Lisbon, per case ..	4 3-4 9	Teneriffe ..	8 0-10 0

REMARKS.—Trade in old Potatoes is fair for the end of the season, and their prices are about the same as those of last week. New Potatoes are realising good prices for supplies are not large.—E. J. Newborn, Covent Garden and St. Pancras, June 5, 1914.

Vegetables: Average Wholesale Prices.

s.d. s.d.		s.d. s.d.	
Artichokes, Globe, per dozen ..	2 0-2 6	Lettuce—continued: — Cos, French, per doz. ..	1 6-2 0
— ground, ½ sieve 1 0-1 6		Marrows, per doz. ..	12 0-18 0
Asparagus: Cavillou ..	0 9-0 10	Mint, per doz. ..	3 6-4 0
— Sprue ..	0 4-0 6	Mushrooms, cultivated, per lb. ..	0 8-0 10
— Giant ..	4 0-8 0	— Broilers ..	0 4-0 6
— Victorian ..	1 9-2 0	— Buttons ..	0 9-1 0
— Toulouse ..	1 6-1 9	Mustard and Cress, per dozen punnets ..	0 10-1 0
— Lauris ..	1 0-1 6	Onions, picklers, per ½ bushel ..	3 0-4 0
— English bundle ..	1 0-8 0	— Spring, per doz. ..	2 6-3 6
Beans, Guernsey, lb. 0 7-0 8		— Egyptian, bags 14 6-15 0	
— Broad, French, per pad ..	2 0-2 6	— Lisbon, box ..	12 0-12 6
— wire, French, per pad ..	4 0-5 0	Parsley, per dozen bunches ..	2 6-3 0
Beetroot, per bushel ..	4 0-6 0	Peas, Guernsey, lb. — French, pad ..	3 0-3 6
Cabbages, English spring, per hamper ..	2 0-2 6	— English, ½ bus. ..	3 0-5 0
Carrots, (English), bags ..	4 0-6 6	Radishes, per doz. ..	1 6 —
— New, bunch, round ..	0 4-0 6	Rhubarb, Leeds, forced, dozen bundles ..	1 0-1 3
— long ..	0 5-0 6	— Natural, per tally ..	7 6-8 6
Cauliflowers, per hamper ..	2 6-5 0	Sage, per dozen ..	1 6-2 0
Chicory, per lb. ..	0 4 ½ —	Spinach, per bushel ..	1 6-2 0
Cucumbers, per flat ..	4 0-6 0	Spring Greens, bag ..	1 6-2 0
Endive, French, per dozen ..	2 0-3 0	Stachys tuberosa, lb. ..	0 4 —
— Batavian, per doz. ..	3 0-3 6	Swedes, bag ..	1 6-2 0
Garlic, per strike ..	2 6-3 0	Tomatoes, English, per doz. lbs. ..	4 0-4 6
Horseradish, 12 bundles ..	24 0 —	— Guernsey, per doz. lbs. ..	3 6-4 0
Leeks, per dozen ..	2 0-3 0	Thyme, per dozen bunches ..	2 0-6 0
Lettuce, Dutch, round, per crate ..	2 6 —	Turnips (French), long, dozen bunches ..	10 0-11 0
— English, Cos, per score ..	0 9-1 6	— round ..	7 0-8 0
— English, round, per score ..	1 0-1 3	Watercress, per doz. ..	0 4-0 6

REMARKS.—Asparagus, both English and Continental produce, is becoming scarce, whilst Peas and Broad Beans from Kent and the West of England are fairly plentiful. Of the commoner vegetables Cauliflower, Cabbage, Onions and Horseradish are scarce, but other kinds are a good supply.—E. H. R., Covent Garden, June 5, 1914.

GARDENING APPOINTMENTS.

- Mr. Edward Batchelor, late Foreman at Sunningdale Park, as Superintendent of the Gardens at the Hospital for the Insane, North Battleford, Saskatchewan, Canada. [Thanks for R.G.O.F. Box.—Eds.]
- Mr. E. W. Fuller, for more than 2 years Foreman in the Gardens at Henham Hall, Waogford, Suffolk, and previously at Heveningham Hall, Yoxford, Suffolk, and Paddockhurst, Crawley, Sussex, as Gardener to JAMES BUCHANAN, Esq., Lavington Park, Petworth, Sussex.
- Mr. Lewis Williams, for more than 4 years at Llanover Court, Abergavenoy, as Gardener to JOHN WOOD, Esq., M.P., Hengrave Hall, Bury St. Edmunds.
- Mr. T. P. Brown, for the past 7 years Gardener to Colonel H. F. BOWLES, Forty Hall, Enfield, as Gardener to Mrs. MONTGOMERY-PATERSON, Eastley House, Thorpe, Surrey.
- Mr. A. Williams, for the past 2½ years at Hill Crest, Evesham, as Gardener to the Misses WEISS, Chambers Court, near Tewkesbury.
- Mr. Joseph Smith, for the past 3 years Gardener for Mrs. LAIRD, at Delavor, Birkenhead, as Gardener to Sir THOMAS ROYDON, Bart., Frackhy Hall, Frackhy, Birkenhead, Cheshire.
- Mr. W. J. Harris, for 4 years Gardener to C. S. LOVELL, Esq., Bromley, as Gardener to G. H. NEAME, Esq., Godden Green, near Sevenoaks.
- Mr. Thos. E. Parker, previously Inside Foreman to the Right Hon. Lord DEVONPORT, K.G., Wittington Hall Gardens, Marlow, Buckinghamshire, and Peckforton Castle, Cheshire, as Gardener to W. HERBERT PHILIPPI, Esq., Craigmellau, Gilberton, Adelaide, South Australia. [Thanks for 2s. for R.G.O.F. box.]—Eds.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending May 30, is furnished from the Meteorological Office:—

REMARKS ON WIND AND WEATHER.

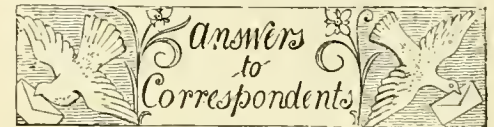
June 2, 1914. Early in the week, when a depression had passed eastward over these islands, the wind became northerly, with rain in many places, temperature decreased very decidedly, and a little later during clear skies at night and an anticyclonic distribution of pressure, frost was experienced over a large area, both in Great Britain and Ireland. In several localities the frost was sufficiently severe to cause much injury to vegetation. Later in the period the wind became more variable, and finally shifted to the south-west or west, while temperature became higher during the day and less low at night. Rain was experienced in the western and northern districts with the change of wind direction and the return to cyclonic from anticyclonic conditions, but the falls were mostly slight or moderate.

THE WEATHER IN WEST HERTS.

Another Dry Week, and the Third in Succession.—The past week was one of about average temperature. The one exception was the first night, when the exposed thermometer registered 6° of frost. The ground is at the present time at about an average temperature at 2 feet deep, and a degree warmer than is seasonable at 1 foot deep. Rain fell on four days, but to the total depth of less than a quarter of an inch. During the previous fortnight there had been virtually no rain at all. There has been no percolation of rain-water through either of the soil gauges for three weeks. The sun shone on an average for 4½ hours a day, which is ½ hours a day short of the usual duration at the same period of the year. Calms and light airs alone prevailed during the week, the direction of these light airs being principally some northerly point of the compass. The mean amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by 8 per cent.

THE SPRING.

Very Warm and Sunny, and Rather Wet.—This proved, with one exception, the warmest spring for eighteen years. March and April were both warm months, but in May the mean temperature was about seasonable. The total rainfall for the quarter exceeded the average by an inch, March being remarkably wet, whereas in both April and May the rainfall was deficient. This proved the sunniest spring with one exception experienced here for twenty-one years. March was a dull month, whereas April was exceptionally sunny, and May had about an average record of sunshine.—E. M., Berkhamsted, June 3, 1914.



ABNORMAL WALLFLOWERS: F. F. Taylor. The specimens of Wallflower are bearing abnormal flowers. The petals are suppressed and the stamens are represented only by rudiments, so that the flower contains nothing but yellow sepals and green pistil. This abnormality is not attributable to defective cultivation, but is an inherited character inherent in the strain. Recent experiments made by Mr. Chittenden at Wisley, and reported in *Gard. Chron.*, May 9, 1914, p. 322, show that this "virescence" behaves in breeding as a recessive character: that is to say, if the pistil of the abnormal flower be pollinated with pollen from a normal flower, no sign of the abnormality is to be observed in the offspring; but if the offspring be self-fertilised, it gives rise to plants of which three-fourths are normal and one-fourth abnormal. The interpretation of this result is as follows:—The abnormality is due to the absence from the germ-cells of a factor which, present in normal plants, causes the petals and stamens to develop. When a normal plant is fertilised, both its male and female germ-cells contain this petal-producing factor, and hence the embryo cell formed by the fusion of the germ-cells contains two doses of this factor, and presently, when the embryo has produced a flowering plant, the germ-cells contained in the flower have all this factor. But when an abnormal is mated with a normal flower, the embryo cell contains only one "dose" of the petal-producing factor. This dose is, however, sufficient to cause the flower to develop normally. But of the germ-cells of the apparently normal flowers produced by crossing normal and abnormal some contain the factor in question and some do not. When the male and female germ-cells mate there are the following possibilities:—Normal male germ-cell meets normal female germ-cell; normal male germ-cell meets abnormal female germ-cell; abnormal male germ-cell meets normal female germ-cell; abnormal male germ-cell meets abnormal female germ-cell; and in the last case the offspring will exhibit the deformity in question.

CAULIFLOWERS FAILING: J. K. Your plants are attacked by a worm known as *Fridericia bisetosa*. The ground on which the Cauliflowers were growing should be dressed with gas-lime; or quicklime will do if the former be not available.

CUCUMBER FRUITS NOT SETTING: W. H. J. Your Cucumbers are not diseased; the reason for their shrivelling is not apparent.

EMPLOYMENT AT KEW AND WISLEY: Learner. As you have not been trained as a gardener, and have very limited experience, you cannot obtain a post on the gardening staff in the

Royal Botanic Gardens, Kew, or at the Royal Horticultural Gardens, Wisley. The R.H.S. School of Horticulture admits a limited number of young men to study the principles and operations of horticulture in their gardens at Wisley, but applicants must be between sixteen and twenty-two years of age.

FLOWER BORDER FOR SPRING AND AUTUMN EFFECT: *A Dorset Gardener.* A border of the width you describe might very well include a few shrubs, such as *Buddleia variabilis* magnifica, the branches to be cut to the ground annually; *Spartium junceum*, *Fuchsia Riccartoni*, cut over annually this plant forms a lovely, straight-stemmed mass of bloom; *Romneya Coulteri*, which also should be cut down annually; *Common Rue*, *Lavender* in good-sized groups, *Caryopteris Mastacanthus*, cut over; *Spiraea Anthony Waterer*, pruned hard in March; and *Desmodium penduliflorum*, which should be pruned to the ground level. A few late-flowering *Clematis*, trained to poles, *Prunus Pissartii*, the shoots cut over in spring, *Rose Fellenberg* and tree *Paeonies* are also suitable. Of hardy herbaceous plants *Bocconia cordata*, *B. microphylla*, *Spiraea kamschatica*; *Hollyhocks*, especially single varieties allowed to grow into large, many-spiked clumps; *Phlox paniculata alba*, *Helianthemum autumnale* vars., *Helianthus* Miss Mellish, *Senecio tanguticus*, as beautiful in seed as in flower; *Echinops Ritro*, *Anthemis tinctoria* vars., cut over in summer; *Aconitum Wilsonii*, *Achillea Ptarmica* Perry's variety and *The Pearl*, *Asters Climax*, *W. Bowman*, *Jessie Croome*, *Acris* and *A. linoxyris*; *Anemone japonica Profusion* and *Géant des Blancs*; *Montbretias Vulcan*, *King Edmund*, *Hereward* and others; *Gladiolus* planted in May, *Fennels* (*Feniculum*), *Stachys latifolia*; *Lobelia* of the tall section, *Pyrethrum uliginosum*, *Linaria Pancicii*, *Eryngium Oliverianum*, *Antholyza paniculata*, *Anchusa Dropmore* and *Opal*; *Salvia patens*, *Nepeta Mussinii*, *Lilium tigrinum*, *L. Fortunei*, *L. speciosum* vars., *Colchicum spectabile album*, *Perpetual Carnations*, *Delphiniums* from seed, and *Lupinus polyphyllus*, also from seed the same spring; *Pentstemon Dav Dream*. To fill odd spots *Stock-flowered Larkspurs* and tall *Snapdragons* would be very useful. Some of the above-named plants are evergreen, and would need no substitute for spring, and a large number to yield their best and to meet the requirements of space for a spring bloom would need to be divided annually and replanted as small plants. It is, on the whole, the most satisfactory method of growing these well. For spring do not rely on *Belladonna Lilies* succeeding when mixed with another plant, for these make their growth in spring, and to flower satisfactorily must have plenty of space. Some seeds of a dwarf annual to cover the bare spaces after foliage dies is all you could wisely attempt. Your suggestion to plant *Crown Imperials* is a good one. You can scarcely use too many. They are glorious in clumps, the corms set one foot apart, and no succeeding plants harm nor are harmed by them. It is not essential to study the autumnal plants when arranging for an earlier display. You may introduce *Tulips*, splashes of *Daffodils*, *Blue-bells*, *Iris reticulata*, *Snowdrops*, *Crocuses*, *Scilla praecox*, *S. taurica* and *S. bifolia alba*; *Muscari botryoides album*, but not the type which becomes a weed; *Puschkinia scilloides*, *Chionodoxa* and *Fritillaries*, and there is no reason why advantage should not be taken of *Myosotis*. *Wallflowers* and such-like plants may be employed as temporary means of adding glow or charm to the border. You would find annual deep digging or trenching of infinite value, which would, of course, necessitate annual transplanting. Consolidate the soil by trampling when moderately dry, and if you keep poultry apply a few dressings of their manure to the surface in the course of the growing season. Superphosphate of lime is also of value, or any good commercial fertilisers, whilst mulches of soil applied after rain will afford a remarkable degree of benefit. After all, you must make up your mind to feel your own way, for everyone who succeeds has

that road to travel however well he or she may have been equipped at the start.

GARDENING EMPLOYMENT AT WISLEY.—In addition to the students there is a paid gardening staff at the R.H.S. Gardens, Wisley, as in any other establishment; but we cannot say at the present time whether there are vacancies. The journeyman gardeners receive a remuneration, and are provided with an up-to-date botany. Write to the superintendent, who will furnish you with all particulars.

INSECTS: *Mrs. T.* The grubs found in the Ivy are the larvae of a species of weevil. Weevils are beetles with a long, pointed snout, and the larvae are cream coloured or yellow, legless; they have strong jaws, and soon after hatching begin to inflict damage by voraciously feeding on the food immediately within their reach. The perfect insects feed at night and often escape detection by the gardener, but they may be trapped by slices of Carrot or Potato, and should be looked for at night by the aid of a lantern. There are several species, and they attack various species of plants; sometimes they attack the roots and at other times the leaves. The larvae of one species may frequently be found in pots containing Ferns and allied plants. In such cases it is difficult to apply any insecticide that will kill the grubs that is not also strong enough to injure the roots, but by turning the roots out of the pots it is often possible to discover the grubs and so rid the plants of the pest, provided traps are set for the perfect insects. Vaporite has also been found beneficial. The appearance of the grub and perfect insect is shown in the illustration (fig. 188).

MUSHROOMS: *F. W. K.* The failure may be due to many causes, but as far as one is able to

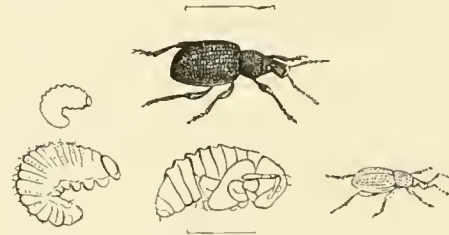


FIG. 188.—BLACK AND CLAY COLOURED WEEVILS.

judge from the specimen of the bed sent the material at some time or another has become too wet. The sample of spawn is excellent. Though *Mushrooms* ought to have appeared before now, it is just possible you may yet get a partial crop.

NAMES OF PLANTS: *Bucks.* 1, Send when in flower; 2, *Tilia platyphyllos asplenifolia*.—*P. C.*, *Leicester.* *Manna Ash* (*Fraxinus Ornus*).—*N. F. P.* *Syringa Josikaea*.—*A. T. H.* 1, *Cladrastis tinctoria*; 2, *Sophora japonica*; 3, *Pyrus nigra*; 4, *Cotoneaster Lindleyi*; 5, *Cotoneaster Henryana*; 6, *Rubus bambusarum*.—*L. S. G.* 1, *Aesculus carnea* var. *Briotii*; 2, *A. flava* var. *sanguinea*; 3, *A. flava*.—*H. V.* 1, *Tilia platyphyllos* var. *asplenifolia*; 2, *Pyrus Terminalis*; *Pyrus Aria* var. *majestica*; woolly beneath leaf, no number.—*A. R.* *Roses*: 1, *Persian Yellow Briar*; 2, *Yellow Banksian*.—*S. E. A. T.* 1, *Phlox Stellaria lilacina*; 2, *Helianthemum vulgare cupreum*; 3, *Alyssum saxatile*; 4, *Saxifraga trifurcata*; 5, *S. Cotyledon*; 6, *Sedum rupestre*.

NECTARINES EATEN: *J. P.* The skin of your Nectarines has been eaten by some insect, probably a cockroach. Place a few slices of Potato about before leaving the house, and come back after dark to look for the insects, which will be attracted by the smell of the Potato, and can be easily killed.

PEACH LEAVES INJURED: *Distressed.* There is no disease present in your Peaches, and from the appearance of the leaves it is evident that, as you suspect, they have been injured by the fumes from the paint. The leaves already damaged can be removed, and further injury prevented by providing plenty of ventilation.

PEARS INFESTED WITH MAGGOTS: *F. R. S.* The maggots in your Pears are those of the "Pear midge." The only thing you can do now is to prevent a repetition of the attack next year by plucking off and burning all infested fruits.

PROPAGATING PIT: *H. S.* Your propagating pit is much too deep. Raise the bed to within 18 inches of the roof-glass. Slabs placed side by side and resting on supports formed of bricks or other material would answer the purpose. Cover the slabs with clinkers or brick-rubble with sifted coal ashes on top to the thickness of 5 or 6 inches together to form a level, well-drained bed to stand the cutting-pots and cutting-boxes on. Raise the flow, and return 4-inch pipes to the level of the bed thus formed—that is, to rest on the bed one on either side close up to the walls. Have valves put in the flow, and return pipes, at the point where they enter the propagating pit to enable you to control and regulate the heat in the pipes. Cuttings inserted in the ordinary way in pots and shallow boxes filled with light mould and surfaced with sand, watered through a rose can, kept close, with a moist atmosphere and shaded from sunshine during the heat of the day, will soon root.

RESIDUE FROM A BURNT HAYRICK: *W. F. G.* The ash from a burnt hayrick contains potash, silica, soda, traces of lime and a few other elements. The manurial value is found principally in the potash, which would benefit nearly all crops, but we do not advise its use for lawns. As the potash is in the form of the oxide, it would be rather caustic in its action, and should therefore not be applied so as to come into direct contact with any part of the plant. If, however, you mix the ash with dry soil and apply it a little and often as a dressing, it will supply valuable plant food.

SCREEN FOR A CLIMBING ROSE: *Rosa.* As you do not wish to plant Ivy, and there are no other fast-growing evergreen climbers that would suit your purpose, you might plant a fast-growing *Wichuraiana Rose*, such as *Edmond Proust*. This variety is almost evergreen, and would not only serve to break the wind, but would also be a beautiful object in itself.

VINE DISEASED: *W. P.* Black rot is present in the specimen sent for examination. It is too late to apply any remedies this season, but next year you should spray when the leaves are half grown, with *Bordeaux mixture* at half strength. The operation should be repeated when the berries have set.

VINE SHOOTS AFFECTED: *J. M. T.* There is no disease present in your vines, and their condition must be due to some error in cultivation.—*Anxious.* See reply to *J. M. T.*

WASP'S NEST: *S. R. Foster.* "The very first commencement of a wasp's nest" you sent us was scarcely recognisable when the box was opened, owing to your having included a lump of the clay bank in which, we presume, it was found. Had you sent the nest alone packed lightly in cotton-wool it would not have arrived in such unrecognisable fragments. From the colour of the paper it appears to be a nest of the German wasp (preferably called the large common wasp), *Vespa germanica*; but we do not understand why there were two queens in the nest. Why did you not send them with it in accordance with our recommendation (p. 308, May 2) so that the matter could have been definitely settled? We incline to the belief that the two wasps were either the queen and a worker, or two workers, as it is practically impossible for there to be two queens in so small a nest so very early in the year. On the other hand, we have not yet seen any workers about, and queens are still flying; if any workers are about they must be the offspring of queens which started to nest before May 1.

Communications Received.—*W. E. T.*—*Tomtit*—*J. S.*—*C. M. V. S.*—*B. F.*—*T. S. H. D.*—*H. S. T.*—*H. & S.*—*The Scottish Smallholder—Steps to a Perfect Garden*—*R. W. & Co.*—*Arnold Arboretum, Harvard University*—*F. J. B.*—*L. C. M. Co. Ltd.*—*G. T.*—*Versaillea*—*Panama-Pacific International Exposition*—*H. E.*

THE
Gardeners' Chronicle

No. 1,433.—SATURDAY, JUNE 13, 1914.

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AMONG THE ROSES.

HERE is no doubt that Roses well repay the time spent on the many little attentions which those who are not Rosarians might be excused for describing as "pottering about over the Roses." It is indeed partly on this account that the Rose is pre-eminently an amateur's flower.

Time and again the National Rose Society has been asked to institute classes at their exhibitions confined to amateurs who cultivate their own Roses, but the answer has always been that experience has proved that such amateurs can successfully hold their own in competition with those who leave the cultivation of their plants to the gardener. Now this is no reflection upon the capacity or ability of the professional gardener, but merely means that he has many things under his care besides the Roses, and cannot spare the time for those numerous and perhaps rather leisurely little attentions that the amateur can bestow upon his plants.

Perhaps there is no time of the year when this special attention is more necessary than the end of May and the early part of June. The more burdensome and monotonous requirements of cultivation, such as regular hoeing and manure watering, the amateur may very likely leave to his professional assistant, but there are many that he will doubtless deal with himself.

First there is the regular search for caterpillars and the destruction of green fly whenever it makes its appearance. For the caterpillars and slug-worms each bush must be regularly and carefully examined, and where the foliage or buds have been attacked the devastator must be sought for and slain. Wherever there is a curled leaf the rule is simple, pinch first and examine afterwards; if the enemy was at home so much the better, if not he must be sought for on some other part of the shoot, or another near thereto, until he is found and destroyed. Green fly can also be attacked with the finger and thumb, but if there are more than a very few this soon becomes an irksome and messy business, and syringing is preferable.

For my own use in this connection I keep two kinds of sprayers, one holding a gallon or more, with a shoulder strap, for extensive operations on pillars and climbing Roses, and the other, with a much finer spray for more careful work, which holds rather less than four pints of liquid. The green fly will generally be first noticed on the buds and the tops of the young shoots, but if these alone are sprayed the pests will usually have come back again next day, for many have been hiding underneath the young leaves towards the top of the shoots, and have thus escaped the spraying fluid. The best way to go to work is, while holding the sprayer in one hand, to gather the top of the infested shoot in the other and gradually turn over each leaf as the spray is directed on the shoot, so that every part of the shoot and leaf is well searched with the spray. For this reason I prefer to use some non-poisonous spraying fluid, such as soft soap and quassia, Cyllin soft soap, or Abol, which, in the proportions in which they are mixed with water for use, will not injure the fingers.

While going over the shoots in this way it is a good plan to examine carefully the buds and disbud where it is desirable, bearing in mind that it is best not to do all the disbudding intended at once, but, rather, in several operations. Not only is this better for the bud finally selected, by concentrating the resources of the plant gradually upon it rather than overwhelming it with a sudden influx of sap, but it gives us greater scope for selection and something to fall back upon in case of accidental injury.

Another important matter that will receive careful and sometimes anxious consideration where fine flowers of exhibition varieties are wanted, will be the number of shoots to be left on each plant. Where the numbers of young growths are numerous any barren ones will be removed at once, whether the barrenness has arisen naturally or as the result of injury to the flower-bud. These barren shoots may receive more consideration where the number of young growths on the plant is not excessive, or where there is no special object in restricting the number of growths. If, as often happens, the barren shoot is the end one, and if there is any suspicion of injury or want of vigour in the old stem from which it springs, it is generally best to remove it,

cutting back the old stem to the next effective shoot. If there is no suspicion of want of vigour, as where the bud has been merely destroyed by a grub or other mechanical injury, it is often best to shorten it somewhat, cutting back to a leaf pointing outwards, at the axil of which a fresh growth will soon form.

A form of pest that has become troublesome of recent years is the leaf-curling saw fly. This fly is quite small; much slighter than the lesser house fly. It lays its eggs on the under edge of the leaf blade, and then works away at the top, causing the leaf to curl inwards towards the midrib; the egg is thus protected by the curled leaf, which slowly withers, and a little whitish grub hatches out in time. It is obviously desirable, therefore, to pick off and burn the affected leaves, which are of little further use to the plant, and it is also well to search for and destroy the flies themselves, which on a fine sunny morning can often be caught when at work on the leaves.

Besides the search for pests a watchful eye must be kept on the plants for the first indications of fungous disease. Where only a few leaves are attacked they may be picked off and burnt; the spot will be remembered, and an assiduous watch kept for any spread of the disease. If the disease is noticed on many leaves some appropriate form of spray should be at once applied to prevent any further spreading of the disease.

The removal of briar suckers alike from maiden and around established plants must always receive early attention. When these proceed from or near to the stock it is sufficient to pull them off, but where they proceed from an underground shoot and appear some distance from the parent plant, as often occurs in old standards, it is best to take a little extra trouble and pursue the underground runner to its source, and remove it cleanly. This, though it takes longer than just pulling them up, will save time later on.

Plants that have come badly through the winter, and newly planted Roses must also be carefully watched. A really good soaking of water to such a plant at this time of the year will often give just that additional encouragement that will make all the difference to the subsequent life of the plant. But here, too, judgment is required. A Rose that has suffered so severely that it is unlikely to survive long, or does not respond to the cold water cure, is best pulled up and got rid of forthwith to prevent it becoming a starting-point for disease, to which it is sure to fall a prey sooner or later. If the invalid is at all badly affected by canker fungus it is generally best to remove the plant at once, unless the whole of the fungus-affected part can be cut away, leaving good young shoots developing beneath it from sound wood. The young growths proceeding from a stem badly attacked by fungus are quite useless; they may maintain some feeble existence till July, but will produce no flowers of any value and usually wither and die before the summer is out.

If the Roses are sufficiently near to

gether (18 inches from plant to plant is a convenient distance for the majority of bed and border varieties) the removal of a single plant will scarcely be noticed. The Rose is not a symmetrical plant, and the growth of the neighbouring bushes will help to fill the gap as the summer advances. If, however, the gap is thought unsightly, plants in pots should be procured and put into the vacant places. *White Rose*.

ORCHID NOTES AND CLEANINGS.

AERIDES CRASSIFOLIUM.

A FINE inflorescence, consisting of a raceme over a foot in length and bearing twenty handsome flowers, each about 2 inches across, was sent by Mr. C. Wright, gardener to the Hon. N. Charles Rothschild, Ashton Wold, Oundle. The flowers are wax-like in substance and of a bright rose-purple colour, lighter at the bases of the segments, and with a white column. The species is of the *Aerides falcatum* section, but a dwarf grower, with thick, dark-green leaves. The specimen sent is of a very fine type, imported from a new locality by Messrs. Sander and Sons. It is the largest-flowered of the genus. It was originally imported from Moulmein by Messrs. Stuart Low and Co. in 1864, and described by the late Professor Reichenbach in the *Gardeners' Chronicle*, Vol. VII. (1877), p. 590. A full-size illustration is given in Vol. VIII., p. 493.

HYBRID ORCHIDS.

(Continued from p. 294.)

Hybrid.	Parentage.	Exhibitor.
Brasso-Cattleya Irene	B.-C. Digbyano-Warneri x C. Mossiae	J. and A. McBean, Sander and Sons.
Brasso-Cattleya Pervenusta	B. Digbyana x C. Fabia	W. P. Burkinshaw, Esq. Armstrong and Brown.
Brasso-Cattleya Rex	B. Digbyana x C. Rex	J. Gurney Fowler, Esq., and Messrs. Charlesworth, Flory and Black.
Brasso-Cattleya Shilliana	B.-C. Digbyano-Mossiae x C. Mossiae	Charlesworth and Co. Sander and Sons.
Brasso-Laelia Mme. Irene Mavrocordato	B. Digbyana x L. Iona nigrescens	Armstrong and Brown, Charlesworth and Co. Sander and Sons.
Brasso-Laelio-Cattleya Albatross	B.-L. Digbyano-purpurata x C. Mossiae Wageneri	H. T. Pitt, Esq. Stuart Low and Co. Sander and Sons.
Brasso-Laelio-Cattleya Endymion	B.-L. Digbyano-purpurata x C. Warneri	Armstrong and Brown, Baron Bruno Schröder, Flory and Black.
Brasso-Laelio-Cattleya Everest	B.-C. Mrs. J. Leemann x L.-C. Canhamiana	Mrs. Bischoffshelm, Flory and Black.
Brasso-Laelio-Cattleya Prince of Wales	L.-C. Dominiana x B.-C. Digbyano-Mossiae	Stuart Low and Co. Sander and Sons.
Cattleya Arestor	Nestor x labiata	Sander and Sons.
Cattleya Magali Sander	Dusseldorferei Undine x Mossiae Wageneri	Flory and Black.
Cattleya R. Prove	intermedia alba x Susanne Hye de Crom	Charlesworth and Co. Sander and Sons.
Cattleya Sibyl	aurea x iridescens	Hassall and Co. H. T. Pitt, Esq.
Cymbidium Sappho	Lowianum x l'Ansonii	Stuart Low and Co. Sander and Sons.
Cymbidium Venus	insigne x Holfordianum	Armstrong and Brown.
Cypripedium Julius	Rothschildianum x Lowii	Baron Bruno Schröder, Flory and Black.
Cypripedium Susanna	glaucophyllum x Fairrieianum	Mrs. Bischoffshelm, Flory and Black.
Laelio-Cattleya Anaconda	L.-C. Pallas x C. Dowiana Rosita	Stuart Low and Co. Sander and Sons.
Laelio-Cattleya Bellata	L.-C. Bella x L. purpurata	Sander and Sons.
Laelio-Cattleya Corsair	L.-C. blethcheyensis x L.-C. luminosa Rosita	Sander and Sons.
Laelio-Cattleya Decinta	L.-C. Decia x L. purpurata	Sander and Sons.
Laelio-Cattleya Doms	L.-C. Dominiana x C. Mossiae	Sander and Sons.
Laelio-Cattleya Dryad	L.-C. Martinetii x C. Schroderae	Sander and Sons.
Laelio-Cattleya Gaiety	L.-C. Marriottiana x C. Mendelii	Sander and Sons.
Laelio-Cattleya Gold Star	L.-C. Ariel x C. Mendelii	Sander and Sons.
Laelio-Cattleya Joy Sander	L.-C. luminosa x C. Schroderae	Flory and Black.
Laelio-Cattleya Medina Excelsior	L.-C. Canhamiana alba x C. Mrs. Myra Peeters	Charlesworth and Co. Sander and Sons.
Laelio-Cattleya Sunstar	L.-C. Andromeda x L.-C. Myra	M. Chas. Vuyksteke, Sander and Sons.
Laelio-Cattleya Sylph	L.-C. Hippolyta x C. Mossiae	Armstrong and Brown.
Miltouia Hyeana Adonis	veixillaria Memoria G. D. Owen x Bleuana rosea	Armstrong and Brown.
Miltouia Isabel Sander	Roezii x Hyeana	Armstrong and Brown.
Miltouia J. Gurney Fowler	veixillaria Mem. G. D. Owen x unknown	Armstrong and Brown.
Miltouia Miss Louisa Fowler	veixillaria Mem. G. D. Owen x unknown	Armstrong and Brown.
Odontioda bechensis	Odm. Rolfeae x C. Noezliana	Sander and Sons.
Odontioda delicata (Picardie)	Oda. St. Fuscien x Odm. ardentissimum	Sander and Sons.
Odontioda Leda	Odm. Rio Tinto x C. Noezliana	Sander and Sons.
Odontioda Leonatus	Odm. Thompsonianum x C. Noezliana	Sander and Sons.
*Odontioda oakwoodensis Fowler's Var.	Oda. Bradshawiae x Odm. percultum	J. Gurney Fowler, Esq. G. W. Bird, Esq.
Odontioda Phyllis	Oda. Bradshawiae x Odm. Lambeaunum	M. Chas. Vuyksteke, R. G. Thwaites, Esq.
Odontioda Prince de Galles	Oda. Vuykstekeae x Odm. Mirum	J. Gurney Fowler, Esq. Sander and Sons.
Odontioda Rosalie	Odm. Thwaitesii x C. Noezliana	De B. Crawshaw, Esq. Sander and Sons.
Odontioda Rubens	Oda. Charlesworthii x Odm. eximium	Sander and Sons.
Odontoglossum Albion	Rossii x percultum	Sander and Sons.
Odontoglossum Bellamina	bellatulum x ardentissimum	Sander and Sons.
Odontoglossum Fortuna	Alequin x Harryanum	Sander and Sons.
Odontoglossum Helicon	ardentissimum x Royal Monarch	Sander and Sons.
Odontoglossum Iconium	cirrhosum x Fascinator	Sander and Sons.
Odontoglossum Irene	Pescatorei x Vulcan	Sander and Sons.
Odontoglossum Iris	Fletcherianum x Lawrenceanum	Sander and Sons.
Odontoglossum Isidorus	cirrhosum x Rio Tinto	Sander and Sons.
Odontoglossum Jucundum	crispum x MacNabianum	Sander and Sons.
Odontoglossum Julius	Royal Monarch x Vulcan	Sander and Sons.
Odontoglossum Mendax	Kegejani (polyxanthum) x Ossulstonii	C. J. Lucas, Esq. Sander and Sons.
Odontoglossum Milo	Adrianae x Wilckeanum	W. Thompson, Esq. R. G. Thwaites, Esq.
Odontoglossum nebulum	nebulum x aspersum	Sander and Sons.
Odontoglossum Thwaitesii	ardentissimum x Harryanum	M. H. Graire, Charlesworth and Co.
Odontonia Roger Sander	Odm. percultum x M. Warsewiczii	R. G. Thwaites, Esq. Sander and Sons.
Oncidioda Mauricei	O. tigrinum x C. vulcanica	Sander and Sons.
Sopbro-Laelio-Cattleya Delia	S.-C. Cleopatra x L.-C. Gottoiana	Charlesworth and Co. R. G. Thwaites, Esq., and E. H. Davidson and Co.
Sopbro-Laelio-Cattleya Dorila	S.-C. Doris x L. pumila	Charlesworth and Co. Charlesworth and Co. Charlesworth and Co.
Sopbro-Laelio-Cattleya Electra	S.-L. heatonensis x C. labiata	
Sopbro-Laelio-Cattleya Hebe	S.-L. Gratrixiae x L.-C. Haroldiana	
Sopbro-Laelio-Cattleya Lotis	S.-L. heatonensis x C. Harrisoniana	

* Odontioda Fowleriana (see report of the Chelsea Show) is a form of Odontioda oakwoodensis, *Gardeners' Chronicle* hybrid list, November 29, 1913, p. 375.

COELOGYNE ELATA.

A PSEUDO-BULB and inflorescence of this large-growing Coeogyne was imported by the Hon. N. Charles Rothschild from Borneo. This is a new locality for the species, its previous recorded habitats being in various parts of Northern India. The Bornean plant seems identical with the Indian type, its large pseudo-bulbs having broad, stalked leaves. The inflorescence, a foot or so in length, proceeds from the apex of the bulb. The upper part of the spike has closely-arranged bracts, from which proceed cream-white flowers with a yellow blotch on the lip, and two crisp bands with red edges running from the base. The flowers open three or four at a time.

LAVINGTON PARK.

LAVINGTON PARK, owned formerly by the late Bishop Wilberforce, and purchased about nine or ten years ago by its present owner, James Buchanan, Esq., is situated three and a half miles to the south-east of Petworth.

The creeper-covered Georgian mansion, as is seen in fig. 189, which shows the south front beautifully clothed with Ivies, Ampelopsis Veitchii and Magnolia grandiflora, stands on sloping ground, facing the Beech-wooded north side of the South Downs. It stands far enough down the slope to admit full sunshine and yet be on high ground, and to allow of a stretch of lawn, croquet and tennis grounds, and shrubberies, which lead to some woodland

walks which are parallel with the hill. In the Bishop's Walk are some beautifully carved, quaint marble seats, and also an image of the King's jester, which was found embedded in an old wall in Holborn that went through the great fire of London. The formal flower garden is at the east end of the residence, in an exposed position. A little beyond the flower beds on the lawn is a magnificent specimen tree of the black Walnut.

From the terrace on the north side are fine views over a vast stretch of fertile park and agricultural land. In the distance can be seen Petworth Park, Leith Hill monument, and Black Down. The park contains many fine trees planted by the late Bishop Wilberforce, including a distinct-looking Cedar raised from seed which the late King Edward collected in Palestine when he was Prince of Wales.

The rock garden, though small, is a very well built structure by Messrs. Cheal. Situated at the west end and close to the mansion, it contains a good collection of well-established Alpines, among which are conspicuous extra good specimens of *Gentiana acaulis*, *Aubrietias*, *Dianthus*, *Saxifraga Clibranii*, *Sedums* in variety, *Scabiosa*, *Parnassia*, *Polygonum capitatum* and *Hepaticas*. Upon the higher parts are some very fine spikes of *Yucca filamentosa*, *Zauschneria californica*, *Helianthemums* and *Cistus*.

The walled-in kitchen and flower garden is situated near to the west side of the mansion. A glorious mass of *Polygonum baldschuanicum* hangs over the top of the corner of the wall. Within the enclosure two borders, each 180 yards long, with a closely-mown grass path between them, present a wealth of flowers such as is seldom seen, the lie of the land enabling the visitor to see practically the whole of the garden.

The border to the right is, with the exception of a few annuals, purely herbaceous, and contains all the popular varieties in bold masses, which produce a much better effect than isolated plants. The border to the left is partly herbaceous, but contains also annuals and the usual summer bedding plants. Last season it was bright with great masses of *Viola* Mrs. Chichester, *Phlox Drummondii*, herbaceous *Phloxes*, *Mignonette* (in several varieties), *Antirrhinums*, *Salpiglossis*, *Montbretias*, *Promethens*, *Westwick*, *George Davison* and others; *Pentstemons*, *Petunias*, *Verbenas*, *Scented-Leaved Pelargonium Lady Plymouth*, *Fuchsias*, *Heliotropes* and many other flowers, mostly planted to colour, and at intervals of a few yards standards of the old Peruvian *Heliotrope* (the sweetest of all) were planted for their scent. At the west end of the border was planted a mass of several hundred specimens of the double-flowered *Marguerite* Mrs. F. Sander, flowering very freely and "true to character," with only here and there a single flower.

The vegetable quarters were formed by three grass walks, running (with the exception of borders at each end) the whole length of the garden, one central, the one between the flower borders already mentioned and one between the woodland and the garden. A paved, flagged path runs the whole length of the garden, alongside the mixed flower border, and a central cross walk 70 yards long was flanked on each side by a border 8 feet wide, planted in large blocks in distinct colours with *East Lothian Stocks*, 5,000 in all. They made a magnificent show at the middle of July (see fig. 190). Most of the borders along the walks are backed with young fruit trees. On the central cross wall are espalier Pear trees, and on the others bush or pyramid Apples.

The soil and culture must be ideal for Apples, as all the varieties appear very healthy in growth, and an orchard of young trees outside the garden proper is doing remarkably well. The south wall has several young fan-shaped Peaches and Nectarines trained on it, and on

the west end of the south wall are fine old trees of Brown Turkey Fig.

The Dower House is only about a hundred yards to the east of the mansion, on the right-hand side of the drive leading to Petworth. Between the flower garden and the Dower House is an imposing group of weeping standards of the Rose Dorothy Perkins, with a shrubbery as a background, in which were noticed good groups of variegated Ligustrum, Purple Plum, *Deutzia crenata*, *Philadelphus*, *Olearia Haastii*, *Buddleias*, *Viburnum Tinus*, *V. Opulus*, *V. plicatum*, *Choisya ternata*, Hollies, Lilacs, and Portugal Laurels.

The Dower House is surrounded partly with lawn, herbaceous borders and beds, shrubs and beds of *Begonia Lafayette* and Paul Crampel.

On the south side of the house is a fine Bay tree quite 30 feet high and nearly as much through, and on the opposite side is a particularly fine specimen of the Turkey Oak. By the way, the Dower House is known as "Beechwood," and was at one time the home of the late Cardinal Manning. Its gardens are now under the supervision of Mr. Streeter, the head gardener at Lavington, and the kitchen garden is cropped in connection with the main garden of Lavington. From this garden we enter "Botany Bay," a

exhibits at the shows); and under them were staged *Cypripediums*. In the greenhouse more Fuchsias were trained up the roof, and *Clerodendron fallax*, *Lilium speciosum*, *Hydrangea paniculata* and *H. hortensis* were growing on the stages, whilst suspended from the roof were baskets of *Begonia Lloydii*. In the stove, Bananas (*Musa Cavendishii*) were represented by four fruiting plants in large tubs, and smaller plants for succession. *Eucharis grandiflora*, *Caladiums*, *Codiaeums*, Palms and *Nepenthes* were especially good. The vines generally appeared well looked after and in excellent condition, a remark that applies equally to the Peaches and Nectarines, Cherries and Figs, and *Liliums* and Tomatos. Upon the opposite side of the wall are the Orchid houses, fruit room, Mushroom house and stokehole; the latter has two sectional boilers set so that they may be worked separately or together. The Orchids consist mainly of *Cattleyas*, *Cymbidiums* and *Odonoglossums*. In the span-roofed, growing houses and frame ground the principal things noted were 200 *Cyclamen*, 200 *Begonia Gloire de Lorraine*, nearly 3 feet high and as far through. Carnations are represented by 800 perpetual flowering and 200 "Malmaisons." The old plants of Tree Carnations were flowering profusely under

and white, and the plant is apparently a free grower. In Edinburgh this year it was shown by Mr. Pirie in his first prize collection of twenty-four Alpines, and also by Messrs. Cunningham, Fraser and Co.

ROMANZOFFIA UNALACHCENSIS.

ROMANZOFFIA SITCHENSIS is a most unreliable plant; I have lost it more than once in trying to establish it—an experience common to many. Last autumn, however, a friend wrote me from British Columbia to the effect that he was sending me a few plants of the rarer *Romanzoffia unalachcensis*, a species allied to *R. sitchensis*, which he hoped might prove more amenable than the latter. In due time the plants arrived, and some were planted in the moraine and the remainder in dry soil in the rock garden. Three little plants have appeared in the latter and one is now in bloom. It is only as yet an inch or so high, with white flowers and smooth leaves, closely resembling a *Saxifrage*, though belonging to the *Hydrophyllaceae*. *S. Arnott*.

PRIMULA WINTERI.

KNOWING that many Alpine *Primulas* grow in rocky clefts where the soil, though moist, has thorough drainage, and where the roots are kept cool by rocks, and the atmosphere constantly moist from hovering clouds, I placed *Primula Winteri* in a pot in a shallow enamelled iron dish about $\frac{3}{4}$ inch deep, and filled it with water to about $\frac{1}{2}$ inch in depth, placing a cloche over the pot. There was thus a constantly damp atmosphere, but as the cloche did not touch the whole of the dish, there was also circulation of air. Under these conditions the plant thrived, and I was able to obtain two young plants from it. As soon as the latter were large enough to form lateral roots I cut through the root-stock, but let the plants remain in the pot until the early autumn, and then planted them out. The young plants flowered freely this season. *E. H.*

NOTES ON FRENCH HORTICULTURE.

THE PARIS SHOW.

THE annual spring exhibition of the National Horticultural Society of France, held at Cours la Reine on May 20-26, was inaugurated by the President of the Republic. As in former years, the exhibition proved a great social event, and as usual the aim of the exhibitors was to produce rather a magnificent mass effect than to display the beauty of individual plants. The display was indeed magnificent with the large specimen *Rhododendrons* and the masses of mixed annual, biennial and perennial plants. The most important floral exhibits were the *Roses*, amongst which the *Wichuraiana* hybrids and *Polyantha* varieties trained in graceful arches proved more popular than ever. Among other plants numerous exhibited were *Carnations*, *Iris* (germanica and *Kaempferi*), *Sweet Peas*, tuberous *Begonias*, *Nymphaeas* (in pools), *Hydrangeas*, *Schizanthus*, and *Calceolarias*. Among outside exhibits the trained fruit trees were especially noteworthy. Rock gardens are growing in favour in France, and were represented by four important exhibits. One, which received the grand prix d'honneur, represented a mountain scene, the summit of which attained to the height of the tent. In addition to the sections devoted to floral art, garden architecture and horticultural education, "sundries" were well represented, and there was as usual a "salon" in which were exhibited oil paintings, water-colours and pastels of flowers and garden scenes.

Among new or interesting plants the following were noted:—A series of new forms of *Iris germanica*, hybrids of *Ricardii* (shown by M. Maron, Brunoy), and the variety *Madame Durand* (shown by M. Denis). New large-flowered varieties of



[Photograph by F. Coze.]

FIG. 189.—LAVINGTON PARK, SUSSEX, THE RESIDENCE OF JAMES BUCHANAN, ESQ.

delightful valley with a stream meandering throughout its length, with here and there miniature waterfalls which end in a spacious duck pond. The stream is bordered by spacious sloping banks, and here and there under the shade of trees are masses of hardy Ferns, apparently self-sown. At the entrance there is also a fine stretch of water, shallow for the greater part, and alive with trout. Several varieties of *Nymphaea* are getting nicely established, and masses of *Primula japonica* and its varieties; *Japanese Iris*, *Polygonum*, *Carex*, red and yellow, *Weeping Willows*, and other semi-aquatics are planted near the water's edge, whilst higher up the banks are grouped *Bamboos*, *Golden Elder*, *Buddleias*, *Tamarisk*, *Spanish Broom*, *Viburnum*, *Laburnums*, *Olearia Haastii*, and other shrubs.

THE INDOOR GARDEN.

The indoor garden includes a range of three-quarter-span, Teak-wood houses, built by Mackenzie and Moncur. They face to the south and consist of a Palmhouse, greenhouse, stove, two vinerias and two Peach houses. Upon entering one is immediately struck by the splendid condition of the plants. In the Palmhouse were well-flowered *Fuchsias*, trained 10 feet high to the roof (similar to Messrs. Veitch's splendid

the north side of one of the houses. Other plants especially good were *Begonia Emily Clibran*, *Achimenes*, *Calanthes*, *Euphorbia jacquiniæflora*, *Poinsettias*, *Gloxinias*, *Plumbago eoccinea superba*, and *Begonia Gloire de Sceaux*. *Thomas S. H. Down*.

ALPINE GARDEN.

HABERLEA AUSTINII.

In former years a very pretty *Haberlea* has been shown at the Edinburgh spring exhibition, and this season it attracted even more notice than usual. If I remember aright, it was shown by Mr. W. G. Pirie, gardener to Mr. C. W. Cowan, Dalhousie Castle, in his exhibit of Alpine flowers a year or so earlier than 1913, and I was much pleased with it. The plant was first shown as *H. Ferdinandii-Coburgii* Austin's variety, or *H. kewensis*, if I remember aright. Since last year the plant has received more attention and, being considered distinct, the name of *H. Austinii* has been suggested for it. This is in honour of the raiser, Mr. Austin, of Messrs. Cunningham, Fraser and Co.'s Comely Bank Nurseries, Edinburgh, where the plant was raised from seeds. The flowers are coloured lilac or violet

I. germanica, Diane, Magnifica, Moncey, Opera, Velouté, La Neige, were shown by M.M. Vilmorin, Andrieux and Cie (Paris). A new Polyantha Rose, Betsy van Nes, and a Mrs. Cutbush with red flowers, were exhibited by M. Münch, of Leuben, Saxony.

A fine lot of Madame Herriot was shown by M. Pernet Ducher, of Lyons. Hybrid rugosas, Conrad Ferdinand Meyer (rose), and Nova Zembla (white), vigorous varieties, very early and able to withstand low temperatures (exhibited by M. Robichon, of Vitry). *Adiantum tenerum*, with very delicate and light foliage, named Monsieur Pellerin de la Touche, was shown by M. Le Conteulx, of Chesnay.

Of the 118 names on the general catalogue of exhibitors of plants only four or five were those of private gardeners: whereas no fewer than 150 names occur as under the title of sundry industries related with horticulture.

The rock garden of M. Ferard received a 1st

infants' gardens. For those from nine to thirteen are provided school gardens, in which the children pass daily several hours working each on a special plot. Prizes are given for the best kept plot, and a school exhibition is held annually in August. For adults gardening competitions are held, and prizes are distributed at a grand fête and banquet presided over by the Director of the Society.

Every effort is made to interest the miner in gardening, seeds and cuttings are distributed, and small books and leaflets are prepared and circulated free. The experiment at Lens deserves to be followed widely in other industrial centres in France; for although much has been done already to satisfy the land hunger, which is even more marked among French than among English town dwellers, no traveller in the great industrial regions of France can doubt but that there is ample room for more experiments on these lines. *A. Mennissier.*

Rose Society, Chrysanthemum Society of America, and other national bodies, as well as the various horticultural societies and gardeners' and florists' clubs, to affiliate with it. At present the membership of the S.A.F., as it is commonly called, is only one-tenth that of the Royal Horticultural Society, and its members are mostly connected with the trade. Of late years strong efforts have been made to attract private gardeners and amateurs, so far with but moderate success. It is unfortunate that the title American Horticultural Society was not adopted at the outset, and until some more suitable title is used the growth of this excellent body will, I am afraid, be comparatively slow. Even with its somewhat limited membership, however, the S.A.F. has accomplished a great deal for the benefit of the trade in America, and it is well to remember in this connection that we have 10,000 florists in America, which is probably treble the number of the private gardeners over here.



FIG. 190.—BORDERS OF ANNUALS AT LAVINGTON PARK.

(See p. 410.)

[Photograph by F. Coze.]

grand prix d'honneur, and a 2nd grand prix was awarded to M. Nonin for climbing Roses.

Among British exhibitors were Messrs. Sutton and Sons, Reading (scientific horticultural exhibit), Mr. Engelmann, of Saffron Walden (Carnations), Mr. Dutton, of Iver, Bucks (Carnations), and Mr. Clark, of Dover (Sweet Peas and new plants).

HORTICULTURAL CONGRESS.

THE Congress held during the exhibition, on May 22, discussed the following subjects:—"Workmen's Gardens," "Influence of Radio-activity and of Catalyses on Vegetation," "Co-operative Societies for the Sale of Horticultural Produce," "New Systems of Heating Glass-houses," "Deleterious Effects of Smoke, etc., on Plants."

Full reports of the papers may be read in the *Journal* of the French Society, and we may confine ourselves to a reference to the important communication by M. Chôquet on the Workmen's Gardens of the Society of Mines at Lens. The work undertaken concerns adults and children. For the youngest children there are

AMERICAN NOTES.

THE SOCIETY OF AMERICAN FLORISTS.

THIS, the strongest trade organisation in America, will meet in Boston next August to hold its annual convention, after an absence of twenty-four years. The local Board of Management is expecting an attendance of 3,000 visitors, and is making extensive plans to entertain them. A feature of this convention will be a "Convention Garden," covering ten acres of ground, located in the Back Bay Fens. This garden is being tastefully laid out, and in it numerous trade growers will make attractive and imposing displays of trees, shrubs, and other plants and flowers which are likely to be interesting in mid-August. The local Board of Management receives plants and cases for all exhibits, making a charge per square foot for the same.

The Society of American Florists and Ornamental Horticulturists is endeavouring to formulate plans which will encourage such bodies as the American Carnation Society, American

OPPORTUNITIES FOR GARDENERS IN AMERICA.

IT would be well for any gardeners who are planning to try their fortunes on this side of the Atlantic not to be too much carried away by the optimistic reports which I have read of the conditions here. As a matter of fact, trade is at a lower ebb and more people are unemployed than has been the case at any time during the past twenty years. While the gardening fraternity has suffered less than most other callings, there are very few openings for head gardeners and less than usual for assistants, and although at this busy season practically all have some employment, chances are that unless trade improves a good many will be idle another fall. Even in California, which has been looked upon as a Mecca for Eastern gardeners, conditions are bad. A recent letter from a friend there stated that he knew of a score of English and Scotch gardeners there who would be very happy if they had sufficient money to pay their car fare East again. *William N. Craig, Brookline, Mass., U.S.A.*

TREES AND SHRUBS.

THE ARNOLD ARBORETUM IN MAY.*

THE number of trees and shrubs really valuable here which Western Europe has contributed to New England plantations and gardens is not large. Of the trees the Beech, two or three of the Elms, the Birches, the Mountain Ash, the Laburnums, the Norway Maple, the Hawthorn, the Hornbeam, the Poplar, several Willows, the Alder, two or three of the Cherries, the Plum, the Apple and the Pear flourish in this climate. Although some of them will drag out a more or less unhappy existence for several years, the Oaks of Western Europe, the Ash, the Sycamore Maple, and all the conifers are not desirable trees for our region. From Western Europe, too, we have obtained a few shrubs which are important in New England gardens. The Heather gives summer brightness to New England gardens and hillsides, and the little *Daphne Cneorum*, a native of the mountains of Central Europe, is now covered with its clusters of fragrant rose-pink flowers. One of the most beautiful of all dwarf shrubs suitable for the decoration of the rock garden, it is rather capricious as to soil and situation, and does not always flourish in this country as well as it does in the Arboretum.

None of the Barberries which have been brought into our gardens in the last thirty years is more useful than the common European *Berberis vulgaris*, which has long been naturalised in eastern Massachusetts and years ago was selected by one of the wise men of Boston as a typical New England plant for the decoration of a monument to be erected to some departed New England worthy. For thirty years, too, much attention has been paid to the introduction and cultivation of the different species of Privet from Eastern Asia, but there is not one among them which is as valuable in New England as the common Privet of Europe, which must have been cultivated here for two hundred years and is now sparingly naturalised in some of the eastern states. The black and shining berries in large terminal clusters are unsurpassed in beauty by those of any other black-fruited shrub which can be grown here, and as they remain in good condition until into the winter they are valuable on the plants and, when cut, for late autumn and early winter decorations. Among the shrubs of Western Europe which are really valuable in New England must be included the Wayfaring tree, *Viburnum lantana*. With the exception of the Korean *Viburnum Carlesii* mentioned in a recent bulletin, and of our native northern Hobblebush (*Viburnum alnifolium*), the Wayfaring tree is the earliest of the *Viburnums* to flower. It is a tall, compact, round-headed shrub with large, thick, dark-green leaves and broad, compact, convex clusters of white flowers. The fruit when fully grown is bright red but finally turns black, fruits of the two colours often appearing at the same time in the same cluster. This shrub is therefore as beautiful in the early autumn as it is in the middle of May; it can be seen in the general *Viburnum* collection near the junction of the Bussey Hill and Valley Roads, and it has been largely planted in the Boston parks. Near it and just coming into flower are several plants of *Viburnum burejaeticum* from Manchuria, Korea and Northern China. This is a neat shrub with small leaves and small compact clusters of creamy-white flowers, which are followed by small black fruits. As compared with most of the American *Viburnums* it has little to recommend it as an ornamental plant; indeed, with a few exceptions, the Eastern Asiatic *Viburnums* are less valuable than the Eastern American species, among which are found garden shrubs of the first class. *Viburnum dentatum* and *V. Wrightii* from Japan, with bright red fruits, have no American counterparts, however, and should therefore be

cultivated for the autumn garden. These two species will soon be in flower in the *Viburnum* collection, where can now be seen nearly every species and variety which can be grown in this climate.

The large creamy-white flowers of *Magnolia Fraseri* are already opening and the leaves are

dantly every year and is perfectly hardy. This beautiful tree is still too rare in American collections. The much smaller, greenish or yellowish-green flowers of the Cucumber tree (*Magnolia acuminata*) will soon follow those of *M. Fraseri*. The Cucumber tree, which under favourable conditions sometimes attains the height of 80 or 90 feet, is the largest *Magnolia* which can be grown in New England, and the most northern in its range of all the American species. The flowers of the Cucumber tree will soon be followed by those of another American species, *Magnolia cordata*. This in the Arboretum is a smaller tree with darker green leaves and small, cup-shaped, canary-yellow flowers. This *Magnolia* was discovered more than a century ago by the French botanist Michaux somewhere on the headwaters of the Savannah River in Georgia or South Carolina. A little later it was found by Michaux and his son, F. A. Michaux, in the neighbourhood of Augusta, Georgia. It was introduced into France by Michaux and the descendants of these trees are now cultivated in the United States and Europe. For many years attempts to rediscover this tree in the regions visited by Michaux have been unsuccessful, and it is interesting, therefore, to report that the Berckmans of Augusta, Georgia, have recently found *Magnolia cordata* in two stations a few miles south and west of Augusta. The plants are growing in upland Oak and Pine woods, the largest of them being 7 or 8 feet tall. The plants begin to flower when not more than 3 feet high, and in April of this year some of these shrubs bore 40 or 50 flowers. In cultivation *Magnolia cordata* is always a grafted tree, but it is not probable that the cultivated trees owe their greater size to a stronger stock, and the small size of the plants discovered near Augusta may be due to dry soil and a hot climate, and *Magnolia cordata* as a tree may still be found in some of the moist, rich valleys of the small streams flowing down the eastern slopes of the Blue Ridge.

Several handsome American Hawthorns (*Crataegus*) are in full bloom, leading a procession which will last for nearly six weeks. The earliest of these plants to flower here belong to the *Molles* section of the genus in which some twenty species are now recognised. They are all shapely round-topped trees, some of them growing to a comparatively large size. The flowers are large, in broad, many-flowered clusters; the leaves are broad, thin and long-stalked, and on most of the species begin to unfold as the flowers open. The fruit of these plants is globose or pear-shaped, crimson, scarlet or rarely yellow, and of excellent flavour. The plants of this group are comparatively rare in the east; they do not extend into the south-eastern states, and are most abundant in the region from Illinois and Iowa, through Missouri and Arkansas, to Eastern Texas. Of this group there are now in flower at the South Street entrance large plants of *C. mollis*, *C. submollis* and *C. arkansana*. The last is a particularly valuable plant, as it retains its brilliant fruit until late in the season and longer than the other plants of this group. Another interesting plant of this group, *C. Arnoldiana*, is valuable because the fruit ripens in August when showy fruits are rare here. This tree was first discovered growing wild in the Arboretum and is still known only from a few stations. It is one of the few species of *Crataegus* which can be easily recognised in winter, when its strongly zigzag branches are conspicuous. There are large plants of this tree on the left of the Centre Street entrance, and there are a number of them on the Valley Road in front of the Oak Collection. All of the species of the *Mollis* group are American with one exception, *Crataegus peregrina*, which is probably a native of Persia. From the American species it differs in the colour of the fruit, which is dark purple, unlike that of any American Hawthorn. This plant is in flower in the old *Crataegus* Collection on the bank between



FIG. 191.—IRIS KASHMIR WHITE.
R.H.S. Award of Merit, June 3, 1914.
(See p. 402 ante.)

half-grown. This is a small pyramidal tree of rather open habit from the slopes of the Appalachian Mountains from Southern Virginia southward, sometimes growing on the headwaters of the Savannah River, where it is most abundant, to the height of 30 or 40 feet. In cultivation it begins to flower when not more than half that size, and here in the Arboretum it flowers abun-

* Bulletin No. 55 (Arnold Arboretum).

the Shrub Collection and the Arborway boundary of the Arboretum, in which there are also plants in flower of *C. arkansana* and *C. Arnoldiana*.

Many plants in the Plum Collection now deserve inspection, notably *Prunus hortulana* and *P. Munsoniana*, both natives of the Missouri-Arkansas-Texas region, the latter the Wild Goose Plum of pomologists. Many of the early-flowering Crab Apples are still in good condition and the flowers of many others are still to open.

In the general Rhododendron Collection at the base of Hemlock Hill *R. carolinianum* is in flower. This is a native of the slopes of the southern Appalachian Mountains. Although this plant was sent to England more than a century ago, it has been entirely lost sight of until a few years ago, having been confused with *R. minus* or *punctatum*, a southern plant of lower altitudes, different habit and foliage, and less attractive flowers. *R. carolinianum* flourishes in the shade and in full exposure to the sun. It is a dwarf plant of compact habit; the leaves are dark green, and the comparatively small pink flowers are borne in compact clusters. It is, perhaps, as hardy in New England as any Rhododendron, and it is certainly a plant of great promise either for the decoration of parks and gardens or a possible element in a new race of hybrids. Several plants of Rhododendron coreanum are in flower on Azalea Path. This species, which was discovered by Mr. Jack in Korea, is also a plant of much promise; it is one of the species with deciduous or nearly deciduous leaves; the habit is good, and the abundant flowers are of a pleasant rose-purple colour. Judging by the experience with it in the Arboretum during the last two or three years, it is one of the best of the recent introductions of its class.

SUMMER PRUNING OF FRUIT TREES.

It is too often the case in gardens that the trained fruit trees appear at midsummer with thickets of strong shoots growing out from them, and later, when the shoots have completed their growth the shoots are cut back to 6 or 7 inches. This "summer" pruning, which is carried out far too late in the season, is expected to make the shoots plump up fruit buds at the base, but it is rarely successful, nor is it likely ever to be generally satisfactory. I know that in some gardens this sort of practice is made more or less inevitable by reason of the shortness of labour, but the following directions should be carried out where possible.

All fruit trees which form spurs should be gone over whilst the young shoots can be pinched off with the thumb and finger, and, in the case of Plums, which do not like the knife, especially is this necessary to prevent gumming and canker. Pears, Cherries (excepting Morellos) and Apricots should be pinched back carefully to four or five eyes from the base of the shoot; and again, when other shoots form, these should be pinched back in turn to one or two eyes. Not all the tree should be done at once, but rather as far as one can reach up, and after a few days have elapsed the operation can be concluded by treating the top of the tree. There will then be less danger of the fruit dropping than if the operation were done at one time. Not only does this early pinching benefit the tree, but it allows more light and air to reach the fruits. Trees which bear fruit on the young wood, such as Peaches, Nectarines, Figs, and Morello Cherries, should have the shoots thinned out and a proper number trained in. The best shoots are those of medium thickness. Therefore, if one has a choice, reject the weakest, and also those that are rank and strong growing. Cut them clean out at the base, unless there is danger of an empty space, when two or three eyes may be left, which in due time may possibly develop into suitable shoots. It is a good plan to tie

in the young wood over the old and bare shoots, and where this cannot be done, either nail or tie it in, taking care to allow plenty of room for swelling, and always keeping the ultimate shape of the tree in one's mind.

Do not allow the shoots to cross each other, as this, to a trained eye, looks very bad. All



FIG. 192.—*VERBASCUM* "WARLEY ROSE": COLOUR OF FLOWERS ROSE-PINK.

(R.H.S. Award of Merit June 3, 1914. See p. 402 *ante*.)

trees during growth should be kept scrupulously clean, as nothing hinders growth so much as infestations of insect pests. These can easily be prevented now that there are so many reliable washes, etc., on the market, and also if the adage, "a stitch in time saves nine," be borne in mind

Bush and pyramid Apples, Pears and Plums which have been thinned out at the winter pruning, the same method will answer here as advised for spur fruiting or wall trees. The side shoots may be pinched back just the same, but the leaders may be allowed to grow a little longer before being treated, and should then be pinched back with the intention of keeping the trees as shapely as possible, consistent with forming good fruiting spurs.

Standard trees are usually not so strong-growing, and with this kind of tree, if the root system is good, and the branches are not too thick, they may be allowed to grow naturally, leaving any pruning until winter. Much of the treatment depends on the variety, some requiring hardly any pruning. As I have mentioned, Plums, and also sweet Cherries, should not be pruned too much, as they resent the knife. I have in mind some cordon Plum trees, which had been pruned hard in the winter every year, and they make every summer strong, thick shoots which never produce fruit buds at the base. These trees were lifted and re-planted; the severe pruning was modified, and the shoots were pinched as advised during the summer months. This season they are loaded with fruit, which will require thinning. I mention this as coming under my personal notice.

Raspberry canes which have borne fruit should be cut out immediately after the fruit has been gathered, and the young canes for the next season's fruiting will be much finer than if the old ones are left during the winter. Red and White Currants should be pinched back when the leaders have made six or seven leaves, and the side shoots when they have made two or three. In Black Currants the young wood from the base should be encouraged to grow, and, therefore, if the old wood is too thick, as soon as the fruit is gathered thin it out. Gooseberries do not, as a rule, require very much pruning during summer, but any suckers from the base should be cut out. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

NOTICES OF BOOKS.

FLORA OF FORMOSA.*

SOME particulars of Dr. B. Hayata's contributions to the botany of Formosa and of the physical features of the island may be found in the *Gardeners' Chronicle* for January 6, 1912, and the previous volumes of the present publication have also been noticed in these columns. Volume III. comprises thirty-five plates and 222 pages of letterpress. Volumes I. and II. contain, in addition to the figures and descriptions of new plants, a "Conspectus of the Flora of Formosa," in which the classification of Bentham and Hooker's *Genera Plantarum* is followed: Ranunculaceae to Rosaceae in the first volume, and Saxifragaceae to Dipsacaceae in the second. Unfortunately, in one sense, and owing to the great influx of new material, the author has not been able to continue the "Conspectus" in the third volume. In that volume of the *Icones* he begins again with the Ranunculaceae, and figures a selection of novel or interesting plants belonging to various families down to the Ulmaceae and Coniferae. The new plants described include a small number of Monocots, among them *Musa insularimontana* and *M. textilis* var. *Tashiroi*, which "differs very slightly from the type in the more patent petioles, scarlet-purple bracts, and in the young leaves, which are usually reddish on the back"—differences hardly demanding two-thirds of a page of Latin description! *Ancistrocladus hainanensis* is an interesting discovery from the Island of Hainan, as the specific name denotes,

* B. Hayata. *Icones Plantarum Formosanarum, nec non et Contributiones ad Floram Formosanam*. Volume III. Taihoku, Formosa, 1913.

but its essential differential characters are not signalled. There are many additions to the genera *Ilex*, *Euonymus*, *Rubus*, *Hydrangea* and *Rhododendron* (about a dozen), also many *Lauraceae*, including eight species of *Cinnamomum*. *Cupuliferae*, too, are represented by many new species, including two of *Carpinus*, ten of *Quercus* and two of *Castanopsis*. Three new species of *Pinus* are described, and two (*P. brevispica* and *P. Uyematsui*) are figured. Of more than passing interest are three new species of *Shortia* (*Diapensiaceae*). *S. transalpina* is a diminutive species from the mountains of the interior, at an altitude of 10,000 feet. *S. exappendiculata* differs, according to the author, from all previously described species of *Shortia*, in the absence of stamens, the sessile anthers, and in the undivided styles, and he suggests that it might constitute a new genus, which he would call *Shortiopsis*.

Appended to the foregoing is an essay on the systematic position of the curious genus *Mitrastemon*, which has also appeared in a German

book during the present year. It will be of the highest value to Orchidists. The plan of the work is to enumerate all known genera of Orchids—grouped as nearly as possible in natural sections—which are capable of being hybridised. Each genus is fully described, and also the species as amply as the scope of the work will allow. Cultural instructions are given from material supplied by Mr. Otto Beyrodt, Mr. H. Janke, Mr. A. Malinquist and Dr. G. Lindau—all experts in their various branches and well known throughout Europe. The work is strictly accurate and complete in its scientific and botanical details. It will be especially acceptable to the gardener, who, while seeking information on cultural and general details, wishes to educate himself in the botany of the Orchid family. The volume opens with chapters on the general aspect of cultivated Orchids and their introduction, together with illustrations of the structure of different sections of Orchids. The parts of the flowers are given, and a review of the geo-

GENERA OF BRITISH PLANTS.*

This little book will be useful to those who have already had some instruction in the classification of plants, but it is too highly technical for the uninitiated. For example, under "Alismalales" we find the following definition or description:—"Flowers cyclic or hemicyclic; achlamydeous, haplochlamydeous, or diplochlamydeous (homochlamydeous or heterochlamydeous); hypogynous or epigynous"! Of course, this is not so formidable as it looks, but it must be quite unintelligible to the "ordinary reader." To the botanical student unacquainted with the German language it offers the elements of a classification of the higher plants on a system now widely adopted outside of Germany, though still little known in this country. Unfortunately it wants the admirable illustrations of the seventh edition of Engler's *Syllabus*.

THE FLORA OF CHINA.

THE fourth part of Sargent's *Plantae Wilsonianae* is a volume of 250 pages, containing a descriptive account of Wilson's collections representative of about a score of families, including the *Coniferae* (in a wide sense), the *Lauraceae*, the *Leguminosae*, the *Rutaceae*, the *Rhamnaceae*, etc. The bulk of the volume is the joint work of A. Rehder and Wilson. Dr. A. B. Rendle is responsible for the *Bambuseae*, Mr. J. S. Gamble for the *Lauraceae*, and Mr. W. G. Craib for the *Leguminosae*. H. Fakeda, A. K. Schindler, S. T. Dunn, C. S. Sargent, C. Schneider and A. Lingelsheim are also contributors. As mentioned in the notices of previous parts, Mr. Wilson's field notes and observations add immensely to the value of this descriptive account of his collections. It is not generally known that these collections are illustrated by a series of some 850 incomparable photographs, taken by Wilson himself. There is nothing in the history of botanical collecting to equal Wilson's achievements in this direction. References to the numbers of the photographs are given throughout in the present work. Sets of the photographs are offered for sale. Upwards of sixty pages of this part of the *Plantae Wilsonianae* are devoted to the *Coniferae*, and there are many corrections of the nomenclature current in both herbaria and gardens. Mr. J. S. Gamble's account of the *Lauraceae* is specially valuable, as it was preceded by a long study of the very numerous Malayan members of this family. The delimitation of the genera is very difficult. Judging from Mr. Wilson's remarks on the altitudinal distribution of Chinese *Lauraceae*, few of these will prove hardy in the British Islands. Specially rich in novelties are the *Rutaceae*, the *Rhamnaceae* and the *Sabiaceae*. A change in nomenclature adopted, not originated, by Rehder and Wilson will probably never become general in gardens. It is *Ailanthus caecodendron* for our old friend *A. glandulosa*! W. B. H.



FIG. 193.—*DEUTZIA DISCOLOR* VAR. *ELEGANTISSIMA*; COLOUR OF FLOWERS LILAC-PINK.
(R.H.S. Award of Merit June 3, 1914. See p. 402 ante.)

form in Engler's *Botanische Jahrbücher*. *Mitrastemon Yamamotoi* is a small root parasite, first discovered in the island of Kiushiu, southernmost Japan, about thirty years ago, growing on the superficial roots of *Quercus cuspidata*. As already recorded in these columns, it has been treated alternatively by Makino, the original describer, as a member of the *Rafflesiaceae* and the type of a new family. As the result of a fuller investigation of the external morphology and of the anatomy of the plant, Dr. Hayata now classifies it as the type of a new tribe of the *Rafflesiaceae*, which the floral and minute characters seem to justify.

THE ORCHIDEEN.*

THIS is the first number of a very important and excellent work on Orchids by Dr. Rudolf Schlechter, which will be completed in ten num-

graphical distribution of the genera. The enumeration begins with *Cypripedilinae*, divided into four sections: *Selenipedilum* Rehb. f., a small and little-known section; *Cypripedium* L., the hardy class; *Phragmopedilum*, Rolfe, usually called *Selenipedium* in gardens; and *Paphiopedilum* Pfitzer, the bulk of these known in gardens as *Cypripedium*, including *C. barbatum*, and *C. insigne*. These divisions are well sustained by structural differences, but the ordinary gardener will probably stick to his "Cypripedium." *Habenariinae*, including the Orchids and other terrestrial species. *Disa*—*Disa*, *Satyrion*, and other genera of terrestrial Orchids, are fully dealt with.

Some excellent illustrations, including coloured plates of *Odontoglossum grande* and *Paphiopedalum callosum*, are given, and the volume is well printed. An English edition is contemplated.

HOPS IN UNITED STATES AND GERMANY.—

The Board of Agriculture and Fisheries reports that His Majesty's Consul at Portland, Oregon, U.S.A., states (May 16) that there is said to be a moderate demand for the new crop of Hops and for Oregon contracts, a few of which have been obtained at 7d. per lb. Although a number of hills are dead, the new acreage is expected to make up more than the loss, and the outlook at present is favourable for a good crop, although nothing definite can yet be reported. Official reports give the condition of Hops as between average and good in Wurtemberg on June 1, and as good in Bavaria at the end of May.

* *Genera of British Plants Arranged according to Engler's Syllabus der Pflanzenfamilien*. (Seventh edition, 1912.) With the addition of the characters of the Genera. By H. G. Carter, M.B. (Cambridge University Press, 1913.) Small 8vo, pp. 121. Price 4s. net.

* *Die Orchideen*. By Dr. Rudolf Schlechter. Paul Parey. Berlin, S.W. 11. Hedemannstrasse 10 u. 11.

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKSON,
Oakwood, Wylam-on-Tyne.

ANGULOA.—It is desirable to re-pot the plants at a season when the roots are active, and as the young growths develop at the same time as the flowers it is best to attend to any re-potting requirements immediately the flowers are over. A suitable compost consists of equal portions of turfy loam and peat, with sufficient sand and charcoal intermixed to render the compost porous. The materials should be pressed moderately firm, and the pots filled to about 1 inch from the rim. If the surface is covered with a layer of chopped Sphagnum-moss it will add considerably to the appearance of the plants. After re-potting, afford water sparingly until the plants are re-established, but water the roots freely when the pots become filled with roots. The leaves should be examined carefully for the presence of scale and other insect pests; it will be found that sponging with a weak insecticide is the most effectual means of keeping these pests in check.

CATASETUM.—Many *Catasetums* are growing freely and producing their flower-scapes. Nearly all these Orchids require hot, humid conditions during their season of growth, also an abundance of root moisture until the growths have matured. We grow them in the plant stove, where they obtain plenty of light and are syringed daily. They succeed best in baskets or shallow pans suspended near to the roof-glass. The roots should not be disturbed more frequently than is necessary, as they form a matted mass of roots which need very little compost to sustain them. In re-potting use a compost of a lasting nature, such as is provided by a mixture of equal portions of *Osmunda* and *Polypodium* fibres, and let there be ample drainage provided. This kind of work should be done when the roots are first becoming active.

ORCHIDS WITH TERETE LEAVES.—Plants of *Vanda teres* and others of its kind which have recently passed out of flower are rooting freely. Plants that have become leggy from the loss of their lower leaves may be cut through the stems into convenient lengths and re-potted. Success will depend on the position in which they are grown and the treatment they receive; the nature of the compost is a secondary consideration. Plenty of broken crocks intermixed with chopped, living Sphagnum-moss, pressed firmly about the base of the plants, is all that is required. They flourish in full sunshine in an extremely humid atmosphere. The roots may be well soaked with rainwater as soon as the work of re-potting is completed, and syringing the plants daily with chilled water is recommended until growth becomes matured. Afterwards gradually reduce the amount of water and keep the compost perfectly dry during the dormant season.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

SPRING BEDDING PLANTS.—The best plants of such subjects as *Aubrietia* and *Polyanthus*, having been selected and marked for stock, may be divided into small portions, each with a few roots attached, and re-planted in a partially-shaded corner of the reserve garden. If shade cannot be secured, a few small evergreen branches stuck amongst the plants will answer the purpose equally well. Sprinkle the branches with water during hot sunshine in order to promote a cool, humid atmosphere, until new roots form. Daisies, *Polyanthuses*, *Pulmonarias*, and *Veronica incana* are all best propagated from single crowns. *Wallflowers*, *Silenes*, *Myosotis*, *Stocks*, *Polyanthus* to colour, and *Alyssum saxatile compacta* are best raised from seed sown at once in cold frames, which

should be shaded until germination takes place. Sow the seeds thinly in order that the seedlings may have room to develop hardy and sturdy from the start.

MULCHING.—Flower beds and borders of recently-planted subjects are greatly benefited by a thin mulching of fine leaf-mould, or a dressing of peat-moss passed through a half-inch sieve; apply this also to shallow-rooting plants such as tuberous and fibrous-rooted *Begonias*. All flower beds and borders require mulchings of short manure, a little stronger in character than the above. To prevent the birds from scratching the material place stones on it underneath the leaves of the plants.

ANNUALS.—Preserve a fine surface tith amongst annuals by the constant use of the small Dutch hoe; this will also prevent evaporation of moisture from the ground. A surface mulching is preferable to continuous waterings by the hose.

SWEET PEAS.—Finish staking the plants, and attend daily to the training of the young growths, distributing them evenly. If blooms are required for exhibition purposes, pinch out the lateral growths, thus concentrating the energies of the plant into the main stem, and afford weak stimulants applied a little and often. An occasional sprinkling of soot will be beneficial, and it should be washed into the ground with water from the hose.

CARNATIONS.—Afford a mulching to these plants as recommended for *Begonias*. To destroy green fly, dip the points of the shoots in soapy water, adding extract of nicotine in the proportion of one teaspoonful to four gallons of water. Train the growths naturally on spiral, galvanised wires (those painted green are the best). *Lady Hermione* is an excellent variety for planting out-of-doors because of its robust constitution. For stimulants, use specially compounded manures, liquid manure and soot-water—the soot-water gives tone and colour to both blooms and foliage.

SUMMER CHRYSANTHEMUMS.—Pinch systematically the growths to secure evenly-balanced plants, using small stakes to spread out the growths as they develop. The earliest varieties should be stopped not later than the end of the present month, but this work must be regulated in accordance with the date at which the plants are required to flower. To secure the best results in blooming, hoe and water the soil constantly. Endeavour to preserve a neatness in the garden and freedom from insect pests, which at this season soon cause irreparable damage if their presence is overlooked.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY,
Knowsley Hall, Lancashire.

PELARGONIUM.—The more forward of the plants rooted in February are ready for transplantation into 7 or 8-inch pots, and the later-struck cuttings into 5½ or 6-inch pots. The compost may consist of three parts turfy loam, one part each of manure from a spent Mushroom bed and leaf-mould, adding sufficient sand to ensure porosity, and a 6-inch potful of bone-meal to every three bushels of the compost. Mix the materials thoroughly and leave them in a heap for a few days. Use clean, well-drained pots, and place over the crocks a little moss, or some of the coarser compost. The plants to be re-potted should be in a moist condition, so that there may be no necessity for root waterings for several days after potting. Place the plants in a cold frame, on an ash bottom; syringe them and shade from bright sunshine. On mild nights remove the lights, and when the plants are re-established expose them to full sunshine. To produce hard, well-ripened shoots, leave ample space between the pots. Pinch out the points of the shoots to make bushy specimens, and afford water with great care. All kinds of *Pelargonium* may be fed twice weekly with liquid manure made from horse or deer droppings. Remove decayed flowers, and promote a fairly dry atmosphere to prevent the blooms from damping. Train the shoots of Ivy-

leaved *Pelargoniums* to stakes or pillars. Tie lightly the shoots of plants in baskets, but do not destroy the free natural effect of the growth.

CINERARIAS AND CHINESE PRIMULAS require close attention as regards shading and watering, and should be fed liberally. Make another sowing of these plants for later flowering.

CALCEOLARIA.—Cut away untidy growths that have finished flowering, and shade the house during the brightest part of the day. Keep green fly in check by fumigating the plants at regular intervals. Early in July sow seeds on the surface of the soil in pans, and germinate them in a cold frame under a bell-glass.

CAMPANULA PYRAMIDALIS.—Afford frequent applications of liquid manure and soot-water to plants in pots showing flower-spikes. Place the plants under the north side of a wall or hedge to obtain partial shade, and stake each flower-spike to prevent damage by wind. Grow the plants in the open until the flowers begin to open. Re-pot plants raised in autumn and spring before they become pot-bound, and place them on a bed of ashes where the situation is shaded from bright sunshine. If close attention can be given to potting, these plants are preferable to those planted out and lifted for flowering. Sow seeds of *C. calycanthema* to obtain plants for flowering next year.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton
Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buck-
inghamshire.

VINES.—Attend carefully to the watering of vine borders, especially those inside where the vines are swelling their berries. Afford a copious watering with soft, tepid water, and then apply a mulch of half-decayed manure, leaves or similar materials to prevent undue evaporation of moisture from the soil. Vine borders, properly constructed and well drained, are not likely to be harmed by over-watering at this stage. Maintain a genial, growing atmosphere in all vineries, and take advantage of sunny days to air the house, closing the ventilators early in the afternoon with an abundance of atmospheric moisture. Do not neglect the fires, which should be started to meet the declining heat of the sun, and admit a little air through the front and back ventilators to avoid a stagnant condition of the atmosphere. If the atmosphere becomes surcharged with moisture mildew is apt to become troublesome, in which case sprinkle the paths and hot-water pipes with sulphur and increase the amount of heat and air. Thin the Grapes when ready, and remove all superfluous lateral growths. Afford plenty of air and a brisk temperature to Grapes colouring, and keep houses in which the crops are ripe, sweet and clean.

MELONS.—Afford plenty of air, heat, and moisture to succession plants swelling their fruit, and expose them to plenty of sunlight. Regulate plants growing in frames, pinching the shoots at one joint beyond the fruit, avoiding mutilation or injury to the foliage. Place a piece of tile, wood, or glass on the bed beneath the fruits and take care not to over-water the soil during the ripening stage. Pollinate the strongest female blooms as they develop.

FIGS IN POTS.—As soon as the first crop of fruit has been gathered remove the loose portions of former mulchings and apply a fresh rich compost, which will induce the formation of surface-feeding roots for the support of the second crop, which should be light compared with the first crop, if that has been an average one. Attend to the training and regulation of the growth constantly. Plants in unheated houses require all the sun-heat possible, and the ventilators should be closed early in the day with a sun temperature of 80° to 90°. It is advisable to grow the plants on the extension system, allowing the leading shoots to extend without stopping until they have reached the limit of the wires or trellis, afterwards removing them to make room for others growing from the base of the stem. Train the young growths at a suitable distance apart, to enable the wood to ripen properly, and

to secure firm, short-jointed growths. Little or no syringing is required during dull weather, but on fine days ventilate the house early and syringe sufficiently early in the afternoon to allow the foliage to become dry before night-fall.

PINES.—Suckers potted early in spring should now be growing in the pots in which they will fruit. Recently-potted plants should be afforded a steady bottom heat of 80° to 85°, and if the soil is dry water it thoroughly. When the roots are again in an active state and penetrating the new soil only a moderate amount of moisture is necessary. Young plants require constant and careful attention in every particular. Let them have plenty of space during their early stages of growth. Examine them daily for watering, which should be thorough whenever carried out. Ventilate the house early, especially if the morning is bright, so that the foliage may be free of all moisture before the sun's rays reach it, otherwise scorching may occur. Maintain a moist, genial atmosphere by frequently damping the paths and other surfaces several times daily when the weather is favourable, but refrain from promoting much moisture during dull weather, as this causes a soft, unhealthy growth and reduces the vigour of the plant.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

FIGS.—Fig-trees are growing rapidly, and there being very little frost last winter to damage the shoots their condition is satisfactory, with every prospect of a good crop. Young trees have a tendency to make gross growth, and to counteract this inexperienced persons often resort to severe pruning, which is wrong, for it only results in further growth of a similar nature. The proper treatment is to practise root-pruning in the autumn. The branches of young trees should be trained thinly apart, leaving only a sufficient number to furnish the wall-space. All weak growths can be pinched back to the third or fourth leaf. As showing that an extensive and rich rooting medium is not necessary one has only to remember how well Fig trees grow in odd corners with their roots often in a hard road or path. Such trees are invariably seen in robust health, and in favourable seasons they bear good crops. The grower should endeavour to obtain similar results with young trees in other parts of the garden by restricting the roots to a small space, which is the best way to prevent the tree from making gross, unfruitful wood, which seldom ripens properly, and is liable to be cut back by frost in winter. But it must be remembered that when the roots are restricted to a small area they are liable to suffer from an insufficiency of moisture, in which case the fruits would fail to develop. In addition to requiring large quantities of water, such trees need to be fed occasionally in order to help them mature heavy crops of fruit.

CORDON PEARS.—Pinch the side shoots to the fourth or fifth leaf, but allow the leader to extend for the present. It is well to do the work of pinching on two or three occasions, for if too many shoots were removed at one operation it would cause a check to the tree. The work may be commenced at the top branches, and the lower parts done after a day or two. To obtain fruits of the best quality, they should be thinned to a reasonable crop as soon as they commence to swell, but this should not be done before that stage, for large numbers of Pears drop whilst young. In doing this work, take into consideration the age and condition of the tree, and also whether the fruits are of large or small size. For instance, those of the varieties Citron des Carmes and Doyenné d'Été are very small when ripe, and these trees may be allowed to carry large crops. Marguerite Marillat and Triomphe de Vienne are two fine varieties for early exhibition, and if fruits are required for this purpose the trees, and particularly those growing on light, gravelly soils, need to be watered and syringed frequently during times of dry weather. The surface soil also should be top-dressed with a suitable fertiliser, which should be forked into the ground, and the latter afterwards watered; when this has

been done spread a mulch of short manure over the roots. The shoots of fan-shaped and horizontally-trained trees required for extension should be secured in position, and all others not needed for furnishing the tree should be stopped.

THE KITCHEN GARDEN.

By R. P. BROTHERTON, Gardener to the Earl of Haddington, Tynninghame, East Lothian.

LONDON COLEWORTS.—Seeds of this green vegetable sown now and again a few weeks later will furnish plants for cutting from late in October until January. I generally plant the seedlings behind an earlier crop, allowing to each a space of one foot, which is ample room.

BET.—The latest sowing should now be made, selecting one of the larger-growing blood-red varieties. The plants of the previous batch are quite forward enough to be thinned to 1 foot apart, and should there be any blanks, fill these with the thinnings. Stir the surface soil in a thorough manner to destroy weeds and render the soil friable and sweet.

CARROTS.—Thin the main crop of Carrots if this work has not been done already, and if there is space available, which is not always the case, make a last sowing of a stump-rooted variety. I have not found this late sowing to escape the Carrot fly, but others have succeeded with it, and anyhow it is worth trying, for late roots are always appreciated. Guerande is an old and reliable variety for late sowing.

FRENCH BEANS.—The plants sown out-of-doors have come up in splendid condition, and should be thinned to 1 foot apart in the rows. I am aware that it is not unusual to leave them much closer, but unless for a large gathering or two at the beginning, it gives less good results than spacing the plants so that each is all but independent of the other. The thinnings need not be lost if there is room to transplant them elsewhere, but a fresh sowing will give equally good results, though later. Draw to the thinned plants as much soil as can be got from between the rows to steady them during high winds. If growing in properly prepared ground the crop will need nothing further in the way of cultivation; but if the soil is of poor quality, scatter some pigeon manure very thinly, or a good vegetable fertiliser, over the surface previous to breaking it up with the hoe for earthing operations. If it is intended to grow the plants without staking them the shoots should be pinched as soon as they commence to run, to dwarf the plants. Each plant demands 3 feet each way when grown in this manner.

LATE PEAS.—I do not like to be later than this date in sowing the crop for the latest pickings, though in warmer localities it will be too early, and perhaps too late in colder. It is important that the forcing treatment as practised with earlier crops is not applied to this, because, though there may be abundant growth and a fair amount of flowers late in the season, the pods do not fill so well as on plants which are less vigorous, though equally healthy. Thin seeding is also of more importance for this than for any other sowing. I would strongly recommend placing supporting material to the rows at once. It may be noted that the old-fashioned custom of drawing the soil to the stems of the plants previous to staking is of no advantage to the crop, and was adopted merely as a means of keeping the plants upright. If early staking is carried out the earthing-up is not necessary.

THE "FRENCH" GARDEN.

By PAUL AQUATIUS.

CROPS OUT-OF-DOORS.—The earliest planted Cabbage and Cos Lettuces have been marketed, and will be followed by those sown from January onwards. Though the demand for salads diminishes as the season advances it is wise to continue planting small batches of Lettuce at regular intervals until late in September, when the most important batch is sown for winter use. Cos Lettuces are generally preferred dur-

ing the summer, though in certain parts of Lancashire and Ireland Cabbage Lettuces are the most popular kind. Select a well-situated spot for the rearing of seedlings of Lettuce, Endive, Cabbage, Radish, Spinach, and similar plants, preferably one where the crops can be watered as often as necessary. At this time of the year the seeds germinate quickly, therefore sow thinly, thus avoiding damping off, and ensuring hardy and strong plants, which may be set directly from the seed beds to their final quarters. There should be a succession of Cauliflowers obtainable until the first frosts in October. Afford copious waterings at the roots when the inflorescence appears; examine the plants daily, and keep the curd covered carefully. When the plants are ready for marketing such as are not required immediately may be pulled up by the roots and placed in a cellar or cool shed. There should be a constant succession of plants, the batch grown without heat following those from the hot beds; in July those from the cloche beds will continue the supply until those out-of-doors are ready in August. Carrots and Turnips sown in March and April are swelling at the roots, and require watering at least twice weekly. Vegetable Marrows set in frames early in April may be grown now without shelter; the fruits are swelling, and the roots should be kept moist. Owing to the recent frosts the early crop promises to be a very remunerative one. No artificial feeding is necessary, the manure bed giving sufficient nutrition. Prepare ground for the planting of late Celery without delay, enriching it with a heavy dressing of manure. The trenches should not be more than 2 or 3 inches deep, with a space of 3 feet between each, which may be utilised by an immediate sowing or planting of Kidney Beans or Lettuces. Should dry weather continue water frequently the crop of Witloof Chicory to prevent the plants bolting. Tomatos no longer require shelter of the cloches; secure the stems to bamboo canes, and remove all side shoots. Spray with a fungicide as a preventive against disease.

MELONS.—Prune the plants systematically as the growth progresses, examining them for this purpose at least once every week. Allow all side shoots to remain until the fruits are the size of a tennis-ball, when judicious thinning may be commenced, pinching the shoots to one leaf. Keep the plants dry whilst the female flowers are expanded, and ventilate freely in bright weather. Melons planted before May 20 do not require covering, but protection should still be afforded those set later. Water the plants before 9 a.m. to enable the leaves and stems to become dry thoroughly before night.

CUCUMBERS require careful shading, and the glass whitewashed, a syringe being preferable to a brush for doing this. Mulch the ground with dry manure or short hay to prevent the young fruits from damping off. Turn the fruit during growth to prevent the side lying on the ground from turning yellow.

AQUILEGIA CANADENSIS.

MANY of the Aquilegias are perplexing to the cultivator, and some absolutely refuse to thrive, no matter how much care is lavished upon the plants; this is sometimes true of the interesting *A. canadensis*. It would cheer those who have failed with it to see the bountiful tufts in rough, dry places in Canada, where the plant enjoys a soil that is distinctly poor and in places sheltered in a large measure from winds. The writer was astonished last summer to find soil near groups of Pines a warm orange-scarlet from the abundance of those graceful flowers we delight to see in the rock gardens at home. It positively thrives where some things cannot exist, hot suns scorching the ground beneath with strong rays, and winter snows having no injurious effect whatever. It is one of the cheeriest of the many beautiful wild flowers of the Dominion, and a hint as to the places in which it loves to dwell may be useful to those who cultivate it in England. *E. T. Cook, Toronto, Canada.*

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News.—Correspondents will greatly oblige by sending to the Editors 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 Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JUNE 16—

Roy. Hort. Soc. Coms. meet and Nat. Gladiolus Soc. combined show. (Masters Memorial Lecture by Prof. J. Bretland Farmer, F.R.S., D.Sc., at 3 p.m.)

WEDNESDAY, JUNE 17—

Yorkshire Gala (3 days).

THURSDAY, JUNE 18—

Linnean Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 59.2°.

ACTUAL TEMPERATURES:—

LONDON, *Wednesday*, June 10 (6 p.m.): Max. 66°; Min. 49°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, June 11 (10 a.m.): Bar. 29.5; Temp. 68°. Weather—Bright Sunshine.

PROVINCES, *Wednesday*, June 10: Max. 69°, Brighton; Min., 44°, Dover.

SALES FOR THE ENSUING WEEK.

FRIDAY—

Japanese Pigmy Trees, in porcelain pots and pans, by Protheroe and Morris, Central Sale Rooms, 67, 68, Cheapside, London, at 2 p.m.

Apple Scab.

A very thorough and interesting account of Apple Scab is contained in *Bulletin 335* of the Agricultural Experiment Station, Cornell University. Mr. Errett Wallace, the author of the *Bulletin*, comes to the conclusion, as the result of prolonged and careful investigation, that the primary infection which occurs in spring is due mainly and perhaps exclusively to the ascospores which are liberated from the resting fruit-bodies (perithecia) of the fungus. He finds that the perithecia which occur on the fallen leaves burst and discharge their ascospores just about the time that the Apple blossom is opening. As a consequence the first outbreak of the scab fungus (*Venturia inaequalis*) is generally to be observed on the leaves of the blossom buds—for these leaves are the first to expand.

Mr. Wallace points the moral to be drawn from this fact, which is that spraying, if it is to prevent the primary inoculation, must be carried out just before the blossom buds are showing pink. As a spray fluid the author prefers lime-sul-

phur to Bordeaux mixture, and records the observations made by Mr. Waite that good results have also been obtained by the use of self-boiled lime-sulphur to which sulphate of iron is added.

Mr. Wallace finds that from 8 to 15 days elapse between infection and outbreak of scab. During this time the spores which found lodgment on the leaves germinate, their germ tubes penetrate the cuticle, and form hyphae, which extend through the leaf and break out on the surface to form the characteristic patches and the first crop of conidia. These conidia, or summer spores, give rise to secondary infection, which again manifests itself after an incubation period in the outbreak of scabby patches and of a new crop of conidia. From experiments made upon Apples Mr. Wallace concludes that infection follows rainfall very regularly. He estimates that, for the spores to germinate and drive their germ tubes into the tissues, the surface of the leaf must remain wet for some 8 hours, and to this he attributes the fact that scab is more rife on trees with dense heads and on such as grow in sheltered situations. For in an open tree the water drains off the leaves more quickly, and hence such a tree stands a good chance of escaping infection, even though the wind- or insect-borne spores fall upon its leaves.

The relation between moisture on the leaf and germination of the spores leads to the further advice that spraying should be practised when rain is expected rather than when rain is over. Mr. Wallace insists that if the sprayer is able to get his work done only an hour or so before rain falls he will do much to prevent the outbreaks of scab: for, on the one hand, even this short space of time will suffice, in his opinion, to allow the spray fluid to stick on the surface, and, on the other, spraying after the rain is too late, since during a single rainy day the spores adhering to the leaves will germinate, penetrate the leaf, and though the damage will not be manifest for a week or two owing to the "incubation period," it is already done, and the mycelium produced by the germinating spores is out of reach of the spray.

Mr. Wallace does not believe that much, if any, infection is due to hibernating conidia or mycelium. He finds that the conidia do not long retain their powers of germination, and that, although they may resist fairly low temperatures, they are destroyed by prolonged frost. Conditions, however, are different in this country, and it may well be that in our more mild winter climate mycelium, and even conidia, pass unharmed through the winter. Beside spraying and proper attention to pruning, Mr. Wallace recommends that wherever possible the fallen leaves—the harbourers of the winter fruit-bodies of the fungus—should be turned under the soil, and he gives instances which show that outbreaks of scab are less marked when this operation has been performed. As the result of inquiry into the subject of disease-resistance the author concludes that no variety is actu-

ally resistant; nor is he sanguine that the breeder will be able to perform what Nature has failed to do.

Horticulture and Forestry at the Peace Exhibition.

Various features at the Anglo-American Exhibition at Shepherd's Bush, the first of the

public functions inaugurated to celebrate the hundred years' peace between the two countries, have been promoted for the most part by honorary committees.

The most important, from our point of view, are the horticultural and forestry committees. The former body has arranged for the planting of the borders and beds with shrubs and flowers, and for exhibitions and conferences to take place at suitable dates during the season, particulars of which were printed in our last issue.

The forestry committee has had to overcome considerable difficulties. In the first place there are fewer exhibitors to draw upon than in the horticultural section, and this season there were several forestry exhibitions already arranged before the committee was formed, notably one at Shrewsbury, to be held in connection with the annual show of the Royal Agricultural Society. When it is remembered that the Shepherd's Bush display must remain open to the public for the long period of five months it will be seen that the demands made upon exhibitors will not permit of the same specimens being sent to provincial shows. Nevertheless, the contributions are sufficiently large and comprehensive to create a considerable amount of interest amongst foresters and wood workers.

The School of Forestry of the University of Cambridge has provided the most extensive exhibit. It consists largely, but not exclusively, of specimens grown in the British Isles, and most of the exotic species selected for exhibition are hardy in the British Isles. Over 220 specimens of planks and boards are shown, each bearing a descriptive label. In many instances a portion of the specimen is polished and the remainder left plain. Every specimen is nicely planed and finished. In addition, there are examples of railway sleepers, plain and creosoted; fence posts illustrating the advantage of using creosoted wood, small manufactured articles, examples illustrating the effects of different methods of pruning, specimens showing injuries caused by squirrels and rabbits, and other interesting objects. Much care has been exercised in arranging the specimens, and the Cambridge authorities are to be congratulated upon the result.

The Duke of Richmond and Gordon has contributed an extensive exhibit from the Gordon Castle Estate, in Morayshire. It includes fine sections of the trunks of common Oak, Larch and Scots Pine, planks of similar woods, flooring boards cut from Scots Pine, sections of Oak suitable for boat building, creosoted posts and rails, specimen of a farm gate made from estate-grown timber by estate workmen, articles of turnery made on the estate; photographs of forest scenes and a



CRINUM POWELLII

A Hybrid Crinum : successful out-of-doors in many parts of Britain

section of Scots Pine upwards of 5 feet in width cut more than a century ago from a tree grown on the estate.

The Earl of Leicester has sent a series of photographs showing the steps taken to reclaim sand dunes in Norfolk, with trunk specimens of Corsican Pine from the dunes. The series demonstrates how forests can be raised on what was originally waste and barren land. Included in the exhibit are various objects manufactured by estate workmen, such as field and wicket gates, mangle rollers, snow and mud shovels and an entrance door. The last-named is made of Oak and is excellent in every way, its perfect finish being the subject of much favourable comment.

From Dupplin Castle, Perth, Sir John Dewar has made an extensive exhibit of pit timber, props, crowns and tramway

Easton Estate, Suffolk. They are of Poplar, and measure over 4 feet in diameter. The tree from which they were cut contained 378 cubic feet of timber in addition to 5 loads of top and faggot wood. Very fine Ash planks are shown from the same estate, also Willows and basket work.

From Darnaway Forest, Forres, the Earl of Moray has sent a valuable exhibit of planks and transverse sections of timber from trees of a good marketable size, specimens of trees showing the difference in the quality of the timber due to different densities of planting, photographs of forest scenery, several cases of insects injurious to forestry, parasitic fungi and other objects.

Messrs. Richardson and Sons have forwarded several photographs of famous

Our Supplementary Illustration.—*Crinum Powellii*, the subject of the Supplementary Illustration, is a well-known hybrid raised from *C. longifolium* crossed with *C. Moorei*. The beautiful deep-rose coloured flowers are more tubular than those of the parent, *C. Moorei*. They have been likened to those of the *Belladonna Lily*, but they are larger and brighter. The bulb is globose, has a short neck, and bears about twenty leaves, each some three or four feet long. The inflorescence is an umbel of sometimes eight flowers, and the spike is borne well above the foliage, as may be seen on reference to fig. 194, which shows how well the plant succeeds in the gardens at Burford, Dorking. Like many other plants, *Crinum Powellii* does best when allowed to grow for many years undisturbed, and those at Burford have been planted for thirty years. The late Sir TREVOR LAWRENCE informed us that they were set at least 2 feet deep, and in winter received a protective covering of ashes to the depth of about one foot. It is always advisable to



FIG. 194.—CRINUM POWELLII IN LADY LAWRENCE'S GARDEN AT BURFORD, SURREY.

(See Supplementary Illustration.)

sleepers, all made of a good quality of Scots Pine wood. He also exhibits railway sleepers, flooring boards, posts and rails (creosoted and plain), planks of Oak, Ash, Larch, Spruce and other timbers. The exhibit is one which is likely to attract the attention of wood merchants, for in each case the timber is shown as it is required for use.

Mr. W. P. Ellmore, Leicester, contributes an extensive collection of the best kinds of Willows used for basket making. They are shown in three ways, unpeeled, as white rods and as buff rods. The Willow industry is well worthy of encouragement in the British Isles, for even the small landowner can look forward to making a margin of profit within two years of planting.

The largest planks in the exhibition come from the Marchioness of Graham,

trees and a fine slab of brown Oak; whilst Mr. Bastin has sent a dozen mounts of insects injurious to forest trees. A comprehensive set of rules and scientific instruments provided by Messrs. Dring and Fage possess considerable interest for foresters and wood workers.

There have not been many Forestry exhibitions in London in recent years, and the present display, though by no means all that we could have hoped, is sufficiently interesting to make us wish that the authorities at Shepherd's Bush had given more care to the arrangement of the exhibits. They should have kept the collections together, arranging them across the hall, instead of separating and dwarfing them by placing the specimens around the walls with exhibits of a very different nature immediately in front of them.

select a warm spot in the garden for members of this family, and those who are acquainted with Kew will know how well *Crinums* succeed in the warm border at the foot of the Palm house. The late Mr. GUMBLETON was very successful with *Crinum Powellii* and its varieties at Belgrove, County Cork. He secured one strong bulb when *C. Powellii* was first sent out by Messrs. HENDERSON, about 1880, and although the plant does not increase very rapidly, eight years after planting the solitary bulb Mr. GUMBLETON had a mass of eighteen fine flower-spikes, averaging 4 feet in height, and each bearing from twelve to sixteen flowers. There are forms of *C. Powellii* with paler coloured blossoms, and a very fine white variety named *C. Powellii album*.

FLOWERS IN SEASON.—MESSRS. KELWAY AND SON send us a few choice varieties of *Paeonies* as fragrant as the colours are attractive. Amongst the best are *A. G. Vanderbilt*, crimson with purple shading; *Lord Mayor*, very fine rose-coloured flower; *Artist*, pale pink, with flesh-coloured centre; *Christabel*, double

white; Cecilia Kelway, a pretty shade of pink; Syren, pink, with lemon centre; Lady Mayoress, pink with very fine white centre; Mulchelney, old rose colour; and two more or less single flowers, R. W. Marsh, crimson-maroon with a mass of bright yellow stamens, and Wild Rose, a perfect single flower, which in shade and appearance is much like a very glorified Dog-rose. From Messrs. ROBERT VEITCH AND SON we have received some fine flowering sprays of *Buddleia Colvilei*.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the committees will be held in the Vincent Square Hall, Westminster, on Tuesday, June 16, 1914. At the 3 o'clock meeting in the lecture room, Professor J. B. FARMER, F.R.S., will deliver the eleventh Masters Memorial Lecture, entitled "Certain Aspects of Plants in Their Relation to Their Environments."

NEW SOIL-TILLER.—The *Times*, in its issue for the 8th inst., describes a trial which has just taken place in Kent, near Farningham, of a new rotary soil-tilling machine, which combines the action of plough, cultivator and harrow all in one. The action of the machine resembles that of a Potato digger, except for being backwards instead of transverse, and it leaves the land in an open, loose condition very favourable to subsequent cultivation. It is driven by a 30-h.p. petrol engine, and the largest of the three sizes in which it is obtainable weighs two tons. The cost is about £400, the other sizes being about £300 and £100 respectively, and the three widths are 7 feet, 5 feet, and 3 feet. The machine is capable of cultivating to a depth of from 2 inches to 12 inches; it can tackle hard land as easily as soft, the only difference being that of speed, which varies from 1 foot to 3 feet per second. The total cost of the operation varies from 12s. to 18s. per acre, and the effect considerably exceeds that at present obtained by implements already in use.

THE PRUNE CROP IN OREGON AND WASHINGTON.—The Board of Agriculture and Fisheries is informed by His Majesty's Consul at Portland, Oregon, in a report dated May 18, that the Prune crop of Oregon is estimated to be very small—probably a little over one-tenth of an average crop. From personal observation in Washington, he is of opinion that the crop is very poor in that State also.

R.H.S. GARDENS CLUB.—The members of the R.H.S. Gardens Club hold their annual meeting and outing to-day (Saturday, the 13th inst.). The programme includes a visit to Mr. LEOPOLD DE ROTHSCHILD'S garden at Gunnersbury House, Acton, at 11 a.m., and an inspection of Kew Gardens. Those unable to visit the Gunnersbury House gardens are requested to assemble at the main entrance to Kew Gardens at 2.30 p.m.

THE "FAIRCHILD" LECTURE.—The annual Fairchild lecture will be delivered by the Rev. Dr. HACKETT, late Dean of Waterford, and now vicar of St. Peter's, Belsize Park, on Tuesday, the 23rd inst., at 8 p.m., in Shoreditch parish church. The members of the Worshipful Company of Gardeners, accompanied by the Master and Wardens, will be present. It will be remembered that THOMAS FAIRCHILD, of the parish of St. Leonards, Shoreditch, gardener and cloth-worker of London, by his will, dated February 21, 1723-9, bequeathed to the Trustees of the Charity Children of Hoxton and their successors and the Churchwardens of the Parish of St. Leonard, Shoreditch, and their successors, the sum of £25, to be by them placed out at interest for the payment of 20s. annually for ever for the preaching of a sermon in the church of St. Leonard, Shoreditch, in the afternoon of the Tuesday in every Whitsun week, on "The Wonderful Works of God in the Creation," or on "The Certainty of the Resurrection of the Dead, proved by the certain changes of the animal and vegetable parts of the Creation."

THE NEILL PRIZE IN HORTICULTURE.—The Neill Prize, which is in the gift of the Council of the Royal Caledonian Horticultural Society, has this year been bestowed upon Mr. JAMES GRIEVE, Redbraes Nursery, Edinburgh. The prize consists of the interest of £450, which sum was left many years ago by the late Dr. PATRICK NEILL for the purpose of acknowledging the services of a distinguished Scottish botanist or cultivator, to be awarded every second year. The selection of Mr. GRIEVE as the recipient of the prize on this occasion will be exceedingly popular among Scottish gardeners, by whom he is held in high esteem, both for his professional skill and his genial personal qualities. Mr. GRIEVE is a native of Peebles and served his apprenticeship in the nurseries of Messrs. THOS. GENTLE AND SONS of that town. He afterwards served in Stobo Castle Gardens, and in 1859 he entered the nurseries of Messrs. DICKSONS AND Co. at Pilrig and Redbraes, Edinburgh, and later became nursery manager to the firm. On the removal of Messrs. DICKSONS' nurseries, in 1896, to Craigmillar, Mr. GRIEVE commenced business in partnership with his two sons at the old Redbraes nursery. Mr. GRIEVE has done much useful work in the hybridisation of florist flowers and fruit trees. At Stobo he commenced



FIG. 195.—MR. JAMES GRIEVE, RECIPIENT OF THE NEILL PRIZE.

the crossing of *Achimenes*; in 1863 he took up the crossing of wild *Violas*, producing many garden varieties, and his other hybridisation work was chiefly in Carnations, Pinks, Phloxes, and Pentstemons. He is the raiser of *Rhododendron Grievei* and other hybrid *Rhododendrons*, and has produced a number of new Apples and other fruits, the Apple James Grieve being named after him. He is a Fellow of the Royal Horticultural Society and of the Edinburgh Botanical Society, and a member of the Royal Caledonian Horticultural Society and the Scottish Horticultural Association; he has served on the Councils of the Botanical Society and the two Scottish horticultural societies. Mr. GRIEVE has lectured on horticultural and nursery work to the employees at the Royal Botanic Garden, Edinburgh, and he has been in much request as a lecturer on florists' flowers and as a judge of these at flower shows in Scotland.

RESIGNATION OF A SECRETARY.—Mr. G. L. BLACKBURN, who is leaving the district, has resigned from the office of secretary to the Leamington Branch of the British Gardeners'

Association, and Mr. R. T. LAW has been appointed secretary in his stead.

THE BLACKENING OF FRUIT BLOSSOM.—A paper by Messrs. BARKER AND GROVE in the first number of the *Annals of Applied Biology* (May, 1914) gives a detailed account of the investigations carried out by these authors into the nature of the blackening of fruit blossom, so frequent in Pears in spring. The disease, generally attributed to frost or cold winds, has been shown by Mr. BARKER (*Gardeners' Chronicle*, May 3, 1913, p. 287) to be due to a bacterium which, present in the flower-bud, may cause the pistils of unopened flowers to become discoloured. The first sign of the disease may be manifested by a graying and blackening of the tips of the sepals, or it may appear as minute grey-black spots in the floral receptacles; ultimately the whole receptacle blackens and the disease spreads to the ovary. In rarer cases the stigma is attacked and turns black and the blackening spreads from style to ovary. In any case, the flowers fail to set fruit and generally fall prematurely. The disease spreads rapidly from flower to flower, and from experiments carried out by the authors it is clear that bees and other insects may transfer the bacterium from one flower to another, and thus spread the disease. Nor are only the floral parts attacked. The disease spreads to the vegetative parts and affects the fruit-spurs and not infrequently kills them. Evidence is forthcoming that this black-blossom parasite is not confined to the Pear. It is probable that it attacks the flowers of Apple, Cherry, Gooseberry and Plum, and may also infect the leaves. Of Pears, *Bauré d'Amanlis* and *Catillac* are markedly susceptible, but many others are also rendered unfruitful by the parasite. The bacillus has been obtained from discoloured Apple flowers of Beauty of Bath, Bramley's Seedling, Allington Pippin, Devonshire Quarrenden and Duchess of Oldenburgh, and also from Victoria and Myrobella Plum. The bacterium appears to be a soil organism and has been isolated from the soil of fruit plantations. The authors are engaged in a further study of the disease, and it is to be hoped that they may be able to discover means of preventing it.

RHODODENDRON EXHIBITION IN REGENT'S PARK.—The exhibition of *Rhododendrons* and rock plants, which is being held in Regent's Park by Messrs. WATERER, SONS, AND CRISP, was opened on Monday last by H.H. the Duchess of Teck. It will remain open for public inspection for three weeks.

FRUIT CROPS IN HOLLAND.—The Board of Agriculture and Fisheries is informed by His Majesty's Acting Consul-General at Rotterdam that, according to a report by the Dutch Department of Agriculture of May 20, complaints were being received from several districts that night frosts had done much harm to the fruit crops, which till then were mostly promising. In Limburg especially the damage was considerable, although less on the hills than in the valleys. Here and there drought was doing harm and rain was badly wanted, particularly in Zealand. In this district much damage was being caused by insect pests. Elsewhere also pests were prevalent, but the vigorous measures adopted had materially lessened the evil. Cherries: Prospects were moderate in the Upper and Lower Betuwe, rather bad in Limburg and the east of North Brabant, and good elsewhere. Red and White Currants were moderate in the Westland, the Bangert, and in Limburg, and good to very good in almost all other districts. Black Currants were moderate to good in most parts of the country. Gooseberries were good in the Upper Betuwe, the centre and west of North Brabant, Ysselmonde and the district around Dordrecht, bad in the Westland and the east of North Brabant, and very good in the island of Walcheren and other parts of the province of Zeeland. Raspberries were good in the centre and west of North Brabant, around Nymegen, in the

province of Utrecht, and in most parts of Limburg and the Westland, but rather bad in the north of Limburg and the Krimpenerwaard.

SHIPMENT OF DUTCH POTATOS TO PHILADELPHIA.—We learn from the *Board of Trade Journal* that H.M. Consul-General at Philadelphia (Mr. W. POWELL) reports that the first shipment of foreign Potatos to reach Philadelphia since the embargo was placed on Potatos grown on foreign soil arrived at that port on May 1 from the Netherlands. An expert from Washington inspected the Potatos before they were unloaded, and as no evidence of scab or taint of any kind was discovered, the whole shipment was allowed to be unloaded. It is reported that the Potatos were also examined before leaving the Netherlands and were given a certificate of good condition.

RESTRICTIONS ON IMPORTATION OF GOOSEBERRIES IN NORWAY.—With reference to the notice at p. 725 of the *Board of Trade Journal* for March 19 last, respecting the prohibition of the importation into Norway of Gooseberry plants and parts thereof, including fresh Gooseberries, unless special permission for such importation has been granted by the Norwegian Department of Agriculture, the Board of Trade is now in receipt, through the Foreign Office, of copy and translation of a circular of the Norwegian Department of Finance and Customs, dated April 30, which notifies that such permission may be granted on condition that the application is accompanied by a certificate from a publicly appointed horticulturist in the country of origin stating either that the nursery from which the plants are supplied is free from mildew (*stikkelsbaerdraeberen*), or that the plants have been satisfactorily disinfected prior to their despatch. The circular also notifies that permission will not be granted to import Gooseberry plants from abroad to the "Amts" (counties) of Finnmark, Tromsø, Nordland, North Trondhjem, South Trondhjem, Romsdal and North Bergenhus. *The Board of Trade Journal*.

"BOTANICAL MAGAZINE."—*HYPERICUM ASCRON*, tab. 8,557.—This large-flowered St. John's Wort occurs both in the old and new world. Mr. M. L. DE VILMORIN, who obtained seeds from Korea, presented plants to Kew. These gave rather larger flowers than the ordinary form, exceeding 2½ inches in diameter. The flowering stems grow 3 or 4 feet high and are terminated by large corymbs of yellowish flowers, the flowering season being July and August. The species is not a good garden plant, because it is apt to die after a few years, but a fresh stock may be raised readily from seeds.

VITIS THUNBERGII, tab. 8,558.—This plant must not be confused with the so-called *V. Thunbergii*, which is only a very fine form of *Vitis Coignetiae*. The true *Thunbergii* has much smaller, deeply-lobed leaves and is not of such vigorous growth, neither is it so hardy. The leaves, like those of most vines, die off a rich shade of red, and the plant would be valued in gardens in warm districts for its autumn tints.

DEUTZIA MOLLIS, tab. 8,559.—This species was first described by Mr. DUTHIE in the *Gardeners' Chronicle*, October 6, 1906, p. 238, from specimens collected by Mr. E. H. WILSON in Central China. This inflorescence is a many-flowered corymb, the petals being white, sometimes flushed with pink.

TRICYRTIS STOLONIFERA, tab. 8,560.—The species of *Tricyrtis* have curious-looking flowers, and in *T. stolonifera* the maculated foliage is not unlike the leaves of some Orchids. There are some ten species, and *T. stolonifera* is the brightest-flowered of all. The specific name is derived from the stoloniferous habit, which chiefly distinguishes it from *T. formosana*. The specimen figured was raised from seeds collected by Messrs. ELWES AND

PRICE in Formosa. The plant is apparently not perfectly hardy in this country, but it would be suitable for growing in the cool greenhouse, and in warm districts would probably grow well out-of-doors. The flowers are purple with deeper spots on the upper surface and paler beneath.

STAPELIA LEENDERTZIAE, tab. 8,561.—The flowers of this species are very distinct, being bell-shaped, of a claret-purple colour, about 3 inches long and 2 inches across; in most members of the genus the corolla is flat or saucer-shaped. The plant illustrated was sent to Mr. W. E. LEDGER, of Wimbledon, by Mr. G. THORNCROFT, of Barberton, in the Transvaal.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The seventy-fifth anniversary festival dinner of the Gardeners' Royal Benevolent Institution will take place at the Hotel Metropole, Northumberland Avenue, on the 26th inst. The Right Hon. the Speaker, JAMES W. LOWTHER, Esq., who will preside at the dinner, makes an appeal for increased support in the following letter:—Speaker's House, S.W.—28th May, 1914.—Dear Sir,—I am to have the pleasure of presiding at the 75th anniversary dinner, in aid of the funds of the Gardeners' Royal Benevolent Institution, on the 26th June, at the Hotel Metropole, and I venture to ask for the kind assistance on that occasion of all lovers of flowers and of gardens. This National Horticultural Fund, since its foundation seventy-six years ago, has distributed nearly £150,000 amongst necessitous horticulturists and their widows. It is now affording permanent aid to 265 persons (150 men and 115 widows), at an annual cost of £4,840. In addition to this permanent charge upon its funds, it is the policy of the institution to provide immediate temporary assistance from separate funds in well authenticated cases of urgent distress. As regards the permanent charge, the assured income of the institution only amounts to £950 per annum, consequently there is a sum of about £4,000 which has to be made up annually from subscriptions and donations. In order to assist the institution in raising this amount, I invoke your generous aid, and should feel greatly favoured if you will give me the pleasure of your company on June 26.—I remain, yours very truly, JAMES W. LOWTHER.

FRUIT CROPS IN WÜRTTEMBERG AND FRANCE.—The Board of Agriculture and Fisheries is informed by H.M. Consul at Stuttgart that cold and wet weather during May did much damage to the fruit crop of Württemberg, all of which, except Pears, had previously promised well. Growers only expect to market a medium crop, Cherries especially will be much below previous estimate. An official report gives the condition of Apples on June 1 as 2.7, Pears as 3.4, and Grapes as 3.0 (2=good, 3=average, 4=poor). The Strawberry crop, which is just coming in, is reported as good. Quotations on the Stuttgart wholesale market are per cwt. Strawberries, 50s. to 85s.; Cherries, 18s. to 22s.; and green Gooseberries, 16s. to 20s. H.M. Consul-General at Paris reports (May 29) that the fruit crop in France is likely to be generally satisfactory as regards all kinds except Prunes, which will probably yield rather less than last year, and that prices will therefore probably be rather lower than in 1913. H.M. Vice-Consul at Honfleur reports (June 6) that in his district early Cherries are plentiful, and prospects are good for the later varieties. Good crops of table dessert Apples and early Pears, heavy crops of cider Apples, but only half a crop of Plums and Greengages, and very poor crops of late Pears, are expected.

ROYAL METEOROLOGICAL SOCIETY.—A meeting of the Royal Meteorological Society will be held at 70, Victoria Street, Westminster, on Wednesday, June 17, at 4.30 p.m. A paper on "The Rainfall of the Southern Pen-

ines" will be read by Mr. B. C. WALLIS, B.Sc., and one on "The Relation between Wind Direction and Rainfall," by Mr. H. J. BARTLETT.

PUBLICATIONS RECEIVED.—*Bulletins from the Purdue University Agricultural Experiment Station*: No. 164, Strawberries; No. 165, Tomato Investigations; No. 166, Commercial Fertilisers; No. 170, The Reclamation of an Unproductive Soil of the Kankalec Marsh Region; No. 171, The Vegetable Garden; No. 172, Soybeans and Cowpeas.—*Twenty-Sixth Annual Report of the Purdue University Agricultural Experiment Station*. (LaFayette, Indiana, U.S.A.)—*Bulletins from New Hampshire Agricultural Experiment Station*. (New Hampshire College of Agriculture and the Mechanic Arts, Durham, N.H.): No. 166, Results of Seed Tests; No. 167, The Fertiliser Inspection for 1913; No. 168, The Effects of Fertilisers in a Cultivated Orchard.—*The Agri-Horticultural Society of Madras*. Report for 1913 and Proceedings from October to December, 1913.—*Forty-Fifth Annual Report of the Fruit Growers' Association of Ontario, 1913.*—*Report of the Minister of Agriculture, Province of Ontario, 1913.*—*Eighth Annual Report of the Horticultural Societies of Ontario, 1913.*—*Bulletin 220 of Ontario Agricultural College, "Lightning Rods."*—*Bulletin 221 of Ontario Agricultural College, "Food Value of Milk and Its Products."*—*Forty-fourth Annual Report of the Entomological Society of Ontario, 1913.*—*The Genus Pinus*. By George Russell Shaw. (Arnold Arboretum, Harvard University, Mass., U.S.A.)—*Journal of Agricultural Science* for May. (Cambridge University Press.) Price 5s. net.—*The Social Guide*. Edited by Mrs. Hugh Adams and Miss Edith A. Browne. (London: Adam and Charles Black.) Price 2s. 6d. net.—*Tours in Galloway*. Official Guide to the Portpatrick and Wigtownshire Joint Railways.—*The Orchid Review for June*. (Marshall Bros., Ltd., 47, Paternoster Row, E.C.) Price 6d.—*The Journal of the North of England Horticultural Society for June.*—*Agricultural Journal, Department of Agriculture, Bihar and Orissa, India*. (Government Press, Patna.)

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE COMMON SWIFT MOTH (HEPIALUS LUPULINUS).—This moth, the caterpillar of which is so destructive to the roots of Paeonies and other fleshy roots in gardens, and even to the slender roots of other plants, is very difficult to catch with the net, as it flies swiftly just on a level with the low plants in the garden, vanishing at intervals. It also scatters its dark-coloured eggs loosely on the ground, so that it is almost impossible to see them. I was glad, therefore, to find a ready means of catching and killing the moths. Having left out overnight in the garden some emulsion of the insecticide Abol (with which I have been spraying the Apple trees) I found next morning twelve females of this species dead and floating in it. I therefore left it out a second night, and found eighteen next morning. In the evening I went out and found five more, but next morning only two out of the five were left. This I found was due to an inquisitive sparrow which I saw carrying off one of the moths. As the male ghost moth, *Hepialus humuli*, has white wings, I wondered whether the white colour of the emulsion attracted the female insects, but as the male of the *Hepialus lupulinus* is not white, but, on the contrary, darker than the female, I put out a white dish with water in it, and another white dish with milk in it, to see if they would be attracted to it, but they were not, whilst they still came to the Abol emulsion. It is probable, therefore, that there is something in the odour of the Abol that attracts them, as the males of other species of this genus have characteristic odours, that of *Hepialus lectus*, which feeds on Bracken roots, being likened to Pineapple, and that of the *Hepialus humuli* to the capric odour of the billy goat. In any case, the fact of the insect

being attracted and killed by the emulsion of Abol may be usefully placed on record. *E. M. Holmes, Ruthven, Sevenoaks.*

OBSERVATIONS OF MERODON FLY DURING ACT OF LAYING.—I have recently had the opportunity for the first time of seeing a Merodon fly laying an egg. I observed the operation in four cases, and in one, which I will describe, the observation was under the most favourable circumstances. The fly settled on the outside of the tuft of leaves from a "single" bulb about 2 inches from the ground, and turning almost immediately head downwards, proceeded to crawl down to the base. The soil, which had not been disturbed, had shrunk away from the leaves, leaving a fair-sized hole around them. On arriving at the level of the soil the fly went down with its head and about half its body into the hole. At this moment it seemed to be very agitated. It then withdrew its head, and, dropping from the leaves to the ground, it at once turned round and slipped into the hole tail first, with its back to the leaves, until only its head and its front legs, resting on the edge of the hole, were visible. Three or four seconds later I netted it and searched for the egg, but could find none on the leaves or neck of the bulb. The whole operation had taken about 20 to 25 seconds, and was performed with such unhesitating precision that it had every appearance of being normal. In the second case the ground had been hoed and the loose, dry soil had been drawn up against the leaves, thus filling in the holes, but the leaves swaying in the wind had formed shallow crater-form rings around each plant. The fly proceeded exactly as before, but it scabbled away the loose soil, both when it was prospecting head down and also as it settled itself in tail first. After catching it, I drew away the soil from the leaves and found the egg on the earth close to the neck of the bulb, but I may have detached it when drawing the soil away. In the third case the fly got partly around the leaves away from me, but it appeared to have its back to the leaves when in the hole; it certainly was not facing them. And in the fourth case the fly entered the hole tail first, but sideways—due, I think, to the shape of the hole. In neither of these two latter cases could I find the egg, and it was hardly to be expected, as striking with the net jars the leaves and surrounding soil. So it is impossible to say whether the eggs were attached to the leaves or simply dropped into the hole down beside the neck of the bulb. But if the fly does attach the egg it might be expected to face the leaves when laying, whereas the position with its back to the leaves would be more convenient for dropping it down the hole. If the grub does enter the bulb at the base, as there seems little doubt now that it does, it would seem to be more advantageous for the egg to be dropped as far down the hole as it would go, and the young grub on hatching would not then have so far to crawl. Also it would be safer from enemies, and would be more assured of moisture, which seems very essential to the young grub. I would have liked to have made further observations, but there have been no flies about for a week or more. This note is not written merely for the sake of recording a fact, though that is always to the good; but if it should be established that normally the egg is dropped into the hole, and not laid on the leaves, it is evident that the practice of keeping the soil loose and drawn up to the leaves, so filling in the holes, from the earliest time of the appearance of the fly would be of especial importance. *A. J. Bliss.*

THE LESSER NARCISSUS FLY.—Does Mr. A. J. Bliss seriously suggest that the meaning of the article in the *Journal of the Board of Agriculture*, read as a whole, resolves itself into this, that, having distinctly stated that the larvae of this fly do burrow into, and attack, the necks of the Narcissus bulbs, it is offered as a possible interpretation of the paragraph which Mr. Bliss quotes that under no circumstances do they do so; for, if under any circumstances they do so, then *pro tanto* the "scavenger" theory goes? Surely the writers in the journal are not so stupid as that. They have doubtless written on facts ascertained, although not thinking it necessary to set out all

these facts in detail. And we are not, therefore, told what were the whole conditions under which the flies of the second brood did not attack the bulbs; but, anyway, this throws no light on what, earlier in the season, the flies of the first brood may do. Mr. Bliss is mistaken in thinking that no facts have been brought forward to support the views of the *Journal of the Board of Agriculture*, while it is absolutely certain that from first to last no single fact has been adduced to affirmatively prove the "scavenger" theory. It rests wholly on surmise. And while it is, of course, true that were the "scavenger" theory to be sustained we might, to quote Mr. Bliss, "be put to considerable trouble that eventually might prove to have been unnecessary," on the other hand, should the other view be sustained where then will these persons who have not cared to take this trouble find themselves? Better a little trouble as an insurance against a somewhat serious risk. However I do not propose to waste further time in pursuing these arguments. As matters now stand it appears to be "Mr. Bliss versus The Board of Agriculture," and I am content to leave it at that, with heavy odds on the Board. *Charles E. Shea.*

OXALIS ADENOPHYLLA (see p. 400).—Referring to the note in your last issue, I may say that I have for two or three years grown this species (as also *O. enneaphylla*, white and rose), in a retaining limestone wall, and a few words on my experience may be useful to others. *O. enneaphylla* grows well and flowers moderately both in a north and a west aspect. The flowers expand fully and keep open even when the sun is obscured. I think, however, that the plants are not flowering so freely as formerly, and I should be glad to know if they should be lifted and broken up. If that is recommended, how and when should it be done? *O. enneaphylla* var. *rosea* is growing in a south-east aspect. Its foliage is smaller than in the type, and, moreover, it is brownish along the margins, as though not in perfect health. I have, however, noticed that these characters were present in all other plants that I have seen at Kew or elsewhere, and I should be glad to know whether readers can confirm this observation. My plant does not flower very freely, and the flowers are not so roseate this year as last. *O. adenophylla* occupies the same aspect as the last. It is as vigorous as, if not more vigorous than, *enneaphylla*, and much more floriferous. It is, however, far more sensitive to sunlight, and even on the brightest day its flowers close directly the sun's rays are withdrawn, as happens in my case before two o'clock. I see that some leaves are appearing in a joint of the wall half a foot from the main plant, a condition of things I have not noticed in the case of the other two forms. *William Somerville, Oxford.*

ANOPLANTHUS COCCINEUS (see p. 401).—*Anoplanganthus coccineus* flowered here in May last year. The seed had been received in 1910 from Tiffis, and was sown on the *Centaurea dealbata*, but nothing appeared. They again supplied me with seed in 1911, and again no result followed, and in 1912 I put out the *Centaurea* and the contents of the pot in the open ground, and forgot all about it until, going round the garden on May 25, 1913, I suddenly caught sight of the stem, looking like a stick of red sealing-wax. I am sorry to say it has not reappeared this summer. *A. C. Bartholomew, Park House, Reading.*

TRITONIA CROCATA.—On a recent visit to Ingestre Gardens, Stafford, I had the pleasure of seeing an exceedingly fine batch of *Tritonia crocata*. Mr. E. Gilman, the head gardener, informed me that he found the plant invaluable for decorative purposes, either for cut flowers or pots. The colour is a beautiful shade of orange scarlet, very effective under artificial light. The plant resembles *Freesia refracta alba* in habit and growth, and can be cultivated on similar lines. The compost used by Mr. Gilman consists of fibrous loam and leaf-soil, with a little peat, silver sand, and mortar rubble. About seven or eight bulbs are placed in a 5-inch pot, and started in a cold frame. They are subsequently moved to a cold greenhouse, and placed near the roof-glass. A little liquid manure is applied when the spikes begin to push up, and

at this stage a little heat is occasionally given. A profusion of bloom is produced, which lasts from March until May. I feel sure that if this plant were better known it would be as popular as *Freesias*. *R. Greenfield.*

RIBES SANGUINEUM AUREUM BROCKLEBANKII.—As the raiser of this beautiful flowering shrub, may I be allowed to correct an error made by your reporter in his description of the plant on the occasion of its receiving an Award of Merit at the meeting of the R.H.S. on the 3rd inst.? He wrote on p. 402: "This is a pretty form of the dwarf species of *R. alpinum*, with foliage of an entirely bright yellow. Growing only 12 or 18 inches in height, it should prove useful to give a mass of bright colour in bedding." As it originated here as a sport on *Ribes sanguineum*, it will doubtless grow as high as the type, or nearly so. Specimens here are fully 3 feet high, and 4 or 5 feet through. It would have been higher, but, planted at the margin of the shrubby border, it has been cut back annually. In your "Answers to Correspondents" column, p. 234, you were good enough to notice a flowering spray which I had sent to your office in these words: "The *Ribes sanguineum Brocklebankii* with yellow young foliage appears to be a very good shrub of its type. We have not seen it before." *Thomas Hinkworth, Haughton Hall Gardens, Tarporley.*

SEVERING OF IVY STEMS.—In the issue for May 23, p. 352, on the explosive force of decayed Ivy, it is stated that Ivy will continue to grow if the stem is severed. I have never known a single instance where this has happened; I have known several cases where it has been tried, but it has always failed. I should be glad to know if any of your readers could give an instance of the stem of an Ivy having been completely severed, continuing to live throughout one summer. *H. G. B. Biddenden, Andover.*

THE ROYAL BOTANIC SOCIETY.—As an ardent enthusiast, who has been more or less in touch with horticulture, both at home and abroad, during the last thirty years, I am led to the opinion that your correspondent, Mr. Stuart R. Cope (see p. 401), is much too severe in his condemnation of the methods of a society which is making an honest endeavour to mend its ways. It is agreed that much of what he states has some sound basis for argument, still there is a deal that could be explained to account for the actions of those who manage this delightful oasis—anyway, at the present time. He expresses regret that the charter under which the Society's rights are held is not adhered to, but seems to forget that it is possible for constituted rules and regulations to require adjustment according to circumstances. He fails to grasp the fact, which must be clear to the most ordinary observer, that with the advance of knowledge in and about our Colonies there is not to-day that special demand for home-trained men and home-bred cultures, beyond what Kew can supply, that there was years ago when our possessions in every part of the world demanded everything they were in need of from this country, both in brains and plants, and in confirmation of this opinion am I not correct in stating that the present Director of Kew Gardens is himself, professionally, a product of India? I well remember, when young plants of Coffee, Tea, Cinchona, Rubber, and other economic and commercial crops were wanted, they were raised here and transported in Wardian cases, and I ask the question, is it absolutely necessary to make such regular shipments to-day? What could we now teach Ceylon about Tea and Coffee, the Malay States about Rubber, New Zealand about Grasses and Clovers, South Africa about Tobacco, Jamaica about the Sugar Cane, or Canada about Peas? The points Mr. Cope raises about the Royal Horticultural Society I am not in agreement with, as I contend that the true history of the real cause of the present unique position of this great and influential Society has yet to be written. *Donald McDonald.*

STOLEN FROM THE CHELSEA SHOW.—It is unfortunate that, at the Chelsea Show, a theft occurred of plants sent over for certificates from French nurserymen of Roses not yet in com-

merce. That they were stolen by some expert for propagating purposes is evident, and the thief is probably the same person who stole from our stand during the night a guinea plant of Rose Mrs. Carnegie. May we express our sympathy with the firms who have suffered this loss at an English exhibition? *George Paul, Director, Paul and Son (Cheshunt).*

QUEEN WASPS AT TRING.—On the 5th inst. I received from Mr. R. C. Sanders, gardener at Halton House, Tring, a box of wasps that had been caught within a radius of two miles of Halton Gardens, between the second week in April and May 22 by men and boys on the estate, with a request that I would report whether they were all queens. I welcomed the opportunity of inspecting such a collection, because it would furnish evidence as to the relative numbers in which our British species occurred this year in that particular district. The investigation took me about five hours. On the whole the specimens were in excellent condition, and, with the exception of the mouldy ones and some badly discoloured, were easily identified. The collection purported to consist of 2,651 individuals, divided into two batches, viz., 1,725 caught by men and 926 by boys. There had obviously been a miscount, however, in both cases, for I found 1,707 in the first case and 901 in the second, a deficiency of 43 in all, which was not accounted for by the odd bodies, wings, heads, etc., which could not be included conveniently, because many of them undoubtedly belonged to specimens which I had already counted. In all such incomplete cases I counted them where identification was possible, and the result was as follows:—

	Caught by men.	Caught by boys.
Queens, <i>Vespa germanica</i> ...	1,056	568
<i>Vespa vulgaris</i>	276	135
<i>Vespa ruga</i>	235	133
<i>Vespa sylvestris</i>	137	61
<i>Vespa norvegica</i>	1	1
<i>Vespa austriaca</i>	—	—
Workers, <i>Vespa germanica</i> ...	1	—
<i>Vespa vulgaris</i>	1	—
A drone fly, <i>Eristalis pertinax</i>	—	3

1,707 901

It will thus be seen that, with the exception of the rare cuckoo wasp, *V. austriaca* (*arborea*), and, of course, the hornet, all our British social wasps were represented, and that *Vespa germanica* was obviously by far the commonest species in the district this spring. Putting the average number of wasps, all sexes, produced in the nests which these 2,603 queens would have founded at 1,000—a very low figure in the case of *vulgaris* and *germanica*—we arrive at the total of nearly 3,000,000 wasps, which, barring accidents, would have emerged from those nests in the course of the season to do their beneficial work in reducing the number of flies and caterpillars of various kinds and their destructive work in attacking fruit later on. Let us hope that the balance will be in favour of the fruit; but it remains to be seen whether man will not be the sufferer in some other way. *C. Nicholson, Hale End, Chingford.*

SCOTLAND.

CRAIBSTONE ESTATE.—The Governors of the Aberdeen and North of Scotland College of Agriculture have paid to the Scott Trustees the purchase price of the estate of Craibstone, amounting to £18,000. The estate of Craibstone lies some six miles north of Aberdeen, and extends to over 760 acres, 474 being arable, 44 pasture, 218 woods and 27 waste land. The estate includes a roomy mansion, built some thirty years ago. There are some very fine specimens of Ash, Elm and Beech, and the potentialities of what may be done in experimental and research work in the domain of forestry are very great. The policies may be used as an arboretum, where specimens of trees and shrubs suited to the area embraced by the college could be grown. In all an area of something like 300 acres will be available for forestry purposes. The mansion is to be converted into a school of rural economy, something on the lines of the Munster Institute, Cork.

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

JUNE 3.—*Present:* Mr. A. E. Bowles, M.A., F.E.S. (in the chair); Messrs. J. T. Bennett Pöe, W. Cuthbertson, F. J. Baker, W. Hales, J. Fraser, W. C. Worsdell, F. J. Chittenden (hon. sec.), and W. R. Dykes (visitor).
Fungus attack upon Nymphaea.—Mr. J. R. Ramsbottom reported as follows upon the fungus

burg, and, not realising he had the same fungus as Allescher, described it under the name *Ramularia nymphaea*; later as *Ovularia nymphaea*. Allescher afterwards pointed out that the fungi were identical, but that owing to having had old specimens he had been misled by the tearing of the epidermis of the host plant caused by the rapid growth of the fungus. He holds that *Ovularia* is the correct genus, and, of course, the first specific name, *nymphaeanum*, must stand. Judging from the specimens I have seen, *Ramularia*, rather than *Ovularia*, would seem to be the



FIG. 196.—IRIS LAEVIGATA ALBA.

R.H.S. Award of Merit, June 3, 1914 (see p. 402).

attack on foliage of *Nymphaea* shown at the last meeting:

“A leaf of *Nymphaea* sent to me by Mr. Bowles, and exhibited at the last meeting, showed two rows of large holes parallel to the midrib. An examination of the decayed tissues showed fungus spores, together with certain algae, diatoms, etc. The fungus proved to be one of the Hyphomycetes. It was first described by Allescher in 1895 as *Ploeosporium nymphaearum*. He had gathered it on living leaves of *Nymphaea alba*, *flava*, *odorata*, and *Nuphar luteum* in the Munich Botanic Garden. Bresadola had the fungus sent to him from Branden-

correct genus as the mature spores apparently become septate. I have found the fungus growing on wild Water Lilies at Wicken Fen, Cambridge, during the autumn of last year.”

Rose malformed.—Mr. W. C. Worsdell said he had examined the Rose sent to the last meeting by Miss Collin, and had found the calyx normal, and all the petals save one changed into foliage-leaves. Proliferation into a second flower had occurred, the calyx of which merged imperceptibly in a complicated way into the virescent, superior carpels of the primary flower. This is an uncommon abnormality, as it is usually the calyx, not the corolla, which exhibits phyllody.

Malformed Schizanthus.—Mr. Worsdell also reported that he found virescence and proliferation of all the flowers of the inflorescence in the specimen shown at last meeting. Each flower has become changed into an inflorescence consisting of a number of minute rudimentary, axillary, virescent flowers, with no definite arrangement of their parts.

Gall on Daphne Mezereum.—Dr. Rendle reported that Mr. B. F. Cummings of the Natural History Museum had kindly examined the galls on *Daphne Mezereum* shown by Mr. W. E. Ledger at a previous meeting, and considered it not at all unlikely that they were the work of

cate was unanimously recommended for *Glaucidium palmatum* shown at the last meeting by Messrs. Perry, of Enfield.

Irises.—Mr. W. R. Dykes showed a series of Irises, species of the *I. sibirica* group all characterised by a more or less hollow stem and beardless flowers. Among them were *I. Forrestii*, *I. Wilsonii*, and *I. chrysographes*, and the following hybrids: *I. × Zeta* (*sibirica* ♀ × *Wilsonii*), *I. × Epsilon* (*Bulleyana* ♀ × *Forrestii*), *I. × Gamma* (*Forrestii* × *chrysographes*). There were plants of the last form raised both ways, and all practically alike.

Iris tenax ♀ × *I. Wilsonii* (= *I. × Meta*)

Frost damage.—Mr. Chittenden showed Apple fruits about an inch in diameter which had been damaged by the severe frost on May 26 (at Wisley, 19° Fahr on grass, 25° on post on the hill—probably lower in lower grounds). The flesh was in some cases only slightly-tinted brown about the vascular bundles, but in more severe attacks the cells had become greatly disorganised and the tissues broken. None of this damage was to be seen externally. The fruit on the trees on the hill had completely escaped damage, but that in the lower ground was very severely injured, although the fruits had not yet dropped.

Double Claytonia sibirica.—Mr. Chittenden also showed flowers of a double form of *Claytonia sibirica* from the Wisley Gardens, in which the doubling in some cases was not confined to the petals, but three or four pistils had been produced as well.

ROYAL METEOROLOGICAL.

MAY 20.—The first of the afternoon meetings of this society for the present session was held on Wednesday, the 20th inst., Mr. C. J. P. Caye, M.A., president, in the chair.

Mr. E. GOLD read a paper on "The Reduction of Barometer Readings in Absolute Units, and a new Form of Barometer Card." The Meteorological Office having now employed the C.G.S. units in their publications, this has necessitated the preparation of new tables for the reduction of the barometer readings and for the adjustment of the effect of difference between the standards of temperature 62° F. and 273° A.

Mr. A. HAMPTON BROWN also read a paper on "A Cuban Rain Record and its Application," in which he dealt with the rainfall records of the Belen College Observatory, Havana, for the period 1859 to 1912, and gave particulars of the monthly, yearly, and seasonal rainfall. The author has endeavoured to trace the connection between the wet season at Havana during May to October, and the precipitation in England, south-west and South Wales during the three months, January to March following, and he has found that from 1878 onwards, when the first reports for this country are available, an excess rainfall in Havana during May to October was generally followed by a deficient rainfall in England south-west at the beginning of the next year, and *vice versa*. For the eight years, 1888-1895, when the rainfall at Havana was continuously in excess, in England south-west the figures with one exception were the reverse. During the next five years, 1896-1900, there was a deficiency at the Cuban station, and, excepting 1897, an excess in this country. There were many years where the application failed, but the general continuance of the see-saw movement was so persistent that it could hardly be regarded as merely coincidental.

NATIONAL HARDY PLANT.

JUNE 4.—The annual show of this society was held at Vincent Square, on the day following the R.H.S. meeting and exhibition, and certain exhibits of hardy flowers of the previous show remained. These, with other trade exhibits, assisted in making the hall gay and attractive.

Entries for the competitive classes had been numerous, but a short time before the show many entrants found it necessary to withdraw. A large number of new plants were submitted for certificate, but only four novelties received awards. Twenty-five medals were awarded to groups and collections of hardy flowers.

CERTIFICATES OF MERIT.

Paeonia lobata.—This plant has been described as a dwarf variety of *P. officinalis*, but from a garden point of view it is distinct. The obovate, or nearly orbicular petals make a very attractive globular flower of coral red colour. The plants are dwarf, and, unlike some herbaceous Paeonies, are not overburdened with foliage. Shown by Mr. JAMES GRAY.

Erigeron hybridus Asa Gray.—A very decorative variety producing cymes of flowers which have less stiff florets than usual; the colour is that known as old gold. Shown by Mr. B. LADHAMS.



FIG. 197.—HYBRID IRIS IOTA (*I. TENAX* × *I. PURDYI*): FLOWERS WHITE SHADED AND VEINED WITH LILAC.

R.H.S. Award of Merit, June 3, 1914 (see p. 402).

an early form of *Perrisia daphnes*, Kieff, a beetle larva.

Double Mangel.—Messrs. Cannell and Sons, Loddon, Norwich, sent a double root of Mangel, two roots, one considerably larger than the other, being attached at about the widest part. The Committee thought it probable that the two had become grafted one on to the other during growth and following contact.

Double Daisy.—Mr. Wirsley sent heads of a double Daisy in which several capitula had become tightly pressed together, so that the whole head presented a very curious appearance.

Glaucidium palmatum.—A Botanical Certifi-

illustrated in a particularly striking degree the frequently-noted fact of the greater strength and vigour of a first cross over the parents. The flowers in this case had inherited a yellowish tinge from the pollen parent. *I. × Iota* (*tenax* ♀ × *Purdyi*) was also shown (see fig. 197). A peculiar colour variation in *Iris bracteata* (normally a yellow-flowered form) was also exhibited with flowers of a purplish tint, and the beautiful *I. laevigata* (see fig. 196) so often confused with *I. Kaempferi*.

A Certificate of Appreciation was unanimously recommended to Mr. Dykes for his work in raising these Irises.

Campanula Hohenackeri.—This exceedingly floriferous plant is said to be a perennial, but it is advisable to sow seeds annually, as the plants bloom so freely that it sometimes kills them. The inflorescences of sky-blue flowers are about 18 inches high. Shown by MESSRS. PIPER AND SONS.

Erysimum linifolium.—A dainty little "Fairy Wallflower." The petals are attractively crumpled, and their colour is a soft shade of lavender. Shown by Mr. C. ELLIOTT.

COMPETITIVE CLASSES.

The only exhibit of a rock garden, arranged on a ground space of 72 superficial feet, although flat, was very pretty and attractive, and worthy of the 1st prize. The exhibitors were MESSRS. W. ARTINDALE AND SON, Sheffield.

The two competitors in the class for a collection of hardy herbaceous perennials, arranged on a floor space of 15 feet by 8 feet, availed themselves of the licence allowed by the schedule to employ cut blooms chiefly, and they made very attractive displays. MESSRS. G. and A. CLARK, LTD., Dover, included a large amount of bloom without giving the slightest suggestion of crowding, and all their flowers were exceedingly well-grown specimens. Spikes of *Dictamnus* and *Delphinium* were magnificent. Several hybrid *Verbascums* attracted attention, and of these V. A. M. Burnie (salmon buff), V. *Ivanhoe* (terra-cotta), and V. hybridum (bright yellow), were graceful and charming. Besides good bunches of the bright red *Geum* Mrs. Bradshaw, there were equally fine bunches of the rarer *Geum* John Bradshaw, which bears golden-buff flowers, and blooms again in the autumn. (Small Gold Medal.) MESSRS. ARTINDALE AND SONS, Sheffield, had especially good herbaceous *Pyrethrums*, of which J. Kelway and Mr. B. Brown, both bearing bright red flowers, were very attractive varieties. *Eremurus robustus*, E. *himalaicus*, E. *Elwesianus*, *Lupinus roseus*, and *Papaver orientalis Garibaldi* were also exceptionally good. (Silver-gilt Medal.)

Mr. W. MILLER, Wisbech, was awarded the 1st prize for a collection of *Pyrethrums*, which included many good varieties.

Mr. R. MORRISON, Grange Dene, Woodside Park, London, who showed good vases of *Papaver orientalis* Crimped Beauty, *Iris germanica* Walmer, *Inula glandulosa superba* and *Aquilegia* hybrids, won the 1st prize in the class for four vases of distinct hardy herbaceous flowers; and Mr. F. BOUSKELL, Market Bosworth, Nuneaton, showing especially good *Lupinus*, was placed 2nd.

Mr. F. BOUSKELL won the 1st prize offered for one vase of any one kind of herbaceous flower with a pretty arrangement of *Anthericum Liliago algerense*; 2nd, Mr. F. BAILEY, with pink *Lupinus*.

Mr. E. MUDGE, Willesden, who placed various German *Irises* in rather large blue bowls, was awarded the 1st prize for table decorations; and Mr. E. G. QUICK was awarded the 2nd prize for an arrangement of Iceland Poppies and grasses.

NON-COMPETITIVE EXHIBITS.

MESSRS. J. PIPER AND SONS, Bayswater, London, included many Alpines in the large exhibit they arranged, especially for this show. Such plants as *Helichrysum frigidum*, *Pratia arenaica*, *Scutellaria indica*, *Campanula glomerata* Mauve Queen, *Silene Hookeri*, *Primula sikkimensis*, and various *Cypripedium* are typical examples of the rock garden exhibits in MESSRS. PIPER'S splendid contribution, which also included good plants of *Lavatera Olbia*. (Large Gold Medal.)

Mr. JAMES BOX, Hayward's Heath, added to his exhibit of the previous day several vases of the charming *Paeonia lobata*, which received a Certificate of Merit, two large stands of the very fragrant *Paeonia albiflora grandiflora*, and a large number of *Pyrethrums*, *Lupinus* and *Primula sikkimensis*. (Large Gold Medal.)

MESSRS. DOBBIE AND CO., Edinburgh, replaced the Sweet Peas, which we admired on the previous day, but which having been grown under glass, were not admissible, by very many vases of *Aquilegias* of an excellent strain. The magnificent *Antirrhinums*, however, were still on view, and again received admiration. (Large Gold Medal.)

MESSRS. J. KELWAY AND SONS, Langport, Somerset, were awarded a Large Gold Medal for their exhibit of herbaceous *Paeonies* and *Pyrethrums*; and MESSRS. BARR AND SONS,

Covent Garden, London, received a small Gold Medal for their collection of *Lupinus polyphyllus* varieties. MESSRS. H. B. MAY AND SONS, Upper Edmonton, showed many valuable hardy Ferns, of which *Osmunda palustris congesta*, *O. regalis cristata*, *Athyrium Victoriae*, and *A. gemmatum tricolor* are a few examples. (Small Gold Medal.)

MESSRS. HARKNESS AND SONS, Bedale, were awarded a Silver-gilt Medal for a rock garden. The principal plants were *Primula Bulleyana*, P. Veitchii, *Hutchinsia alpina*, *Incarvillea Delavayi*, *Saxifraga Cotyledon*, and *Violas*.

MESSRS. WM. CUTBUSH AND SONS, Highgate, planted a rock garden with such plants as *Dianthus Napoleon III.*, *Ramondia pyrenaica*, and *Cypripedium pubescens*, and also showed many excellent border flowers. (Small Gold Medal.)

MESSRS. W. and J. BROWN, Peterborough, included many stately spikes of *Eremurus*, and good plants of *Salvia Tenorii* in a fine collection of hardy flowers. (Small Gold Medal.)

Mr. F. BOUSKELL, Market Bosworth, Nuneaton, arranged a group of choice *Lupinus*, *Paeonies*, *Irises* and *Papavers*. (Silver-gilt Medal.)

MESSRS. SUTTON AND SONS, Reading, displayed an excellent strain of long-spurred *Aquilegias* in many beautiful colours. (Silver-gilt Medal.)

MESSRS. J. VEITCH AND SONS, Chelsea, included splendid examples of *Primula capitata*, P. *sikkimensis*, P. *unique*, and other *Primulas* in a group of choice border plants. (Silver-gilt Medal.)

Silver-gilt Medals were awarded to MESSRS. T. S. WARE, LTD., Feltham; MESSRS. PHILLIPS AND TAYLOR, Bracknell, Berks; MESSRS. J. WATERER, SONS, AND CRISP, Liverpool Street Arcade, London; and Mr. AMOS PERRY, Enfield, for the collections of hardy plants, which were noted in the report of the previous day's show. Silver Medals were similarly awarded to MESSRS. R. H. BATH, LTD., Wisbech; the Misses HOPKINS, Shepperton-on-Thames; Mr. C. ELLIOTT, Stevenage; Mr. J. REUTHE, Keston, Kent; and to MESSRS. B. LADHAMS, LTD., Southampton.

MESSRS. REAMSBOTTOM AND CO., Geashill, King's County, brought a collection of beautiful *Anemones*. (Silver Medal.)

MESSRS. ROBINSON BROS., LTD., West Bromwich, exhibited *Carmona Plant Food*, and various insecticides and fungicides; and demonstrated the handiness and efficacy of their Alpha sprayers, which were displayed in a variety of sizes and qualities.

MESSRS. A. E. WHITE, LTD., Paddock Wood, Kent, exhibited "Abol" insecticides, and their very useful "Abol" knapsack hand sprayers.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

JUNE 8.—The monthly committee meeting was held at the R.H.S. Hall on the 8th inst. Mr. C. H. CURTIS presided. A member was allowed to withdraw £40 from his deposit account, still leaving £62 to his credit; two other members withdrew the sums of £4 and £2 8s. respectively. Two members were assisted from the Distress Fund, and the sick pay on the ordinary side amounted to £60 13s. 10d., and on the State Section £24 7s.; maternity claims being £13 10s. Two new members were elected, and the Commissioner's scheme for the reduction of benefits for insured persons, who are in arrears, was brought forward.

SCOTTISH HORTICULTURAL.

JUNE 2.—The monthly meeting of this association was held at 5, St. Andrew Square, Edinburgh, on the 2nd inst. Mr. KING, the president, was in the chair, and there was an attendance of sixty members.

The evening was an open one, and the following questions were discussed:—(1) In judging Sweet Peas, should scent count? (2) What is the cause of waving, frilling, etc., in flowers? The general impression was that it would be out of the question to ask judges to take account of scent in the case of Sweet Peas on the exhibition table, but that in the case of new varieties submitted for certificates it should be given due consideration. No satisfactory reply was forthcoming as to the cause of waving and frilling of flowers.

Mr. J. W. SCARLETT mentioned that the purple-topped Milan Turnip formed its bulbs sooner, and consequently could be got earlier, when it was grown from seed produced by plants which had themselves been grown from seed sown in April, and which flowered and fruited the same season, than from seed produced in the following season from later sown plants.

The exhibits were:—Seedling hybrid *Aquilegias*, exhibited by Mrs. SCOTT-ELLIOTT, Teviot Lodge, Hawick (awarded a Certificate of Merit for strain); and *Rosa lutescens* (R. *pimpinellifolia* × R. *lutea*), exhibited by Mr. GEO. W. TAYLOR.

ROYAL HORTICULTURAL OF VICTORIA.

EXHIBITION AT MELBOURNE.

APRIL 22, 23.—The autumn show of this Australian Society was held in the Melbourne Town Hall on these dates. The show was preceded by a very squally day, and many outdoor flowers were missing from the tables, but flowers grown in shelter, such as *Chrysanthemums* and *Begonias*, were in excellent condition. Owing, however, to an exceptionally dry season, many flowers, and in particular *Gladioli*, were much below the usual standard of quality, and the competition was not so good as in former years. Vegetables were an improvement on those shown last year, whilst fruit was finely coloured. Roses were on the poor side; the 1st prize was awarded to the following twelve varieties:—Mrs. Myles Kennedy, Lady Ashtown, Laurent Carle, Mme. M. Soupert, Lyons Rose, Maman Cochet, White Maman Cochet, Mrs. W. J. Grant (here known as Belle Siebrecht), Frau Karl Druschki, M. Constant Soupert, Niphetos, and Duchess of Portland. Amongst the fine exhibits of *Chrysanthemums*, the twelve varieties staged by Mr. W. J. POCKETT, JUNR., won the Challenge Cup, the varieties being Queen Mary, R. M. Buitenton, Edith Buitenton, Gladys Blackburn, Mrs. W. A. Reid, Reginald Vallis, Miss E. King (yellow), Kara Dow (bronze), G. W. Pook, J. 47 and J. 10; the last, an unnamed seedling, was selected as the champion bloom in the show. It is a splendid white variety, with long, drooping florets, yet having the centre perfectly covered; every bloom in this exhibit measured 9 to 10 inches across. The best six *Cactus Dahlias* were Red Admiral. Mrs. Brundrett, H. H. Thomas, Snowden, Golden Ware, and Mrs. Upham, all the blooms being of fair size for so late in the season. Show Dahlias were only of moderate quality. A guinea offered as the 1st prize for six hardy herbaceous perennials brought forth one exhibit only. It was awarded the prize, and consisted of *Gaillardia*, *Phlox decussata*, *Delphinium* var., *Helenium autumnale superbum*, a variety of *Pentstemon* and *Aster ericoides*.

Non-competitive exhibits were numerous, and included fine *Chrysanthemums* in pots; a superb, unnamed specimen of *Polypodium*, with fronds 5 feet long and 18 inches across; a choice collection of *Nerines*, including the varieties Lady Carrington, N. *alba*, Lady Llewellyn (indistinguishable from N. *splendens*), N. *amabilis*, N. O'Brienii, Salmon Queen, and *Meadowbankii* (the last apparently synonymous with N. *Fothergillii*). There were also exhibits of nine varieties of winter-flowering Sweet Peas; two exhibits of *Gladioli*, representing well over 150 varieties, notable sorts being *Glory of Noordwijk* (a fine pale-yellow, rather small flower), *Europa* (a white bloom, with faint lilac stripes, also small in size), *Empress of India* (dark wine-purple or maroon), *Halley* (a very pretty pale salmon-pink variety, with weak stems, but large and well-placed flowers), and *Niagara* (a good spike of creamy pink). As usual, the Curator of the Melbourne Botanic Gardens exhibited a magnificent collection, comprising *Collerette*, *Paeony*, *Cactus*, *Show* and *Single Dahlias*, interspersed with *Chrysanthemums* and *Azaleas*, *Callistemon lanceolatus*, *Camellia Sasanqua*, *Hoheria populnea*, *Heptapleurum longifolium*, *Bougainvillea glabra*, *Bouvardia leiantha*, *Stenocarpus sinuata*, *Erica melanthera*, *Protea mellitera alba*, and other interesting plants. *Gilbert Errey, Victoria.*

Obituary.

JAMES SIMMONS.—We learn with regret of the death, on May 16, of Mr. James Simmons, for thirty-five years gardener at Carlew, Cornwall, aged sixty-two years. Mr. Simmons was a native of Devonshire, and was appointed gardener at Carlew when twenty-seven years of age. The place afforded scope for his abilities as a gardener; he raised many hundreds of seedling Himalayan Rhododendrons, and other tender subjects. He leaves a widow, one son and one daughter.

LAW NOTE.

INTENSIVE GARDENING IN URBAN DISTRICTS.

In the Chancery Division recently, before Mr Justice Warrington, evidence was given in the action by Mr. and Mrs. John Otway Percy Bland, of the Clock House, Upper Halliford, near Shepperton, to restrain Mr. Henry Stanton Yates, a "French" gardener, from stacking manure so as to interfere with the health and comfort of plaintiffs.

Mr. Yates, the defendant, said in cross-examination that he used about 1,500 tons of manure a year in the making of his beds for intensive gardening. He did not realise that any nuisance was caused.

Mr. Justice Warrington stated that plaintiffs alleged that they had been compelled to put up wire blinds to exclude the flies attracted by the manure, and were never able to have windows open properly. Defendant replied that he had been at his foreman's cottage in the garden and did not suffer from flies.

Plaintiff's counsel said that for three years defendant had promised to do something to minimise the nuisance, but had claimed the right to stack manure on his land because he was using it in the ordinary course of his business.

Mr. Yates replied that he put the manure behind the shed and raised a corrugated iron fence, and, after consulting the sanitary authorities of Sunbury, placing a screen on top of the shed, promising to remove the manure 14 yards further off, making another road, and doing all that at his own expense, he thought he had done everything in his power.

Mr. Coles, sanitary inspector for Sunbury, said he received a written complaint from plaintiff on October 13 last as to the heap of manure. He visited the garden and made certain suggestions to the defendant. These he reported to the medical officer of health, who approved of them, and they were carried out by Mr. Yates.

Mr. John Weathers (instructor on horticulture to the Middlesex County Council) said a manure heap as managed by Mr. Yates gave off a very slight smell of ammonia—an agreeable smell to him, at any rate. He really did not notice any flies about. He was rather susceptible to flies, and he thought he would have noticed if any were about.

Mr. Ernest Edward Austen (assistant in the section of Entomology, Natural History Department of the British Museum), said that at the request of plaintiff's solicitors he visited their property with Sir Ronald Ross on May 18 and made a report on his investigations. He had no interest in this case except as a scientist. In the garden of Mr. Bland's house he saw a small number of flies of various sorts, but he did not see a single house-fly. He did not expect to find any, as the house-fly was attached to houses and human dwellings, such as military camps. In the drawing-room he tried to find house-flies and discovered only one. That was the only house-fly he found during his visit. There was a swarm of flies under the glass in the porch. They belonged to three or four species, but there was not a single house-fly. These, he expected, would come from decaying animal or vegetable matter. He experienced no discomfort from flies, either in the garden or in the house, and he noticed no smell. Cross-examined, he admitted that the presence of a large heap of manure in a state of fermentation would be likely to cause a plague of flies.

His lordship, without calling on counsel for the plaintiffs, gave judgment. He said it was with some reluctance (because it might interfere with a profitable and good industry) that he must grant an injunction restraining defendant from depositing or stacking on his land adjoining plaintiffs' premises manure so as, by reason of offensive smell or the breeding and collection of flies, to occasion a nuisance to plaintiffs. He did not intend to stop defendant's garden, but only wished to prevent his carrying on his operations so as to occasion a nuisance to plaintiffs. Defendant must pay the costs of the action.

DEBATING SOCIETIES.

BATH GARDENERS'.—At the meeting of this society, held on the 13th ult., Mr. Halliburton read a paper on "The Rock Garden." Great care, remarked the lecturer, should be taken in the construction of the rockery, and limestone was a very good material to use as boulders.

BRITISH GARDENERS' (Watford Branch).—A meeting of the Watford branch of the B.G.A. was held on the 21st ult., Mr. W. R. Phillips presiding. There was a good attendance. Mr. Harding gave an address on "Watford's Past and Future."

BRISTOL AND DISTRICT GARDENERS'.—The opening meeting of the summer session of this association was held on the 28th ult., Mr. R. Jennings presiding. Mr. Cyril Harding delivered an address on "The Aims and Objects of the British Gardeners' Association." The prizes offered by Mr. Barnard, for a brace of Cucumbers, were won by Mr. Miles, Mr. Ayres, and Mr. Thoday, in this order.

CATALOGUES RECEIVED.

W. WATSON & SONS, LTD., Dublin.—Summer Bedding Plants.

KELWAY & SON, Langport, Somerset.—Gladioli.

H. N. ELLISON, West Bromwich.—Ferns, Cacti, and Seeds.

THE DARLINGTON FENCING CO., LTD., Hopetown House, 5, Lloyd's Avenue, London, E.O.—Crusader Fencing.

JOHN McKECHAR, 35, Giesbach Road, Upper Holloway.—Palms, Ferns, etc.

C. F. A. VAN DER SLUYS, Ramée, Guernsey, Channel Islands.—Carnations.

FOREIGN.

DIE VERWALTUNG BLUTENBERG, Lichtenfelde, bei Eberswalde.—Shrubs, Climbers and Roses.

MISCELLANEOUS.

MACMILLAN'S Monthly List of New Books for June, 1914.

GARDENING APPOINTMENTS.

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

Mr. H. Wilson, for the past 18 months Foreman at Wortley Hall, Sheffield, as Gardener to R. A. OSWALL, Esq., Auchincruive, Ayr. [Thanks for 2s. for R.G.O.F. box.—EDS.]

Mr. C. J. White, for the past 6 months Foreman at Heywood, Ballinakill, Queen's Co., Ireland, and previously at Muckross Abbey, Killarney, as Gardener to Lady GORDON, Arden, Co. Kerry.

Mr. A. Perry, for the past 12 years Gardener to C.J. D. L. ANSTRUTHER, Tendring Hall, Stoke-by-Nayland, Colchester, as Gardener to the Hon. HENRY COVENTRY, of the same address. [Thanks for 2s. for R.G.O.F. Box.—EDS.]

Mr. F. Tebbetts, for the past 7 years General Foreman at Coton House, Rugby, as Gardener to Sir A. E. FELLOWES, K.C.V.O., Honingham Hall, Norwich.

Mr. D. B. Whitelaw, for 2½ years Gardener to W. D. RUSSELL, Esq., Maulsley House, Glengarnock, and previously foreman at Bothwell Castle, Lanarkshire, and Buchanan Castle, Stirlingshire, as Gardener to C. F. K. MAINWARING, Esq., Oteley Hall, Ellesmere, Shropshire.

Mr. W. Wyatt, for the past 5 years Second Gardener at Swanston House, Whitechurch, Reading, as Gardener to C. S. PURSE-DUNCOMBE, Esq., Broadwell Hill, Moreton in the Marsh, Gloucestershire.

TRADE NOTE.

MESSRS. KELWAY AND SON.

We are informed by Messrs. Kelway and Son, Langport, that they have relinquished their retail seed business so far as British orders are concerned. Their seeds may be obtained, however, by retail buyers through the trade. The retail business in plants will be carried on as before.

MARKETS.

COVENT GARDEN, June 10.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal aalemen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices

	s.d. a.d.		s.d. a.d.
Arums (Richardias), per doz.	2 6-3 0	Marguerites, per dozen bunches	1 6-2 0
Carnations, per dozen blooms, best American varieties	1 3-2 0	Mignonette, per dozen bunches	3 0-4 0
— smaller, per doz. bunches	12 0-15 0	Orchids, per doz.:	
— Carola (crimson), extra large	3 0-4 0	— Cattleya	12 0-15 0
— Malmalson, per doz. blooms:		— Odontoglossum crispum	3 0-4 0
— pink	9 0-10 0	Paeonies, per dozen in a bunch	5 0-10 0
Cornflower, English, per doz. bunches	1 0-1 3	Paneratium, per dozen bunches	2 0-2 6
Eucharis, per doz.	2 0-2 6	Pelargoniums, per doz. bunches, double scarlet	6 0-8 0
Forget-Me-Not, per dozen bunches	2 0-3 0	— white, per doz. bunches	3 0-4 0
Gardenias, per box of 15 and 18 blooms	2 6-5 0	Pinks, White, per doz. bunches	1 6-2 0
Gladiolus, Akermannii, per doz. bunches	6 0-8 0	Pyrethrum, white, per doz. bun.	2 0-2 6
— Blushing Bride, per doz. bunches	4 0-6 0	— single, coloured	2 0-2 6
— Fairy Queen, per doz. bunches	8 0-9 0	Roses: per dozen blooms, Frau Karl Druschki	1 6 2 6
— Ne Plus Ultra, per doz. spikes	1 0-1 3	— Joseph Lowe	2 0-3 0
— Peach Blossom, per doz. bunches	6 0-8 0	— Kaiserin Augusta Victoria	1 3-2 0
— The Bride	4 0-8 0	— Lady Hillingdon	1 0-1 6
Gypsophila, pink, per doz. bun.	5 0-6 0	— Liberty	1 6-2 6
— white	3 0-6 0	— Madame A. Chatenay	1 0-2 0
— white, large bunches, each.	1 0-1 3	— Melody	1 0-1 6
Iceland Poppies, p. doz. bunches	1 0-1 6	— My Maryland	1 0-1 6
Iria, Spanish, per doz. bunches	6 0-8 0	— Niphotos	1 3-1 6
Lilium auratum, per bunch	—	— Richmond	1 3-2 0
— longifolium, per doz., long	1 3-1 6	— Sunburst	1 0-2 0
— short	1 0-1 3	— Sunrise	1 0-1 6
— lancifolium album, long	—	— W. A. Richard-son	0 9-1 6
— short	—	— White Crawford	1 6-2 0
— rubrum, per doz., long	2 6-3 0	— Yellow Souvenir	1 0-1 6
— short	1 0-1 3	Spiraea, per doz. bunches	5 0-6 0
Lily-of-the-Valley, per dozen bunches:		Stative, mauve, per doz. bunches	3 0-4 0
— extra special	12 0-15 0	Stephanotis, per 72 pips	1 6-2 0
— special	9 0-10 0	Stocks, English, white, per doz. bunches	4 0-6 0
— ordinary	8 0-9 0	Sweet Peas, white and coloured, per doz. bun.	3 0-6 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d. a.d.		s.d. a.d.
Adiantum Fern (Maidenhair), best, per doz. bunches	3 0-4 0	Croton foliage, doz. bunches	12 0-15 0
Agrostis (Fairy Grass), per doz. bunches	2 0-4 0	Cycas leaves, per doz.	2 0-9 0
Asparagus plumosus, long trails, per half-dozen	1 6-2 0	Eulalia japonica, per bunch	1 0-1 6
— medium, doz. bunches	12 0-18 0	Lichen Moss, per dozen boxes	9 0-10 0
— Sprengeri	6 0-12 0	Moss, groaa bunches	6 0—
Carnation foliage, doz. bunches	3 0-6 0	Myrtle, doz. bunches, English, small-leaved	6 0—
		— French	1 3—
		Smilax, per bunch of 6 trails	1 0-1 3

REMARKS.—Prices generally are much lower, and business more steady. There are many varieties of Carnations on sale, and the blooms of these are much finer than they have been. The most noticeable varieties are Enchantress and Rose Pink Enchantress; many people, however, prefer the Winsor variety, as, although the flowers are smaller, they are similar in colour and last longer. Other popular varieties are Mayday, Carola, Triumph, Empire Day, British Queen, Lady Northcliffe, Mrs. Ward, Mrs. H. Burnett, White Perfection, White Enchantress, Mikado, and Lady Alington. Britannis and Scarlet Glow are preferred to Beacon, which does not last so well in warm weather. White Carnations are not plentiful, and they are more valuable than coloured sorts. The price of Lilium Harrisii (longifolium) is lower than it has been this season, and blooms of L. speciosum rubrum are arriving in a much better condition. Gladiolus The Bride is more plentiful and selling more freely. Peach Blossom, Akermannii,

No Plus Ultra, and Brilliant are the leading coloured varieties offered now. There are also good supplies of white, pink, and blue Cornflowers, Iceland Poppies, white and pink Gypsophila, double and single Pyrethrums, and Pinks Her Majesty and Mrs. Sinkins. The Rose trade is very slack, the favourite varieties being Mme. Abel Chatenay, Liberty, Richmond, and Frau Karl Druschki. Amongst foliage Asparagus Sprengerii, A. plumosus, Smilax, Adiantum Fern, Carnation foliage, and French Myrtle are all more plentiful; a few bunches of Eulalia Grass are on sale.

Plants in Pots, &c.: Average Wholesale Prices.

Plants in Pots, &c.: Average Wholesale Prices.		Average Wholesale Prices.	
	a. d. s. d.		s. d. s. d.
Aralia Sieboldii, dozen ..	6 0 7 0	Heliotropes, 48's per dozen ..	6 0 7 0
Araucaria excelsa, per dozen ..	18 0 21 0	Hydrangeas, Pink, per doz. 48's ..	10 0 18 0
Asparagus plumosus nanus, per dozen ..	10 0 12 0	— White ..	12 0 15 0
— Sprengerii ..	6 0 8 0	— Blue ..	15 0 36 0
Aspidistra, per doz., green ..	18 0 30 0	Kentia Belmoreana, per dozen ..	6 0 8 0
— variegated ..	30 0 60 0	— Forsteriana, 60's, per dozen ..	4 0 8 0
Cacti, various, per tray of 16's ..	4 0 —	— larger, per dozen ..	18 0 36 0
tray of 12's ..	6 0 —	Latania borbonica, per dozen ..	12 0 30 0
Cocos Weddelliana, per dozen, 60's ..	6 0 12 0	Lilium longiflorum, per dozen ..	18 0 24 0
— larger, each ..	2 6 10 6	Lily-of-the-Valley 48's, per dozen ..	18 0 21 0
Crassulas, 48's, per doz. ..	15 0 18 0	— 48's, per dozen ..	21 0 30 0
Croton, per dozen ..	18 0 30 0	Marguerites, in 48's, per doz., white ..	6 0 8 0
Dracena, green, per dozen ..	10 0 12 0	Pandanus Veitchii, per dozen ..	36 0 48 0
Erica candidissima ..	12 0 15 0	Pelargoniums, 48's, per dozen ..	10 0 12 0
— Cavendishii ..	21 0 24 0	— Zonal, 48's, per doz. ..	5 0 6 0
— Magnifica, 48's ..	15 0 18 0	— Ivyleaf, 48's ..	6 0 9 0
Ferns, in thumbs, per 100 ..	8 0 12 0	Phoenix rupicola, each ..	2 6 21 0
— in small and large 60's ..	12 0 20 0	Rodanthe ..	5 0 6 0
— in 48's, per dozen ..	6 0 6 0	Spiraea japonica, per dozen pots ..	6 0 8 0
— choicer sorts, per dozen ..	8 0 12 0	Stocks, white, 48's per dozen ..	6 0 8 0
— in 32's, per doz. ..	10 0 18 0	— pink ..	6 0 8 0
Fuchsias, 48's, per dozen ..	7 0 9 0	— red ..	6 0 8 0
Geonoma gracilis 60's per dozen ..	6 0 8 0	Verbeenas, Miss Willmott, 48's, per dozen ..	8 0 9 0
— larger, each ..	2 6 7 6		

REMARKS.—There is nothing new to record in this department. The chief business is in flowering plants. Ericas are nearly over; Crassulas are coming to hand in a splendid condition. The Fern and Palm trade is only moderate. Ferns, and especially those in 5-inch (48's) pots, are only of a medium quality.

Fruit: Average Wholesale Prices.

Fruit: Average Wholesale Prices.		Average Wholesale Prices.	
	a. d. s. d.		s. d. s. d.
Apples, Australian, per case ..	8 0 12 0	Lemons, Messina, per case ..	10 6 15 0
— cooking, case ..	7 0 10 6	— Naples, case ..	20 0 27 0
— Cox's, case ..	16 0 20 0	Melons, English ..	0 10 1 6
Apricots, box ..	1 2 1 4	— Canteloupe ..	4 0 10 0
— cases ..	3 9 4 6	Nectarines ..	4 0 15 0
Bananas, bunch: ..		— Belgium ..	2 6 8 0
— Double Ex. ..	11 0 12 0	Nuts:	
— Extra ..	9 6 11 0	— Almonds, sack ..	64 0 66 0
— Extra-medium ..	10 0 —	— Barcelona, sack ..	44 0 —
— Giant ..	14 0 —	— Brazils, cwt. ..	46 0 50 0
— Medium ..	6 6 7 6	— Chestnuts, Naples, per bag ..	16 6 20 0
— Red, per ton ..	£23 —	— Coco-nuts, per 100 ..	18 0 22 0
— Jamaica, p. ton ..	£15 —	Oranges:	
Cherries, French, box 1 3 2 6		— Californian ..	
— per ½ sieve ..	7 0 8 0	— Navel, per case ..	16 0 18 0
Currants, black, ½ sieve ..	8 6 —	— Denia, per case ..	18 6 40 0
— red, per handle ..	4 6 —	— Murcia, p. case ..	12 0 18 0
Dates, per cwt. case ..	20 0 —	— Naartjes, box ..	4 0 6 0
Figs, English, p. doz. 1 6 6 0		— Naples, case ..	10 0 12 0
— Kadrowi, cwt. ..	11 0 —	Peaches, English, per doz. ..	2 0 15 0
Gooseberries, ½ bushel ..	3 0 4 6	— Belgian, p. doz. ..	1 6 5 0
Grapes:		Pears, Australian, tray ..	7 6 9 6
— Australian, per box ..	21 0 25 0	Pineapples, St. Michael ..	2 9 3 3
— Belgium Hambros, per lb. ..	1 0 2 0	Raspberries, per lb. ..	1 6 2 6
— English, Hambros, per lb. ..	1 6 3 6	Strawberries, Worthling, per lb. ..	1 0 —
— Muscat of Alexandria, lb. ..	2 0 6 0	— First quality ..	1 0 —
Grape Fruit, case:		— Second quality ..	0 4 0 6
— 96's ..		— Southampton, per cwt. ..	1 6 2 6
— 80's ..			
— 64's ..	14 0 20 0		
— 54's ..			

REMARKS.—Shipments from Australia this week amounted to about 16,000 packages, consisting of Apples, Pears, and Grapes. The supply of Strawberries is unusually heavy for this season of the year. There is only a limited number of Nectarines, but Peaches are very plentiful. There has been a shorter supply of Green Figs; Melons continue plentiful, and there are ample supplies of black and white Grapes. The following Continental fruits are available: Black and Red Currants, Peaches, Nuts, Cherries, Apricots, Plums, Green Almonds, and Canteloupe Melons. Larger supplies of green Gooseberries are arriving, but Tomatoes and Cucumbers are not plentiful.—E. H. R., Covent Garden, June 10, 1914.

Vegetables: Average Wholesale Prices.

Vegetables: Average Wholesale Prices.		Average Wholesale Prices.	
	a. d. s. d.		s. d. s. d.
Artichokes, Globe, per dozen ..	2 0 2 6	Letts—continued:	
— ground, ½ sieve ..	1 0 1 6	— Cos, French, per doz. ..	1 6 2 0
Asparagus: ..		Marrows, per doz. ..	8 0 10 0
— Cavillion ..	0 10 1 0	Mint, per doz. ..	4 6 5 0
— Sprue ..	0 9 1 0	Mushrooms, cultivated, per lb. ..	0 8 0 10
— Giant ..	3 6 8 0	— Broilers ..	0 4 0 6
— Guernsey bundle ..	1 0 3 6	— Buttons ..	0 9 1 0
Beans, Guernsey, lb. ..	0 7 8 8	Mustard and Cress, per dozen punnets ..	0 10 1 0
— English ..	0 6 0 7	Onions, picklers, per ½ bushel ..	3 0 3 6
— Broad, English, bushel ..	2 6 3 0	— Spring, per doz. ..	3 0 4 6
— French, per pad ..	2 0 2 6	— Egyptian, hags ..	14 6 15 0
— wire, French, per pad ..	4 0 5 0	— Lisbon, box ..	11 0 12 0
Beetroot, per bushel ..	4 0 7 0	Parsley, per dozen bunches ..	3 0 3 6
Cabbages, English spring, per hamper ..	2 0 3 0	Peas, Guernsey, lb. ..	0 4 0 5
Carrots, (English), bags ..	4 0 6 6	— French, pad ..	3 0 3 6
— New, bunch, round ..	0 6 0 7	— English, ½ bus. ..	2 6 4 0
— long ..	0 6 0 7	— bushel ..	4 0 8 0
Cauliflowers, per hamper ..	3 6 5 0	Radishes, per doz. ..	1 6 —
Chicory, per lb. ..	0 4 ½ —	Rhubarb, Leeds, forced, dozen bundles ..	1 0 1 3
Cucumbers, per flat ..	5 0 8 0	— Natural, per tally ..	7 6 8 6
Endive, French, per dozen ..	2 0 3 0	Sage, per dozen ..	1 6 2 0
— Batavia, per doz. ..	3 0 3 6	Spinach, per bushel ..	2 6 3 0
Garlic, per strike ..	2 6 3 0	Spring Greens, bag ..	1 6 2 0
— Horseradish, 12 bundles ..	20 0 21 0	Stachya tuberosa, lb. ..	0 4 —
Leeks, per dozen ..	2 0 3 0	Swedes, bag ..	1 6 2 0
Letts, Dutch, round, per crate ..	2 6 —	Tomatoes, English, per doz. lbs. ..	4 0 5 0
— English, Cos, per score ..	0 9 1 6	— Guernsey, per doz. lbs. ..	3 6 4 0
— English, round, per score ..	1 0 1 3	Thyme, per dozen bunches ..	2 0 6 0

REMARKS.—Vegetable Marrows, Mushrooms, Asparagus, French Beans, Peas, Broad Beans, Cabbage, Broccoli, Dutch Cauliflowers and Potatoes are all available.—E. H. R., Covent Garden, June 10, 1914.

Old Potatoes.		New Potatoes.	
	a. d. s. d.		s. d. s. d.
Blacklands ..	3 3 —	St. Malo ..	10 6 11 0
Dunbar—Red soil ..	5 0 5 6	Teneriffe ..	8 0 9 0
Lincoln—King Edward ..	4 3 4 9	Scotch—Grey soil ..	3 9 4 6

REMARKS.—Trade in old Potatoes is fairly good, but stocks are almost exhausted; their prices are satisfactory. New Potatoes have advanced in value, and this has checked sales, but it is expected that they will be cheaper this week-end.—E. J. Newborn, Covent Garden and St. Pancras, June 11, 1914.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending June 6, is furnished from the Meteorological Office:—

June 9, 1914.
Remarks on Wind and Weather.—At the beginning of the week the passage eastwards of a "V"-shaped depression across Scotland and the upper part of the North Sea was accompanied by westerly to north-westerly winds, reaching the force of a gale on some of the more exposed parts of our North and North-West coasts. A subsequent veering to the northward was experienced, with a general fall of temperature, but towards the middle of the week, when a large anticyclone extended over the country from the Atlantic, the wind fell light and the thermometer rose in most districts to about its average level for the time of year. Towards the close of the period, the gradual extension of a well-marked depression from the Icelandic region was associated with a freshening current of air from the west or north-west, the sky became very cloudy, and temperature showed a tendency to fall. A sharp ground frost occurred at some inland stations in North Britain on the night of May 31, and again on the night of June 2.

THE WEATHER IN WEST HERTS.

Week ending June 10, 1914.
A Most Welcome Rain.—The first day of the week proved warm for the time of year, but since then unseasonably low temperatures have prevailed. The nights were, however, as a rule not so unseasonably cold as the days. On the coldest night the exposed thermometer registered 2° of frost. The ground is at the present time 2° colder than is reasonable, both at 1 foot and 2 feet deep. Rain has fallen on each of the last five days, and to the total depth of nearly an inch. Previous to that, for nearly a month there had been very little rain. This is shown by the soil gauges, through neither of which had there been any percolation of rainwater at all until the last day of the past week, or for nearly a month. The sun shone on an average for 5½ hours a day, which is half an hour a day short of the average duration for the same period in June. The first two days were very bright,

the sun shining respectively for 1½ and 11 hours. Calms and light airs alone prevailed, the direction of these light airs being almost exclusively some northerly point of the compass. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by 4 per cent.

MAY.

Dry, and on the whole of about seasonable temperature.—Taken as a whole, this was a May of about average temperature. There was a warm period in the middle of the month lasting ten days, followed by a cold period lasting five days. On the warmest day the temperature in the thermometer screen rose to 77°, and on the coldest night the thermometer exposed on the lawn registered 11° of frost. The extreme maximum temperature was nothing very unusual, but the lowest night temperature (11° of frost) was, with four exceptions, the lowest reading recorded here in May during the last twenty-nine years. Rain fell on thirteen days, but to the total depth of only 1½ inches, which is ¾ inch short of the average quantity for the month. This was the driest May for eight years. Of the total quantity three-fourths was deposited on the first eleven days of the month. The sun shone on an average for 6½ hours a day, or about the average duration for May. The winds were as a rule light, and more particularly was this the case during the latter half of the month. In no hour did the mean velocity exceed sixteen miles—direction west. The average amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by 1 per cent.—E. M., Berkhamsted.

THE ROYAL COUNTIES' AGRICULTURAL SOCIETY.

At the Portsmouth meeting of the Royal Counties' Agricultural Society, which opened on Wednesday last, Messrs. SUTTON AND SONS exhibited 40 varieties of vegetables, specimens of such root crops as Mangels, Swedes and Turnips, also Gloxinias, Begonias, Calceolarias, Clarkias and other flowers.

ANSWERS TO CORRESPONDENTS.

"There are few gardeners, and still fewer amateurs, who do not on occasion require immediate information upon various points of practice. But either from an unwillingness to inquire, or from not knowing of whom to make the inquiry, they too often fail to obtain the information they are in want of. And let no one be alarmed lest his questions should appear trifling, or those of a person ignorant of that which he ought to know. He is the wisest man who is conscious of his ignorance; for how little do the wisest really know!—except that they know little. If one man is unacquainted with a fact, however common, it is probable that hundreds of others in the same position as himself are equally in want of similar information. To ask a question, then, is to consult the good of others as well as of one's self."—Gardeners' Chronicle, No. 1, Vol. I., January 2, 1871.

CYANIDING A CARNATION HOUSE: F. Erber, Germany. You do not state what insect is attacking your Carnations, but presumably it is aphid, which may be killed without the slightest fear of injuring the foliage by using cyanide at the following strength per 1,000 cubic feet contents:—½ oz. sodium cyanide, ½ oz. pure sulphuric acid, ½ oz. water.

MANURE FOR PERPETUAL-FLOWERING CARNATIONS: Teacher. Perpetual-flowering Carnations intended to be grown the whole twelve months of the year in pots must be fed, and feeding should be commenced directly the plant is established in its flowering-pot. Liquid stimulant made from fowl manure and soil is suitable in the spring and summer months and will give increased size and lustre to the flowers. Put half a bushel of the materials in a bag and place the bag in a 36-gallon cask of water, allowing it to stand for 24 hours, then dilute at the rate of half a pint to 2 gallons of water. The manure water should not be applied more than once a week. It is not recommended to use strong chemical fertilisers, as these eventually undermine the constitution of the plant, but you may employ one of the special fertilisers for Carnations.

NAMES OF PLANTS: T. W. A variety of Coleus known as Paisley.—W. Payne. 1, Andromeda floribunda; 2, Solanum crispum.—E. H. Ekins. On another occasion send only six specimens at one time. 1, Fagus sylvatica heterophylla; 2, Berberis japonica; 3, Skimmia japonica; 4, specimen too poor to identify; 5, Asparagus plumosus; 6, Adiantum formosum; 7, Selaginella Kraussiana; 8, S. Braunii; 9, Adiantum sp.; 10, Zebrina pendula; 11, Iris sibirica orientalis; 12, Horminum pyrenaicum; 13, Sedum spathulifolium; 14, Sedum rupestre;

15, *Cotula dioica*; 16, *Nocca alpina*; 17, *Polygonum polystachyum*; 18, *Sedum* sp. (too scrappy to identify); 19, *Pyrus lobata*; 20, *Pyrus Aria*, "White Beam."—*G. D. A.* See reply to *E. H. Ekins*. 1, *Polemonium coeruleum*; 2, *Geum chiloense* var.; 3, *Ononis rotundifolia*; 4, *Dictamnus albus* var. *purpureus*; 5, *Genista hispanica*; 6, *Anthyllis montana*; 7, *Cistus florentinus*; 8, *Helianthemum vulgare* var.; 9, *Pyrus arbutifolia*; 10, *Campanula glomerata superba*; 11, *Mertensia sibirica*; 12, *Iris sibirica orientalis*.—*H. J.* *Dendrobium moschatum*.—*F. P. H.* 1, *Masdevallia coccinea*; 2, *Cattleya Bowringiana*; 3, *Stenochlaena Meyeriana*, so far as we can judge from the portion of a barren frond. The serrated, cartilaginous margin and simple parallel veining are good characters by which to identify the species.—*W. M.* 1, *Ornithocephalus grandiflorus*; 2, *Aërides japonicum*; 3, *Angraecum falcatum*.—*Dublin.* 1, *Roses*, *Reine Marie Henriette*; 2, *Yellow Scotch*; 3, *Fellenberg*; 4, probably *Webbiana*, but the flowers

Sedenii.—*H. L. R.* 1, *Veronica Beccabunga*; 2, probably *Anchusa italica*, but too faded to identify definitely.—*Geo. Wall.* *Orchis incarnata*.

PARASITE ON PELARGONIUM: *A. E. J.* The plant infesting your Pelargonium is Dodder (*Cuscuta europaea*), which is parasitic on many kinds of plants. Dodder is found wild in this country on Broom, Grass, and other host plants.

PEACH STONE SPLITTING: *J. S.* The splitting of the stones is due to the roots having absorbed an excessive amount of moisture. Certain varieties are prone to this trouble, and they need to be watered very carefully when the fruits are swelling. It may be that you have not used the water-can excessively, but that the border is too retentive of moisture in consequence of improper drainage. We advise you to ascertain if this is so by making a thorough examination of the roots in the autumn when the trees are resting.

The setting of the hoops and pegs shall be in accordance with one of the diagrams shown, and the order in which the points are to be made shall be in accordance with the arrows which appear thereon. Measurements:—Setting No. 1: Pegs in centre line of ground 7 yards from nearest boundary; hoops in centre line of ground 7 yards from peg, and 7 yards apart; corner hoops 7 yards from nearer peg and 7 yards from the nearest boundaries. Setting No. 2: The winning peg equi-distant from the corner. Hoops in centre line of ground 7 yards from peg; corner hoops 7 yards from the nearest boundaries." (From *Laws of Croquet* (1909), published for the Croquet Association by Horace Cox, Windsor House, Bream's Buildings, London, E.C., price 6d.). In laying out a croquet ground it is essential to have sufficient room outside the lawn (35 yards by 28 yards) to allow of the roller or mower being turned. This is necessary to avoid unduly wearing the most important part of the turf, viz., that where the "yard line" is situated.

ROOF-GLASS OF A GREENHOUSE: *F. G. S.* You have allowed the glass to become coated with a black deposit of soot and other matter, which will require more than ordinary water to remove. Hydrochloric acid (common spirits of salt) would probably remove the deleterious matter, but you will have to exercise great care in its use, for this acid is very injurious to vegetation, and has a corrosive action on the hands and clothes. You will need to use strong gloves to protect the hands.

ROSE LEAVES: *W. E. T.* Your plants are not affected with disease; the discoloration of the leaves is due to climatic conditions. During times of cold winds, or when the temperature is very low, the foliage of Roses often assumes a brownish tone, instead of the usual bright green tinting.

TOMATO PLANTS FLAGGING: *F. G. B.* The plants are affected with Tomato canker, a disease for which there is no cure. Burn all the plants that show trace of the disease, and after the crop is finished remove all the soil, and every portion of the old plants, burying the former in some out-of-the-way part of the garden, and burning the latter. Give the house also a thorough cleansing, placing a little carbolic acid in the water.

TOMATOS DISEASED: *Tom-tit.* The disease in your Tomato plants is caused by a bacterium. Infection takes place through the expanded flowers, the complaint being carried from one plant to another by insects visiting the blossoms. Plants affected cannot be cured, and your best plan is to pull them up by the roots and destroy them on the garden fire.

VINES: *J. M. S.* As you have been successful in producing ripe Grapes in June from pot vines, you should find no difficulty in securing good results in a narrow border, 15 to 18 inches wide, confined on both sides with masonry. But the planting should not be deferred till winter. Canes of one season's growth, well ripened, cut down as soon as the leaves have lost their green colour, will start early, and when the shoots are an inch or two in length, the roots should be shaken free of soil and re-potted. By the end of May or the beginning of June, and before they become pot-bound, they will be in a good condition for planting in the border, breaking the pots with a hammer, and placing the soil firmly round the roots, which should be kept so low that there will be plenty of room for frequent top-dressings. If the vines are well treated, not too heavily cropped, and no leaves are removed when the fruit is gathered, they will crop satisfactorily for many years. Vines, however good, transferred from their pots during winter, do not always produce satisfactory fruit in the following season.

Communications Received.—*R. H. S.*—*G. H. J.*—*J. E.*—*A. M. G. B.*—*H. A.* (Blackburn)—*R. D.*—*S.* and *Sons.*—*E. F. H.*—*H. M. W.* (San Francisco)—*G. J. I.*—*T. H. C.*—*W. D.*—*W. J. V.*—*R.*—*H. S. T.*—*F. C. E.*—*A. MacE.*—*W. F.*—*W. L.* Berlin—*W. R. D.* (thanks for drawing)—*G. P.*—*F. Jordan*—*T. E. W.*—*W. C.*—*E. A. R.*—*R. F.* Kansu, China—*F. J. C.*—*A. L.*—*E. T. C.*—*T. C.*

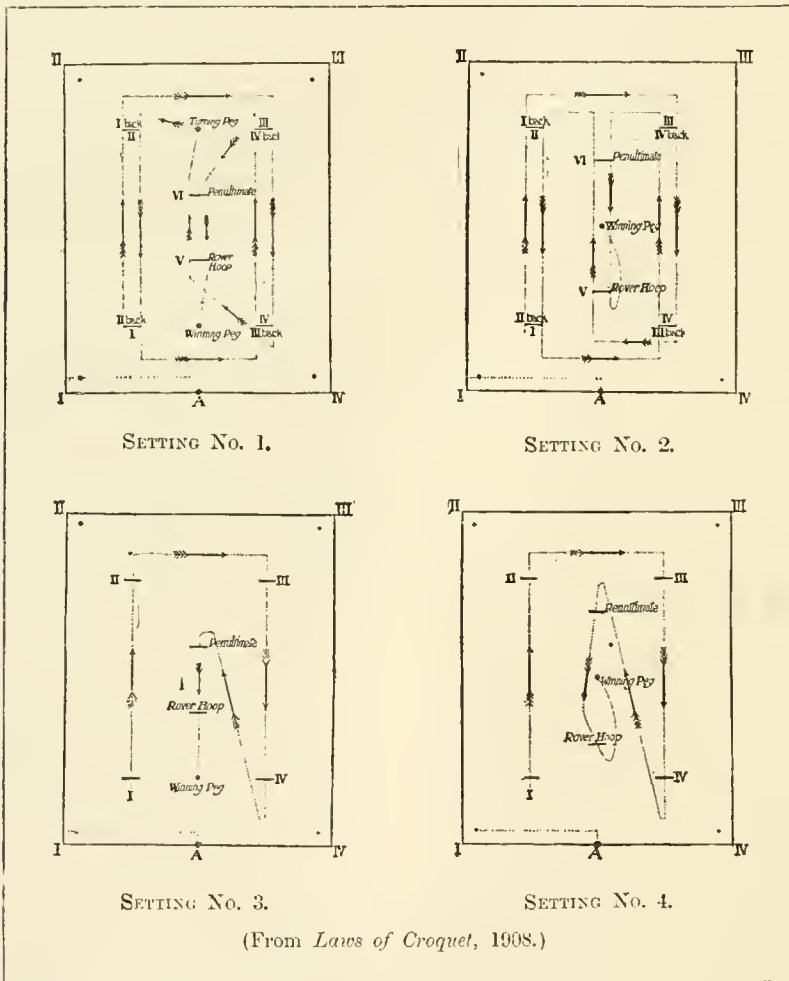


FIG. 193.—THE CROQUET ASSOCIATION'S DIAGRAMS.

had fallen; 5, Dawson Rose; 6, *Polemonium Richardsonii*.—*Stansted.* 1, *Pyrus intermedia*; 2, *Crataegus punctata*.—*F. R. D.* 1, *Sedum roseum*; 2, *Quercus acuta*; 3, *Coton-easter pannosa*.—*J. D.* 1, *Ipomoea* sp., specimen too far gone to recognise; 2, *Mackaya bella*.—*J. Bergmann.* 1, *Aloysia citriodora* (Lemon-scented Verbena); 2, *Grevillea rosmarinifolia*.—*Ashton.* *Calycanthus floridus*—*Californian Allspice*. The Allspice of commerce is obtained from *Pimenta officinalis*.—*H. T.* 1, *Odontoglossum sceptrum*; 2, *Oncidium divaricatum*; 3, *Brassica caudata*; 4, *Broughtonia sanguinea*.—*A. B.*, *Apethorpe*. *Habenaria bifolia*.—*W. J. R.* 1 and 2, *Cypripedium Harrisonianum*; 3, *Cypripedium vernixium* (*Argus* × *villosum*); 4, *Cypripedium villosum*; 5, *Ansellia gigantea*; 6, *Cattleya Mendelii*; 7, *Laelia purpurata*; 8, *Cypripedium* (*Selenipedium*) *Schröderae* (*caudatum* ×

PLAN OF A CROQUET GROUND: *Perplexed.* "The ground shall be rectangular, 35 yards in length by 28 yards in width, with a defined boundary. A flag shall be placed at each corner, and corner spots, 3 feet from both boundaries, shall be accurately defined. Points on the boundary 3 feet from each corner flag shall be marked by white pegs, not exceeding three-quarters of an inch in diameter and 3 inches above the ground. The baulk (see diagrams) shall also be defined. The hoops shall stand 12 inches out of the ground, outside measurement, and be firmly fixed. The crown shall be straight, and at right angles to the uprights, which shall be not less than 3½ inches or more than 4 inches apart (inside measurement) from the ground upwards. The turning and the winning pegs shall be of wood, of a uniform diameter above the ground of 1½ inches. They shall stand 18 inches out of the ground, and be firmly fixed.



THE

Gardeners' Chronicle

No. 1,434.—SATURDAY, JUNE 20, 1914.

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FRUIT PROSPECTS IN EASTERN COUNTIES.

Special Investigations by "SOUTHERN GROWER."

I.—CAMBRIDGESHIRE.

A MOTOR-CAR tour through the principal fruit districts of Cambridgeshire, Suffolk and Norfolk has enabled me to form estimates of the various fruit crops. In all the districts it was found that a great deal of damage had been done by the May frosts, and in some by a like visitation which occurred at Eastertide. The injury, however, was curiously partial. Strawberries, Pears, Plums, and Currants were most damaged, Raspberries to a less extent, and Cherries very little. Reports indicated that early Apples were the chief sufferers. As a matter of fact, however, the early varieties of this fruit are those which show the best crops, most late sorts, and particularly Lane's Prince Albert and Bramley's Seedling, being extremely short of fruit in most places, mainly because they bore great crops last year.

THE WISBECH DISTRICT.

A Suffolk fruit-grower who accompanied me had obtained the kindly assistance of a Wisbech grower, Mr. Miller, who devoted a day to showing us many of the principal orchards in the district, which he knows thoroughly, as well as some small ones, and whose stores of information as to details of the local fruit industry were freely com-

municated to us. No certain estimate of the area under fruit in the district could be given by him; but the Agricultural Returns make the extent in the Isle of Ely, in which the town is situated, 6,133 acres, and the greater part of this area must be in or quite near to Wisbech. The official tables also credit Wisbech alone with 8,187 acres of crops other than Corn, Potatos, Roots and Grass, and, allowing for Clover, mixed forage crops, various culinary vegetables, Mustard and seed crops, a large proportion, perhaps over 5,000 acres, may be allowed for fruit. The soil is a rich and free-working alluvial deposit of great depth, in many places 12ft. to 13ft., over a subsoil of sand—in some cases running sand. The soil is remarkably rich in nitrogen, but devoid of lime and deficient in phosphates and potash. It is admirable for Potatos, which are extensively grown; and, judging from the sizes of old trees, it must be well suited to Apples and Pears, while Plums, Strawberries, Raspberries and Gooseberries grow well or fairly in it, but not Cherries or Black Currants—at least, though Black Currants may grow enough wood in it, they do not fruit well. Very few Cherry trees are to be seen.

The first impression derived from an off-hand inspection of the orchards was that they were extremely overcrowded, and this was confirmed with respect to many that were more closely examined, though not in all cases. Moreover, it must be said with reluctance that there is a great deal of slovenly fruit culture in Wisbech. Pruning is sadly neglected, as shown not only by the interlocking of branches on individual trees and that of the branches of one tree with those of its neighbours, but also by great quantities of dead wood sticking up on trees liable to canker. Quantity rather than quality of fruit is obviously the main object of most growers, to sell by the ton, as fruit is mainly sold in the district, to a great extent long before it is gathered.

The high value of land accounts to a great extent for the overcrowded condition of many of the orchards. Unplanted land, we were informed, sold at £100 an acre commonly, and planted land up to £200, while rents of planted land are £8 to £10 an acre. In the effort to get the utmost produce off such dear land, trees are planted at half the proper distance in many cases, and those which were intended, perhaps, as "fillers," are left to stand. And then there is bush fruit, and for a time in many cases there are Strawberries or bulbs under the thickly planted trees. Probably more value would be obtained from a given area if half the trees in the overcrowded orchards were dug up.

Degrees of cleanliness in the orchards vary greatly, some being kept fairly or scrupulously free from weeds, and others not. Weeds have not much chance of growing on some of the most densely shaded ground, and while the trees are young, and Strawberries are grown among them, the land is kept well cultivated and hoed as a rule. In one oldish orchard that was seen neither pruning, spraying, nor

hoeing had been done. The Gooseberries under the interlocking trees were almost fruitless, weeds among them being thick and as tall as the bushes, while the trees, we were told, never yield any considerable quantity of fruit. This is an exceptionally bad example of neglect; but a few other cases are only less discreditable.

WELL-MANAGED ORCHARDS.

The preceding remarks do not apply to the orchards of Messrs. R. H. Bath and Co., or to some others which were inspected. Indeed, many fruit gardens, large and small, are in all respects well managed.

Messrs. Bath have 400 acres of land under flowers, fruit and vegetables. The fruit includes about 120 acres of Apples, forty acres of Plums, fifty acres of Strawberries, forty acres of Raspberries, and a large acreage of Gooseberries. As in most cases trees and small fruit are grown together, the total area under fruit is not to be got at precisely from these figures. These orchards are admirably managed, and in viewing them we had the advantage of the company of the practical manager of the fruit and vegetable divisions of the estate. From him we learnt that Bramley's Seedling, Allington Pippin, Early Victoria, and Lane's Prince Albert are the Apples most extensively grown. Others more or less largely grown are Worcester Pearmain, Norfolk Beauty, James Grieve, Beauty of Bath, Grenadier and Duchess of Oldenberg. The last crops well, but sells badly. Worcester Pearmain does not flourish, while Norfolk Beauty and James Grieve give great satisfaction. We saw more fruit on some of the Bramley trees than in any other orchard visited during our tour, but very little on others. In most districts this variety is very poorly fruited this year, having produced a heavy crop in 1913. Lane's Prince Albert is nearly fruitless in this as in other orchards. Allington and Early Victoria, great favourites at Wisbech, bear good crops this season in Messrs. Bath's and other orchards. Other Apples cropped well are James Grieve, Grenadier, Beauty of Bath and Norfolk Beauty. Cox's Orange Pippin does not flourish at Wisbech, and is hardly grown at all. On the whole, the Apple crop is better in Messrs. Bath's orchards than in any other visited in the district.

The principal Plums are Victoria and Prince of Wales. There are a few Czars, Bush Plums, and Monarchs, but no Early Rivers. The last variety is very little grown in the district. Messrs. Bath also grow a French dessert Plum, La Délicieuse, to a small extent. Usually it bears well, but not this year. Prince of Wales bears the best crop this season, while Victoria is fruiting fairly in parts of the orchards. On the whole, neither Apples nor Plums are considered up to average, though we saw none elsewhere in Wisbech equal to those under notice.

Careless is regarded by our conductor as the best Gooseberry, and it is less subject to mildew than any other variety. Other Gooseberries in favour are Lancashire Lad and Lancer. The crops on the three varieties named are fair to good, while

Whinham's Industry is less satisfactory. Messrs. Bath and Co. obviously have faith in a continued demand for Gooseberry bushes, in spite of the discouragement caused by American mildew, as they have a block of 300,000 yearling bushes and 100,000 cuttings.

Bath's Perfection, Balmforth's Seedling, and Hornet are the Raspberries most in favour, and they are promising good crops. The Strawberries most grown are Royal Sovereign, Sir Joseph Paxton, The Laxton, and, as a late variety, Cropper. Strawberries had been injured by drought as well as by frost, and it was astonishing to see them so promising after a good rain as they were at the time of our visit.

OTHER ORCHARDS IN WISBECH.

Mr. Cockett has the largest area of top fruit in the district, his orchards covering 400 acres. The Apples which he grows most extensively are Lord Grosvenor, Early Victoria, Stirling Castle, Grenadier, Keswick Codlin, and Bramley's Seedling. The first five are bearing well this year, while Bramley is fruiting partially. Some very large old trees of this variety in an old orchard show a good crop; but the foreman said this was not general, as it is not a Bramley year. Here and in several other orchards we saw immense trees of a local variety named Green Harvey, a tremendous bearer in alternate years. It was stated that an average of 5 cwt. of Apples of this variety per tree had been grown, while an individual tree here and there had produced $\frac{3}{4}$ ton to 1 ton. One ton would be equivalent to 56 bushels of 40lb., and this seems an incredible crop, even for a tree of enormous size.

The principal Plums grown are Victoria, Prince of Wales, Belle de Louvain, and Czar. The Plums in the orchards seen are bearing better than in most others in the district. Another local Apple seen in two or three orchards is Margaret Henrietta, a small red dessert variety of poor quality, but in good demand in Northern markets. This variety is a tremendous cropper. In one case we saw some trees of it so crowded together that sun and air could get freely only to the tops, and these, spread out like an immense umbrella in a compact mass of branches, were densely covered with fruit.

Lord Grosvenor is an Apple greatly in favour at Wisbech, as it is a great and almost regular cropper. It cankers badly in some of the orchards, if not in all; but the growers put up with that fault for the sake of this Apple's productiveness.

Black Currants are so very little grown in Wisbech that we neither saw nor heard of more than one piece of considerable area, and this was almost devoid of fruit. The two reasons given to us for not growing Black Currants at Wisbech and in another part of Cambridgeshire were that they become badly infested with "big bud," and that the crop is frequently cut off by spring frosts.

Mr. Miller took us last of all to see his own fruit garden in Wisbech. Most of his fruit land is at a distance, some of it being in Suffolk. His home garden is well cultivated, and beautifully clean. Here we saw the only piece of outdoor Tomatos noticed in the course of our tour; but Mr. Miller grows them chiefly under glass, and these are highly promising crops. A good block of young Pears and cordon Apples attracted our attention. James Grieve and Newton Wonder are fruiting well, whilst Lane's Prince Albert, as nearly everywhere, is almost bare. Gooseberries and bulbs are grown among some of the trees. A variety of Gooseberry known as Roaring Lion bears a great crop. Some old trees of the Green Harvey Apple and Hesse and Cluster Pear are of enormous size. In fruiting seasons they bear very great crops.

SOMERSHAM.

A few orchards at Somersham were looked at cursorily in passing on our journey towards Wil-

lingham. Most of the trees of the Plum, Damson, and Cherry that we saw were almost bare of fruit, and Apples were thin. Frost, it appears, did a great amount of damage to fruit of all kinds in this parish.

WILLINGHAM.

One of the best-managed orchards in Willingham is that carried on by Mr. J. F. Thoday, and is about 50 acres in extent. Here we saw some of the best Plum crops noticed in the course of our tour in Cambridgeshire. The Cambridge Greengage is fruiting well, and this is the case generally, Mr. Thoday informed us. He has also good crops of Czar and Bush Plums, and a fair one of Early Rivers, The Bush, and Cox's Emperor, while Victoria is nearly bare, and the fruiting of Monarch is partial. Hesse, Pitmaston Duchess, and Joe Wilson Pears, the last being a local variety, bear fair to good crops.

Mr. Thoday's principal Apples are Bramley's Seedling, Lord Suffield, and Beauty of Bath, and these are fruiting well for the season. Lane's Prince Albert is nearly fruitless. Willingham is in the midst of a great Plum district, and it is estimated locally that the crop in the district is only half an average one, Mr. Thoday being exceptionally fortunate. He has a large expanse of glasshouses, which we had no time to visit.

In the adjoining parish of Cottenham there is a large acreage of fruit. Here we had to be contented with inspection from the roadside, as an appointment further on prevented a protracted enquiry in the parish. Both Apples and Plums, we were informed, are much under average.

HISTON.

At Histon, where Messrs. Chivers have a great jam factory, the firm kindly sent their fruit manager to show us one of the fruit farms which they hold. Their scattered orchards extend over some thousands of acres.

For a wonder this season Lane's Prince Albert is among the Apples bearing well in parts of the orchard visited, some of the other varieties showing a good set of fruit being Worcester Pearmain, Queen, Histon Favourite, Bismarck, and Bramley's Seedling in some blocks. Stirling Castle and Keswick Codling are not cropping well, whilst Beauty of Bath shows about half an average crop.

Frost did some damage to Plums, Strawberries, and Raspberries at Histon, but little or none to Apples. The Strawberries seen, however, were promising after a recent fall of rain, and some good crops of Prince of Wales, Greengage, Pershore, and Early Rivers Plums were seen. The prospective yields of Plums and Apples on the whole are put below average. Aphid has done a great deal of damage to Plums. Damsons in this particular orchard are fruiting well.

Black Currants are only half a crop. They started well, but "ran off" in consequence, presumably, of drought. Cherries are good.

Spraying in these orchards is done by means of portable main pipes and hose, the work being driven by an engine capable of serving twenty-four sprayers. In another place Messrs. Chivers have underground mains.

In another orchard in or near Histon, which we entered on seeing the manager as we were passing, we found Black Currants very thin on the bushes, as they had "run off." Here Worcester Pearmain was seen to be cropping well, while Lane's Prince Albert was fruiting only in places. No Damsons were seen on the trees, and Plums generally were said to be only half an average crop.

Although this report begins with Cambridgeshire, on account of the great importance of that county in relation to fruit-growing, my tour began in Suffolk, and was continued through part of Norfolk. A description of what was seen in the two eastern counties must be reserved for a second article. *A Southern Grower.*

ORCHID NOTES AND CLEANINGS.

HYBRID ORCHID RECORDS.

At a recent meeting of the R.H.S. Orchid Committee, Mr. J. Gurney Fowler, chairman of the Committee, laid before the members a scheme for the classification of hybrid Orchids under the species entering into their composition, and with reference to those hybrids or cross-bred varieties in which three or more species were used. Dealing with the *Laelia*, *Cattleya* and *Odontoglossum* hybrids, of that character which have obtained awards at the Royal Horticultural Society, he has prepared an analysis running into over 700 lines, the first item in each line being an original species, the second the species forming a primary cross, and followed by the third and successively by all other species concerned in each cross, the recognised name of the plant being given after the names of the species concerned in its production.

A study of Mr. Gurney Fowler's little book is very interesting. For example, with *Laelia purpurata* as an original it appears sixty-three times consecutively, with *C. Dowiana* in the second line twenty-four times, and with the introduction of other species the sixty-four distinct crosses are obtained, in many cases the third agent being a hybrid.

THE ROSARY.

VIEWS ON CLASSIFICATION.

In the *Rose Annual* for 1914, a number of rosarians contribute notes on the question of Rose classification. The following are summaries of these views expressed by those who favour a radical change in the existing system on the subject which is discussed on p. 438.

Mr. A. Dickson's view is that hybridists have broken down all existing lines of demarcation between what were once well-defined groups, and he proposes to divide the Roses of our gardens into four sections, viz.: (1) Bedding Roses; (2) Exhibition Roses; (3) Shrub or Bush habited Roses; and (4) Climbing Roses; each of which may be again sub-divided into groups. The first section, Bedding Roses, is divided into three groups according to estimates of their vigour of growth. In group A we find Hugh Dickson, Grüss an Teplitz, Frau Karl Druschki, La Tosca, and Dorothy Page Roberts; in group B Roses of such different habit as Caroline Testout and Lady Hillingdon; while as typical of group C are given 3 H.T.'s, Madame Ravary, Richmond and Le Progrès, a China Comtesse du Cayla and 2 Polyantha Pompons, Orleans and Jessie.

When we come to the 2nd section, "Exhibition Roses," we find some of the best for this purpose have already been used in the other sections. This, therefore, is to be confined to such Roses as are useless for any purpose other than exhibition. It would indeed prove an index expurgatorius. Section 4 for Climbing Roses is sub-divided into groups: (a) Wall Roses, (b) Early-flowering, and (c) Late-flowering. These groups bring together some odd combinations; thus we find Climbing Mrs. Grant associated with Noisettes, such as W. A. Richardson in group A (Wall Roses). Early-flowering Climbers are put into group B, which includes both multifloras and some Wichuraianas; while group C, late-flowering, has some Wichuraianas, Paul's Single White and Climbing Lady Ashtown. Smrely Climbing Mrs. W. J. Grant and Climbing Lady Ashtown are far more like one another in habit and form of flower than either of them is to the others of the groups in which they are here respectively placed. Now admitting Mr. Dickson's premises that the borderland between two neighbouring groups cannot be readily defined, yet the typical plants are well known, and the plants on or near the border line could at least be arbi-

trarily defined, and the direction in which they vary from the type could be indicated if necessary. If this were done, surely it would tell us more of Jessie to know that it is a poly. pom. than that it is a member of a group comprising Comtesse du Cayla and Richmond: similarly, to know that Climbing Lady Ashtown is a climbing H.T. would give more information about it than to say that it is a member of a class which includes Hiawatha and Paul's Single White.

Mr. Pemberton's scheme does not differ in essentials from that of Mr. A. Dickson. In effect, he substitutes for Mr. Dickson's section for bush habited Roses a section of "Roses for Decoration," and he adds another section for pot Roses. He does not work out his scheme so well as does Mr. Dickson, in that he gives us no examples. His scheme is, of course, open to the same objections that meet us in Mr. Dickson's, namely, that the same variety might in many cases find a place with equal propriety in two or more sections, and the line of demarcation between them is consequently even less well defined than under the present arrangement. Mr. Pemberton would be willing apparently to retain the names H.T., Tea, etc., at present used, though he seems to think their practical value would be gone.

Mr. G. M. Taylor's article is in some sense a more serious contribution to the discussion, and it is clear that he realises something of the great difficulty involved in a new departure from the established system. He proposes to arrange all cultivated Roses into three primary divisions:—(1) perpetual-flowering, (2) summer-flowering, (3) autumn-flowering Roses, each division being again sub-divided as hereafter mentioned. Dealing first with the primary divisions, we have a scheme which at least depends on definite characteristics of the plants, and which, if practicable, might afford useful and definite information as to the plants in the respective divisions, and might be free from the vice of overlapping. The distinction between perpetual-flowering and autumn-flowering varieties is in some sense original. The question is whether it is capable of being sufficiently sharply defined to permit of its general application for differentiation. Even between the summer and autumn flowering sections the dividing line would often be far from clear. If we take the Wichuraiana group, for example, this would be split up between divisions 2 and 3. Dorothy Perkins, François Foucard and Coquina would undoubtedly have to go into division 3, while perhaps the bulk of the group would be found in division 2. Precisely how much sporadic flowering in autumn would avail to shift a Rose into the third division would certainly be difficult to determine, for the same Rose will often differ in this respect in different gardens, and under different treatment. No doubt the Teas and H.T.'s would nearly all be found in 1, while the H.P.'s would go into 3; but what is to happen to Roses like Hugh Dickson and Frau Karl Druschki, which, though they have only two definite growths, yet give us flowers—the first at intervals, and the latter nearly continuously through the season?

But each of these primary divisions is to be further split up, and the sub-divisions suggested are: (A) Garden or Decorative Roses; (B) Exhibition Roses; (C) Semi-double; (D) Single. Here the vice of overlapping is at once apparent, for garden and decorative Roses (section A) will be found in all the sub-divisions, while exhibition Roses, class B, will be found also in class A, and to a less extent in section C.

Dr. A. H. Williams's proposal is no doubt the most elaborate. He has three primary divisions, according to vigour of growth:—(1) Climbers; (2) Bush Pillars; (3) Dwarfs. These again are to be sub-divided into four secondary divisions, according to the type of flower, into (1) Exhibition Roses; (2) well-formed flowers too small for exhibition; (3) loose or irregular blooms; and (4) singles. And each of these twelve secondary groups is to be again parti-

tioned according to their inflorescence into (1) blooms more or less solitary; (2) fair-sized truss; (3) large cluster. The result of this arrangement, if I understand it aright, would be to divide our garden Roses into 36 groups, for which, if it were adopted, appropriate names would have to be found in due course, for no one could be expected to remember how to associate definite characteristics with a mere number. This scheme, though it appears complicated, is certainly legitimate, for it predicates the possession of definite characters which, however difficult they might be to work out, might be capable of being ultimately ascertained.

Perhaps the next step for testing the value of the proposed new schemes as against the

little-known plant, and, while in some gardens it thrives as easily and multiplies as rapidly as the Daffodil, in others it fails to flower, and gradually dies. Its glorious umbels of scarlet Amaryllis-like flowers are, however, so distinct in colour that there are few gardens in which it is not worth trying. Near the East Coast it is perfectly hardy, and it has been known to withstand over 20° of frost in spring, which is the most trying time, as the bulbs push early into growth. To flower well it should be given a well-drained position under a south wall, where the bulbs can be thoroughly ripened each summer, and where a mulching of leaves to protect it from keen winds in spring is not unsightly. A sunny, well-drained slope in the rock-garden offers an ideal site for it. It then pushes



FIG. 199.—HIPPEASTRUM PRATENSE: COLOUR OF FLOWERS BRIGHT SCARLET.

existing classification should be the working out of the 600 Roses of the N.R.S. catalogue according to the schemes, say, of Mr. Taylor and Dr. Williams. The experiment would be interesting, and even if it resulted in the rejection of these schemes, might lead to valuable suggestions for the improvement of our present classification. *White Rose.*

HIPPEASTRUM PRATENSE.

Hippeastrum pratense (or, as it is better known in gardens, *Habranthus pratensis*) was introduced from Chile about 1840, and a flowering plant was figured in the *Botanical Register* for June, 1842. Yet somehow or other it remains a

up flower-stems in late May or early June from 1 to 2 feet in height, each of which carries from three to six flowers in an umbel.

Baker, in his *Amaryllideae*, includes it in the sub-genus *Rhodophiala*, a group characterised by linear leaves and open funnel-shaped perianth, with short tube and capitate stigma. In this classification the sub-genus *Habranthus* is separated by its trifold stigma. The illustration in fig. 199 was taken from the group exhibited by Messrs. Wallace and Co. at the fortnightly meeting of the R.H.S. on June 3.

PUBLICATIONS RECEIVED.—*The Colorado Agricultural College, Fort Collins, Colorado, Prospectus* for June, 1914-15.—*The British Fern Gazette* for June. (The British Pteridological Society, Kendal, Westmorland.)

NOTES FROM WISLEY.

PLANTS IN FLOWER.

The following plants are flowering well in the moraine:—*Dianthus frigidus*, *D. alpinus*, *Asperula hirta*, *Wahlenbergia saxicola*, *W. croatica*, *Androsace obtusifolia*, *A. glacialis*, *Stachys corsica*, *Viola heterophylla*, *Ionopsisium caule*, *Silene Hookeri* and *Saponaria caespitosa*. On other parts of the rocky *Saxifraga Cotyledon pyramidalis*, *Onosma taurica*, *Meconopsis integrifolia*, and the blue *Meconopsis racemosa* are flowering freely, whilst two particularly fine patches of *Ramondia pyrenaica* facing north make a striking feature. By the side of one of the larger pools *Primula Bulleyana* and *P. sikkimensis* are in flower, and the latter is especially charming in such a position. In the shade of the wood, *Lilium rubellum*, a Japanese species with delicate old-rose coloured flowers, is very fine. This most charming woodland Lily flourishes well at Wisley, where it grows in a rather damp spot and has been left undisturbed for several years. *Xerophyllum asphodeloides* is flowering in the wild garden. It is a native of North America and bears a compact spike of white blossoms on a stem about 2 feet high arising from a tuft of grassy foliage. In moist positions near the ponds *Iris versicolor*, *I. ochroleuca* and *I. Pseudo-acorus* are in full flower, while the Japanese *Iris (I. Kaempferi)* is just commencing to open.

Many flowering trees and shrubs are in bloom, notably *Olearia stellulata*, which needs a rather sheltered place; *Robinia hispida*, *Laburnum alpinum*, *Lonicera involucrata*, with reddish flowers and bracts; *Potentilla Veitchii*, a Chinese shrub, producing white flowers from May till autumn; *Cotoneaster humifusa*, which is prostrate in habit and bears white flowers; *Kalmia latifolia*, *K. angustifolia*, *Stephanandra flexuosa*, *Rubus odoratus*, *R. nutkanus* and *Chionanthus virginica* (Fringe Tree). *Polygonum baldschuanicum* and *Hydrangea scandens* are two excellent climbers now in flower. *Nymphaea stellata* Berlin Variety is blooming very freely in the heated Lily tank, which has been recently constructed near the glasshouses. To grow this Water Lily in the open a temperature of from 70° to 75° has to be maintained in the water at the commencement of growth in the spring, but in hot weather no artificial heat is necessary. Although the plants were only put in during the third week of May the surface of the water is already nearly covered with foliage and a large number of the beautiful, blue flowers are open. The tank measures 20 feet long by 12 feet broad, and the depth of the water is about 2½ feet. *W. D. Cartwright.*

HARDY BIENNIALS.

STRICTLY speaking, a hardy biennial is a plant which is raised from seeds one year and flowers the next, producing its seeds and perishing after it has fulfilled its mission of perpetuating the race. In actual practice, however, it is found in our climate that a number of annual and perennial plants give the best results, or are more convenient for certain purposes, if they are treated as biennials. Some annuals, for example, flower earlier or more satisfactorily if they are sown the previous year, while there are many hardy perennial plants which are at their best the first season after sowing. These, therefore, are cultivated as biennials, and it is found profitable to treat them in this manner, especially as some exhaust themselves by free-flowering, and are liable to be lost during the succeeding winter.

In the cultivation of biennials one of the most common errors is that of sowing too late. The seeds are left unsown until summer is well advanced, with the result that the plants they produce have not time to attain their full development before winter sets in, so that they either fail to flower or are small and ineffective at the time when they ought to be in perfection. This is why early sowing is desirable with hardy biennials, and plants raised in good time will be found much more profitable in every way than those which have been raised late.

Another common mistake is that of leaving the seedlings too long in the seed-bed without thinning or pricking out, the effect being that the plants are poor and stunted, and never attain their proper vigour and beauty.

May, June, and July are the best months in which to sow the seeds of hardy biennials in the open, but in the colder parts of the three kingdoms it is sometimes found desirable to sow them in pots, pans, or boxes under glass at an earlier period. It must be kept in mind that some biennials when too large suffer considerably more in winter than those of medium size. This is not usually the case, however, and every effort should be made to have good plants for planting out where they are to bloom either in autumn or in spring. Some of the hardiest may, with advantage, be sown in the open in April.

The time to plant out is given where necessary under the names of the respective plants, but, wherever possible, those which flower early should be planted in autumn, and those which flower later can either be put out then or in spring. Sometimes this is not possible, owing to the ground being otherwise occupied, and in the latter case great care must be taken in transplanting.

While details are supplied regarding the sowing and after-treatment of the leading biennials, it may be said that the others, where not otherwise mentioned, may be raised by sowing the seeds in shallow drills in sandy soil in the open garden, covering them with fine soil to about twice their thickness, and watering when required in dry weather. They may also be sown in boxes, pans, or pots under glass, or in drills in frames. When the seedlings have made two of their true leaves they should be thinned, or pricked out, about 2 inches apart, so as to allow free growth before planting out.

ALTHAEA ROSEA OR HOLLYHOCK.

The Hollyhock has for a long time been under a cloud on account of the losses and disfigurement caused by the ravages of disease, but this has lately been less virulent than at one time, and there are signs that the plant will regain at least a share of its former popularity. It should be remembered that seedlings are less liable to the disease than plants raised from cuttings or eyes, and that biennial treatment gives the best results.

The seeds may either be sown in autumn under glass, as soon as they are ripe, or in the open air or in a frame in July. The latter is the time generally adopted, and it is recommended for those who have little glass to spare, or who have to purchase their seeds. If under glass the seeds may be sown in boxes or pots of light sandy soil, and covered to a depth of about a quarter of an inch with similar soil, or they may be sown in a bed made up in a frame. In the latter case they should be sown in drills. Seeds sown in the open are put in shallow drills about 6 inches apart, and covered with about a quarter of an inch of fine soil. When the seedlings have made a pair of their second, or rough, leaves, they ought to be pricked out about 6 inches apart, those under glass in other boxes, and those in the open in beds, about 6 inches apart either way. The former may be transplanted into frames afterwards.

The Hollyhock likes a rich, well-manured soil, and should be kept growing freely from the

time of planting out in May until the flowering period. In addition to the double Hollyhocks, there are attractive single varieties, and some of these, if sown early in heat and treated like half-hardy annuals, bloom the same autumn.

ADLUMIA CIRRHOSA.

In this plant we have a pleasing biennial climbing plant, useful for trellises or climbing over shrubs and bushes. It is about 5 feet high, is quite hardy, and flowers in summer if sown in the open, preferably where it is to bloom. The sowing should be made in June or July, and the plants encouraged to make growth by the use of good soil. This plant has graceful foliage and flesh-coloured flowers.

ASTERS.

A few of the Michaelmas Daisy class of Asters have only a biennial duration, and the best of these is probably *Aster Bigelovii*. This grows to a height of about 2 feet, and has good flowers of a fine violet blue. It is hardy, and may be sown in the open from May to July for flowering the next summer.

CARDUUS AND CHAMAEPUCE.

In these genera we have several handsome biennials excellent for effect in the summer garden. They are good "Thistles," and can be easily raised from seeds sown in the open in May, June, or July for the following year's display. They are best transplanted young, and can be cultivated in any soil. *Carduus (Cnicus) benedictus* is the Blessed Thistle, a handsome plant, about 6 feet high; *C. Kernerii* has rose-purple flowers, 3 feet high; *Chamaepeuce Casabonae* is handsome with its spiny leaves and light purple heads; and the effective *C. diacantha* has lovely foliage, very spiny, and prettily marked with white.

CHEIRANTHUS CHEIRI.

With the exception of some annual Wallflowers which have come into cultivation within the past few years, the Wallflower (*Cheiranthus Cheiri*) is at its best when cultivated as a biennial, the plants being then much more floriferous and more compact than when treated as perennials. There is, also, a vast difference between Wallflowers properly cultivated and those which are either sown too late or neglected in their early stages. In open seasons the seeds may be sown in the open in March or April, although May and June are the times generally adopted. The seeds are best sown in shallow drills of sandy soil and covered with about a quarter of an inch of the same compost. Thin sowing is desirable, and when the plants have made a pair of their true leaves they are pricked out about 2 inches apart in light soil. When rooted, if bushy plants are desired, they can have the points pinched out, and thus encouraged to make side shoots. When these have grown the plants may again be transplanted about a foot apart into good soil, which has been well firmed, and a second pinching of the shoots may take place if the plants have been raised early, but it should not be done after the beginning of August. As early in autumn as the ground is available the plants should be set where they are to bloom. Late and thick sowing, and late transplanting and planting, are causes of failure.

The German Double varieties may be treated in the same way, but it is undesirable to pinch these out more than once. *Cheiranthus Allionii* is a handsome Wallflower-like plant, which is practically a biennial. It grows about a foot high and bears good heads of orange-yellow flowers. It may be treated in the same way as the Wallflowers, and is excellent for the border or the rock-garden. Closely allied to it is *Erysimum helveticum*, a useful border plant, growing a foot high and bearing orange-yellow flowers. *S. Arnott.*

(To be continued.)

CALCEOLARIA "JOHN INNES."

The illustration in fig. 200 shows a hybrid Calceolaria raised at Merton by the present writer during 1912 from *C. plantaginea* ♀ × *C. polyrrhiza* ♂.

Only one seedling was produced. It possesses the rhizomatous growth of *C. polyrrhiza*, with leaves of intermediate characters between those of its parents. The flowers are larger than those of either parent, being 1½ inch long and 1 inch across, the shape suggesting the male parent, but the corolla is not inverted, as in that species.

The ground colour is a deep rich yellow, with irregular chocolate spotting on the front, more heavily spotted at the back, and chocolate blotches inside the throat.

The plant flowers freely, and is a vigorous grower, being readily propagated from the rhizomes. It is likely to prove as hardy as its male parent, having stood two winters in the

and preparation of the manure. Provided, however, that proper attention is given to them, Mushrooms may be grown either out-of-doors or inside with excellent results, and there is no doubt that their culture could with advantage be greatly extended.

THE MUSHROOM HOUSE.

No hard and fast rules need be laid down as to the nature of the house. Good results may be obtained in a plainly constructed lean-to shed with thatched roof, or in a cellar. The essential features are darkness and a fairly equable temperature. To obtain the latter during the warmest months of the year, the house, if constructed above ground, should be given a northern aspect. An earthen floor will ensure humidity. For winter culture the installation of hot-water pipes will be a distinct advantage, providing the temperature is well regulated.

The spaces for the beds may be constructed of wood or bricks. The latter are much the more durable, though many growers prefer

but a bottom heat thermometer is more satisfactory. The mercurial bulb is encased in a sharp-pointed brass tube which can be thrust into the bed, and read at any time without removal. The rise in temperature should be noted daily. Spawning should take place when the heat is on the decline, at about 80° to 85° F. The spawn should be of the best quality obtainable, and procured from a reliable source, as it is folly to use cheap or second-class material. The cakes of spawn should be soaked in water if very dry, though this is only necessary during the summer months, or when they have been left exposed to the air for a long time. They should be broken up into pieces about as large as a hen's egg and inserted in the bed some three inches deep in holes from nine inches to a foot apart, and then firmly covered over. About a week afterwards, if the spawn shows signs of running, the bed should be soiled over, a layer of fresh turfy loam two inches deep, and beaten thoroughly firm, being the best for the purpose. If this is at all dry it should be watered; a hard surface will be no deterrent to the crop. The soil should then be covered with a mulching of clean straw, which will prevent undue evaporation of moisture. The date of spawning should be noted.

The interval from the time of spawning until the beds commence to bear varies, but if all goes well young Mushrooms may be expected in about six to eight weeks' time, and as soon as these are noticed the mulching should be removed, as in a warm structure it tends to harbour insect and other pests. Throughout the season of growth the temperature should be kept between 55° and 60° F., according to the conditions out-of-doors, and damping down should be done as often as necessary to ensure a humid atmosphere. This will be governed entirely by the natural surroundings, but the walls and paths should be kept damp, using as little fire heat as possible. To provide additional warmth some newly-gathered droppings should be spread in the pathway and turned once or twice daily.

BEDS IN THE OPEN.

Those who have not the convenience of a Mushroom house, cellar, or any similar suitable place, may with confidence try the formation of a bed out-of-doors, provided it is built in time to be coming into bearing in the early autumn. Mushrooms may be cut in the open, the whole season through, if beds are spawned in succession, though winter-bearing beds need to be covered with a thick layer of straw in severe weather. The site for spring and summer bearing beds should be shaded from the hottest of the sun's rays. It should be slightly above the natural level, so that surface water drains away readily. Beds constructed out-of-doors differ in one respect from those built inside, i.e., they are ridge formed, with a base usually from 5 to 6 feet wide. The material should be firmly trodden and rammed as the work proceeds. The manure requires preparing exactly as for other systems, but excellent crops may be obtained by the use of equal parts of manure and leaves if the latter are not too decayed, and where a liberal supply of leaves is obtainable their combination with horse manure is to be recommended, for the heat generated is much more lasting and even.

COMMERCIAL CULTURE.

Although the foregoing principles are applicable to the cultivation of Mushrooms generally, the methods adopted are in many cases somewhat different when the crop is grown on a commercial scale. Quantities of first-class Mushrooms are grown in old limestone pits, shale mines, quarries, disused railway tunnels, underground cellars, old ice houses, sheds, empty Rhubarb forcing houses, and similar positions. Any place which can be kept dark, and where sufficient manure for new beds can be stored to maintain a temperature of 60° F., is suitable.



FIG. 200.—CALCEOLARIA "JOHN INNES" (*C. PLANTAGINEA* × *C. POLYRRHIZA*).

open garden. It did not prove to be self-fertile, but when crossed back with *C. polyrrhiza* it gave seedlings varying in leaf and flower characters between the original cross and *C. polyrrhiza*.

About thirty of these seedlings have come through the winter in a border out of doors, where they are now coming into flower.

Two more seedlings have been raised this year of the original cross (*plantaginea* × *polyrrhiza*). They are like the first, except that they both lack the spotting on the front of the "pouch." *E. J. Allard.*

MUSHROOM CULTURE.*

MUSHROOMS are sometimes regarded, particularly by small growers, as an uncertain crop. Failures may be due to bad spawn—especially when the crop has been grown indoors, to the unsuitability of the structure, or to the quality

woodwork. If woodwork is chosen, it must be strong, especially if it is decided to have another tier for successional beds. This economises space, but at least three or four feet should be left between the tiers to admit of proper working. Each bed should be two feet six inches deep. Less depth would suffice, but the beds will continue in bearing longer, and be generally more satisfactory, if the depth stated is allowed.

PREPARATION AND SPAWNING OF BEDS IN HOUSES.

The preparation of the manure for inside beds is important. The manure from corn-fed horses is best; it should be freed from the longest litter, but the shortest straw ought not to be too searchingly removed. The newly collected droppings should be spread out in a dry shed not exposed to the sun and drying winds, and turned frequently to allow the rank heat to escape. Afterwards the dung may be thrown into a heap and turned occasionally, and whilst still warm be brought together and rammed firmly to form the bed. The temperature should then be tested. A stick in the hands of an experienced person may be a sufficient guide,

* Board of Agriculture and Fisheries Leaflet No. 270.

Where Mushrooms are to be grown on a fairly big scale a large quantity of manure is necessary. Only the very roughest of the straw is removed, and the manure is heaped and turned over for a few days to prevent violent heating, or "fire-fang," as it is often called. The manure is then lowered or wheeled into the mines or pits, or conveyed to tunnels in waggons by a central line of rails. In many cases a box 3 feet deep, 3 feet 6 inches to 4 feet broad at the base, and with open top and bottom, the top opening being usually 18 inches to 2 feet broad, is used. This box is usually made the length of the beds, which are run off at right angles to a broad central path at least 6 feet wide. Having placed the box in position, the manure is alternately forked into the box and trampled down hard until it protrudes above the top opening. The box is then lifted off and moved along sufficiently far to allow 18 inches between the beds at their base. This process is continued until all the manure which may be ready at the time is disposed of. As soon as the temperature falls to about 85° F., pieces of spawn 2 inches to 3 inches in diameter are inserted in the beds 2 to 2½ inches deep and about 18 inches apart.

Within a few days of spawning the beds are soiled over with 1½ inches of ordinary black garden or other surface soil. This is sometimes applied by placing a box sufficiently large over the bed to allow of the desired coating of soil being packed down all over the bed. By means of a mason's trowel or an ordinary garden spade and a can of water, a very smooth surface is made on the bed. As soon as one batch of beds has been finished, another batch is commenced, and a continuous supply of heat is thus obtained.

In places such as pits, caves or tunnels, the beds are not so liable to dry and are seldom hayed and strawed. As soon as the flush of the crop is over, the beds are watered with tepid water in which sulphate of ammonia has been dissolved, at the rate of half a teaspoonful to three gallons. Rough agricultural salt is used by some growers in a similar manner, in slightly higher proportions, with good effects. As a result of such treatment a second crop is obtained, and the beds continue to bear for a much longer period.

GATHERING THE CROP.

The gathering of the crop is an important feature. The Mushrooms should never be cut with a knife, but given a sharp twist and pulled clean out, the lower portion of the stem being cut off afterwards. The beds must not be allowed to become dry. They should receive periodically a good soaking of tepid water, and beds that have been in bearing some time may be rejuvenated by watering with liquid farm-yard manure diluted with four times its bulk of water. Some beds, if allowed to remain, will continue to bear more or less for a long time, but usually it is best and most convenient to clear out the old manure, which is useful in a variety of ways, and to use new material for another crop.

The Mushrooms are usually sent to market in 1-lb. punnets, and in baskets holding 2 or 3 lbs., or more. They bear transport well, with little packing, and, if proper arrangements for marketing are made, they may be expected to pay well during the winter and spring months.

PALLIDA-CENCIALTII HYBRID IRISES.

THE Award of Merit given at the Chelsea Show to Iris Goldcrest calls attention to a small and little-known group of bearded Irises which includes some of the best garden plants in the family. They are characterised by their self-coloured flowers—the standards are of almost the same shade of colour as the falls, and there is

no veining or blotching under the beard—and by their very straight, erect stems, which carry the flowers well above the foliage. The form of the flowers and their papery spathes are also very

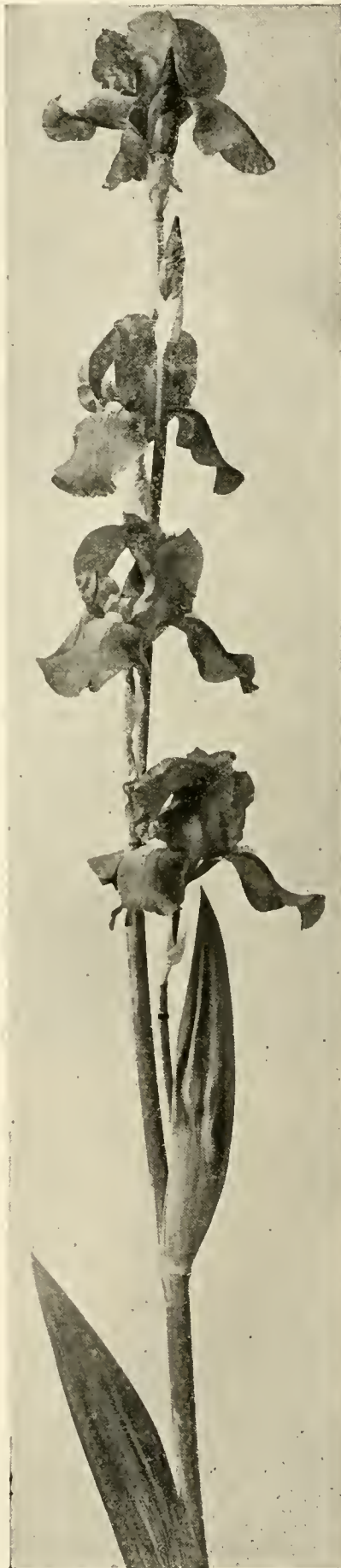


FIG. 201.—IRIS "VIOLA": FLOWERS BLUISH-VIOLET COLOUR.

distinct, and few Irises rival them in the freedom with which they bloom and their habit of holding a large number of flowers expanded at one time. The illustration of Goldcrest in fig. 164, p. 370, shows the shape of this variety, and in fig. 201 is illustrated the habit of *I. Viola*. It will be seen that the stem carries six flowers, of which four are expanded together, at well-proportioned distances. *Viola* is the best of a batch of seedlings raised by Mr. Caparne. The uniform colour of the whole flower is shade 4 of light bluish-violet (202 of the *Rép. de Couleurs*). The beard is small and almost white. Goldcrest is almost exactly the same shade of blue, but has a well-marked yellow beard. *Celia* is another form with pale mauve flowers, in colour close to Albert Victor. Penge is much deeper and has the same rich violet-blue as *I. pallida brionensis*. They all grow 3 or 3½ feet high and have the advantage of lengthening the flowering season of the Iris by flowering earlier than the typical *Pallidas*. *R. W. Wallace*.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

"STOLEN FROM THE CHELSEA SHOW" (see p. 422).—In a lesser degree we suffered loss at the hands of thieves at the recent Chelsea Show, a number of plants in pots being completely stripped during the night succeeding the closing day. Though our loss was not a serious one, we hope that, apart from any steps the Royal Horticultural Society may decide to take another year, the publicity which you have given the facts may deter the thieves from attempting a renewal of their practices. The instance Mr. Paul cites is particularly unfortunate and regrettable. We join in expressing sympathy with our French neighbours. *Dickson and Robinson*.

APPLYING WATER TO GARDEN PLANTS AND LAWNS.—Readers of gardening journals and of the occasional articles on horticultural subjects in the general Press will have remarked the trend of the writers towards adding to the labours of the gardener in a variety of ways and without any compensating advantages. Some of the writers would have us believe that the greater portion of the country partakes of the nature of the Bagshot sand, being as porous and hungry as the heathland of Surrey and parts of Hampshire, in which water is extremely scarce. But much of the soil of these islands consists of heavy loams, clay and other water-bearing strata, and the rainfall is greater than that of almost every other European country. In the generality of years there is no lack, excepting on soils of a sandy nature. The writer of this note has a lengthy experience in the cultivation of gardens of large size in several parts of England and on varied soils, and is therefore competent to form an opinion on the matter of affording water to plants, the time to apply it, and the duration of its application, whether mulches for the preservation of moisture in the soil are desirable or otherwise, and whether these should be of a manurial nature or not. It may be assumed that when plants are removed from the seed-bed, as in the case of the Brassicas set out in June, if the weather be not rainy, water will be required till they are established, but seldom afterwards. Celery requires much water till it is fit for its first earthing up, but not later, unless there is a cessation of growth. Strawberries planted in the month of August may require water till they have made roots in the soil, if the weather is dry; also beds of Radishes, Lettuces, Violets planted in the spring months with rooted runners should have water applied failing rainy weather, and be often syringed in order to destroy red spider, which is injurious to the leaves. Culinary Peas and Sweet Peas soon go out of bearing and the latter cease to produce flowers if not well supplied with water and mulch at the root, and the same applies to Runner Beans, but is less applicable in the

case of French or Kidney varieties. Fruit trees planted against warm walls, when carrying much fruit, should be afforded two or three copious applications during the course of the summer, slightly loosening the crust with a digging fork to let the water pass to the roots; and if the soil be light and porous, a mulch of spent hot-bed manure after the first application will keep it moist for a few weeks. The same treatment may be adopted with Pear trees on dwarfing stocks and with Apples on Paradise stocks which may be carrying heavy crops of fruit; not otherwise, unless the soil is shallow or very porous. In some heavy soils a hoeing with the draw-hoe at intervals of three to four weeks, so as to keep a crumbly layer at the surface, will be found more advantageous than a mulch of spent manure, preventing undue drying of the soil and favouring the admission of the sun beat to the roots of the trees, etc., so beneficial to most things in heavy land. In regard to the depth the hoe should go, two to three inches is quite enough. With regard to ordinary vegetables, it is sufficient if the hoeing is quite superficial, assuming that in a well cultivated garden no deep-rooting weeds are permitted to exist. Where the soil is light and sandy a difficulty is sure to be experienced in hot weather in keeping lawns and, especially, slopes in good condition, applications becoming necessary almost daily. These are better given in the evening, although on days that are cloudy water may be applied at any time with good results. Lucky is the gardener who has water supplied in underground pipes, for by its means he can easily keep the grass in good order with the least amount of labour. In light land it is of much assistance in keeping the lawn green in a dry season to cover the soil with a layer of clayey loam two to four inches in thickness previously to sowing grass seeds or laying the turves; or, if that be impracticable from reasons of expense or lack of the right material, then to apply finely-sifted heavy loam as a winter dressing annually for a few years. Such soil feeding should not exceed an inch in thickness, the fresh soil being spread evenly and rolled when in a dry condition some days subsequently. On lawns not required for tennis, etc., if the grass is deficient in clover—*Trifolium perenne* minus—a plant of dwarf-growth should be sown in quite small quantities immediately after this dressing is put on the turf, raking it in with a short-toothed iron rake. Manurial watering is an important operation in most gardens for various plants—viz., for vines applied to inside and outside borders, to vines in pots, Strawberry plants in pots, French beans that are being forced, etc. Manures may be employed in the flower garden at intervals in this form, intermittently with clear water, as may be called for, in the case of such plants as *Mnsas*, *Colocasias* (such as *Antiquorum*), the larger-growing *Solanums*, *Wigandias*, *Ricinus*, *Amaranthus*, *Daturas*, *Ferdinandias*, *Hibiscus Manihot*, *Lavateras*, *Meliantus*, and other plants grown in gardens for their leaf effects. Dahlias, Holly-hocks, Shrubby Phloxes, *Nicotianas*, *Minalobata*, *Digitalis* and early-flowering *Chrysanthemums* are greatly benefited by occasional doses of manure water, whilst growing and previously to their coming into bloom. It is a safe rule to use it in a much-diluted state and often, rather than strong and seldom. *Critic.*

WASPS (see p. 423).—It may interest readers to know that this spring, up to the end of May, 1,769 queen wasps have been caught in these Gardens. For the past six years my employer has paid to the men on the estate 2d. for each queen wasp caught up to the middle of June. But this year the wasps have been so numerous he has paid each man 2d. each for the first 100 and 1d. each for all over 100. Some years the wasps devour very large quantities of fruit; in fact, it has been quite a dread to gather the ripe soft fruits from the trees. It would be interesting to know what other employers do to check the increasing wasp plague. If your correspondent, Mr. C. Nicholson, would like the collection from here to report on it, I would be pleased to send it to him. *H. Ranson, Holmbury Gardens, Dorking.*

GRASS IN THE ROCKERY.—One or two papers, including the *Times*, at the time of re-

porting the exhibits at the late Chelsea Show, rather took exception to the grass representing a piece of upland Alpine "Meadow" in my exhibit, and there was more than a hint conveyed that it is not possible to keep grass within bounds in an ordinary rockery in an English garden. I think, however, it is to be managed by sowing dwarf varieties of grass on a shallow stratum of peaty soil, underneath which is a good solid bed of soft magnesian limestone. It should not be much trouble to weed any coarse grasses out that may have strayed in with the soil or seed. I contend that where our close "swath" is successful it will not be necessary to cut the grass before June or July, and even then so little may be cut off that the flowered stems of *Gentians*, *Primulas*, and *Orchids* are merely "ended" in such a manner as will tend to the welfare of the plants—practically the fruits only being removed. It is a pretty experiment and worthy of trial. I have already succeeded with *Gentiana verna* and *Primula farinosa* a second season in grass—and Mr. Irving at Kew is trying *Gentians* in it. *J. Wood.*

THE SOURCE OF YELLOW ROSES.—The admirable article from the pen of *White Rose* upon "The Source of Yellow Roses" (p. 343) has been productive of a few questions upon the subject from another writer under the *nom de plume* of *Experience*. There is little use, I imagine, endeavouring to trace the ancestry of such *Roses* as *Marechal Niel* and *Duchesse D'Anerstaedt*, for, so late in the history of these varieties, any pronouncement can only be speculative. It is undoubted that nearly all of the older yellow *Roses* owe their origin to a promiscuous sowing of seed obtained from seed pods set without any artificial aid from the hybridist, and insect agency is possibly responsible for a large number of the fine old sorts raised many years ago. In the old days accurate records of parentages did not exist, and it would be futile to attempt to supply them now. But our modern hybridists are working upon more scientific lines and upon a more certain basis. The modern *Rose* breeder has gone to totally different varieties to obtain the present-day yellow *Roses*, and in several of the fine sorts of recent origin that are now in commerce the ancestry is apparent to any careful student of the evolution of the queen of flowers. *Experience*, in his note, says it is quite evident that if we go to the various yellow species—or alleged species—mentioned by *White Rose* we shall obtain *Briar*-like nature in our crossings, and can we improve on what *Pernet-Ducher* has done and is doing in this direction? That question is, I think, easily answered. The work at present being done by the illustrious French rosarian has already been done, and done well, by one of our famous British raisers. So long ago as 1844 a writer in one of the responsible horticultural journals of that period stated that he found *Harrisonii* and *Double Yellow* to set seed freely when impregnated with pollen from other *Roses*. The British raiser to whom I have referred has sent out during recent years many most excellent yellow *Roses*, and I know that he was using pollen from *Persian Yellow* as far back as 1884. The raiser in question never divulges his parentages, but in the catalogue of his firm for the season of 1912-1913 he takes the grower of *Roses* a little into his confidence.

Writing of the fragrance of *Roses*, he states that the true *Rose* perfume is the old *damask* or *Attar* of *Rose* odour; that the "Tea perfume" speaks very decisively for itself; and it is, however, to the *Persian Rose*, with its unique fragrance, that we are indebted for the exquisite perfume so much appreciated in the newer yellow *Roses*. These words are taken from the catalogue of *Roses* issued last season from the famous *Newtownards* nurseries. I confess to some considerable interest in the evolution of *Roses* and endeavour to study the subject very carefully and closely. I felt certain that the noted Irish firm must have been using *Briar* blood for a long period, and Mr. Alexander Dickson informed me that he first used pollen from *Persian Yellow* thirty years ago. The breeding in of colour and fragrance from the *Persian Rose*

is a triumph of hybridisation, and so carefully and thoroughly has it been done that all the undesirable qualities of the *Briar*, including its unquestionable tendency to black spot, have been eliminated. The *National Rose Society* has decreed that a certain race of *Roses* shall be designated as *Pernetiana*, in honour of an esteemed French raiser, and no one will grudge him the distinction. Nevertheless, the fact remains that honours should also be bestowed nearer home, and the future historian of the evolution of *Roses* must certainly credit the house of *Newtownards* with a worthy and honourable place in the building up of a race of elegant and refined yellow varieties. *George M. Taylor, Mid-Lothian.*

SEVERING OF IVY STEMS (see p. 422).—In your issue of June 13 Mr. H. G. B. Biddesden writes: "I shall be glad to know if any of your readers could give an instance of the stem of an Ivy, having been completely severed, continuing to live throughout one summer." I am able to state that ten years ago I severed the stem of an Ivy growing on a building 3 feet above the ground, and removed the roots entirely. With the exception of a little drooping for the first few days the Ivy was none the worse for the operation, and is at present growing as well as ever. It has often been examined by others as well as myself, and we are convinced that it has no connection with the ground whatever. *James Wood, Hedsor Park.*

THE LESSER NARCISSUS FLY.—The main points brought out in the recent correspondence concerning the lesser *Narcissus* fly (*Eumerus strigatus*) have been that many larvae feed in one bulb, that they are to be found feeding in March and April, and that they may be merely scavengers. Reasoning from the habits of allied insects is in this case of little value, for the larvae of the *Syrphidae* or hover flies exhibit most remarkable variations in their feeding habits and in their habitats. Some are predaceous upon aphides; some devour living plants; some feed in the most filthy of decaying matter. (Many will remember *Virgil's* recipe for starting bee-keeping. No doubt his final product consisted of swarms of drone-flies!) The following facts may be of some interest. The larvae from bulbs lifted in April pupated almost at once, and flies hatched out from them in early May. Even larvae submerged in water for 72 hours behaved in this way. The eggs laid by these flies have hatched, and the larvae may now be found feeding, a dozen or more together, in the necks of *Narcissus* bulbs. There seems to be no doubt whatever that they enter at the neck of the bulb. They may be found feeding in bulbs which show no other damage than can be accounted for by the larvae feeding in the bulb, though this is not always the case. One we have before us as we write has the upper half inch of the bulb within the neck reduced to a brown semi-liquid mass in which the larvae are feeding, and this is the only damage the bulb has suffered. Another, on the contrary, is suffering also from basal rot, and the larvae have penetrated further into the middle already. The decay set up is of the same nature as, and very similar to, that following the attack of the *Onion* maggot upon *Onions* or *Shallots*. It is clear that at least two broods of the flies appear within the year; that, at least at times, the larvae attack healthy bulbs; and that it would be wise to examine all bulbs lifted now with care, and to destroy all those containing the larvae. *Fred J. Chittenden.*

—Apparently Mr. Shea still misses the real point of the matter. It is not whether the larvae of the *Eumerus* "burrow into and attack the necks of the *Narcissus* bulbs," which we all know they do, but whether the bulbs so attacked are sound and healthy ones or not, for which there is at present no entirely satisfactory evidence either way. But I agree with Mr. Shea that those who are investigating the matter on behalf of the Board of Agriculture are certainly "not so stupid," and will now give their attention to the point, and, before we are called upon to take any special measures, will produce for us definite proof one way or the other. This has been the whole and sole object of my calling attention to it. *A. J. Bliss.*

The Week's Work.

THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to MRS. COOKSON,
Oakwood, Wylam-on-Tyne.

THUNIA.—The flower-scapes of these Orchids are developing, and if the pots have become filled with roots, feed the latter about twice a week with weak liquid-manure made from cow-dung. As soon as the flowers have expanded, the plants may be removed to a cooler and drier atmosphere, where the flowers will last much longer. These plants are serviceable for house decorations, and if the roots are kept moderately dry the plants should suffer no harm during the time the flowers last in perfection. After the flowers are over, afford the plants every encouragement to complete their growth: they should receive plenty of light.

PHAIUS.—Hybrids of *P. Humboldtii*, including *P. Cooksoniae*, *P. Phoebe*, *P. oakwoodense*, *P. Doris* and *P. Chapmanii* have finished flowering and the new growths are developing roots. Therefore the plants may be repotted. The habit of the plants of this section is much more compact than that of *P. simulans* and its class, and it is not desirable to disturb the roots annually for repotting if the condition of the plants warrants its postponement. Surface moss that has become overgrown should be removed and replaced with fresh moss, whether repotting is practised or not. Small plants soon fill their receptacles with roots, and it is generally necessary to repot them annually. For compost use a mixture of turfy loam, peat and leaves in equal portions, with sufficient sand, charcoal and broken crocks added to render the materials porous. The plants should be shaded carefully until they have become re-established. During the season of active growth, when the pots are filled with roots, the plants require a plentiful supply of water. A temperature of about 70° should be maintained at night during this stage, but in the resting season 65° will suffice.

DENDROBIUM FORMOSUM.—This Orchid has become popular in private gardens during recent years for the purpose of furnishing white flowers in the autumn. The plants are growing freely, and any necessary repotting should be done as soon as the roots are active. The plants require a liberal amount of strong light from the time growth commences until the flowers expand in the autumn, but they must not be exposed so much as to cause scorching. A hot, humid atmosphere should be maintained and the roots liberally supplied with moisture until growth matures, when cooler and practically dry conditions should be afforded.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to EARL BEAUCHAMP, K.C.M.G.,
Madresfield Court, Worcestershire.

FLOWERING SHRUBS.—The shrubs in these gardens have never before in my experience been more damaged by spring frosts. Many of the newly-introduced species especially have been damaged. The minimum temperature was 60° on one night and 24° two nights afterwards. Shrubs that had been pruned after flowering and made new growth were cut back by the frost and have had to be pruned again to sound wood. It is very doubtful if this later growth will ripen sufficiently to flower next season. Magnolias, Buddleias, *Deutzia carminea*, *D. densiflora*, *D. kalmiaeflora*, *D. corymbiflora*, *Stephandra flexuosa* and all the Japanese Acers have suffered severe damage, whilst *Corylopsis spicata* and many others have been cut to the ground level. All these plants have in former winters withstood much more severe frosts; the damage was largely by reason of the tender condition of the young growths.

ROSES.—Aphis has caused us much trouble this season, the Roses requiring attention daily to keep them clear of green fly. There has been

one continual migration of the pest on the wing, and as fast as one infestation has been destroyed by spraying, the bushes have been freshly attacked. Madresfield is in a Hop-growing district, and our persistent attacks of aphis may be due to migrations from the Hop fields.

THE TERRACE GARDEN.—Grass verges must be made neat and trim and lawns kept mown. Should Plantains or other coarse weeds appear in the turf, destroy them with the "Wikeham" weed eradicator. Keep the flower-beds tidy, and see that the plants are properly supported and stopped as required.

SEED-SOWING.—It is time for sowing (in a cold frame, for preference) spring bedding plants, such as *Polyanthus*, *Aubrietias*, *Wallflowers*, *Myosotis*, *Alyssum saxatile compactum* and other biennials. Partially shade the seed-pans until the seeds have germinated in order that the soil may keep moist without resorting to watering; for the same reason maintain a humid atmosphere about the seed-pans of the seedlings. Many herbaceous perennials come true from seed, and now is the best time to sow them. Seedlings are always more vigorous than plants raised from cuttings or by division. The fine *Geum Mrs. Bradshaw* may be raised from seed sown now. *Campanulas*, *Oenotheras*, *Aquilegias*, *Thalictrums*, *Veronica subsessilis*, *Pentstemons*, *Rudbeckias*, *Sweet Williams*, *Brompton* and winter-flowering *Stocks* are all easily raised from seed.

THE IRIS GARDEN is now the gayest and most pleasing feature in the flower garden. Irises flower over a long season, and the plants seldom fail. *I. Monnieri* and *I. ochroleuca* have been extra fine this treacherous season.

THE BULB GARDEN.—The foliage is now nearly ripe, and the long grass may be mown where bulbs are planted in turf. The sun will ripen the bulbs, which is very important if good flowers are expected next season.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the EARL OF DERBY,
Knowsley Hall, Lancashire.

VALLOTA PURPUREA.—The plants show signs of completing their growth, therefore water should be withheld gradually, allowing the bulbs to rest from now until September. Stand the plants on a staging or ash bottom in a cold frame in full sunshine to ripen the bulbs. It is not necessary to repot *Vallotas* oftener than every third or fourth year. Early in July is a good time to top-dress or repot established bulbs; the compost should consist of equal parts loam, leaf-mould and sand, with a little bone-meal added. Pot firmly and keep the soil almost dry until September. Imported bulbs should be potted in October.

HUMEA ELEGANS.—A few seeds of this sweet-scented plant may be sown now, and another sowing made about the middle of July. Sow the seeds thinly in a pan of finely-sifted soil, barely covering them. Place the seed-pan in a cold frame, and cover it with a piece of glass or paper. As soon as the seedlings can be handled they should be potted carefully and grown on. Strict attention must be paid to watering, for an excessively moist soil must be guarded against. Admit plenty of air on all favourable occasions. Unlike most plants, *Humeas* are not benefited by wetting the foliage.

PANCRATIUM FRAGRANS.—The flowers are almost over and fresh leaves are developing. Examine the plants with a view to top-dressing any that require this attention, using a mixture of three parts loam and one part each of pulverised cow-manure and leaf-mould, adding a little charcoal and sand. If any plants require repotting, the work must be done very carefully, to minimise damage at the roots. Use ample materials for drainage and slightly less cow-manure than advised for the mixture for top-dressing. Plunge the plants in a hotbed until growth is completed, when they may be exposed to full sunlight. Sponge the leaves directly thrips are noticed.

POT ROSES.—To obtain good flowers from Roses in pots early next spring, the plants must receive liberal treatment during the summer

months. Stand them out-of-doors in a light situation, sheltered from cold winds. Remove all flower-buds from plants required for forcing next spring. If repotting is necessary remove a goodly portion of the old soil and use good turfy loam enriched with a little bone-meal. Pot firmly. Cut away all old and useless wood, and then plunge the pots in ashes, affording water very carefully for some time afterwards. Those with soil in a satisfactory condition should be fed with weak soot water and diluted liquid manure. Syringe the plants with clear water occasionally. For combating mildew and green fly, spray the plants with *Quassia* extract.

CANNA.—The earliest plants are in full growth, and should be watered frequently with liquid manure. Plants of later batches may be repotted and grown on in a pit or frame. Water the soil very carefully until the roots are re-established.

MANAGEMENT OF THE HOUSES.—With the exception of stoves and propagating pits, fire heat may be almost entirely dispensed with by judicious ventilation and closing the houses early.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton
Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buck-
inghamshire.

PINEAPPLES.—Attend to old, leggy plants that are not fruiting, and cut them off at the surface of the soil, removing the lower leaves to where the stem begins to soften, shortening the latter if necessary. Pot them firmly into 8 or 10-inch pots, using good turfy loam in moderate-sized lumps. Plants sixteen or eighteen months old having no appearance of fruiting should also be turned out of their pots, some of the old soil removed, and the roots cut back, afterwards re-potting them as mentioned above. This will enable the plants to produce earlier and finer fruit, as the old soil frequently becomes soddened from the presence of worms, one of the greatest pests in Pine cultivation in pots. Place the plants in a close pit having a brisk bottom heat, and water the soil, which will suffice generally for moisture until about a fortnight, when fresh roots will have developed. Plunge the pots in the hot-bed, keep the pit close and moist, lightly syringe the plants overhead daily, and shade them effectually. The temperature at night should be about 70°, with a rise of 10° to 15° in the daytime; examine the bed at intervals to see that the requisite amount of bottom heat is maintained. If the plunging bed is composed of fermenting materials and bottom heat is not supplied by means of hot-water pipes do not use fire-heat unless it is absolutely necessary.

PEACHES AND NECTARINES.—Artificial heat can be discontinued when the early crop is ready to be gathered, and an abundance of fresh air admitted in order that the fruit may be highly coloured and rich in flavour. Examine the fruits daily to ascertain which are ripe, but handle them carefully to avoid bruising. The fruit should be grasped firmly in the palm of the hand, and such as are ripe will part from the tree when pressed lightly against the base. If the fruits are required to hang on the trees until they are fully ripe suspend to the trellis or wires a sheet of soft canvas or netting, or place over the border a layer of dried bracken fern or hay, the value of which will be increased if a sheet of soft canvas or stout tiffany is placed on the top of it. This will ensure that any that may fall will not be bruised. To pack the fruit for transmission it should be wrapped separately in tissue paper with a covering of cotton wool and packed carefully, but firmly, in single layers in the box with a padding of wood wool surrounding each fruit. Pay unremitting attention to the trees in succession houses, as previously directed, and let there be no break in the supply of fruit. Take measures to prevent infestations of insect pests; red spider may be kept in check by affording the borders plenty of moisture. Old trees in the late houses carrying heavy crops of fruit require a regular supply of stimulants. Remove all surplus growth, retain-

ing only those shoots that are absolutely necessary for fruiting the following season:

CUCUMBERS.—Encourage the plants to grow rapidly. If the young fruits grow curled or the foliage looks weak and flabby examine the condition of the bottom heat and also see if the plants are in need of stimulants. It will be found best, as a rule, always to maintain a moderate degree of bottom heat, and to feed the roots liberally with liquid manure. A top-dressing of cow or sheep manure, spread about 1 inch thick, and replaced every fortnight, will attract the roots to the surface. Keep the plants strong and healthy, and afford sufficient water, as the more rapid the growth the larger will be the crop of fruit. Any plants that have not proved productive should be discarded and fresh specimens planted in their places.

THE APIARY.

By CHLORIS.

SANITATION v. DISEASE.—During the past month I have had occasion to examine an apiary, which was infested by the Isle-of-Wight disease a few years ago, when I strongly advocated burning all the hives, as the disease was so bad. Unfortunately, two new double hives were saved; the contents were burned and a fresh start made in them; but the bees died, probably from the same disease. Since then several fresh starts have been made in skeps, and one that came through last winter was examined, and Isle-of-Wight disease was undoubtedly present. The apiarist was induced to make a bonfire to destroy the skeps and bees. On examining the two double hives saved from the last fire, I was amazed to discover their condition. To commence with, the frames and combs were one mass of larvae of the bee-moth in all stages of development, thus being a source from which the pest could be spread to neighbouring hives; the floor-boards were thick with rotting debris and other filth. Luckily, I induced the bee-keeper to destroy the lot, and he has determined to make a fresh start with a swarm he has found. From the foregoing it will be easily seen that much of our present trouble is due to carelessness. The hives should be kept thoroughly clean by having surplus floor boards, so that their cleansing may be thorough, not superficial, as is too often the case. The work is best done by scraping, and afterward thoroughly washing with disinfectant. Then no unused hives with combs should be left in the neighbourhood of the hives for the wax moth to deposit her eggs in, and the ground in the vicinity of the hives should be kept scrupulously clean by hoeing, and occasionally in the winter unslaked lime should be used to purify the soil and kill any germs that may assist in spreading disease. It is a mistake to have hives under hedges and trees where they catch the drip from the trees and are not in a free circulation of air, although a wind-screen is excellent and shade from the mid-day sun a boon.

SHOWING.—As a means of finding a market for honey, exhibitions are excellent. As bee-keepers will now be removing their surplus honey, the best sections should be put aside with this end in view. In some shows shallow frames are admitted. To secure prizes for sections it is necessary that the foundation should be a full sheet of worked comb: it must be drawn out, filled and sealed quickly, so that only those sections filled during a good honey flow are of any use. For this purpose swarms generally do the work best, by producing clean, straight comb with an even capping. Those who have been most successful on the show bench have given great attention to selecting a strain of bees which give the best results in the points named above. Use two bee-way sections, with split top and grooved sides, and if the inside of the wood be coated with a thin covering of hot wax the bees will then probably attach their comb to the wood all round. To perform this operation successfully warm the sections and put on the very hot wax with a brush, taking care that no wax gets into the "V"-shaped joint, or the section will not fold true, as the painting is done while the sections are in the flat. To make the sections square and

quite true it is best to use a block. The girders of the rack are made of flat wood about three-quarters of an inch wide and three-eighths thick. The sections must then be wedged up quite tightly, to leave no space for the bees to fill with propolis to stain the wood and make much extra work to remove. T-girders should be avoided, as the spaces are always filled with propolis. Dividers are needed, and as those of metal are thinnest they are much to be preferred to wooden ones, and those that give the closest fit will conserve the heat best. It is often said that bait sections (i.e., those partly filled) will cause the bees to use sections readily, and this is quite true; but most people place them in the centre, which is wrong, for the bees fill the inside frames without much inducement; so place them on the outside. Then the racks cannot be wrapped up too warmly, leaving no openings through which heat can escape or a draught may arise. It will be seen that a "W. B. C." hive is of great advantage. As soon as the sections are filled they must be removed or they will become travel-stained, and in some cases the bees thicken the cappings, and this results in a deduction of points at the shows. To prevent the bees puncturing the cells, use as little smoke as possible. A Porter bee-escape will reduce the possibilities of this danger. To get good sections of heather-honey the racks must be fitted up with drawn-out comb. Clean all the wood of the sections by scraping, then store in a clean cupboard until the time of the show. Just before the show glaze with glass cut to the exact size and use white paper lace not more than three-quarters of an inch deep. Afterward paste around the four sides strips of white paper exactly flush with the edge.

THE KITCHEN GARDEN.

By R. P. BROTHERTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

CARDOONS.—The plants are ready for transplanting into trenches where they can be blanched easily, in much the same manner as Celery. Cardoons, however, are a less exacting crop, needing a merely fairly fertile soil; but they must have a larger space for leaf development, or about 2 feet apart. In dry weather, until the roots are re-established, water must be applied. It is not too late in warm districts to sow seeds for a late batch, though too late in the north.

WITLOOF.—This is a kind of Endive—or, rather, an improved form of the allied Chicory, which, like Endive, is blanched during winter and spring. It is now full time to sow seeds in drills made at a foot apart. The crop will grow in very poor soil, but yields more profit in fertile, though not necessarily recently manured, ground. The plants are tap-rooted; therefore it is not usual to practise transplanting, the seedlings being thinned instead to 9 to 12 inches apart. The summer cultivation, in addition, consists in stirring the surface with a hoe and destroying weeds.

JERUSALEM ARTICHOKE.—When this vegetable is planted in heavy soils it is an advantage to stir the ground deeply, at the same time drawing a little soil against the stems. In ground of a loose texture a large quantity of soil should be placed against the stems in order to steady them during times of strong winds, or they may be uprooted. This will be the last attention the crop will need until late in autumn unless the soil be foul, when in a few weeks the surface will require to be Dutch-hoed to destroy seedling weeds.

MUSHROOMS.—If Mushrooms are required in autumn it is time to prepare the materials for the bed. Owing to many horses being at grass at this time, material from the cowhouses has been ere now utilised, but it must be largely of straw, and should be carefully moistened and fermented. Such an unlikely material as Barley straw has also been used and prepared by moistening and fermentation. Neither material, I should say, is very dependable, and it would be better to supplement horse droppings with a larger quantity than usual of the rough manure. Another method of obtaining an autumnal supply is to spawn natural

Mushroom-producing fields. The common Brown Mushroom is the best to employ for this purpose, and no delay should occur in inserting the spawn. Mushrooms were found here last year in May. Puff-balls were plentiful and St. George's Mushrooms abundant slightly earlier.

EARLY POTATOS.—Set apart enough tubers of the best plants for "seed" for another year. If full-grown, the tubers may be sorted at once from among those left for eating and laid out in boxes to "green," and later stored away in the fruit room or other cool place. As the crop is lifted, utilise the ground for a crop of Turnips, Spinach, Lettuces or Radishes. It is not necessary to dig the ground previous to sowing these crops, provided the soil is loosened with a fork when the Potatos are lifted.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

DESSERT CHERRIES.—The fruits of early varieties of Sweet Cherry on wall trees are swelling rapidly, and every effort should be made to cleanse the trees of all insect pests before placing nets over the trees to protect the fruit from birds. A selection of the best early varieties includes Bigarreau de Schrecken, Black Heart, Black Tartarian, Early Rivers, Guigne Annonay, and Early Red Bigarreau. The roots should be supplied with plenty of water, and the mulching materials renewed if necessary. The netting, if of a temporary nature, should be made secure, or the birds may enter and destroy the best fruits. It should not hang loose in front of the tree, but forked sticks, about 18 inches long, should be placed at intervals from the face of the wall, and the nets secured to these. But first fasten to the wires all shoots required for extension, and pinch the others as advised previously, for shoots not required must not be allowed to remain. Trees properly treated in this respect in the growing season require very little pruning in the winter. Moreover, neglect of summer pinching involves the cutting out of a large amount of wood subsequently, and this often leads to gumming and the loss of large branches.

BUSH APPLES.—The trees are making rapid growth, and should receive attention both in pinching out some of the superfluous side growths and also in respect of thinning the fruits. The earlier-ripening varieties should be dealt with first. Amongst the best of the early varieties are Beauty of Bath, Mr. Gladstone, Irish Peach, Lady Sudeley and Langley Pippin. The variety named last is a healthy and vigorous grower, crops freely and bears fruits from small to medium size. St. Everard is a new early dessert Apple, ripening in September; it is a cross between Cox's Orange Pippin and Margil, and has received the First-class Certificate of the Royal Horticultural Society. The fruits of small varieties, such as Yellow Ingestre, should not be thinned too freely. Cooking varieties should be much more severely thinned, as many of the Codlin type—for example, Lord Grosvenor and Lord Suffield—set far too many fruits in favourable seasons, and heavy crops ruin the health of the trees.

GENERAL REMARKS.—The dry weather of April and May was unsuited to recently transplanted trees, and such as were not watered and mulched are not looking so healthy as could be wished. The recent showers have benefited them to a great extent, but rains should be supplemented by root-watering, and overhead syringing should be practised in the evenings. If the mulch applied early in the season needs renewing, hoe the surface soil and apply fresh litter. If nothing else can be spared, mowings from the lawn will make a capital substitute for manure. This material should never be wasted, but used as a mulch for all sorts of fruit trees and more especially those recently transplanted. The hoe should be kept constantly busy in the fruit quarters, for thorough cultivation of the soil is of the greatest assistance to all crops. Trees that were grafted this season should be examined, the ties loosened if necessary, and the new growths made secure against damage by wind and storms.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, JUNE 24—

Richmond Fl. Sh. Croydon Hort. Soc. Fl. Sh.

THURSDAY, JUNE 25—

City of London Rose Society's Show at the Cannon Street Hotel, Isle of Wight Rose Soc. Sh. at Ryde (provisional). Roy. Botanic Soc. meet, Sherbourne Floral Fête. Canterbury, Kent Rose Show.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 51.1°.

ACTUAL TEMPERATURES:—

LONDON, *Wednesday*, June 17 (6 p.m.): Max. 74°; Min. 51°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, June 17 (10 a.m.): Bar. 29.6; Temp. 71°. Weather—Bright Sunshine.

PROVINCES, *Wednesday*, June 17: Max. 75°, Bath; Min. 46°, Felixstowe.

SALES FOR THE ENSUING WEEK.

FRIDAY—

Orchids, at 12.45. Japanese Pigmy Trees, at 2. By Protheroe and Morris, 67 and 68, Cheapside, E.C.

The National Rose Society publishes in its Annual for 1914

8 short papers by well-

known rosarians, together with a critical summary of the views expressed in these papers. The summary is from the pen of the late Mr. George Gordon, whose deeply lamented death we record on another page. The papers provide a convenient basis for the discussion of the question of classification of garden Roses. At the same time one may express the hope that fuller inquiry into the subject may be undertaken before a decision is arrived at, particularly if any material departure from the present methods should be contemplated.

At the beginning of last century rosarians, who were perhaps more in touch with the botanists than are many of their descendants, were content to follow the botanical classification, adapting or expanding it where necessary to their requirements. As a rule garden hybrids of botanical species took their name from one of the parents, though sometimes new names were chosen for particular groups. Thus we find Thory in Redouté's volumes forming groups of the garden varieties under the heading *Gallica* and *Centifolia*, while he did not hesitate when necessary to expand his system by forming sub-groups, as, for examples, *Agatha* and *Pontiana* out of *Rosa gallica*.

Again, the hybrids of *R. alpina* became known as Boursault Roses, and those of *R. arvensis* as Ayrshire Roses, while following out the same system of expansion when garden forms arrived which promised to found a new race, appropriate names were provided for the new groups. Thus arose the *Alba* Roses, the Hybrid Chinas, the Hybrid Perpetuals, the Noisettes, the Chinas, the Hybrid Teas, the multiflora (polyantha), the *Wichurianas*, and finally the Pernet group, with many others.

As a general proposition no doubt our garden Roses may be regarded as the result of crossing Roses of very numerous species with some form or derivative of *Rosa indica*, long though it may often have taken to find the appropriate com-

ination that should herald the new race. Thus in the case of *R. multiflora*, the early crosses were wanting in hardiness or were unsatisfactory in other ways, until the combination which gave *Crimson Rambler* and founded the new race of *Ramblers*, was hit upon after 100 years of more or less unsuccessful experiment.

So long as the combinations were fairly simple this system answered well enough. Now, however, crossing and re-crossing have taken place to such an extent that parentage, thought by some to be an uncertain guide even when known and accurate, is in many cases not known, or at least not published. Not only is there often great difficulty in assigning a new Rose to a particular group, but there exists the danger of the over-subdivision of the present groups. The *Garland*, for instance, has in different cases been described as a hybrid *China* or hybrid *Musk*, and perhaps in despair as hybrid of species. Or again, to take some of the new varieties of bedding Roses, which, it is thought, are likely to be used for purposes similar to those for which we now use the *Polyantha* Pompons; some of these are believed to contain a considerable share of the *Musk* Rose in their composition, others of the *Wichuriana*, and others again may be of uncertain origin, but are thought to have little relationship with *R. multiflora*. Can these properly all be classed as *Polyantha* Pompons, or, if not, how are they to be grouped? Is there not a danger of over-multiplying our groups and yet failing to afford simple information of their contents? And yet at the same time the Hybrid Tea group has become unwieldy and embraces several types.

At the end of his summary Mr. Gordon propounds two problems as the essential points for consideration. These are:—(1) Shall the existing classification be abolished without first determining that it is absolutely impossible to adapt it to present-day requirements? (2) If found incapable of such modification is either of the proposals now before us sufficient with or without modification to take its place?

We should all probably answer the first question by an emphatic negative, but the practical question suggested by it is rather, Can the present classification be adapted to our requirements? And this may be more difficult to answer. Of the articles under review Mr. Easlea holds that no radical alteration can be permitted without confusion. Mr. Peter Lambert suggests a scheme which is merely a modification of the existing classification. Mr. A. E. Prince accepts the present classification, and Mr. George Paul would keep the existing system with some modifications confined to the autumn-flowering varieties, while Mr. Pemberton does not wish to alter the classification, but desires a new grouping within it. The other writers, Messrs. A. Dickson, G. M. Taylor and Dr. Williams, appeal whole-heartedly for a complete clearance and a fresh start on altogether different lines. From this it might appear that there is a majority in favour

of retaining the existing classification with some modification; but, in fact, this is not so, for if Mr. Pemberton's views be examined more carefully, it will be found that it is only the botanical classification he would retain, which is not really in question, for there can be little doubt that the botanists will do this; in fact, the garden varieties which interest the rosarian would all be somewhat contemptuously dismissed by the botanist as "form. hort.," while if the method of grouping these garden forms which Mr. Pemberton suggests were adopted, its lines would be so different from those now used that it is difficult to see how they could be retained together. We may take it, therefore, that the writers of these articles are equally divided for and against the present system. The suggestions of those who propose an entirely new departure are printed on p. 430. If we examine the views of those who favour the retention of the existing classification, we shall find that Mr. Easlea would be content with a revision of the H.P., H.T. and Tea groups. These he would in effect partition into 7 groups (though he only numbers 5) as follows:—Group 1: H.S. or summer blooming, to include all the H.P.'s and others that bloom sparingly in autumn, e.g., *Clio* and *Conrad F. Meyer*. Group 2: H.A. or Hybrid Autumnals, to include such H.P.'s as *Mrs. J. Laing*, *F. K. Druschki*, etc., and H.T.'s such as *J. B. Clark*, *Gladys Harkness* and others, and Teas such as *Mme. Jules Gravereaux*. Group 3: H.T.'s or typical Hybrid Teas, e.g., *Prince de Bulgarie*, *Mme. A. Chatenay*, *Mme. Ravary*, and the Teas *Molly S. Crawford* and *Harry Kirk*. Group 4: Teas, i.e., true tea-scented varieties. Group 5: H.B. or Hybrid Bedders, such as *Ecarlate*, *Marquise de Salisbury*, *Edu Meyer*, and perhaps *Richmond*. Group 6: T.M. or Tea Monthlies, which include the present *China* group, adding thereto *Princesse de Sagan*. Group 7 would be the Pernet group—*A. R. Goodwin*, *Rayon d'Or*, etc. Save that there seems no object in altering the well-known name of the *China* Roses these suggestions have much to recommend them, and meet the difficulty that has arisen with the Hybrid Teas, which, for a class, have become unwieldy, and embrace too great a variety of growth and flower.

Mr. P. Lambert, Mr. G. Paul and Mr. Prince are all content with the present classification subject to some modifications, which compared with the radical proposals of other writers must be considered moderate. Mr. George Paul's thoughtful article is well worth consideration. With some mutual concession probably his proposals and those of Mr. Easlea might be merged, and would give us all the modification of the existing system that is necessary.

The result seems to be that no new scheme has yet been suggested which would not bring with it greater difficulties than those which we have to face under the present classification, while some more or less conservative modification of the existing system seems quite feasible.



FIG. 202.—*CELMISIA MUNROI*; FLOWERS WHITE WITH YELLOW DISC.
Awarded a Cultural Commendation at the R.H.S. Meeting on Tuesday last. (See p. 450.)

Coloured Plate.—The subject of the Coloured Plate to be published with the next issue is Begonia "Eclipse."

MR. ROOSEVELT'S EXPLORATIONS IN BRAZIL.—The brilliant account of his travels which Mr. ROOSEVELT gave before the Royal Geographical Society on Tuesday last, although confined mainly to the geographical features of the country explored by his expedition, contained many observations of interest to the naturalist. The hardships encountered on the expedition were due to the physical features of the country, to the "insect pests," and to lack of sufficient food. To supplement their stores of food, the party had recourse to the tops of Palms, which served as vegetables. They had relied on plentiful supplies of Brazil nuts, but the crop proved a failure. The highlands, in which were discovered the head waters of the unknown river—the River of Doubt—possess a fine climate, and Mr. ROOSEVELT predicts that, owing to their richness in water power, these upland regions of Brazil are destined in the near future to support a large white population given over to industrial enterprises.

SMALL HOLDINGS.—In the course of his speech on the vote of £344,000 for the Board of Agriculture, Mr. RUNCIMAN spoke optimistically of the progress of small holdings. There are now 11,000 small holders, and in addition 1,400 holdings are held under associations. On June 13, 193,000 acres of land had been, or were about to be, acquired. Upwards of £4,000,000 have been invested in holdings, and £65,000 is paid in rent to the local authorities hiring land for the purpose of small holdings. There are 6,000 approved applicants who have yet to be provided with land, and 90,000 acres are required in order to meet their needs. Comparatively few labourers have acquired holdings, and this Mr. RUNCIMAN attributes to the lack of the necessary capital owing to low wages. The President of the Board spoke highly of the work of the Agricultural Organisation Society, and stated that there are 478 agricultural co-operative societies in Great Britain. He believes that the work of these societies has proved of great assistance to the small holder. The Board is attempting to increase the number of paid small holders' advisers.

R.H.S. GARDENS CLUB.—The annual reunion of past and present members of the R.H.S. Gardens at Chiswick and Wisley took place on Saturday, the 13th inst. The event was made the occasion for an outing, and visits were made to Mr. LEOPOLD DE ROTHSCHILD'S gardens at Gunnersbury House, Acton, and Kew Gardens. The party was met at Gunnersbury House by the gardener, Mr. JAMES HUDSON, who pointed out some of the more interesting features of the place, including the fruit and vegetable gardens, the lawns, terraces—with the fine specimen Pelargoniums, Pomegranates, and *Aloysia citriodora*—"Japanese" garden, and flower beds. After the visitors had partaken of refreshments, kindly provided by their host, Mr. ROTHSCHILD himself acted as guide through the fruit houses and the whole of the pleasure grounds, extending as far as Brentford. Mr. HUDSON'S skill as a gardener, and especially with fruit trees in pots, was exemplified on every side. Cherries were remarkably fine, as also were other stone fruits, including Plums, Peaches, and Nectarines, and Mr. ROTHSCHILD gathered ripe fruit for all to taste. The Pine-pits, Vineries, Orchid houses, and Lily tanks were visited in turn, and each was an object-lesson in good culture. In the grounds the venerable Cedars were pointed out with pride as being probably the oldest in the country, and Mr. ROTHSCHILD showed his great knowledge of trees and shrubs by his many pertinent references to those in his extensive collection. But the beautiful scenic effects in the grounds are perhaps the greatest attraction at Gunnersbury House, for all who visit it are impressed with the beauty of the landscape. In bidding the

party good-bye Mr. ROTHSCHILD asked to be allowed to defray the expenses of the luncheon which was provided at the Star and Garter Hotel, Kew Bridge. A ramble through Kew Gardens in the afternoon brought a most enjoyable day's outing to a close.

NATIONAL CHRYSANTHEMUM SOCIETY.—The annual outing of the members of the National Chrysanthemum Society will take place on Monday, July 20. The party will journey by river from Reading to Wallingford on the steam launch, "The Britannia." The journey from Paddington to Reading will be by the 8.50 a.m. train. Lunch will be taken at the George Hotel, Wallingford, and tea at the George Hotel, Pangbourne, at 5 p.m. The return journey will be made by the 8.10 train from Reading, which arrives at Paddington at 8.58 p.m.

THE COALSTOUN PEAR.—The coming of age of Miss E. C. BROUN-BAIRD, of Coalstoun, Haddingtonshire, has revived the story of the Coalstoun Pear. According to the legend, one Sir HUGH CLIFFORD, who lived in the thirteenth century, had magical powers. While escorting his daughter to her marriage he plucked a Pear and told his daughter that, so long as it was preserved whole, good fortune would attend her and her descendants. The Pear was carefully preserved in a silver case by the descendants of the lady, but in the seventeenth century one of the descendants, Lady ELIZABETH BROUN, was rash enough to bite the fruit, with the result that the baronetcy went to another branch of the family, the estate remaining in another—that to which Miss BROUN-BAIRD belongs.

AERIDES CRASSIFOLIUM.—In the last issue on p. 410 it was stated that this Orchid was originally introduced by Messrs. STUART LOW AND CO. In the description cited the late Professor REICHENBACH remarked, "For this beauty I have to thank my excellent correspondent, Mr. STUART LOW." The title of the firm at that time was HUGH LOW AND CO.

CELMISIA MUNROI (see fig. 202).—At the R.H.S. meeting on Tuesday last, a good pot of this New Zealand Daisy was shown by Mr. REUTHE, Keston, carrying two well-developed crowns and four flowers. The foliage is particularly firm textured and beautifully silvered below, but the plants exhibited had received cold frame treatment. Miss Willmott, we believe, has wintered the species out-of-doors for the last few years, but coming from an altitude only of 1,500 to 4,500 feet in the northern half of the Middle Island, it is not likely to prove generally hardy. It was introduced by Messrs. Veitch, and was figured in the *Bot. Mag.*, tab. 7,496, in 1896, from material obtained from the greenhouse at Kew. Its close relation and confusion with the variable *C. coriacea*, perhaps the most beautiful species in the genus, is of some interest. Cheeseman (*N.Z. Flora*) says that the plant commonly in cultivation as *C. Munroi* is *C. coriacea*. On the other hand, the Kew plant was thought to be *C. coriacea* until it flowered. The only differences of importance are small distinctions in the corolla and seed. A Cultural Commendation was awarded for the specimen now illustrated.

THE "MASTERS" LECTURES.—The first of the two Masters Memorial Lectures for the present year was given at Vincent Hall on Tuesday, June 16, and the second will be delivered on Tuesday, July 14. The lecturer, Prof. J. B. FARMER, began by saying that in choosing as his title "Some Aspects of Plants in Relation to Their Environment," he had been guided by the recollection of a conversation with the late Dr. MASTERS, on the wealth of material which horticulturists might easily furnish to those whose business it is to try to elucidate the scientific problems that plants present. The lecturer said that he proposed to divide

his subject into two parts, viz., (1) the plant in relation to its physical environment, and (2) the plant in relation to its biological environment. The first of these would form the subject of the first lecture, though, of course, many matters which might be expected to be included would have to be omitted owing to the shortness of the time at his disposal. The main thesis of the lecture consisted in the attempt to show that the behaviour of a plant could be advantageously treated as a problem, or series of problems, susceptible of solution by the aid of chemistry and physics. The advantage of this method—partly, at least—consists in the need it imposes of endeavouring to analyse the factors which are concerned in the production of given structures or in the discharge of special functions. It was admitted that at the present time there is much left to be done—much knowledge to be gained—before this procedure can be worked out in detail. But a great headway has already been made, and everything points to this method of treating the problems as the most fruitful one. For it is only as the result of detailed knowledge of the parts that we can hope to perceive the *modus operandi* of the whole, and be able to step in to control and modify the processes with any assurance of certainty as to results. And this ought to be the aim of those whose business is with plants. It was urged that many of the reactions of the plant to temperature, to nutritive conditions, and to other physical influences, such as light, could be to some extent imitated outside the plant, and although the events which go on in the living organism are of immense complexity, it was shown how some of them, at any rate, could be subjected to useful analysis. The questions of manures, and their effect on growth and fruitfulness, the physiology of grafting, the relation of the plant to the soil, and the absorption of water by roots, were used as illustrations, and were discussed in the light of experiments which had been carried out by the lecturer himself, as well as by other investigators. It was suggested that specific characters were to be regarded as so many marks of individual chemical idiosyncrasy, whereby the raw food-stuff was caused to combine in certain special ways, so as to give rise to the peculiarities in question, but more was promised on this topic for the second lecture. The problem of adaptation was discussed in the light of what had already been said, and the lecturer avowed his disagreement with those who were content to label useful characters as examples of direct adaptations in the ordinary sense of the word. Many characters, both physiological and structural, cannot be regarded as advantageous at all—e.g., the formation of honey dew by Lime trees—nor is it possible to see in the form of most leaves evidence of adaptive modification. Where it exists, closer examination commonly discloses a more elaborate chain of cause and effect, as is shown, for example, in leaf mosaic. To catalogue these as adaptations is to emphasise the least profitable aspect of the problem at the expense of the more truly scientific one which is concerned with real causes and real effects. Naturally, there are many examples which elude analysis at present. That does not, however, alter the general position, nor does it excuse the substitution of a sham for a real explanation. The more we become accustomed to regard our problems from the point of view of science and common sense, the more definitely we shall be able to state them, to analyse them into simpler terms, to solve them, and thus ultimately to gain the sort of control over the plant and its products which the chemist and the physicist have acquired over the materials and forces that lie within their sphere of influence.

GOLDEN WEDDING OF MR. AND MRS. THOMAS BUNYARD.—Many of our readers will remember the pleasantly written and instructive articles on nursery management and propagation contributed to these columns some years ago by Mr. THOMAS BUNYARD, over the nom de

plume "Experience," and they will join us in congratulating Mr. and Mrs. BUNYARD on the celebration of their golden wedding this month. Of their fourteen children some are settled abroad, but nine were able to be present to celebrate the event. Four of Mr. BUNYARD'S sons, Messrs. HARRY, PERCY, ARTHUR, and ALFRED BUNYARD, have followed in their father's footsteps in making

of "XL All" fame. He is interested in ornithology, from the horticultural standpoint, and possesses a very fine collection of birds' eggs. Mr. ARTHUR BUNYARD in connected with *Garden Life* and other papers. Mr. THOMAS BUNYARD many years ago was in partnership with his brother, Mr. GEORGE BUNYARD, of the Royal Nurseries, Maidstone, and since those days has filled several appointments with other firms.

example, that illustrated in fig. 203—the stricken tree is torn to pieces as by an explosion, but in the present instance the current graved for itself a narrow channel in the bark of the Poplar, and, as fate so sadly willed it, found its way to earth through the bodies of the individuals standing near the trunk. Of trees, some seem particularly prone to be struck, others are relatively immune. Thus the Oak—as



FIG. 203.—SEQUOIA GIGANTEA STRUCK BY LIGHTNING.

horticulture their profession. Messrs. HARRY and ALFRED have settled in the United States, the former being the general manager of A. T. BODDINGTON AND Co., wholesale seedsmen, of New York, and the latter a florist in Madison Avenue. Mr. PERCY BUNYARD is the London representative of Mr. G. H. RICHARDS,

THE EFFECTS OF LIGHTNING.

THE recent tragic death of several people who had taken refuge from a storm under a Poplar tree at Wandsworth Common has drawn attention once again to the devastating yet capricious effects of lightning. In many cases—as, for

Shakespeare long ago observed—is often struck. The Beech is struck but rarely. It is said that other trees which generally escape are Walnut, Lime, and Birch, but very little is definitely known as to the causes of comparative immunity. One thing is clear, namely, that the danger to individuals taking shelter during a storm is in exact proportion to their nearness to the trunk.

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 16.—The fortnightly meeting and exhibition at Vincent Square on this date was noteworthy for the large number of hardy flower exhibits, two collections of pot fruits, and one of vegetables. Orchids were fewer than usual. The Orchid Committee recommended 1 First Class Certificate and 4 Medals.

The Floral Committee recommended 11 Awards of Merit to novelties, and 31 Medals to collections.

The Fruit and Vegetable Committee recommended one Gold and two other Medals to collections of pot fruits and vegetables.

At the 3 p.m. meeting Professor J. B. FARMER delivered the Eleventh Masters Memorial Lecture on "Certain Aspects of Plants in their Relation to their Environment." (See p. 440.)

Floral Committee.

AWARDS OF MERIT.

Silene alpestris grandiflora flore pleno (see fig. 204).—This is another addition to the very few Alpine plants with double flowers. Its little

orange shades yet attained in the Sweet Pea. The flowers are large, with finely-waved erect standards, and although rather less stout-stemmed than the other varieties with which it was placed, it had every appearance of vigour and of regularity, carrying 3 or 4 flowers on a stem. It appeared to have been grown under glass, and needs trying in the open with the following variety, when the differences now noted might well disappear, and the varieties prove identical. The colour is an intermediate tone of "coral red" (*Rép. des Couleurs*, 76).

These two were shown by Messrs. DOBBIE AND Co.

Sweet Pea "Robert Sydenham."—As exhibited, this was a shade darker in colour than the last. If there was a difference in form it was in the slightly flatter and bolder standards of this variety, and the more horizontal wings, but in this case the flowers had been cut from the open, and petiole, calyx and stem showed a natural redness that the other flowers lacked. Though both varieties are undoubtedly very fine, we think that flowers so closely alike should be in the same conditions before awards are made. Shown by Messrs. THOS. STEVENSON, Addlestone.

Fire Flame, etc.). Shown by Mr. HICKS, Twyford.

Carnation "Bedford Belle."—A perpetual-flowering variety, with flowers of a soft salmon-pink or rosy-pink (*Rép. des Couleurs* 126, tone 1; or 118, tone 2). The flowers are rather roughly formed, but the stems are good, and it is richly fragrant, more so, indeed, than any perpetual-flowering variety we can call to mind, and herein lies its great value. Shown by Messrs. LAXTON Bros., Bedford.

Paeony "Golden Harvest."—Immense globular flowers 7 inches in diameter on stout stems characterise this variety. The colour is dominated by the softest lilac-pink of the recurving guard petals, but in the full centre are shades of cream, yellow and pink, making a beautiful harmony. It is not new, and possibly not very distinct, but it is undoubtedly a good thing, responding well to generous cultivation. Shown by Messrs. R. H. BATH, LTD., Wisbech.

Polystichum (Aspidium) munitum undulatum.—This is a very pretty form of this entirely hardy and evergreen species, in which the pinnae for two-thirds of their length are so undulate as to form spiral terminations. The fronds are peculiarly tough, and more lucent than the type. Found wild in British Columbia by Mr. J. Fraser, of Uchulet, British Columbia, and exhibited by Mr. C. T. DRURY on his behalf.

Orchid Committee.

Present: Sir Harry J. Veitch (in the chair), and Messrs. Jas. O'Brien (hon. secretary), Gurney Wilson, R. A. Rolfe, F. Sander, J. Wilson Potter, Stuart Low, F. J. Hanbury, R. G. Thwaites, T. Armstrong, A. McBean, Walter Cobb, J. Charlesworth, C. H. Curtis, W. P. Bound, A. Dye, E. H. Davidson, H. G. Alexander, W. H. White, S. W. Flory, W. Bolton, and Sir Jeremiah Colman, Bart.

Award.

FIRST-CLASS CERTIFICATE.

Odontoglossum King Arthur (parentage unrecorded), from Messrs. J. and A. McBEAN, Cooksbridge. A grand flower of immense size, good shape, and rich colouring. The greater part of the segments were heavily blotched with deep claret-red, the tips and margins being white, but tinged with rose-purple from the dark violet tint at the back of the segments. The lip is broad and well formed, and bearing dark blotches in front of the yellow crest.

CULTURAL COMMENDATION.

To Mr. BALMFORTH, gr. to F. Menteith Ogilvie, Esq., The Shrubbery, Oxford, for four very fine specimens of *Cypripedium Lawrenceanum* Hycanum Bank House variety, a beautiful and free-growing form, which had previously secured a First Class Certificate.

GENERAL EXHIBITS.

E. R. ASHTON, Esq., Broadlands, Tunbridge Wells (gr. Mr. Young), staged an effective group of exceptionally good and well-grown plants for which a Silver Flora Medal was awarded. The group contained many fine specimens of *Miltonia vexillaria*, *Odontoglossum*, *Laelio-Cattleyas*, etc.; specially noteworthy were *Odontioda Ashtonii* (Odm. *Armstrongiae* x *Cochlioda Noezliana*), a good red flower with white lines between the blotching, the margin and front of the lip tinged with rose; *O. St. Fuscien*, and other *Odontiodas*; a very fine *Miltonia* of the *M. vexillaria Memoria G. D. Owen* section; *Odontoglossum Conqueror*, a very fine violet-blotched hybrid, *Odontonia brugensis*, *Miltoniodes starwoodii*, some excellent forms of *Laelio-Cattleya Aphrodite*, *L.-C. Ganymede*, and *L.-C. Cowanii*. The centre was of yellow *Laelio-Cattleyas*, and the whole was effectively arranged.

Messrs. CHARLESWORTH AND Co., Haywards Heath, staged an attractive group of good specimens, their showy *Miltonia Charlesworthii*, and some fine specimens of *M. vexillaria* varieties with 10 to 12 spikes each, being effectively displayed with good *Odontoglossum ardentissimum*, *O. crispum* *Xanthotes*, good *Laelio-Cattleya Martinetti*, *L.-C. Canhamiana alba*, one with two spikes of five flowers each. Among rare species was *Ornithidium aureum* with its singular, yellow flowers. (Silver Banksian Medal.)

His Grace the Duke of MARLBOROUGH, Blenheim Palace, Woodstock (gr. Mr. Hunter), was awarded a Silver Flora Medal for a group com-



FIG. 204.—*SILENE ALPESTRIS GRANDIFLORA FL. PL.*
(R.H.S. Award of Merit on Tuesday last.)

buttons of full-petalled white flowers are quite pretty, each a little over half-an-inch in diameter, and supported on slender branched stems about 4 inches above the close tufts of linear, green leaves. Shown by Messrs. TUCKER, Oxford, and Mr. G. REUTHE, Keston.

Delphinium "Henri Moissan."—A dense spike 2½ feet long of this fine novelty was shown. The flowers are deep violet-purple (*Rép. des Couleurs*, 192), shaded lightly with a bluish tint, as nearly all the purples are, and with a black eye. The spike shown was just branching out in the lower portion, and would doubtless give a succession of flowers after the main display was over. Shown by Messrs. BLACKMORE AND LANGDON.

Sweet Pea "Royal Purple."—The large, waved, bright purple flowers of this variety, borne finely on stout stems, represent an uncommon colour in Sweet Peas. In the *Répertoire des Couleurs* the shade comes nearest tone 1 of Bishop's Violet (189), or tone 4 of Magenta (182), but its texture gives it a brightness and beauty quite lacking in the paper colours.

Sweet Pea "Dobbie's Orange" (see fig. 205).—This is one of the best of the so-called

Carnation "Scarlet Glow."—A smooth-petalled, rosy-scarlet border variety. The calyx was good, but the stem seemed lacking in wiriness, and we failed to detect any fragrance. Shown by Mr. CHAS. BLICK, Hayes.

Rose "J. F. Barry."—This is a sport from Arthur R. Goodwin, and like that variety, possesses the dwarf bushy habit, perpetual-flowering character, and spiny growths of the *Pernetianas*. The flowers are canary-yellow, the outer petals showing a tendency to turn white. The petals are short, giving the flower a shallow, unshaped form, but the Rose is a very fragrant one, and should prove a first-rate bedding variety. Shown by Mr. G. W. PIPER, Uckfield.

Rose "Princess Marj."—This fragrant, large single, crimson-scarlet Hybrid Tea has already received recognition from the National Rose Society (see p. 303), and is essentially a bedding Rose, and in beds its magnificent glowing colour, size and freedom and fine foliage will make it a very useful variety. But for cutting it has too clumsily-shaped buds, even if the colour were desirable, ever to rival such delicately-formed and shaped flowers as the Irish singles (*Elegance*,

posed principally of White *Cattleya* *Mossiae* *Wagneri*, both from imported and home-raised plants. With them were *C. M. Reineckiana* *excelsa*, some very fine forms of *Laelio-Cattleya Canhamiana*, a good *L.-C. Aphrodite*, *Cypripedium bellatulum* and *C. niveum*.

Messrs. STUART LOW AND CO., Bush Hill Park and Jarvisbrook, Sussex, staged a fine group of *Miltonia vexillaria*, *Renanthera Imschootiana*, forms of *Cattleya Mendelii* and *Mossiae*, *Phalaenopsis Rimestadiana*, and *Oncidium Krameri*. Among the *Dendrobiums* were a fine specimen of *D. Dalhousieanum*, with 15 spikes and a beautiful plant of Messrs. Low's early-flowering *Dendrobium formosum giganteum*, with 24 fine, white flowers with yellow centres. (Silver Flora Medal.)

J. GURNEY FOWLER, Esq., Brackenhurst, Pembury, Sussex (gr. Mr. J. Davis), showed *Odontoglossum Aquitania*, a superb flower with the inner parts of the segments blotched with purple.

F. MENTETH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), showed fine plants of *Cypripedium Lawrenceanum* *Hyeaenum*, and the handsome *Odontoglossum crispum* *Queen Empress*, a large typical form tinted with rose.

Messrs. HASSALL AND CO., Southgate, showed a fine form of the white *Cattleya Mossiae* *Wagneri*, good *L.-C. Canhamiana alba*, *L.-C. Aphrodite* and others.

H. S. GOONSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), showed *Odontioda Patricia* *Goodson's* var. (*Odm. Phoebe* × *Oda. Charlesworthii*), with flowers of a deep claret-red with lighter red lip marked with yellow.

PANTIA RALLI, Esq., Ashted Park, Surrey, showed a very fine form of *Odontoglossum Doris* (*crispum* × *Ossulstonii*), and *Cattleya Mendelii* *Knight Templar*, a finely-formed and handsome variety.

Mr. ROBERTSON, gr. to Earl Brownlow, Ashridge Park, showed two finely-grown specimens of *Coelogyne Dayana*, with many long drooping racemes of flowers.

Mr. W. SHACKLETON, Highfield Nurseries, Great Horton, Bradford, showed a very distinct form of *Odontioda Brewii* named *Highfield Variety* with dark violet sepals and petals, and rose-coloured lip with yellow crest.

R. G. THWAITES, Esq., Chessington, Streatham, showed a good white seedling *Cattleya*; and the true *Laelio-Cattleya Canhamiana* *Lady Wigan*.

The chairman called attention to the rule for entries of plants to go before the committee at Holland House. The entries must be posted not later than the Thursday before the show.

(To be concluded.)

CONFERENCE AT THE WHITE CITY.

JUNE 10.—A conference was held in the Palace of Music at the Anglo-American Exposition at Shepherd's Bush on Wednesday, June 10. Mr. G. Yeld, of York, was in the chair. Papers were read by Mr. R. W. Wallace on "Some Aspects of Modern Gardening," and Mr. S. Arnott on "American Plants which Flower in England." Plants were exhibited illustrating the subjects of the papers.

In his opening remarks the chairman referred to the comparatively few hardy plants in general cultivation in the year 1821, and compared a catalogue of those early times with an up-to-date modern list, showing how, by means of the introduction of species, and also even more by the skill of florists who have raised innumerable varieties, our gardens have become immeasurably richer both in form and in colour.

He said that the cultivation of hardy plants is the most democratic, the most popular, the most easily pursued, and probably the most generously repaying of all forms of gardening.

Before calling upon the readers of the papers he spoke briefly on the improvement which has taken place in hardy plants during the last 100 years.

Gardening has in these days come by its own on both sides of the Atlantic. So far has the passion for gardening gone, so great is the demand for works on gardening, that one-half of the front of the chief bookseller's shop in York has lately been turned into a miniature garden with flowers and dwarf shrubs, while the other half was filled with works on gardening.

By the kindness of Mr. James Backhouse, of the York Nurseries, he had been allowed to examine the list of "Ornamental Annual, Bien-

nial, and Perennial Plants" sold by Thomas and James Backhouse, nurserymen and seedsmen, Tanner Row, York. Second edition, 1822.

This very interesting catalogue gave the following information:—

- Aquilegia*:—2 species: *vulgaris*, *canadensis*.
- Campanula*:—15 varieties.
- Delphinium*:—*grandiflorum* (fr. Siberia) var. *flore pleno*, var. *chinense*, *elatum*, *azureum*.
- Dianthus*, including the *Carnation*, 10 varieties, including *alpinus* and *calsius*.
- Geum*:—*rivale*, *montanum*, *virginicum*.
- Hemerocallis*:—*flava*, *graminea*, *fulva*, var. *flore pleno*; *japonica*, white flowered; *coerulea*, blue flowered.

Phlox:—18 varieties (but none of the new florist types).

Primula:—15 varieties, of which 9 are varieties (all but one double) of the common *Primrose*: *farinosa*, *auricula*, var. *villosa*, var. *flora albo*, *longifolia*, *marginata*.

Pyrethrum:—2 varieties: *macrophyllum*, *pathonium*.

Lathyrus:—*latifolius*, *sylvestris*, *grandiflorus*; on an interleaved page in writing at 2s. 6d.

Trollius: *europaeus*, *asiaticus*.

Aquatic Plants:—There is a separate list of 19 plants, including *Nuphar luteum*, *Nuphar advena*, *Nymphaea alba*, *Nymphaea odorata*.

Think for a moment of the varied colours now



FIG. 205.—SWEET PEA "DOBBIE'S ORANGE."
R.H.S. Award of Merit on Tuesday last. (See p. 442.)

Iris:—27 kinds, not counting bulbous, of which there are 5, *pallida*, *pallida odoratissima*, *cristata*, *ruthenica*.

Lupinus:—1: *nootkatensis*.
Lilium:—11 kinds: *candidum*, fol. var. *flore stri.* (striped), *flore pleno*, *bulbiferum*, *umbellatum*, *tigrinum*, *pomponium*, *chalcedonicum*, *Martagon*, *canadense*.

Narcissus:—21 kinds, including *triandrus* and *calathinus*.

Paeony:—12 varieties: *albiflora pleno chinensis*, apparently priced at 7s. 6d., v. *Humei* at 10s. 6d., v. *fragrans* pink at 10s. 6d., *corallina* 9d.

Papaver:—*nudicaule*, *cambricum*, *orientale*.

to be found in *Papaver orientale*, and the glorious new Poppies from China.

Consider the *Primulas* from the Himalayas, the Caucasus, the Alps, America, Western China, and elsewhere; we now have a world of rare, fragrant and exquisite flowers. In those days, no *Incarvilleas*, no *Eremurus*, no *Chionodoxas*, no *Gaillardias*, no *Iris Kaempferi*, one *Tritoma* (*Kniphofia*), instead of our present throng, and no *Astilbes*.

Of Alpines, there are few in the 1821 list; there is not, for example, one *Aubrietia*, whereas now, perhaps, we have two dozen varieties; no *Edraianthus*, one *Androsace*—this on the testimony of the York catalogue only.

The advance may be expressed in another way by calling attention not only to the glories of a great garden, such as Great Warley or Aldenham or Gunnersbury, but to what may be seen to-day in a modest country or even town garden (where the owner is an enthusiast who spares no personal trouble). Daffodils of a variety and perfection which would have been deemed impossible a quarter of a century ago; Tulips, dwarf and tall, early and late; Delphiniums and Pyrethrums of undoubted merit; Oriental Poppies, and possibly one of the wondrous forms we owe to the discoveries of Messrs. Forrest, Wilson and Ward; perhaps one or two Primulas from the same marvellous treasure-house; Eremuri, perchance, and Incarvilleas; a few choice fragrant Paeonies; the more easily-grown Lilies, probably including *L. Hansonii* and *L. Henryi*, and even *L. sutchuenense*; a few Phloxes of rich colouring and fragrance; and then, to cheer the waning days of autumn, some of those charming new Michaelmas Daisies, such as *Climax*, *Beauty of Colwall* and *Chastity*.

For these and many another we have to thank the courage, determination and devotion of plant collectors in distant lands, and the patience and skill of the hybridist.

SOME ASPECTS OF MODERN GARDENING.

Mr. R. W. WALLACE, in the course of his paper, said:—

The great and absorbing interest in all that appertains to the garden is mainly concerned—almost entirely concerned—with the planting, growth, and flowering of hardy plants, trees, and shrubs, and, in consideration of the numerous introductions of new plants of all kinds from abroad, and the work of hybridists at home, we now have such a wealth of hardy plants, and a far greater knowledge than formerly as to their proper disposal in the garden, that it is hardly surprising that the energies of the present generation have been directed into developing the culture of the outside garden, as compared with the efforts of our forefathers, who mainly delighted in the culture of greenhouse plants. Hence it is that we have the outdoor garden divided into so many departments, such as the Rose garden, the rock garden, the wild garden, the woodland garden, the Heath garden, etc., and in all these various regions specialists reign, and hooks are written by them and for them.

I fear sometimes we lose sight of that important factor in a rock garden, namely, the proper placing of the stone in relation to the planting. This art was well taught by the late Mr. James Backhouse, almost the pioneer of this movement. Picturesque stones, well and truly placed, with planting duly restrained so that both plants and stone act as a setting to each other, form a pleasant picture, and this, in contrast to what is often seen, masses of plants over-running the stonework until it is almost hidden—plants beautiful in themselves, but possibly used with too free a hand.

I believe the principles governing the planting of the rock garden should be the same as those for other portions of the garden, and, where possible, we should aim at those sheets of colour amid mists of greenery that make Nature's planting in the hills so lovely. But the Alpine children are so numerous, and each has such a fascination of its own in flower or leaf, that it is extremely difficult to draw up a list small enough to satisfy our enthusiasts, although we know that the smaller the number of species and the more restrained the planting, the more natural and beautiful the finished picture will appear.

Wild gardening is the most beautiful and most fascinating form of gardening I know. It is the wise grouping of hardy plants in considerable numbers in bold and irregular formations. How frequently where grass land is available is it left untouched! And yet the open, rough, grassy places adjoining woodland, or the grassy stretches on either side of the entrance drive, or on common lands adjacent, are ideal sites for many of the stronger-growing herbaceous plants.

You will not wish to have a catalogue of suitable plants, but, amongst others, I would emphasise the value of Lupins, both tree and herbaceous; in bold masses, particularly are tree

Lupins useful for clothing rough and unsightly banks. Their growth, peculiar in its semi-drooping habit, seems to fit in so perfectly. Planted in large groups for distant effects at the edge of woodland, and again in odd corners, the mingling of the yellows and whites is very telling, which the addition of the new pale mauves will only make more beautiful. The herbaceous polyphyllus forms are better adapted for massing in groups on level, flat areas, and now that we are getting all shades of blue, pink, and white, and palest lavenders to deepest purple, delightful colour effects can be worked out.

Lupins associated with German Irises in colour schemes form delightful combinations if the colours are chosen carefully, the yellow and brown of the Iris shading into the yellow of the Lupin, and again, the mauve of the tall Iris pallida working up to the deeper blues of the Lupins. Not many Lupins are required, but the occasional use of them with the Iris seems to give strength and height to the scheme. I commend to those who are fond of working out garden plans for themselves to experiment with Irises and Lupins; and here let me give credit where it is due, it is to Miss Jekyll we owe the idea of associating Irises and Lupins.

The Iris family I have mentioned in connection with the foregoing, but they deserve fuller treatment. As a family they are now much in evidence, and are bound to become more so. The vast majority are easy of growth, free-flowering, and quick of increase. For planting in broad masses, I think groups of individual varieties are best. Associate your pale yellows in close proximity to the pale mauves, with an occasional dash of deep purple for contrast.

The old *I. flavescens*, and the newer *Shelford Yellow*, and *Foster's Yellow*, and the pink-mauves *Mrs. Alan Gray*, *Her Majesty* and *Queen of May*, are varieties to be noted as good for this purpose. For deep purples, *Kochi* and *Kharput* are very fine; but nothing exceeds in beauty the fine grouping of the pale lavender of the true *pallida dalmatica*, especially if it can be placed near to a planting of the white *Guelder Rose*. The broad-leaved Irises are generally best massed in large, irregular-shaped groups, rather than in thin lines, and never look better than in irregular beds formed in grass, or in a long, narrow grass-way bordered on either side with groups, or, as at *Clandon Park*, massed in the grass by the lake-side, but well above the water-level; but they may be planted in any open, sunny position with grass surroundings, and in such spots and surroundings they are quite at home.

The Siberian Iris, and its Oriental forms, and the Chinese species *I. Delavayi*, the American forms, such as *I. virginica*, *I. setosa*, and *I. cuprea*, form a group mostly with narrow, grassy foliage and slender spikes. These all luxuriate near water, which seems their natural habitat. The taller groups and later-flowering varieties typical of which are *aurea*, *gigantea*, and many intermediate crosses, with their bold, stiff, spear-like foliage, some 4 to 6 feet high, do not, I think, do so well in too moist a position. They seem to prefer a good, strong soil which is cool and moist, rather than water-logged. In such a soil, massed at intervals with the earlier varieties, they will give a continuity of effect. The Spanish and English Irises are also delightful when grown amidst grassy surroundings, but these are not so easily made permanent occupants in the wild garden, and require occasional renewal.

(To be continued.)

ROYAL COUNTIES AGRICULTURAL.

JUNE 10.—The annual exhibition of the above society opened on the 10th inst., taking place on Southsea Common. The weather was fine though windy, and the attendance of visitors was very satisfactory. The horticultural section was a great success, many of the leading nursery firms having sent attractive and meritorious groups of plants.

Among the horticultural exhibits Sweet Peas were noticeable, especially those sent by Messrs. DOBBIE AND SONS, and Messrs. S. BIDE AND SONS. The former firm showed about three dozen

bunches of excellent quality, with well-developed colour, *Dobbie's Scarlet*, *Melba*, and *Duchess of Portland* being very attractive. A Gold Medal was awarded to this group. Messrs. BIDE showed four dozen bunches, including *Phyllis Bide*, a good new orange-coloured variety. The group was effectively arranged, and secured a Silver-gilt Medal. Messrs. E. W. KING AND CO., Coggeshall, exhibited four dozen bunches of Sweet Peas, including *Anglian Fairy*, *Blush*, *Rosabelle*, and *Lavender George Herbert*. (Silver-gilt Medal.)

Roses were conspicuous both in quantity and quality. Mr. ELISHA J. HICKS, of Hurst, Berks, used as a background for his exhibit large branches of rambling varieties, and filled the foreground with excellent groups of standards and other kinds. In his collection was the new H.T. *Mrs. G. Norwood*, best described as a pink *Frau Karl Druschki*, and very sweetly perfumed. The new single *Rose Princess Mary*, which possesses the double charm of rich fragrance with intense colour, was also well shown; and *Sarah Bernhardt*, *Papillon*, *Diablo*, *Queen Mary*, *Lady Waterlow*, and *Persian Yellow* were also present in good form. (Gold Medal.)

Messrs. W. H. ROGERS AND SON, Bassett Nurseries, Southampton, showed four dozen blooms in good exhibition form. Among these were the varieties *Paul Lede*, *Mrs. Hubert Taylor*, *Lyons-Rose*, *Dean Hole*, *Juliet*, and *Marquise de Sinety*. There were also *Clematis* (in pots), and a well-arranged rockery at one end of the tent. (Gold Medal.)

Messrs. SUTTON AND SONS, of Reading, made an interesting display of *Double Begonias*, *Phlox Drummondii*, *Gloxinias*, *Primula obconica*, *Chrysanthemum coronarium*, *Cineraria stellata*, *Verbenas*, *Nemesias*, and *Salpiglossis*. Vegetables were represented by a collection of thirty dishes of excellent Potatoes, such as *May Queen*, *Carishrooke Castle*, *Stirling Castle*, *Edinburgh Castle*, *White City*, and *Sutton's Ashleaf*; *Magnum Bonum Cauliflowers*, *Early Giant Peas*, *Carrots*, *Broad Beans*, and *Turnips*. *Cucumbers*, *Melons*, and *Mushrooms* were also well shown. Besides their group Messrs. SUTTON AND SONS also undertook the planting of the beds in the exhibition grounds, which made a very bright display.

Carnations were well displayed by Mr. A. F. DUTTON, of Iver, Bucks, and well deserved the Gold Medal awarded to the group. Carnations were also shown by Messrs. WILLS AND HESKETH, Warsash, and Mr. C. FAY, Testwood Nurseries, Totton.

Messrs. REAMSBOTTOM AND CO., Geashill, Ireland, sent *Anemones* and hardy flowers, all well grown.

Messrs. B. LADHAMS AND CO., Shirley, constructed an old English garden, surrounded by stone walls, effectively planted with a variety of the favourite hardy plants. They were awarded a Gold Medal.

Messrs. STUART LOW AND CO., Enfield, showed an interesting group of well-flowered Orchids, and also Carnations and Roses.

Messrs. JARMAN AND CO., Chard, exhibited a collection of *Centaureas*, white, lilac and yellow. These, together with a small group of Sweet Peas, *Pelargoniums*, and *Violas*, were awarded a Silver Medal.

Miss R. C. WHEELER AND CO., Elmswood Nursery, Cosham, showed a prettily-designed and planted rockery.

Messrs. H. B. MAY AND SONS, Chingford, exhibited a large and varied group of Ferns, *Lantanas*, and *Heliotropes*, for which they gained a Gold Medal.

THE GUILDFORD HARDY PLANT NURSERY showed cut flowers and choice Alpines, and were awarded a Silver Medal.

Messrs. WATERER, SONS, AND CRISP, of Bagshot, showed *Rhododendrons* and *Kalmias* in an effective manner at one end of the tent. Their group was awarded a Gold Medal.

Messrs. E. HILLIER AND SON, Winchester, exhibited new shrubs, hardy flowers, and Water Lilies.

The only exhibitors of vegetables alone were Messrs. TOOGOOD AND SONS, of Southampton. They showed an extremely attractive group of Tomatos, Cauliflowers, Broad Beans, Peas, Lettuce, Potatoes, Onions, Radishes, Vegetable Marrows, Beetroots and Carrots, which well deserved the Gold Medal awarded.

YORKSHIRE GALA.

JUNE 17-19, 1914.

THE fifty-sixth annual Yorkshire flower show and gala opened on Wednesday last in the Bootham Park, York, in glorious summer weather, and continued for three days. These exhibitions rank with the best shows held in the provinces, and the display this year was equal, at the least, to anything the broad county has witnessed. The exhibits were accommodated in one large tent, similar to that at the Chelsea shows, and it was probably due to this fact that the event was so successful. The interior of the large canvas structure was in marked contrast to that of the usual flower show tent on a hot day. The atmosphere was cool, and there was plenty of light to show off the flowers to advantage. The exhibits, if we except fruit, were of exceptional quality, and especially those of Roses, Sweet Peas, Orchids, groups of plants, and hardy flowers. The committee is to be congratulated on the progressive spirit displayed in the management, and the secretary, Mr. Fred Arey, deserves the thanks of all.

Groups.

The most important class was that for a group of miscellaneous plants, in or out of bloom, arranged for effect, and occupying a space of 300 square feet. The prizes offered were of the total value of £70, the 1st prize being £20.

Five exhibits were forthcoming, and all were meritorious. The 1st prize was awarded to J. PICKERSGILL, Esq., Bardon Hill, Weetwood, Leeds (gr. Mr. J. Donoghue). The design was diamond-shaped with a central cross-bar on pillars carrying Roses, Ferns, Codiaecums (Crotons), Odontoglossums, and a magnificent Palm in the centre. This provided a good "middle," but the system (now a common feature in these classes at shows) is unnatural and too formal. An old fallen tree trunk may have suggested the idea, but centrepiece and matched corner foils are not nature. However, the quality of the various plants deserves the highest praise, whether Orchids, Roses as Standards, Kalanchoe flammea, Anthuriums, Crotons, Caladiums, Dracaenas, or Alcaecias, and each plant had its full value for display. The 2nd prize was awarded to Mr. W. A. HOLMES, nurseryman, Chesterfield, who also employed a central archway crowned with a tall palm. The Crotons in this collection were splendid, and there were also good Roses, Liliiums, Lantanas, Spiraeas, Caladiums, Coleuses, Dracaenas, Ferns and other species, making a beautiful assemblage of fine foliage and bright flowers; 3rd, Messrs. R. SIMPSON AND SON, Selby; 4th, Mr. F. H. WARD, York.

The class for a group of hardy plants and flowers, with background of decorative plants, Bamboos, with pool of water, Nymphaeas, water plants, etc., arranged for natural effect on the ground level, took the place of the old rock garden class. The 1st prize was awarded to Messrs. J. BACKHOUSE AND SON, LTD., York, for an exhibit which was rather heavy in design and a little overdone with greenery at the back. But there were many excellent features, including the waterfall and stream, and the colonies of *Cypripedium Calceolus*, *Primulas*, *Ramondias*, *Saxifraga pyramidalis*, and other Alpines that seemed quite at home. The 2nd prize was awarded to Mr. S. PICKERING, Clifton, Yorks, who also "banked" his exhibit and crowned it with Bamboos, *Acer Negundo*, and other graceful trees. There was also a dripping stream and pool, the latter planted with *Nymphaeas*. The whole was plentifully furnished with plants of low growth, including Ferns. 3rd, Messrs. ARTINDALE AND SON, Sheffield, with many plants from the herbaceous border—*Oriental Poppies*, tall *Verbascums*, *Kniphofia*, *Liliiums* *Spiraeas*, *Roses*, and others of this class; 4th, Mr. T. H. GAUNT, Farsley, Leeds, who was nearest to nature in the arrangement of his exhibit, but not strictly in keeping with the schedule.

The groups of bedding plants staged in Class 5,

either semi-circular or corner-shaped, were not remarkable. The 1st prize was awarded to Mr. W. PYBUS, Monkton Moor, near Leeds, for an oval bed with panels of scarlet *Pelargoniums*, *Saxifraga pyramidalis* (exceptionally fine spikes), golden *Calceolarias* and *Marguerites*, with a border of *Campanula carpatica*; 2nd, CLIFTON FRUIT AND VEGETABLE Co. This exhibit formed the central bed around the four exhibits in the next class; 3rd, Mr. T. M. PERCH, Bridlington, for a mixed group.

There was another class for a group of bedding plants, and this was much the better. There were four exhibits, and the 1st prize was awarded to Messrs. HARKNESS AND Co. for a bright bed of scarlet *Salvias*, *Pelargoniums*, *Fuchsias*, *Violas*, *Hydrangeas*, and *Schizanthus retusus* with foils of weeping *Roses*; 2nd, Mr. T. M. PERCH. For a collection of plants, in or out of bloom, and of cut flowers arranged for effect, the 1st prize was awarded to Messrs. J. CYPHER AND SONS, who employed choice Orchids, with a few *Anthuriums*, *Crotons*, *Ferns*, *Asparagus*, and other fine foliage plants; 2nd, Mr. HOLMES, Chesterfield, with stove and greenhouse plants and flowers arranged very pleasingly; 3rd, Mr. J. PICKERSGILL, Leeds.

In the smaller class, for a collection arranged on a space 12 feet by 6 feet, Mrs. WHITEHEAD, Deighton Grove, York, excelled with a commendable group, well arranged; 2nd, J. PICKERSOILL, Esq.; 3rd, W. D. ARTON, Esq., Rawdon, Leeds (gr. Mr. F. Howland).

SPECIMEN PLANTS.—The 1st prize in the class for three ornamental fine foliage or variegated plants was won by Messrs. J. CYPHER AND SONS, who also showed best in the class for three *Codiaecums* (*Crotons*). The best single specimen *Codiaeum* was shown by Messrs. R. SIMPSON AND SON, Selby.

Orchids and other Exotics.

The competitive classes for Orchids were not so extensively represented as usual.

In the class for a table of Orchids, 12 feet by 5 feet, Messrs. J. CYPHER AND SONS, Cheltenham, were awarded the 1st prize for a finely arranged exhibit, which included *Laelio-Cattleya Canhamiana*, *L.-C. Aphrodite*, *C. Whitei*, a grand plant of *C. Warszewiczii*, fine plants of *Miltonia vexillaria* and *Thunia Marshalliana*. Messrs. CYPHER AND SONS were also placed 1st in the class for twelve Orchids in bloom. W. P. BURKINSHAW, Esq., Hessele, Yorks (gr. Mr. J. T. Barker), was a close 2nd, and Mr. J. SUNLEY, South Mitford, 3rd. In the class for six Orchids Messrs. CYPHER AND SONS again excelled. For three Orchids in bloom Mr. W. P. BURKINSHAW was 1st, showing *Laelio-Cattleya Lady Miller*, a grand variety of *Miltonia vexillaria*, and *Laelio-Cattleya Canhamiana* variety *Amelia*.

In the open class for a new or rare Orchid Mr. BURKINSHAW won the 1st prize with the lovely *Cattleya Mendelii* *White Queen*, having only a faint tint of rose on the front lobe of the lip.

In the three classes for Orchids open only to amateurs Mr. BURKINSHAW won all the 1st prizes.

PELARGONIUMS.—The majority of these plants were accommodated in an overflow tent. There were five classes, one for a collection of show varieties, arranged for effect with foliage plants, including Ferns, on a table 8 feet by 5 feet. The 1st prize was awarded to a local grower, Mr. H. LEETHAM (gr. Mr. R. Keighley); 2nd, Messrs. GODFREY AND SON, Exmouth. The trained specimen Zonal varieties were as good as we have seen them in former years, but they do not attract so much interest as formerly, and we understand that the classes will be discontinued. Mr. H. PYBUS, Monkton Moor, Leeds, repeated his successes of former years. He was placed 1st for (a) 12, (b) 6, and (c) 3 Zonal, Nosegay, or hybrid Nosegay varieties, distinct, Mr. J. W. CLARK, York, following in each case. These exhibitors were also awarded the 1st and 2nd prizes respectively in the class for six double-flowered *Pelargoniums*, distinct, the plants being the best in the section.

CARNATIONS.—The schedule included a class for a group of Carnations in bloom, arranged in a space 12 feet by 6 feet. Of the two exhibits staged the better was shown by Mr. W. LANGSTAFFE, whose plants were well flowered, compact, and represented a good selection of colours. Mr. J. PICKERSOILL was placed 2nd for *Souvenir de la Malmaison* varieties of exceptional vigour.

BEGONIAS.—The finest Begonias in the show were exhibited by Messrs. BLACKMORE AND LANGDON, Bath, in the class for a group of tuberous-rooted varieties arranged on the floor in a space of 100 square feet. Mr. THOS. WINN, York, was successful in the classes for (1) a group measuring 12 feet by 2 feet, and (2) the best and most distinct varieties in flower.

Capt. EDWYN WALKER, York (gr. Mr. H. Clark), showed the best group of *Gloxinias*, and the best group of *Calceolarias*, and was awarded the 1st prizes.

Roses.

Mr. W. TODD, York, excelled easily in the class for a collection of Roses in pots. Hybrid Perpetuals and Hybrid Teas were arranged in a group with Ramblers above them, and pretty dwarf Polyantha varieties as an edging. None of the plants was named. 2nd, Mr. W. LANGSTAFFE, York.

For a group of Roses, not fewer than 20 pots, Mr. TODD again excelled, and Mr. LANGSTAFFE was again placed 2nd.

The best table of Roses, 6 feet by 4 feet, was shown by Messrs. W. and J. BROWN, Peterborough. The space was too limited to obtain a good result, but Messrs. BROWN made the most of their possibilities and showed how well good blooms can be exhibited in a small space. In the centre was a splendid vase of *Lady Pirrie* variety. 2nd, Mr. GEO. PRINCE, Oxford, who made a feature of the variety *Juliet*.

CUT BLOOMS.—There were three exhibits in the class for 72 blooms in not fewer than 36 varieties. The 1st prize was awarded to Messrs. JARMAN AND Co., Chard, for massive, well-coloured flowers that remained fresh under the trying heat. Notable varieties were *G. C. Waud*, Mrs. E. Mawley, Dean Hole, Mme. J. Gravereaux, Ulrich Brunner, *Lady Ashtown*, *Hugh Dickson*, and *Lady Helen Vincent*. 2nd, Messrs. R. HARKNESS AND Co., Hitchin; 3rd, Mr. HARRY RICHARDS, Warsash.

There were four competitors in the class for 48 blooms in not fewer than 24 varieties, and here Messrs. J. BURRELL AND Co., Cambridge, carried off the 1st prize with *Hugh Dickson*, Mrs. J. H. Welch, *Ethel Malcolm*, Dr. O'Donel Brown, Mrs. Foley Hobbs, Mrs. Ed. Mawley, *Souvenir de Pierre Notting* and *Maman Cochet* as his best blooms. 2nd, Messrs. JARMAN AND Co., Chard; 3rd, Messrs. HARKNESS AND Co., Hitchin.

For 36 blooms Messrs. W. and J. BROWN, Peterborough, excelled with splendid flowers of Mrs. W. H. Rowe, Mme. Jules Gravereaux, J. B. Clark, Mrs. A. Carnegie, C. W. Cowen, *Ethel Malcolm*, Mrs. W. H. Rowe, Molly S. Crawford, John Cuff and others. 2nd, Messrs. R. HARKNESS AND Co., with small but refined blooms; 3rd, Messrs. J. BURRELL AND Co.

There was a keen competition in the smaller classes. For 24 blooms, distinct, Mr. GEO. PRINCE, Oxford, won the 1st prize with the best blooms in the show. This select exhibit included Mrs. Amy Hammond, Mme. Jules Gravereaux, Leslie Holland, *Lyon Rose*, *Souvenir d'un Ami*, *British Queen*, Mme. *Mélanie Soupert*, *Frau Karl Druschki*, and Mrs. Foley Hobbs. 2nd, Messrs. J. BURRELL AND Co.; 3rd, Messrs. W. and J. BROWN.

For 18 distinct varieties the prizes were won by Messrs. GEO. PRINCE, Messrs. W. and J. BROWN, and Messrs. J. BURRELL AND Co. in this order. In the two Amateur Classes for Roses Mr. W. HUTCHINSON, Kirby Moorside, won both the 1st prizes.

SWEET PEAS.—The Sweet Peas were notably good, both in the Competitive Class and the traders' collections. There was only one class

and the schedule called for 18 bunches of distinct varieties, arranged in a space 12 feet by 4 feet, on three-tier staging. Four good exhibits were forthcoming, and the 1st prize was awarded to Messrs. E. W. KING AND CO., Coggeshall, their varieties being Elfrida Pearson, Illuminator, Mrs. Cuthbertson, Princess Mary, Phyllis, Rosabelle, Bertrand Deal, Margaret Atlee, Anglican Orange, Inspector, Anglican Fairy, King Manoel, Anglican Cream, Thos. Stevenson, Lavender Geo. Herbert, R. F. Felton, Anglican White and Hercules; 2nd, Messrs. HOBBIES, LTD., Dereham, Norfolk.

RHODODENDRONS.—There was a class for a group of Rhododendrons in bloom occupying a space not exceeding 200 square feet. There were only two exhibits, and Messrs. WATERER, SONS AND CRISP, LTD., won the 1st prize easily with superb plants in pots, the exhibit being much brighter than that of their competitors, Messrs. KENT AND BRYDON, Darlington.

Messrs. WATERER'S plants were all in pots and small, but they were flowering magnificently. Notable varieties were Mrs. John Kelf, warm rose; Warrior, huge crimson trusses; Gomer Waterer; Sunshine, old rose with gold blotch; and the new Duchess of Teck, a pink Gomer Waterer. Messrs. KENT AND BRYDON were awarded the 2nd prize.

Hardy Flowers.

The exhibits of hardy flowers arranged on tabling made a notable feature along one side of the tent. The competition was keen, but Messrs. HARKNESS AND SONS showed decidedly best, and were awarded the 1st prize. Oriental and Iceland Poppies, Paeonies, Irises, Lupins, Scarlet Geums, Gladiolus Blushing Bride, and Delphiniums were the more notable subjects; 2nd, Messrs. G. GIBSON AND CO., Bedale; 3rd, Messrs. GODFREY AND SON.

For a collection of 24 bunches Messrs. HARKNESS again excelled, and Messrs. G. LONGSTER AND SONS, Derwent, were placed 2nd.

In the smaller class for 12 bunches the prizes were awarded to the Marquis of NORTHAMPTON, Castle Ashby (gr. Mr. A. R. Searle), and Mr. HUTCHINSON respectively.

The class for a collection of hardy herbaceous perennials, plants or cut flowers, or both, arranged in a natural manner on the ground in a space of 300 square feet, provided a splendid colour effect. But the exhibitors aimed at imposing collections, and lightness and gracefulness were sacrificed to the desire to include something of everything; consequently the effects were anything but "natural." The local nurserymen, Messrs. J. BACKHOUSE AND SON, were easily first amongst four exhibitors, for their style of grouping was best and the quality of their flowers superb, but tall standard Roses should certainly not be included in a collection of hardy herbaceous perennials. These, with tall Eremuri, served as foils to masses of Anchusa, Paeonies, Liliums, Pyrethrums, Verbascons, Irises, Gailardias, Gladioli, and a host of other hardy border flowers. 2nd, Messrs. ARTINDALE AND SON, who massed their flowers, making a wonderful group of colour, and having almost everything the flower border affords at this season. 3rd, Messrs. GIBSON AND CO., Bedale; 4th, Messrs. HARKNESS AND SONS.

Fruit and Vegetables.

York Gala has no great reputation as a fruit and vegetable show, and on this occasion the exhibits were very poor. There was no entry in the class for a decorated table of ripe fruit, and only one very poor exhibit in the class for a collection of 10 kinds. But two good exhibits were forthcoming in the class for a collection of six kinds, J. BRENNAND, Esq., Thirsk (gr. Mr. J. Hathaway), winning the first prize with choice Nectarines, Royal George Peaches, Brown Turkey Figs, Black Hamburg Grapes, and a fine Melon. Mr. FRANK PLUMER, Market Weighton (gr. Mr. R. J. Vaughan), was placed 2nd, with Figs, Nectarines, Peaches, Melon, and Grapes (Black Hamburg and Foster's Seedling). Nectarines (Lord Napier) were splendid.

For a collection of four kinds, Sir ROBERT WALKER, Bart., York (gr. Mr. James Folkard), excelled with good Black Hamburg Grapes, small in berry, but large bunches; Laxton's Leader Strawberries, Lord Napier Nectarines,

and a Melon; 2nd, W. D. CLIFF, Leeds (gr. W. N. Hague), whose best dish was of Peaches.

The Marquis of NORTHAMPTON, Castle Ashby (gr. Mr. A. R. Searle) showed the best Peaches, and Mr. J. W. DENT the best Nectarines.

Sir ROBERT WALKER, York, had the finest white Grapes in the variety Buckland Sweetwater and Lady HAWKE the best two bunches of Black Hamburg variety.

In the Melon classes the 1st prize winners were (scarlet-fleshed) Marquis of NORTHAMPTON, (green-fleshed) Lord DERAMORE, and (white-fleshed) ROSALIND Countess of CARLISLE (gr. Mr. Sutton).

There were also classes for Figs, Cherries, Strawberries, and Tomatos, in which the Marquis of NORTHAMPTON and Mr. JOHN BRENNAND showed successfully.

VEGETABLES.—The Marquis of NORTHAMPTON won the 1st prizes in both Messrs. Sutton and Sons' and Messrs. Ed. Webb and Sons' classes for collections of six distinct kinds of vegetables, showing good Peas, Tomatos, Cauliflowers, Beans, Onions, and Carrots. Mr. A. BLAKEY, York (gr. Mr. Howden), was placed 2nd in both classes.

Non-Competitive Exhibits.

Messrs. R. WALLACE AND CO., Colchester, staged a floor group of hardy flowers. The centre was comprised of Eremuri and Delphiniums, with a centre-piece of Bamboos. Around these were arranged masses of Campanulas, Paeonies, Lilies, Ixias, Spanish Irises, Heucheras, and other kinds. (Large Gold Medal.)

Messrs. SUTTON AND SONS, Reading, filled a large table with flowers, fruits, and vegetables—an exhibit of high-class produce, shown in the most attractive style. Sweet Peas were interspersed amongst the fruits and vegetables, and at the back, against a black velvet ground, were beautiful vases of Lupins, Poppies, Delphiniums, Pyrethrums, and Aquilegias, whilst in the centre was a mass of fine Gloxinias. (Large Gold Medal.)

Messrs. JAMES CARTER AND CO., Raynes Park, filled a table, 50 feet frontage by 5 feet, with flowers and vegetables. The flowers comprised Spanish Irises and Sweet Peas. The vegetables were arranged in the centre, and included Perpetual Dwarf Beans, Harvestman and Springtide Peas, Improved Telegraph Cucumbers, Golden Butter Beans, Duke of York Tomatos, Springtide Cabbage, Marrows, Lettuces, Turnips, Carrots, Asparagus, Mushrooms, Aubergines and other kinds. (Large Gold Medal.)

Messrs. ED. WEBB AND SONS, Wordsley, Stourbridge, showed half-circular groups of flowers and vegetables against a green cloth background. In the centre was an imposing exhibit of vegetables and Sweet Peas, separated on either side from masses of Cinerarias and Calceolarias by blocks of Schizanthus and Star Primulas respectively. (Large Gold Medal.)

Messrs. DOBBIE AND CO., Edinburgh and Mark's Tey, showed Sweet Peas, their exhibit of these flowers being unrivalled in the show. Such beautiful varieties as Mrs. Cuthbertson, Dobbie's Orange, Elfrida Pearson, Illuminator, New Marquis, King White, and Edson Beauty were all of superb quality. In addition to Sweet Peas this firm showed Spanish Irises in variety. (Large Gold Medal.)

Messrs. W. CUTBUSH AND SON, Highgate, had a delightful floor group of Roses, Carnations, Liliums, Hydrangeas, Verbenas, Crassulas, and other flowers, for which a Large Gold Medal was awarded.

Messrs. KELWAY AND SON, Langport, Somersetshire, showed fine Paeonies, Delphiniums, Gailardias, Lupins, and other hardy flowers. The Paeonies were exceptionally fine. (Gold Medal.)

Messrs. JOHN PEED AND SON, West Norwood, arranged an oval bed with hybrid Streptocarpuses, relieved with Ferns and Palms and bordered with Gloxinias. (Silver-gilt Medal.)

Messrs. STUART LOW AND CO., Enfield, showed Roses and Carnations, both of superb quality. (Large Silver-gilt Medal.)

Messrs. S. BIDE AND SONS, LTD., Farnham, exhibited a large number of Sweet Peas, representing the pick of the choicer sorts in cultivation. (Gold Medal.)

Messrs. GUNN AND SONS, Olton, Warwickshire, showed border Phloxes; Duchess of Wellington, mauve; Mauve Queen, "French" grey;

Rijnstroom, salmon; and Flora, white, are a selection of the newer sorts exhibited. (Large Silver-gilt Medal.)

Messrs. JAMES CYPHER AND SONS, Cheltenham, filled a space of 600 square feet with flowering and foliage plants, making one of the most imposing exhibits in the show. (Large Gold Medal.)

Messrs. MANSELL AND HATCHER, Rawdon, Leeds, exhibited a group of Orchids for which a Large Gold Medal was awarded. The centre consisted of fine plants of Renanthera lmschootiana overhung with finely-flowered spikes of Phalaenopsis Rimstadiana on each side of the centre. The groundwork consisted principally of *Miltonia vexillaria* and hybrid Cattleyas and *Laelio-Cattleyas*, *Vanda Teres* and *Odontoglossums*.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Gold Medal for a group consisting of fine plants of *Miltonia vexillaria*, several varieties of *Laelio-Cattleya Fascinator*, *L.-C. Aphrodite*, *L.-C. Canhamiana alba*, *C. Warscewiczii*, *C. Mossiae Wageneri*, *C. Gaskelliana alba*, choice plants of *Odontoglossum crispum* and hybrids.

Messrs. KENT AND BRYDON, Darlington, were awarded a Large Gold Medal for a rock garden of large size. The arrangement pleased us, for the rockery was not over-planted. It was designed with old stratified sandstone, a stream and pool of water forming part of the scheme. (Large Gold Medal.)

Mr. CLARENCE ELLIOTT, Stevenage, arranged a rockery as a table exhibit. (Large Silver Medal.)

A rockery was also exhibited by Messrs. BROADHEAD AND SON, for which the award of a Large Silver-gilt Medal was made.

Mr. A. F. DUTTON, Iver, Buckinghamshire, showed Carnations in baskets. (Gold Medal.)

Messrs. ARTINDALE, Sheffield, showed Carnations, Violas and Sweet Peas. (Silver-gilt Medal.)

Messrs. HOBBIES, LTD., Dereham, Norfolk, were awarded a Gold Medal for a collection of Sweet Peas of fine quality.

Hardy flowers were shown well by Messrs. JAMES COCKER AND SONS, Aberdeen. (Silver-gilt Medal.)

Messrs. YOUNG AND CO., Hatherley, arranged beautiful Carnations of the Perpetual-flowering type on a table. (Gold Medal.)

Messrs. ALEX. DICKSON AND SONS, Belfast, exhibited Sweet Peas of splendid quality together with Spanish Irises. (Gold Medal.)

Mr. C. ENGELMANN, Saffron Walden, showed Perpetual-flowering Carnations in variety. (Silver-gilt Medal.)

Messrs. BLACKMORE AND LANGDON, Twerton-on-Avon, Bath, showed Delphiniums. (Silver-gilt Medal.)

Mr. W. R. TRANMER, Cottingham, Hull, staged Pansies and Violas, also seedlings of *Viola cornuta*, together with a selection of hardy border flowers. (Silver Medal.)

Mr. H. N. ELLISON, West Bromwich, showed Ferns and small plants of Cacti in bowls and pots. (Silver Medal.)

Miss H. HEMUS, Upton-on-Severn, was awarded a Silver-gilt Medal for Sweet Peas.

Messrs. R. H. BATH, LTD., Wisbech, showed superb Paeonies in a general collection of border flowers. (Gold Medal.)

Messrs. JAMES BACKHOUSE AND SON, York, staged a solid, four-sided exhibit of Roses, Hydrangeas, Coleus, Spiraeas, Carnations, and other flowers, a massive but imposing exhibit. (Large Gold Medal.)

Messrs. DICKSONS, Chester, exhibited border flowers of good quality, the majority being of Paeonies and Delphiniums. (Large Silver-gilt Medal.)

Messrs. E. J. BATCHELOR AND SONS, Hartogate, showed exotic Ferns, in which varieties of *Nephrolepis* predominated. (Silver-gilt Medal.)

Roses in great variety were shown by Messrs. W. AND J. BROWN, Peterborough, and this firm also exhibited hardy border flowers. (Large Silver-gilt Medal.)

Mr. GEO. PRINCE, Oxford, was awarded a Silver Medal for Roses.

Mr. W. LAWRENSON, Yarm-on-Tees, showed Perpetual-flowering Carnations and hardy border flowers. (Silver-gilt Medal.)

Messrs. G. LONGSTER AND SONS, Malton, showed hardy perennial flowers in variety.

Messrs. JARMAN AND CO., Chard, showed Cen-

taureas and Zonal-leaved Pelargoniums. (Silver Medal.)

Mr. G. W. MILLER, Wisbech, exhibited hardy border flowers in variety. (Silver Medal.)

Messrs. E. W. KING AND Co., Coggeshall, Essex, showed Sweet Peas in a novel manner, some arranged on arches, others on tall stands with beds on the floor. (Gold Medal.)

R. C. VYNER, Esq., Newby Hall, Ripon (gr. Mr. G. Watson), staged a collection of succulents, one of the finest exhibits of these plants we have seen at a show. (Gold Medal.)

Messrs. B. LADHAMS, LTD., Shirley, Southampton, staged border flowers in variety, including hybrid Pinks, for which this firm is famed. (Silver Medal.)

Messrs. CHAS. SIMPSON, LTD., York, showed fruits and flowers, also floral designs, for which a Silver-gilt Medal was awarded.

Messrs. RICH AND Co., Bath, showed border flowers and Roses. (Silver Medal.)

Mr. G. YELD, York, showed hybrid Irises and Hemerocallis. (Silver-gilt Medal.)

A Silver Medal was awarded to Messrs. GODFREY AND SONS, Exmouth, for an exhibit of hardy flowers.

MARKETS.

COVENT GARDEN, June 17.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, 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 way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices, including Arums, Canterbury Bells, Carnations, Gardenias, Gladioli, and others.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage and plants, including Adiantum Fern, Agrostis (Fairy Grass), Asparagus plumosus, and Carnation foliage.

REMARKS.—Large supplies are arriving daily, and there is almost a glut of coloured Iris, Sweet Peas, Iceland Poppies and coloured Gladioli. All coloured flowers are more plentiful and cheaper than white varieties. Coloured Pyrethrum are coming to hand in good condition. There is an abundant supply of Roses, those mostly in demand being Frau Karl Druschki, Liberty, Richmond, Mme. Abel Chatenay, Melody and Sunburst. Among the new arrivals this week are Canterbury Bells, white, pink and blue; Coreopsis, Delphiniums, Gaillardias, Nigellas (Love-in-a-mist) and Scabious; while pink and white Gypsophilas are exceptionally good and cheap.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various potted plants and their prices, including Aralia Sieboldii, Araucaria excelsa, Asparagus plumosus, and others.

REMARKS.—Hydrangea paniculata is selling well, but the supply is small. The white and blue varieties are more popular than the pink. Other plants which are selling well are Crassulas, scarlet and pink; Verbenas (Miss Willmott), white Marguerites, pink Spiraeas, and Rambler Roses, all of which are arriving in good condition. The trade in flowering plants is still good, and Ferns are gradually improving in quality.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices, including Apples, Apricots, Bananas, Cherries, Currants, Dates, Figs, Gooseberries, Grapes, Lemons, Melons, Nectarines, and Oranges.

Fruit: Average Wholesale Prices—Continued.

Table listing various fruits and their prices, including Peaches, Pears, Pineapples, Raspberries, and Strawberries.

REMARKS.—Arrivals from Australia this week amounted to about 128,000 packages, the bulk of the cargo consisting of Apples. There are large consignments of Strawberries from all sources, and an unusually good supply of Peaches. Nectarines and green Figs are still scarce. The supply of Melons exceeds the demand, and of Grapes there are plentiful supplies of both Black Hamburg and Muscat of Alexandria. Early English Cherries are now available, and Apricots, Cherries, Cantaloupe Melons, and Black and Red Currants are arriving daily from the Continent.—E. H. R., Covent Garden, June 17, 1914.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices, including Artichokes, Asparagus, Beans, Cabbages, Carrots, Cauliflowers, Chicory, Cucumbers, Endive, Garlic, Horseradish, Lettuce, and others.

REMARKS.—This week there are increased supplies of Tomatoes and Cucumbers; Peas and Broad Beans are daily more plentiful. Cabbage and Parsley are scarce; English and Dutch Cauliflowers are fairly plentiful, and the supply of Vegetable Marrows is increasing. The supply of Asparagus is good for the time of year, and Mushrooms are becoming more plentiful.—E. H. R., Covent Garden, June 17, 1914.

Old Potatoes.

Table listing prices for old potatoes, including Dunbar Red and Lincoln-Evergood.

New Potatoes.

Table listing prices for new potatoes, including Bedfords, Cherbourg, Jersey, and Kents.

REMARKS.—Stocks of old Potato are nearly finished. Trade in new Potatoes is fairly good, and their prices are much lower. A good supply of new tubers is arriving from Kent growers.—Edward J. Neuborn, Covent Garden and St. Pancros, June 18, 1914.

THE WEATHER.

THE WEATHER IN WEST HERTS.

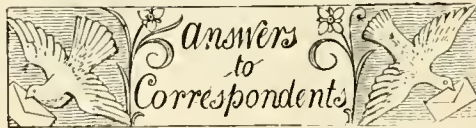
Week ending June 17, 1914. Another Welcome Fall of Rain.—This was a warm week, and more particularly during the daytime. On four days the temperature in the thermometer screen rose above 75°, and on the warmest of those days the highest reading was 75°. The nights were, as a rule, only moderately warm for the time of year, and on one night the exposed thermometer fell to within 6° of the freezing-point. The ground is now 1° warmer at 2 feet deep, and 2° warmer at 1 foot deep, than is seasonable. Rain fell on only one day, but on that day to the depth of over 3/4 inch, bringing up the total quantity for the seven days ending the 11th inst. to 1 1/2 inches—equivalent to 8 gallons of rain on every square yard. Of that amount 3/4 gallons have come through the bare soil gauge, but none through that on which short grass is growing, showing how dry the ground had previously become. The sun shone on an average for 8 1/2 hours a day, which is 2 1/2 hours a day longer than is usual at the same period in June. On two days the sun was shining brightly for over twelve hours a day, but on two other days for less than three hours a day. Light airs and calms alone prevailed during the week, these light airs coming almost exclusively from some point between north and east. There was about a seasonable amount of moisture in the air at three o'clock in the afternoon.—E. M., Berkhamsted, June 17, 1914.

Obituary.

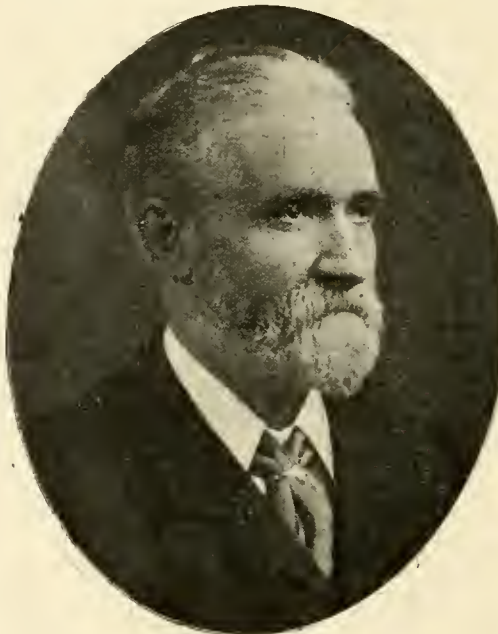
GEORGE GORDON, V.M.H.—It is with deep regret that we record the death of Mr. George Gordon, who was for 25 years editor of the *Gardeners' Magazine*. The announcement of his retirement from the editorial chair in November last was received with surprise by his large circle of acquaintances and all but his most intimate friends, for Mr. Gordon, in spite of the fact that he had passed the allotted three score years and ten, appeared to be still hale and vigorous. But he was stricken with cancer on the liver, and died on June 14. The son of a gardener Mr. George Gordon was cradled in horticulture, and throughout his life his interests were centred in the profession, for he had no hobbies except those directly connected with his work. Always eager in the pursuit of knowledge he was, when well over 40 years of age, attending classes at the Birkbeck Institute, then accompanied by his eldest son, who is now in the Civil Service. He was a skilful photographer, as the many illustrations from his camera which have appeared in our contemporary testify. Quite lately he studied colour photography, and possessed many autochromes of more than average merit. Tall and broad-shouldered he was fortunate in possessing a sound constitution, which enabled him to work hard and almost tirelessly. When over 60 years of age he judged at the York Chrysanthemum Show, took notes of the exhibits, elaborated them during the train journey to London, handed his report to the printers on his arrival, and then proceeded to Folkestone to deliver a lecture in the evening of the same day. He was born 72 years ago at Frogmore Hall, Hertfordshire, where his father, who was a very successful grower and exhibitor of fruit, was head gardener, and from whom he imbibed the first principles of gardening. His first situation away from home was as journeyman at High Leigh, Hoddesdon, in a garden famed for its collections of Orchids and other glass-house plants. After three years, part of the time as foreman, he was appointed fruit and vegetable foreman at Duncombe Park, Helmsley, Yorkshire, where he also became so interested in agriculture that for a time he contemplated following the sister craft, but an appointment as gardener at Norbiton Hall, Kingston, brought him south and decided him to continue gardening. Shortly afterwards the Norbiton Hall estate was sold, and Mr. Gordon was engaged to take charge at The Elms, Hampton Wick. At this time he was only 23 years of age, but he soon established a reputation as a plant exhibitor. His contributions to the *Gardeners' Magazine*, commenced at this time, induced the late Mr. Shirley Hibberd to invite him to join the staff of that journal as assistant editor, and on the death of that famous horticulturist, some 20 years later, he succeeded him as editor. His great interest in Chrysanthemums and Dahlias are well known to the present generation. He was one of the promoters of the first Fruit Conference, which was held at the Crystal Palace on September 7 and 8, 1884. This conference inspired the formation of the British Fruit Growers' Association, and Mr. Gordon was elected vice-chairman. In the early autumn of 1890, in company with Mr. Lewis Castle, hon. secretary of that Association, Mr. Gordon spent nearly a month in visiting the counties of Antrim, Londonderry, Cork, Kerry and Waterford to investigate the fruit industry of Ireland, and his report attracted a considerable amount of attention and criticism, but it bore valuable fruit. Besides having been a member of the committee of the National Chrysanthemum Society for 13 years he was elected a vice-president of the National Rose Society in 1890, and had held a seat on the R.H.S. Floral Committee since 1891. He was one of the promoters of the National Sweet Pea Society. In 1897 he was one of the first sixty to be awarded the Victoria Medal of Honour, and after having been a vice-president of the National Dahlia Society from 1891 to 1912 became its president. At the time of his death he was vice-chairman of the Horticultural, Arboricultural and Forestry Committee of the Anglo-American Exposition at the White City, Shepherd's Bush. His services were in great

request as a judge at flower shows, and on six occasions he was a member of the jury at the Ghent Quinquennial Exhibitions, and acted similarly at Antwerp, Haarlem and Hamburg. Of his many writings the most important are *Dahlias* (Present-Day Gardening Series), *The Book of Shrubs*, and *The Wasted Orchards of England*. Mr. Gordon entertained strong sympathies for the gardener, and was a member of the Committee of the Royal Gardeners' Orphan Fund, of which body he was an influential member. We tender our deep sympathies to his widow, two sons and daughter.

A. F. GAROINER.—Mr. A. F. Gardiner, for 36 years gardener at The Grove, Dumfries, died in Dumfries on the 13th inst. Deceased was a good gardener, and much trusted by his employers. He was 67 years of age, and had lived in retirement for the past three years.



CARNATION FOLIAGE TURNING A YELLOW COLOUR: *Foreman, Blackburn.* The plants are not diseased; the yellow colour in the leaves has resulted from unhealthy root-action caused by the presence of too much moisture in the soil.



THE LATE GEORGE GORDON, V.M.H.

CHIONODOXA WITH ABNORMAL ROOT: *H. and Son.* The swollen root has the appearance of a dropper bulb, but droppers have never been described for Chionodoxa. The structure concerned arises from the same position as a dropper. But its anatomical structure does not agree with that of a dropper, which is a shoot or leaf or both. This organ in Chionodoxa has root structure. Therefore it is merely a fasciated root.

FIG LEAVES DISEASED: *R. G.* The disease from which your Fig trees are suffering is caused by *Cercospora Bolleana*, a parasitic fungus. Collect and burn all diseased leaves and fruits, and spray the trees with diluted Bordeaux mixture. If the trees are badly affected, root them up and destroy by burning, afterwards planting healthy stock in fresh soil.

MELONS DYING: *T. W. B.* The roots and stems are attacked by canker, for which there is no cure. Diseased plants should be destroyed on the garden fire, and the soil in which they have grown should be treated with lime.

MELON LEAVES: *D. M. L.* The plants are diseased by the fungus causing "leaf-rot." If the plants are not carrying fruit they may be

syringed with the Bordeaux mixture at half the usual strength; if fruit is present it will be best to use liver of sulphur. See also reply to *T. W. B.*

NAMES OF PLANTS: *J. W.* 1, *Kalmia latifolia*; 2, *Pieris floribunda*; 3, *Vaccinium corymbosum*; 4, *Escallonia macrantha*.—*A. T. H.* 1, *Rosa xanthina*; 2, *Rose Mme. Hector Leuilliot*; 3, *Rose Soleil d'Angers*; 4, *Ceanothus thyrsiflorus* var. *griseus*; 5, *Griselinia littoralis*; 6, *Ligustrum sinense*; 7, *Euphorbia Characias*.—*T. H. R.* *Rose Lady Waterlow*.—*W. R. P.* 1, *Veronica austriaca*; 2, *Cornilla emericoides*; 3, *C. Emerus*.—*J. A. P.* 1, *Tamarix gallica*; 2, *Atriplex Halimus*; 3, *Prunus Mahaleb*; 4, *Sedum praealtum*; 5, cannot name without flowers; 6, *Thalictrum aquilegifolium*.—*W. and B.* *Poa annua*.—*H. C. P.* *Sedum roseum* (*Rhodiola*).—*C. F. Smart.* Double *Pyrethrum* (*Chrysanthemum coccineum flore pleno*).—*Pat Blackbyrne.* *Roses:* 1, *Aglaia*; 2, *Auguste Barbier*; 3, *Thalia*; 4, not recognised; 5, *Blairi No. 2*. *Shrub, Cerasus Padus* (*Bird Cherry*).—*M. Wright.* 1, *Escallonia macrantha*; 2, *Pyraecantha coccinea*, sometimes called *Crataegus Pyraecantha*.—*F. Clarke.* *Brassica nigra*.—*Miss R.* *Pyrus terminalis*.—*E. P.* *Pernettya mucronata*.—*M. E. S.* *Sedum rupestre*, *Myosotis palustris*, *Geum rivale*, *Veronica gentianoides*.—*J. M. W.*—(1) Not recognised (*Rose*); (2) *Trachelospermum* (*Rhynchospermum*) *jasminoides*; (3) *Agatheae celestis*; (4) *Ceropegia Woodii*; (5) *Diplacus* (*Mimulus*) *glutinosus*.—*E. F.* *Oxalis Bowiei*.—*T. A.* (1) *Oncidium pubes*; (2) *Stelis ophioglossoides*; (3) *Miltonia candida*; (4) *Odontoglossum Lindleyanum*.—*B. C. B.* A fine form of *Salvia coccinea*.—*Mum.* *Lilium umbellatum erectum*.

ONIONS: *Ignorant.* Onions will root fully as deeply as Parsnips provided there is a sufficient depth of suitable soil; hence the value of deep cultivation.

PEACH FRUITS DROPPING: *G. G.* We have examined the fruits and find that the dropping is not due to a fungus disease; it is probable that you have afforded the roots too much moisture or the drainage of the border may be at fault, causing the soil to be water-logged. It would be advisable to overhaul the border next autumn when the trees are at rest, to ascertain if its condition is satisfactory.

PEACH LEAVES: *D. Hughes, F. W. C.* and *A. J. B.* The trouble is due to "Shot Hole" fungus—*Cercospora circumscissa*. The disease may be checked by spraying with liver of sulphur (potassium sulphide), and the work is best done when the leaves are only half grown. Therefore spray early next season, as the disease is almost sure to reappear. Liver of sulphur turns paint black; therefore, do not wet the painted woodwork of the house.

SWEET PEAS: *W. D.* The roots are attacked by a fungus—*Thielavia basicolor*—which is present in the soil. Sterilise the latter, either with fire heat or steam.

VINE LEAVES: *T. W. R.* Vine mildew is present. Spray the foliage with liver of sulphur, 1 oz. in 4 gallons of water. Spray early in the season next year before the mildew appears.—*E. C. W.* The injury to the vine foliage is not caused by a fungus disease or insect pests. It is a physical injury due to some external cause showing that the culture has been at fault. Most probably it is the result of a stagnant atmosphere. Ventilate the viney freely as early in the morning as can be done with safety.

WEED ON LAWN: *A. J.* The weed on your lawn is *Trifolium minus*. The best way to eradicate the Clover is to apply sulphate of ammonia, which will cause the grass to grow so luxuriously that it will in time crowd out the weeds.

Communications Received.—*F. A. W.* (Thanks for 1s. for R.G.O.F. fund)—*F. A.*—*W. H. S.*—*E. S. W.*—*J. A.*—*J. S.*—*M. P.*—*F. G.*—*L. C.* (*Hants*)—*Inquirer*—*W. J.*—*F. W. N.*—*C. L.*—*R. S.*—*W. J.*—*P. B.*—*C. F.*—*H. E. H.*—*F. W. N.*—*R. K.*—*H. E. K.*—*A. I.*—*G. H. S.* (thanks for 1s. 6d. for R.G.O.F. box)—*A. H.*—*W. J. V.*—*W. R. D.*—*E. T. C.*—*T.*—*F. A. W.*—*T. H.* (*Birmingham*) (next week)—*C. T.*



THE
Gardeners' Chronicle

No. 1,435.—SATURDAY, JUNE 27, 1914.

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ON JUDGING ROSES.

THE time of Rose shows and of judging Roses will soon be upon us, and it may be opportune to consider some of the problems connected with judging. The N.R.S. has laid down what are, no doubt, carefully considered rules for judging both exhibition and decorative Roses. The latter do and the former do not specify the qualities for which the judge should seek in making his award. Thus in judging decorative Roses the judges are directed to take into account brightness, form of flower, foliage, and arrangement, also diversity of the varieties and the setting up of the exhibit, and they are told that the relative sizes of different varieties is not to be taken into consideration. No similar guidance is given in the case of exhibition Roses. So many points are to be given for "high-class" blooms, and extra ones for "a very superior" bloom; but what is high-class and what superior are left to the discretion of the judge, without any attempt at definition. It is apparently only when the exhibits are of equal merit that the judges are to proceed to consider their general evenness, variety, arrangement, freshness, and setting up in the stands, otherwise they may be a law unto themselves. Notwithstanding this absence of definition it may be stated at once that as a rule the awards are well made.

There is, of course, no appeal from the judge's decision, but every judge well knows that his awards will be subjected to minute and thorough criticism, and the cases are very few in which the most careful attention is not paid to all the points which, in the view of the adjudicator, constitute merit in a Rose.

Occasionally, however, it happens that some appalling results are arrived at, not so much from any want of care in judging as from an unfortunate idea of what constitutes merit. By far the most common fault in judging Roses is the giving of an inordinate value to the quality of size in a flower. If only for the rather dreadful word "high-class" we could substitute "beauty," and for "a very superior bloom" we could read "a very perfectly formed and lovely Rose," much might be gained.

I remember when judging at a rather large country show, after we had finished our work, some of us looked round the show to see what the other judges had been doing. My eye was arrested by a flower erected above its fellows bearing the legend, "Best Rose in the Show." It was a vegetable of the Mildred Grant type. Long past any approach to beauty of form, if it ever possessed it, of a sad, bilious kind of yellowish mauve, very washy in hue, with somewhat limp and crinkled petals badly weather-beaten, and a mildewy piece of leaf, carelessly arranged, projecting beneath it, altogether a most undesirable looking object: but the size left nothing to be desired, and that I suppose was enough.

Parkinson tells us of the virtues of the Rose "that it serveth to cause suppleness of the body made into a syrup, or preserved with sugar." and again, "that it hath many physical uses, serving for many sorts of compositions, both cordial and cooling." For any or all of these purposes doubtless the Rose in question might have been invaluable; it would have afforded so much material; but as a thing of beauty it was woefully wanting. No doubt when judging classes containing very poor flowers it is often difficult to arrive at a satisfactory conclusion, but there was no difficulty of this kind in the case I have mentioned; the boxes in the classes from which the selection was made were numerous and contained some lovely flowers, though doubtless smaller than the one preferred.

Why is it that we give up to our Roses good garden ground that might grow admirable Lettuces, Cauliflowers, and Peas? Surely it is for the pleasure which we derive by contemplating the grace of form, pure fresh colouring, and the harmony of flower and foliage—in a word, the beauty and glorious perfume of the Rose. Surely in considering the Roses of our gardens mere size is a very secondary consideration. Proportion I admit at once, and there are many Roses which are not well proportioned, and do not give the real grace of form and beauty of which they are capable, except under high cultivation. Where this is the case size of the bloom may be at least tolerated, because it is necessary in these cases to ensure the

beauty we desire. Further, the exhibition Rose is set up in a box, and a flower that is below a certain size looks skimpy and out of place in that particular position. But need we go further?

So far as the general public is concerned, perhaps the question might be answered readily in the negative. No doubt they are attracted by, sometimes greatly interested in, the voluminous dimensions of the flowers they see in the winning boxes, specially those of the trade growers, hopeless though they may feel at times of ever attaining a like result in their own gardens. But when all is said, the attraction which draws most visitors to a show is the hope of finding something there which, when transplanted to their own gardens, will prove better than anything they possessed before. Which of them has not in his time fallen a victim to the charms of Bessie Brown, and given it a prominent and favourable position, only to find that as a garden Rose it is impossible? The perennial popularity of the tent for new seedling Roses and sports at the N.R.S. exhibitions bears eloquent testimony to the desire of the public to find something better than it at present possesses.

As regards exhibitors, whether professional or amateur, the question is not so easily answered. There can be little doubt that to some, perhaps to many exhibitors, the attraction of showing Roses in boxes, rather than in the decorative classes, consists in a feeling that they would like to know where they are. If they can produce bigger and more portly flowers than their rivals they like to feel that that is sufficient, and that they are reasonably certain of recognition. The feeling still exists that the exhibitors in the decorative classes are a hapless crew, with little to guide them in selecting their flowers, and largely at the mercy of the caprice of a judge who is equally without sure guidance, and must make his awards more or less haphazard. It follows that such exhibitors are to be pitied and the decorative classes avoided. This feeling is growing less as the decorative classes increase in popularity, and it may be the method of judging is becoming more settled. Quite recently, when some of the exhibitors of decorative Roses petitioned to be allowed to show in certain of their classes some varieties which seemed suitable for the purpose, but which had found their way into the exhibition lists, they were met with the gibe that they wanted to show ill-grown Roses, and that this ought not to be allowed.

Those who use such arguments would doubtless think it beside the mark to enquire whether a small, well-proportioned flower may not be more beautiful than one induced, perhaps by over-cultivation and excessive feeding, to assume the dimensions that would bring it up to exhibition standard. But is the enquiry quite fruitless? May not the over-fed and too corpulent child be as much an example of bad bringing up as one who has been ill nourished? Perhaps there may be some who would not admit an affirmative answer

to the last question, but in the long run it must become evident that the Rose exists and is cultivated for beauty alone, and that by its beauty it must stand or fall, and that kind of treatment that will bring it before the public in its greatest purity, freshness, and perfection of proportion must ultimately be the best form of cultivation.

I neither expect nor do I advocate any immediate change in the method of judging exhibition Roses. Such alteration as I desire will, I hope, come about gradually, and has, in fact, already begun. Judges, of course, have their idiosyncrasies. Of the judges whom I have met, one of the best colleagues I have had seemed to me, the first time I judged with him, so lost in admiration of all the flowers presented to his in-

yet which is usually a particularly well-formed flower, may the judge take into consideration the fact that the colour is to him unpleasing, or must he ignore the colour altogether? Perhaps there are many who would take the latter view, but an ugly colour is certainly a want of merit in a Rose. Again, for a Rose to be "off colour" is universally admitted as a defect, but the degree to which it has to fall short of the judge's ideal of the particular variety for it to lose a point for this defect, varies with each judge, and with the same judge on different occasions.

It has often been suggested that the presence of perfume in a Rose should be considered in judging, and perhaps many of us would sympathise with the suggestion, and may be unconsciously biased to favour a flower with a

reduced to a gnarled shrub. It is described as forming the chief item in the arboreal vegetation of the Auckland Islands. It has the characteristic foliage of the Myrtle family, with leaves 2 to 3½ inches long, lanceolate or narrowly oval, pointed, shining green, and dotted with oil-glands beneath. It is, of course, evergreen, like the rest of the genus. The flowers (fig. 206) are produced at the extremities of the twigs, their chief feature being the bright crimson stamens, which are up to 1 inch in length, and very numerous in each flower. Kirk observes that New Zealand has few more magnificent sights to offer than a mountain slope covered with this species from its base to nearly 4,000 feet above sea-level, when the brilliant crimson flowers are lit up by the morning sun. In the milder parts of the



FIG. 206.—METROSIDEROS LUCIDA, WHICH HAS JUST FLOWERED AT NYMANS FOR THE FIRST TIME IN THIS COUNTRY. COLOUR OF FLOWERS CRIMSON.

spection that I wondered if he would ever come to a decision; but I found his choice none the worse for his obvious delight in the Roses, and, once arrived at a decision, he is seldom at a loss to give a good reason for it. To another the depth of petal in the flowers is a weighty consideration, so that one might almost expect he would wish to judge the flowers sideways, but he has an eye for a good flower for all that. A third will lay particular stress on the flowers being of a bright colour and typical of the variety, and will insist on taking any doubtful bloom for inspection outside the tent. And on the whole the tendency to reject large, ill-shapen, weather-beaten blooms is increasing. The question of colour is often one of considerable difficulty. If we take a Rose like Mrs. A. E. Coxhead, for instance, which is of a tolerably pleasing colour only at its very freshest, and to some scarcely even then,

delightful perfume. But the difficulties in giving serious effect to the suggestion are considerable. To begin with, noses vary much among judges as among ordinary mortals, and while many are competent to appreciate the full damask perfume of a Rose like Horace Vernet or Hugh Dickson, the more refined and delicate nuances of the varieties of the Teas and some of the H.T.'s are scarcely perceptible by a large number of individuals. *White Rose.*

METROSIDEROS LUCIDA.

This fine Myrtaceous tree is found in both the main islands of New Zealand, but is especially abundant in the South Island. There it forms an erect-branching tree, 30 to 60 feet high, although in exposed alpine situations it becomes

British Isles this tree may be grown out of doors, but over most of the country it will need winter protection. It succeeds in a loamy soil, and when given pot cultivation will be benefited, and flower better, if plunged in the open air for three or four of the summer months. Fig. 206 is reproduced from a photograph of specimens kindly sent us from Nymans, Crawley, the residence of L. Messel, Esq., and they are the first flowers of this species that come under our notice.

ORCHID NOTES AND CLEANINGS.

ORCHIDS AT THE WARREN HOUSE.

IN Mrs. Bischoffsheim's beautiful gardens at the Warren House, Stanmore, the collection of Orchids in the care of Mr. F. Jones is giving a good display of flowers. Goodly numbers of *Odontoglossums* are in bloom, chiefly of the best

type of *O. crispum*, arranged with red *Masdevallias*, *Epidendrum vitellinum majus*, and other brightly coloured species. *Disa grandiflora*, for which the gardens are famous, but which had gone back somewhat, is now again attaining its former vigour, and is well furnished with flower-spikes. In the intermediate houses is a good display of *Cattleyas*, *Laelias*, and *Laelio-Cattleyas*, among which some remarkably fine forms of L.-C. *Aphrodite*, L.-C. *Canhamiana*, and L.-C. *Martinetii* were specially good. Among the newer hybrids a pretty form of *Laelio-Cattleya Acis* (L. *tenebrosa* Walton Grange × C. *Mendelii gigantea*) has fine flowers, the white sepals and petals contrasting well with the deep claret-crimson lip. L.-C. *Gladiator* Warren House variety (L.-C. *callistoglossa ignescens* × C. *Mossiae splendens*) is certainly the best of its class, the flowers larger than those of the best C. *Mossiae*, the lip especially being remarkably developed. The sepals and petals are bright rose colour, the broad, flatly-displayed labellum ruby-crimson with gold lines from the base, and a well-defined, crimped white margin. A batch of *Phalaenopsis Rimestadiana* gives a good supply of large white flowers, and the Orchids of all classes are in excellent condition. The new seeding house promises well, and already there are numbers of hybrids in store pots and others still in the seed pots. A house of *Vanda coerulea* and a large number of good specimens of *Laelia anceps*, chiefly white varieties, give assurance of a good succession of bloom.

FRUIT PROSPECTS IN EASTERN COUNTIES.

**Special Investigations by
"SOUTHERN GROWER."**

II.—SUFFOLK AND NORFOLK.

My inspection of fruit crops in Suffolk began on the farm of Messrs. Youngman and Sons, Charsfield Hall, one of whom kindly conveyed me in my journeys in his motor-car. Seventy acres of the farm are devoted to fruit. There had been a heavy hailstorm on the morning of my arrival, which had dented Apples, Pears, and Plums to some extent.

A great crop of Gooseberries, which are extensively grown, was in course of being gathered. Eleven acres are under Pears, some of which, on low ground, were damaged by a frost at Easter time. Where this was not the case great crops of *Emile d'Heyst*, *Fertility*, *Conference*, *Beacon*, and a local stewing variety named *Winter Orange* were seen.

About 25 acres are under Apples, the principal varieties being *Bramley's Seedling*, *Lane's Prince Albert*, *Worcester Pearmain*, *Warner's King*, *Royal Jubilee*, *Alington Pippin*, and *Beauty of Bath* among mature trees, while there are large pieces of *Early Victoria* and *Grenadier* not yet of bearing age.

Worcester Pearmain, which flourishes on the somewhat heavy soil of Charsfield, is extensively grown, the trees of mature age being twice as big as those seen at Wisbech, where the variety does not succeed well. The crop is one of the best, if not the best, of all, on this variety seen in the present year. The crop on *Bramley's Seedling* is a partial one, good in some parts of the orchards and light in others. *Lane's Prince Albert*, which, like *Bramley*, bore a great crop last year, is not fruiting well this season. This has been a common result in all the districts traversed. *Beauty of Bath* is bearing a moderate crop. A good deal of damage to Apples has been done by a *Capsid bug*, a pest to which insufficient attention has been devoted. It marks the fruit by eating shallow furrows in it and otherwise scarring it, while it also injures the foliage.

Plums cover 13 acres, and are bearing the best crop seen in the course of our tour, particularly *Victoria*, *Czar*, *Transparent Gage*, *Mallard*

(another dessert variety), and *Early Rivers*. *Curlew* is not fruiting well this year, and *Wyedale* is not in healthy condition.

Brown rot has been prevalent among Apples and Plums, especially on *Wyedale Plums*. The aphid also has been troublesome among Plums, and to a less extent among Apples.

Black Currants, which are largely grown, are bearing a crop from fair to good, according to the variety. Several varieties of this fruit are grown, including a new one, *Edina*, which has the advantage of late ripening.

Raspberries and Strawberries are not grown for market now. The former were grown largely at one time, but were given up, partly on account of the distance of the orchards from markets, and partly because the soil did not suit them well.

HOLLESLEY BAY.

A motor drive of about 14 miles brought us to the *Hollesley Bay Labour Colony*, an estate of 1,300 acres, of which 200 acres are under fruit, the greater part of which has been planted in recent

is fair to good, and on the whole the best seen in our tour.

Early Rivers, *Czar*, *Victoria*, and *Monarch* are the principal Plums, and these are bearing fair to good crops for the season.

Royal Sovereign and *Sir Joseph Paxton* Strawberries are well fruited, and Raspberries were promising.

An extensive area is under Gooseberries, the crop of which was a good one. The Black Currants are *Boskoop Giant* and *Baldwin*, and there is a good crop of the former and a fair one of the latter. The *Red Currant* crop is a short one.

Six large glasshouses in one block are devoted to Tomatoes, Cucumbers, and Strawberries, and there are two or three others which were passed at a distance.

A plan is in contemplation for supplying the whole of these excellent orchards with spraying stuff by means of underground mains and branch pipes.

On arriving at the outskirts of Norwich on the



FIG. 207.—POLYSTICHUM MUNITUM UNDULATUM.
R.H.S Award of Merit on June 16, 1914 (see p. 442).

years under the direction of Mr. Barton, farm and orchard manager, who kindly showed us round. About 100 acres are under Apples, 30 acres under Plums, 30 acres of Raspberries among trees, 30 acres of Strawberries, and considerable areas of Gooseberries and Black and Red Currants.

The principal Apples grown are *Cox's Orange Pippin*, *Quarrenden*, *Early Victoria*, *Bramley's Seedling*, *Newton Wonder*, *Lane's Prince Albert*, *Lord Derby*, *Alington Pippin*, and *Beauty of Bath*. A few rows of *Charles Ross*, of which Mr. Barton thinks highly, were also noticed. Many of the Apples are too young to bear much at present, but the crops on the older trees are among the best which we saw in the course of our tour. *Cox's Orange Pippin* flourishes on the light soil of *Hollesley*, and is bearing a full crop for the age of the trees. There is a fair crop on young *Bramleys* and a good one on mature trees, while *Newton Wonder*, *Worcester Pearmain*, *Lord Derby*, *Charles Ross*, and *Beauty of Bath* are fruiting well. The crop of *Lane's Prince Albert*

following day, a detour was made to *Eaton*, as it was my desire to visit the nursery owned by Mr. H. Morse, from whom I had had many excellent fruit trees. Here, besides a great number of well-grown maiden and two-year-old Apples and Plums, with thousands of *Roses*, we saw several varieties of Apples and Plums which Mr. Morse brought over from Australia and New Zealand when visiting those Dominions a year or two ago. If it will succeed in this climate, an Australian Plum, unhappily named *Tragedy*, will be a great acquisition, as it is said to be a week earlier than *Early Rivers*, and as big as *Black Diamond*. The best Apple from New Zealand, Mr. Morse thinks, is *Winter Pearmain*, a dessert variety which keeps till May. New Zealand *Cool* is a fine dessert Pear and a late keeper. Several other varieties of fruit from Australia, New Zealand, and South America were seen, but time is needed to test them in this country. Two Apples, of English raising, not yet commonly grown, were pointed out as deserving trial. These are *Crimson Bramley*, raised by Mr. Merryweather, of Southwell, Notts, and *Red*

Victoria, which, I believe, was raised at Evesham.

WESTWICK.

Our principal object in travelling to Norwich was to see the orchards of Colonel Petre, of Westwick Hall, about 13 miles from the city. A high authority of great experience had informed me that the finest plantations of Black Currants he had ever seen were at this place. After seeing Colonel Petre, who takes a great interest in his remarkably fine orchards, we were shown round by his manager, Mr. Davison, under whose directions almost the entire 75 acres of fruit have been planted and cultivated.

The soil is light loam of considerable depth over sand. It is destitute of lime, and yet Apples, as well as Black Currants, make splendid growth in it. Some trees of Bramley's Seedling, Newton Wonder, and Alington Pippin, planted 13 years ago, are among the largest for their age that I have ever seen, although they are on the Paradise stock. These particular trees bore great crops last year, and are taking a rest, but younger Alingtons are bearing heavily. Quite as remarkable for the variety is the growth of Lane's Prince Albert on Paradise, planted seven years ago. The trees are 12 feet apart, but are already about to interlock. As nearly everywhere, this variety is very short of fruit this season. Some fine crops of Apples were noticed on Worcester Pearmain, James Grieve, Lord Derby, and Newton Wonder. Neither Cox's Orange Pippin nor Warner's King can be grown to advantage at Westwick, as both canker badly.

Plums do not flourish in the district, and have not been tried at Westwick to any considerable extent. There are 12 acres of Cherries, five years from the planting, which are fruiting well.

There are 24 acres of Black Currants in bearing among Apple trees, and 10 acres of young bushes. They are mainly of a variety raised from a very old stock grown in the garden of the mansion, named Westwick Champion, and a remarkably fine variety it is. Some bushes of Boskoop Giant and Baldwins are also grown, and they flourish splendidly. Mr. Davison estimates an average crop from mature bushes at 21 lbs. per bush, and in a fully bearing year, he said, he got 50 tons from 24 acres. He reckons this year's crop less than a fourth of a full one, but to his visitors it appeared a fair crop. Some bushes 15 years old are perfect giants, 6 feet high, and very widely spread.

Reversion among Black Currants is troublesome at Westwick, as it appears to be everywhere. Mainly for this reason Mr. Davison has raised under glass eight different crosses, the seedlings from which are planted on six acres. The parent stocks are Westfield Champion, Boskoop Giant, Baldwin, and Victoria, crossed both ways. For example, the pollen of Champion was applied to Victoria, and *vice versa*. The results of this extensive experiment will be very interesting.

There are nine acres of Raspberries, mainly of a local Kent stock known as Prosperous. The canes are short but very prolific.

One main and two branch pipes underground, supplemented by light steel pipes with flexible joints and some lengths of hose, supply spray wash, driven by a 7 h.p. oil engine, to the whole of the 75 acres of fruit. The plant cost £400.

Our intention was to visit, if allowed to do so, another fruit farm about seven miles from Westwick, that of Mr. Cubitt, of Honing, but after walking about Westwick in a steady downpour of rain for over two hours we were not in a condition for extending our journey beyond a place 18 miles from Norwich, our sleeping place for the night, and we were due at Wisbech on the following day. Moreover, we did not know whether we should find the owner at home, or whether a visit from strangers so late in the day would be welcome. We were informed, however, that the orchards are carried on very much on the same lines as those of Westwick, and are

of about the same dimensions. The cropping is similar, about as many acres of Black Currants being grown, as well as Apples, but no Plums. One different feature at Honing, however, is the growing of 10 acres of Catillac Pears.

CONCLUDING REMARKS.

Nothing struck my companion and myself more forcibly in the course of our tour than the generality of certain features of the season in connection with varieties of fruit cropping, well or otherwise. Frost and drought had marred the fruit prospects in all the orchards visited; but the fact that early Apples are very much more productive this season than late ones seems to indicate that drought did much more harm than frost to that fruit. Drought had not become severe when early Apples were setting their blossom, but had become so when the late varieties had their turn. The very common failure of Victoria Plums is accounted for by the lack of leafage upon that variety when the first May frost occurred. Less easily explicable is the general immunity of Pears from frost injury, and the equally common escape of Gooseberries and Currants. Remarkable, also, is the very considerable recovery of Strawberries from frost damage in most places. Drought was more damaging than frost, I think, to this crop, as it threatens at the time of writing to be to Raspberries also.

PREVALENCE OF GOOSEBERRY MILDEW.

A lamentable observation is that we found American Gooseberry mildew more or less extensively prevalent in every plantation that we saw. Growers are in despair about it, as no one can suggest a cure. That the continuance of tipping would ruin the bushes is certain. Some that we saw were dense masses of young shoots in consequence of tipping. The disease is almost universal in market plantations.

From what has been written in my two reports it will be seen that the fruit prospects are much better in the Suffolk and Norfolk orchards visited than in those of Cambridgeshire. On the whole, the impressions conveyed from my observations during the tour are that early Apples are a good crop, late varieties a very light one. Plums much below average, Gooseberries well up to the mark, except for mildew. Both Black and Red Currants are short, Raspberry prospects fair to good where not deteriorated by drought, and Strawberries fair to good. *A Southern Grower.*

BIRMINGHAM PUBLIC PARKS AND OPEN SPACES.—Those to whom the woods and pastures of the beautiful county of Warwick are dear have viewed with dismay the growth of the City of Birmingham, which has flung out greedy arms and swallowed up many hundreds of acres of green fields. The city authorities, however, have not been unmindful of the need for open spaces and fresh air, which are increasingly needed as the country retreats further and further from the heart of the town. They have provided a number of parks and recreation grounds (eighty in all) where children and adults alike can find rest and opportunities for healthful games. In several of the parks camping out is permitted, open-air bathing can be indulged in, and provision is made for boating and fishing. The largest of the open spaces is the Castle Bromwich Playing Fields, 250 acres in extent, situated to the north-east of the city. Many of the smaller spaces are ancient churchyards, which have been converted into very pleasant resting spots, and at King's Norton, the old "village green" has been preserved, instead of remaining, as in so many cases, nothing but a name. One of the best parks from the garden point of view is Canon Hill, but gardening is well carried out at most of them. Mr. W. H. MORTER, the chief officer, sends us a map and particulars of the parks in an attractive pamphlet, which is issued to the public at the price of one penny.



THE ORCHID HOUSES.

By H. J. CHAPMAN, Gardener to Mrs. COOKSON, Oakwood, Wylam-on-Tyne.

SEEDLING ORCHIDS.—Seedlings of Cattleya, Laelia and allied genera raised this year have made their first roots, and should be transferred to small pots, or several may be placed together in 3 or 4 inch pots or pans. As I have previously stated, the plants are best grown in small pots, but where space is limited the other system should be adopted. The compost should be of a lasting nature, and chopped fine, according to the sizes of the pots used. It may consist of equal portions of peat fibre, Al fibre, and finely-chopped Sphagnum-moss, intermixed with sufficient silver sand to render the materials porous. The pots should be thoroughly clean, and may be filled to about two-thirds their depth with drainage materials. Press the soil moderately firm, and arrange it to form a slight mound about the stems, making it trim with the shears. It is an advantage to do the work of potting in showery weather. The plants may be sprayed overhead freely two or three times a day in fine weather, the object being to keep the atmosphere humid. In hot, dry weather the house may be damped the last thing at night, unless other means exist for keeping the atmosphere moist during times when fire-heat is employed. Seedlings in a more advanced stage may require increased root room, and the work of repotting may be done now if the old compost is in a good condition. The roots should not be disturbed more than is occasioned by turning them out of their pots and transferring to larger receptacles. The compost should be graded according to the size of the pots, and the durability of the compost is of great importance. Recently potted plants should be sprayed overhead daily, and afforded every encouragement to remain plump and healthy.

THE FLOWER GARDEN.

By W. CRUMP, Gardener to Earl BEAUCHAMP, K.C.M.G., Madresfield Court, Worcestershire.

HARDY PERENNIALS.—It is the common practice to plant hardy herbaceous flowers in mixed borders, but here they are massed in bold groups, which is the finest way of displaying them. We have a garden of hardy herbaceous plants, and each subject is planted in a group by itself. The size of each bed is arranged in accordance with the habit and general characteristics of the species employed, and there is a sufficient choice of subjects to give plenty of variety. Usually in the herbaceous border the different subjects are arranged so that the taller ones are at the back, grading to the dwarfier kinds in the front, giving a formal appearance. Our system is to choose for the more prominent positions those that flower longest and best, whilst the height of the different beds is varied. The blending of the colours of the various plants needs consideration, and with a little forethought it is an easy matter to make pleasing floral pictures, as there is an endless variety of suitable subjects.

MICHAELMAS DAISIES.—The growths of perennial Asters need to be thinned, and all weakly shoots should be pulled out by the roots; the main growths of such varieties as Climax and other strong growers should be afforded a space of at least 1 foot, allowing them to grow a little closer in the case of less robust sorts. It will benefit the plants to feed the roots with liquid manure, soot or concentrated fertiliser. As the growths advance they will need supports of some kind, and short, stout, twiggy Hazel sticks are suitable for the purpose. The stick should be arranged so that the clump is wider at the top than at the bottom. In these gardens Michaelmas Daisies are planted in the turf, where they are greatly admired during the late summer and autumn, and they furnish excellent

material for cut blooms. The variety *Tradescantii* flowers in late November, thus giving a succession of bloom until almost the winter. The feathery inflorescences are very graceful, and the variety is to be recommended for planting.

THE FORMAL GARDEN.—It is far better to retain the moisture in the soil by applying mulches than to be constantly watering the roots, for frequent waterings may not only cause the plants to become chilled but have a tendency to make the soil sour as well as to wash much of its goodness below the roots of the plants. Important details to be observed just now in the formal garden include the pinching back of extra strong growths, pegging some of the shoots to the soil and placing small, twiggy sticks as a support to the plant. Let all this work be done before wind and rain have beaten down and injured the growths.

THE KITCHEN GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HADDINGTON, Tynninghame, East Lothian.

SPINACH.—Spinach is a particularly troublesome crop at this season. In very dry weather the seed is best sown as follows:—Draw the drills—which need be only a few inches apart—water the soil through a fine rose, sow the seed, cover it with soil, and water the surface of the bed through a coarse rose can, or by means of the garden hose. Afterwards place mats over the seed-bed until the seedlings appear. In hot weather the plants run to flower so soon that it is advisable to make the sowing thicker than at other times, moreover the leaves in summer grow so small that it is a waste of ground to sow thinly. If a constant supply of this vegetable is required frequent sowings must be made from now onwards, even when the crop is supplemented with New Zealand Spinach.

ENDIVE.—Seedlings of this crop should be transplanted into rows, and a fresh batch of seeds sown to raise plants to follow those of the previous sowing.

PEAS.—It is not safe to delay making the latest sowing of this vegetable. If the ground is unduly dry the trenches, after being made firm and then stirred lightly to produce a good rooting medium, should be soaked with water, and the soil used for covering them also well moistened. As soon as the soil is in a condition for working again sow the seeds and cover them to a depth of 2 inches, placing on the surface an inch of pulverised soil to act as a dry mulch. Be on the watch against infestations of thrips on the earlier sowings, and should the pest be detected spray the plants with nicotine. Soapsuds mixed with petroleum is a cheap and fairly reliable insecticide for the destruction of thrips and other insect pests where a large quantity of specific is required.

CUCUMBERS.—Cucumbers can be grown without fire-heat now, but the roots will need less moisture than the earlier plants, seeing that fire-heat is dispensed with. The shoots may be pinched at each joint, and their number should be reduced where there are so many that there is not space for all the foliage to expand. Thin the fruits where there is an over-crop, and cut the Cucumbers as soon as they are large enough for the table, for if allowed to remain longer they will deteriorate, and, moreover, have the effect of exhausting the energies of the plants. Dress the surface with a mixture of vine manure and loam. Spare no means to keep down infestation of aphides, thrips, and red spider, and admit sufficient fresh air through the ventilators to keep the atmosphere sweet.

CELERY.—The planting of Celery for the main crop should be no longer delayed. If the soil is dry, soak the trenches a few hours previous to planting, and then spread a thin layer of dry soil over the moist surface. If the earlier plants show signs of exhaustion from drought, let sufficient water be afforded the roots to keep the crop growing freely until rain falls. It must be remembered that the hardier the conditions under which Celery is grown the better will the plants withstand the effects of wet and frost when they are full grown. There is plenty of

time yet for growth to develop, as Celery grows very rapidly as soon as the nights begin to lengthen.

ASPARAGUS.—Thin seedling Asparagus to 6 or 9 inches apart, in order to secure strong roots for transplanting next season. Beds that were planted this spring will need attention, as young Asparagus grows fast and the shoots require staking and tying to prevent them being damaged by winds. Established beds must be kept clear of weeds, and the surface well stirred; enrich the soil with nitrogenous manure, for when growth is rapid the shoots mature early. In exposed gardens it is necessary to support the shoots to stakes.

PLANTS UNDER GLASS.

By C. H. COOK, Gardener to the Earl of DERBY, Knowsley Hall, Lancashire.

STATICE PROFUSA.—Strong plants may be permitted to flower now, and they will be benefited by applications of weak liquid manure, supplemented on alternate occasions by a little Clay's fertiliser. The shoots of this Statice become very heavy in time, and are liable to become split at the junction with the stems; therefore it is necessary to support them to stakes. The plants will succeed in a greenhouse temperature at this season. They are very valuable as decorative subjects, lasting for a long time in bloom. The flowers are useful for winter decoration; spikes required for this purpose should be cut just as the flowers expand and suspended in an airy house to dry.

GREENHOUSE CLIMBERS.—Species of *Cestrum* and *Streptosolen Jamesonii* may be pruned, removing weak shoots and any that have flowered. Do not neglect the plants now that their beauty is over, for next season's flowering will depend upon the treatment afforded now. Important cultural details are keeping the shoots trained to the roof-rafters and pillars and syringing the foliage with clean water to keep down attacks of aphids. The roots also must be watered freely during hot weather. The *Heliotrope* is often grown as a pillar plant in greenhouses, and specimens planted out in borders flower profusely. If the untidy shoots are cut hard back now the plants will make fresh growth that will flower well in September. The old wood of *Swaineonias* should also be cut out to afford space for training in the young growths, which should be secured lightly to the pillars on which they are grown. Other plants that require their growth thinned and trained include *Passifloras*, *Tecomas*, *Cobaea scandens*, *Tasconias*, and *Lapagerias*. All these plants should be freely syringed on bright days.

CODIAEUMS AND DRACAENAS.—The tops of tall, spindly specimens of these plants may be taken off and inserted singly in thumb pots, to be rooted in a brisk bottom heat. Stems of old *Dracaenas* may be cut into pieces about one or two inches long and inserted in sandy soil for rooting. Plunge the cutting-pans in a bottom heat of 85°. When shoots and roots have developed the plants may be inserted singly in thumb pots. Later they should be grown on a shelf near to the roof-glass and syringed freely.

FRUITS UNDER GLASS.

By W. HEDLEY WARREN, Gardener to the Aston-Clinton Park Estate (the Rt. Hon. LORD ROTHSCHILD), Buckinghamshire.

VINES.—Give close attention to the airing of the houses by the top ventilators, opening the latter early in the morning and gradually increasing the amount of air as the sun gains strength. Front ventilation must be used with caution, and the ventilators not opened to any great extent excepting on calm, hot days. Guard against infestations of red spider, especially in houses where little moisture is used because of the bunches ripening. Remove all lateral growths that are not required, and attend to the watering of the borders. Afford a liberal treatment to vines growing in pots, whether intended for fruiting this year or next. Encourage young vines planted out this season to root freely and

develop plenty of top-growth. Admit an abundance of fresh air in favourable weather, as this will favour the gradual ripening of the canes. Dispense with shading, if this can be done with safety.

MELONS.—Where successive cropping is not practised the present is a suitable time to make a sowing for autumn fruiting. Melons planted at this time of the year should be afforded a greater depth of soil than those set earlier, and it should be made firmer in planting. Melon plants in all stages should be mulched with Coconut fibre, leaf-mould, or half-decayed manure, to obviate frequent waterings. Water the roots thoroughly when moisture is required, for many crops of Melons are ruined through drought at the roots. Attacks of mildew are often the result of allowing the soil to become dry. Admit an abundance of air to plants bearing fruits in process of ripening, and see that the soil is neither excessively moist nor quite dry. Plants intended to furnish fruits for a succession should be stopped at one joint beyond the fruit. When a suitable crop has set on each plant, remove all other fruits that set. Feed the roots from time to time, and keep the foliage clean and free from insect pests.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

RED AND WHITE CURRANTS.—The bushes have practically completed their growth, and may be summer-pruned with a view to the fruits and plants receiving the full benefit of sunlight and air. Stop the side-growths at the fourth leaf, but do not shorten the leaders for another week or two. Both Red and White Currants do well when grown, as cordons on walls, and such plants produce choice fruits suitable for dessert purposes. If some are planted on either a north or east wall the season when Currants are available will be prolonged until late in the autumn. During times of drought these small fruits require attention in watering, and especially when they are grown in light soils, for an insufficiency of moisture at the roots has the effect of causing the fruit to shrivel. The shoots of cordon trees should be cut back as in the case of the bush specimens. In gardens where space is limited Currants may be grown against a fence or trellis work; another plan is to grow them as standards, such plants being attractive in appearance, and the fruits are easily protected from birds. Bushes infested with aphids should be cleansed of the pest before the fruit commences to colour, or the berries may be spoiled. Let the soil between the bushes be well hoed, and apply a fresh layer of manure as a mulch, if this is necessary, before placing the nets in position to protect the fruit from birds.

BLACK CURRANTS.—This crop also should be protected by netting, which should be placed in position at once. In the case of the Black Currant it is not necessary to thin the shoots; any pruning is best done after the fruit is gathered, when all old wood that has fruited and any other that can be spared should be cut clean away, the object being to furnish the plant with young shoots from the base. If the soil is dry give the roots a soaking of clear water, and afterwards feed them with concentrated fertiliser or liquid manure, finally applying a mulch of short litter.

GOOSEBERRIES.—Stop Gooseberry growths of the current year, as in the case of Red and White Currants. The fruits having been thinned freely whilst they were still green are growing rapidly, and attention must be paid to watering the roots whenever this is necessary. In order to retain the moisture in the soil, hoe the surface and apply a mulch over the roots. If the bushes are infested with insect pests take measures to destroy the latter before the fruits commence to ripen, as it is not advisable to apply washes when the fruit is almost ready to be gathered. For this reason it is also advisable to wash the bushes with clear water after applying insecticides; if the water is applied with force it will do good in many ways.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS.

- SATURDAY, JUNE 27—
British Gardeners' Assoc. visit to Kew. Windsor, Eton and District Rose and Hort. Soc. Sh.
- TUESDAY, JUNE 30—
Roy. Hort. Soc. Summer Sh. Holland House, Kensington (3 days). Hort. Club Dinner and Lecture, 7 p.m. Roy. Agricultural Soc. Ex. at Shrewsbury (4 days).
- WEDNESDAY, JULY 1—
Reigate Fl. Sh. Colchester Fl. Sh. Southampton Rose Sh.
- THURSDAY, JULY 2—
Dover Hort. Soc. Sh.
- FRIDAY, JULY 3—
Dundee Hort. Assoc. meet.
- SATURDAY, JULY 4—
Soc. Française d'Horticulture de Londres meet. Sutton Rose Sh.
- TUESDAY, JULY 7—
Nat. Rose Soc. Sh. at Botanic Gardens, Regent's Park. Wolverhampton Floral Fête (3 days). Scottish Hort. Assoc. meet.
- WEDNESDAY, JULY 8—
Elstres Hort. Soc. Sh. West Surrey Hort. Soc. Sh. at Camberley. Weybridge Fl. Sh.
- THURSDAY, JULY 9—
Finchley Hort. Sh. Potters Bar and Dist Sh.
- FRIDAY, JULY 10—
Bury St. Edmunds Sweet Pea and Rose Sh.
- TUESDAY, JULY 14—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. on "The Cooking of Leaf Vegetables.") Saltaire and District Sh. (2 days). Arbori. Ex. at Hawick (4 days). Gloucestershire Rose and Sweet Pea Sh.
- WEDNESDAY, JULY 15—
Formby Hort. Soc. Sh. Nottingham Hort. Soc. Sh. (2 days). Llandudno and District Hort. Soc. Sh.
- THURSDAY, JULY 16—
Nat. Sweet Pea Soc. Sh. at R.H.S. Hall. Nat. Rose Soc. Sh. in Sydney Gdns., Bath. Birmingham Floral Fête (3 days). Manchester and North of England Orchid Soc. meet.
- FRIDAY, JULY 19—
Nat. Carnation and Picotee Soc. Sh., R.H.S. Hall.
- TUESDAY, JULY 21—
Southampton Hort. Soc. Sh. (2 days).
- WEDNESDAY, JULY 22—
Leamington and County Sh. (2 days). Haywards Heath Sh. Preston Sh. (2 days). Cardiff Sh. (2 days). Yorkshire Agric. Soc. Sh., Bradford (3 days). Watford Hort. Soc. Sh.
- THURSDAY, JULY 23—
Preston (Brighton) Sh. Roehampton Sh. Roy. Bot. Soc. meet. Herefordshire and West of England Rose Sh.
- FRIDAY, JULY 24—
Cheadle Hort. Soc. Sh. (2 days).
- TUESDAY, JULY 28—
Roy. Hort. Soc. Coms. meet and Nat. Gladiolus Soc. combined Sh.
- WEDNESDAY, JULY 29—
Bishops Stortford Hort. Soc. Sh. Normanby Estates Agri. and Hort. Soc. (2 days).
- THURSDAY, JULY 30—
Midland Carnation Soc. Sh. at Edgbaston Bot. Gardens (2 days). Roy. Lancashire Agric. Soc. Sh. at Liverpool (4 days). Co. Clare Summer Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 61.7°.

ACTUAL TEMPERATURES:—

LONDON, Wednesday, June 24 (6 p.m.): Max. 71°; Min. 48°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, June 25 (10 a.m.): Bar, 29.7; Temp. 70°. Weather—Bright Sunshine.

PROVINCES, Wednesday, June 24: Max. 71°, Bournemouth; Min. 45°, Dover.

SALES FOR THE ENSUING WEEK.

WEDNESDAY, THURSDAY, AND FRIDAY—

Three days' unreserved clearance sale of the whole of the Stove and Greenhouse Plants at the Royal Exotic Nursery, King's Road, Chelsea, by order of Messrs. J. Veitch and Sons, Ltd., by Protheroe and Morris, at 12

Bacterised Peat.

The results of Professor Bottomley's investigations of the causes of the remarkable stimulative action exercised on plant growth by bacterised peat were communicated by the author to the Royal Society on Thursday, June 18.

Professor Bottomley has obtained evidence which leads him to suggest that the stimulating effect is due to the formation or liberation during the preparation of bacterised peat of minute quantities of substances which play with respect to plant growth a part similar to that played by the so-called accessory food substances in the nutrition of animals. By appropriate methods he has isolated from bacterised peat substances which, when added to the medium in which plants are growing, increase the rate of plant-growth in a remarkable manner. He finds, moreover, that these accessory food substances are essential for the continued life of seedlings. If, for example, seedlings are grown in pure distilled water, to which are added all the mineral substances which ordinarily suffice to bring about active growth, he finds that though the seedlings at first gain weight they subsequently lose weight and die; whereas if in addition to the complete mineral "food" there be added an extract containing a small amount of the accessory food substances, the growth of the seedlings is considerable and continuous.

Plant physiologists will require overwhelming evidence before they will be prepared to accept this conclusion; for many of them have used distilled water and pure chemicals for the purpose of water cultures and have found that plants may be raised from seed to seeding stage although the water in which they grow contains nothing but mineral salts. This objection, however, is not fatal to Professor Bottomley's hypothesis, for it is quite in accordance with physiological experience that an organism may be able, given appropriate conditions, to manufacture its own "growth stimulators." Indeed, the fact that the accessory food substances necessary for the nutrition of animals are derived from plants makes it highly probable, if not absolutely certain, that these substances are manufactured by the plant. Hence it is but natural to suppose that the accessory food substances, formed by the plant, play in the economy of the latter the same rôle as that which they play in the animal that feeds upon them.

The fact that seedlings may be grown in ordinary tap water, to which the necessary mineral substances have been added, is interpreted by Professor Bottomley to mean that the tap water, owing to its contact with soil, contains traces of these growth-stimulators. Professor Bottomley's researches open up a new and an extraordinarily interesting chapter in plant-nutrition, and if, as the result of further inquiry, his conclusions are established he will have laid both botanical science and horticultural practice under a deep debt of gratitude. It is at present premature to express a definite opinion on the sub-

ject of accessory plant-food substances, but it may be said with confidence that Professor Bottomley has made out a prima facie case for the existence of such substances. We have on the one hand the argument from analogy: the existence of accessory animal-food substances having apparently been demonstrated to the satisfaction of physiologists; and on the other hand we have the striking evidence already published in these columns (*Gardeners' Chronicle*, March 21, 1914, p. 204) that bacterised peat actually exercises a definite stimulatory influence on plant growth. At the present stage of the inquiry the best criticism is constructive, and should consist not in arguing the pros and cons but in repeating and extending the experiments begun by Professor Bottomley. An aspect of the subject of particular interest to horticulturists is this—that gardeners as a class have resolutely refused to believe that artificials are the equals of natural manures. If Professor Bottomley's theories are established that prejudice will receive a real measure of justification; although let us hasten to add even so the justification will be by no means complete, for the poverty of a soil in nitrogen, phosphorus, and potassium compounds cannot be compensated by the presence of accessory food bodies.

Coloured Plate.—*Begonia* "Eclipse," the subject of the Supplementary Illustration, belongs to the winter-flowering section, which originated through crosses between the fibrous-rooted *B. socotrana* and varieties of the tuberous-rooted section. The variety Eclipse received the R.H.S. Award of Merit on November 19, 1912, when shown by the raisers, Messrs. CLIBRANS, Altrincham, who on the same occasion received Awards for three other varieties.

HORTICULTURAL CLUB.—A house dinner of the Horticultural Club will take place on Tuesday next, the 30th inst., at the Hotel Windsor, Victoria Street, Westminster, at 7 p.m., when Mr. CHAS. E. PEARSON will deliver an address on "Sports." The following new members were elected at the last meeting:—Messrs. W. L. BRADBURY, A. McBEAN, JAMES KELWAY, and A. D. WEBSTER.

A BOTANIST DECORATED.—On the occasion of his retirement from the service of the Egyptian Government Mr. W. LAWRENCE BALLS has received from the KHEDEVE the Order of the Medjidieh (Third Class). Mr. BALLS has rendered conspicuous services to Egyptian agriculture, and his work on the Cotton plant in Egypt, which was reviewed in these columns on November 9, 1912, demonstrates the devotion and skill which he has displayed during the years in which he has held the post of botanist to the Egyptian Government.

HOLLAND HOUSE SHOW.—The Summer Show of the Royal Horticultural Society will be held at Holland House, Kensington, by permission of MARY Countess of ILCHESTER, on Tuesday, Wednesday, and Thursday next, June 30, July 1, 2. The plan of the show will follow, in the main, that of former years. There will be several tents for the accommodation of groups under canvas, and certain exhibits will be staged in the open. Horticultural sundries will be extensively displayed, both in the open and in a special tent. We learn that the number of entries has exceeded the space available, but curtailment in this respect always raises the quality, and it is expected that the show will be equal in every respect to those of former



WINTER-FLOWERING BEGONIA, ECLIPSE

years. Last year's exhibition was a record one, and it only needs fine weather to make this year's show the finest of the series.

NATIONAL ROSE SOCIETY'S SHOW.—The National Rose Society's Thirty-Seventh Annual Exhibition will be held on Friday, July 4, in the Botanic Gardens, Regent's Park. The schedule embraces 111 classes, and, judging by the long list of exhibitors who have entered for competition, the show should prove equal to the best held by this successful society.

DATES OF THE FLOWER SHOWS.—A useful list of flower shows for 1914 has been sent us by Messrs. AUSTIN AND MCASLAN, Glasgow, who ask us to announce that it is distributed gratis.

GLOUCESTERSHIRE ROSE AND SWEET PEA SHOW.—We are informed by the Secretary that the date of this show has been altered from Friday, July 3, to Tuesday, July 14.

THE MANURIAL VALUE OF BACTERISED PEAT.—Among the numerous trials which are being made during the present season on the manurial value of bacterised peat those in progress at Messrs. Sutton and Sons' trial grounds at Reading promise to be of particular interest. The season is as yet too early for the results on the various crops to be forthcoming; but we hope to publish a full account of the trials in a few weeks' time.

AMATEURS AND THE EXHIBITIONS.—A correspondent writes to us on the question of amateurs' exhibits at the shows, deploring the fact that they are constantly becoming less numerous and tracing their decline to want of sympathetic recognition on the part of the show authorities. In former days the arrangements at the Royal Horticultural Shows were more on the lines of the provincial shows of to-day—namely, certain competitive classes were arranged, and these classes were divided into sections. Some were reserved for amateurs, some for nurserymen, and others were arranged in which both nurserymen and amateurs could compete. This system was allowed to fall into disuse, and Fellows were left to send groups of any kind that they were able to show, it being thought that such groups were more easy of artistic arrangement than anything that could be shown in specialised classes. In these circumstances the exhibits are judged relatively, and the value of the medal decided on a general basis. The result is that the amateurs compete with nurserymen, although they cannot be expected to have the resources of a nurseryman at their command. It is only the few amateurs who have the most extensive collections who can hold their own on such terms, and the smaller amateurs are discouraged. Gradually, therefore, the shows have come to depend less on amateur growers and more upon members of the trade. This is noticeable not only at the fortnightly exhibitions in Vincent Square, but also at the Chelsea and Holland House Shows. In the reports published in these columns there are just a few names of amateurs that occur again and again, but there is seldom a new name. This is to be regretted, because it is from the ranks of the smaller amateurs that those who eventually specialise and cultivate large collections are recruited. Take, for instance, a nurseryman's exhibit of Sweet Peas or Orchids at any of the R.H.S. shows. It is staged on the same day as another collection of Sweet Peas or Orchids from an amateur grower. When they are judged for medal awards no allowance is made for the fact that the one exhibit is staged by an amateur, who cannot expect to obtain anything for his exhibit but the honour of an award, and the other by a nurseryman, who expects to get his compensation in various ways. We know perfectly well that nurserymen dislike very much to have to compete with amateurs, and that they would welcome any provision for ensuring that amateurs'

exhibits should be judged apart from the trade element, and the awards, as compared with those given the trade, made more liberal. We are convinced that the Council of the R.H.S. would do well to adopt measures calculated to increase the number of amateur exhibits at the fortnightly meetings and summer shows.

GIFT TO THE CHURCH ARMY'S CITY GARDENS.—An Irish lady has given about 150 seed-raising "cloches" for the use of the free-plot-holders of the Church Army "City Gardens," where vegetables and flowers are grown by poor men on waste building sites lent to and converted by the Society.

DR. LOUIS TRABUT.—The *Journal of Agriculture* of the University of California contains an appreciative article by Mr. Paul Popenoe on the work which Dr. Louis Trabut, the distinguished botanist, has done for the colonists of Algeria. Director of the Botanical Service of the country, and professor in the medical department of the University of Algiers, Dr. Trabut possesses an unrivalled knowledge of the flora of the Mediterranean region, and knows how to put that knowledge at the disposal of the cultivators of the great African dependency of France. Interested specially in economic botany, Dr. Trabut has made his journeys in the hinterland of Algeria the occasion of not a few notable discoveries. Among these Mr. Popenoe mentions the finding of a spineless Artichoke. Whilst botanising in the neighbourhood of Constantine, where the Artichoke exists in a wild, spiny state, Dr. Trabut noted a large fenced enclosure around the source of the municipal water supply. Here, if anywhere, he argued, should a spineless plant find safety, and there he found it. Introduced into cultivation, this wild Artichoke is said to have proved of considerable value owing to its drought-resistance. Applying similar reasoning, Dr. Trabut has discovered in sheltered situations many races of forage plants superior to those which occur in the open, where, if they are to live at all, they must be able to resist both drought and animals. Of these plants, some, such as the Tangier Pea, Scarlet Vetch, and Sudan Grass, have been introduced into California. Conversely, the California Navel Orange and the Grape Fruit have been introduced by Dr. Trabut from America to Algiers. Last, but not least, Mr. Popenoe mentions that the long-neglected Botanic Garden of Algiers has been placed under the charge of Dr. Trabut, and may therefore aspire once again to rival the great gardens of the world.

LAVINGTON PARK.—At the time Mr. THOMAS DOWN wrote his note on Lavington Park (see p. 410) Mr. F. STREETER was gardener there, but before the article was published Mr. STREETER had taken up a fresh appointment at Caldecote Tower Gardens, Bushey Heath, Herts, and Mr. EDWARD W. FULLER has succeeded him at Lavington Park.

GIFT OF BOOKS.—With the view of encouraging an interest in horticultural and agricultural literature, Sir JOHN F. DEWAR, M.P. for Inverness-shire, has generously placed at the disposal of the educational authorities of that county a sum of money for the purpose of providing a supply of books on these subjects for school libraries.

FRUIT AND POTATO AND HOP CROPS IN FRANCE.—H.M. Consul-General at Paris, in a report dated June 18, states that the prospects for all kinds of Plums and Apricots are good, and a heavy crop might have been expected had it not been for the heavy rains of the past fortnight causing much fruit to fall. Prospects for Apples and Pears are fairly good. The area under Apples and Pears for cider and perry is officially estimated at 31,370 acres. The area under Potatoes is placed at 3,842,650 acres, compared with 3,678,990 acres in 1913, and that under

Hops at 7,321 acres compared with 7,054 acres. The condition of both crops was from fairly good to good.

THE CROPS AT HOME.—The Crop Reporters of the Board of Agriculture and Fisheries, in reporting on agricultural conditions in England and Wales on June 1, state that Wheat is very generally a good plant and promising, and appears to be the best of the three cereals. Barley and Oats are less satisfactory, and the later sown corn especially is often a thin plant. Both, and especially Oats, stand in need of rain. Only small differences are apparent in the acreage sown with spring crops as compared with last year, that of Barley and Oats each being smaller by perhaps 1 per cent. Beans are probably the most satisfactory crop of the year, although it was still uncertain whether the sharp frosts at the end of May affected them to any extent. Peas are generally looking very well, although weak in places. Early Potatoes have throughout the whole country, except in favoured situations, been cut by the sharp frosts at the end of May, and much damage has been done to them, while a serious consideration in their case is also that the date of lifting will be delayed. The main crop was hardly above ground, and appears practically everywhere to have escaped damage. The area under Potatoes is about the same as last year, but is rather greater in Lincolnshire. Mangolds, where up, appear to be a fair plant generally, though often irregular, and nearly everywhere backward. Turnip-sowing has been more forward than usual in the north, where, indeed, it is often completed. In the midlands and south, however, much less had been done, owing to the dry weather, and it had in many districts not even been begun. Rain was much needed for all roots. Hops were growing well in Kent until the cold spell checked them at the end of the month; in the western counties they were generally healthy, but had also been checked, and in some places damaged, by the frosts. Washing was becoming frequent in the western counties, but not much was being done in the south-east. An increase of about 3 per cent. in the area under Hops is reported, mostly in Kent. Fruit crops received a severe check from the widespread frosts at the end of May, and considerable damage was done to the trees and bushes. In many cases it was, however, too early to see how much harm had been done. Less damage appears to have resulted in Kent, and in the extreme south-west; but elsewhere both Strawberries and orchard fruit have suffered. As the effect of the sudden frosts, so near to the date of the reports, was still somewhat uncertain, prospective estimates of the yield must be very tentative. Strawberries appear about average, on the whole—though very different in different districts; Raspberries a little over average, Currants and Gooseberries average. Apples and Cherries are over average, particularly in the southern counties; Pears about average, and Plums rather below.

MELONS AT THE YORK SHOW.—The best scarlet-fleshed Melon at the York Show (see p. 446) was exhibited by the Rev. Marquis of NORMANBY, Mulgrave Castle, near Whitby (gr. Mr. J. CORBETT).

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

R.H.S. CHELSEA FLOWER SHOW.—At the close of the recent Chelsea Show the Council were told that a wish had been freely expressed that in future the show should last five days instead of three. It was further said that the majority of the exhibitors were in favour of this. In order to test the accuracy of this latter statement the Council ordered a vote of all the exhibitors of plants to be taken. They were asked to say which of the four following proposals they

favoured, marking each 1, 2, 3, 4, according to their order of preference:—(A) To extend the show to five days, viz., Thursday, Friday, Saturday, Monday, and Tuesday; (B) to extend to four days, Wednesday, Thursday, Friday and Saturday; (C) to make no alteration in the number of days, but to change to Wednesday, Thursday and Friday; (D) to make no alteration at all. 114 exhibitors of plants replied, and to the surprise of the Council only twenty placed suggestion A first. On an analysis of the votes and multiplying by three for the first favoured, by two for the second, by one for the third, and by half for the fourth, the following curious figures emerge:—229 votes were cast for C, 203 for B, 155 for B, and 112 for A. Considering the closeness of the voting for C and D, and bearing in mind the great inconvenience to all country exhibitors in adopting C (e.g., closing the show on Friday night with Saturday's early closing at the railway goods yards), the Council have decided

Rose Society to endeavour to bring about the constitution of an international committee to report on this subject. It seems to me that such a committee might perform a notable service by recommending the principles which should be adopted in any attempt to reform or improve our classification. I would not suggest that the National Rose Society should surrender its right to reclassify Roses; but rather that an international advisory committee should be formed and requested to draft, not a new classification, but a report on which, if it were found expedient, the National Rose Society might act. The future, no less than the present, has to be considered, and although, as you imply, convenience and rapidity of diagnosis are the first essentials of any system of classification, it would be a thousand pities if, with the constant intercrossing which is going on, our classification came to convey no hint whatever of the origin of our Roses. To compromise between

write this to add to the common stock of knowledge the little I know of their habitat in New Zealand and their frail hold of life in this country. Dry cold is not their bane, for they grow at home on the ridges and the high scree of the Southern Alps—from 4,000 to 7,000 or more feet above sea-level—on rocky, rubbishy mountain sides, where, of course, the drainage is perfect—and while in winter these Alps are deeply snow-clad, in summer the sun is most powerful. What they, in common with many other tomentose Alpine plants cannot stand is our damp, wet, and often mild winters, producing too early growth. I have been working with them for the past four years—unsuccessfully in a large measure—but given good seed—which seems rare, even from their native haunts, for mine has all come straight from the Southern Alps—and a free, loose medium, they germinate in four weeks. Then the difficulty begins, when they have to be potted off into small pots. In these the happy medium of moisture seems hard to keep, and one by one they damp off at the collar. Of three dozen seedlings I raised last year of *Celmisia Lyallii*, only three or four are now alive! It would be very acceptable, no doubt, to many of your readers if Mr. Reuthe would kindly give through your journal some notes as to how he has succeeded with *C. Munroi*, for a well-known and good gardener told me he has repeatedly lost every plant of *Celmisia* he has tried. This is very disappointing. Yet a keen gardener does not like to be worsted by a mere Daisy! In Laing and Blackwell's *Plants of New Zealand* the following species are given:—*C. argentea*, *C. coriacea*, *C. laricifolia*, *C. lateralis*, *C. Lechleri*, *C. longifolia*, *C. Lyallii*, *C. Mackanii*, *C. sessiliflora*, *C. Traversii*, *C. vernicosa*. Besides these given by L. and B., I have had the following sent me from New Zealand:—*C. Petriei*, *C. sp.* "with brownish leaves," *C. coriacea*, "golden foliage," *C. Walkeri*, and I believe there are many more not yet identified. *Western Wight*.

DAMAGE BY A THUNDERSTORM.—On Friday, the 19th inst., at 5 p.m., this district was visited by a severe thunder and hail storm, and this cemetery, which is of large extent, appears to have been in the centre of the storm tract. Not a plant of the many thousands used in the decoration of beds, borders, and graves escaped injury. In the case of hard-wooded plants, nothing is left but bare stems, in others they are cut down to the ground. In many cases the plants have the appearance of having been attacked by swarms of insects and stripped of all their leaves. A cartload of debris has already been collected, and much more remains to be gathered. Many of the hailstones were $\frac{1}{2}$ inch in thickness, others of a flat shape and as large as a two-shilling piece, while many had the appearance of large jagged pieces of ice. At the rear of my house the hailstones rolled off the roof and collected to a depth of 8 inches, and at the back of our stables to a depth of 14 inches. On the roof of the crematorium the hailstones collected to the depth of the stone coping and for 3 feet up the roof. The ground under the fruit trees and bushes in my garden was strewn with fruit, and scarcely a vegetable of any sort escaped destruction. Before the storm abated the neighbourhood was enveloped in thick mist, which lasted most of the evening. *J. D. Robertson, Superintendent, City of London Cemetery, Little Ilford, Essex.*

HARDINESS OF TRICYRTIS STOLONIFERA.—You mention on p. 421, as "apparently not perfectly hardy," *Tricyrtis stolonifera*, a plant introduced by me from Formosa. This was my own impression until now, but I find a plant which I put out last year under a north wall has survived over 20° of frost, which killed it to the ground; and though I had 10° of frost as late as May 26, it is again throwing up stems from the stolons. Considering that the seeds were gathered in a place where frost must be quite unknown, this has surprised me very much. I may add that in the greenhouse it remains in growth and flowers from March onwards. I shall be able to supply seeds or plants to anyone who may be interested. Prof. Somerville writes to say (see p. 400) that he grows *Oxalis adenophylla* in a retaining limestone wall, and that some leaves "are appearing

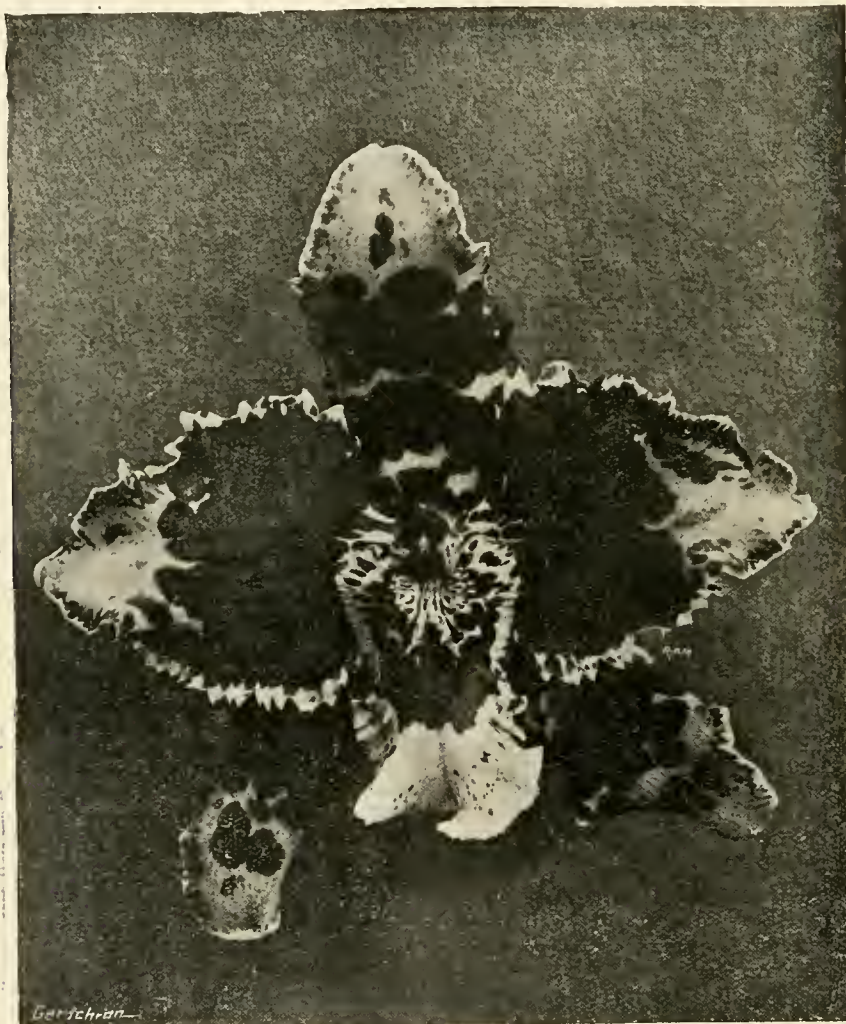


FIG. 208.—ODONTOGLOSSUM "KING ARTHUR": SEPAL AND PETALS WHITE WITH CLARET-RED BLOTCHES.

(R.H.S. First-Class Certificate on June 16, 1914—see p. 442).

to give their casting vote for D. The Council fully recognise that many of the Fellows and vast numbers of the public would like an extension of days, but in this matter they have considered it their duty to have respect chiefly to the owners and exhibitors of the plants; hence their decision to make no change at present. For if the conditions of a show are made too burdensome and expensive to the owners of valuable plants, they will cease to respond to the invitation to exhibit their treasures, and the show would gradually deteriorate in quality even if quantity were maintained by admitting inferior material. *W. Wilks, Secretary.*

CLASSIFICATION OF ROSES.—Whilst reading with interest your article on the classification of Roses, it occurred to me to enquire whether it would not be possible as a first step toward such a classification for the National

these two ends—convenience and historical significance—is admittedly a difficult task, and one quite beyond the powers of the writer of this letter. Nevertheless, whilst many of the great hybridisers are yet with us, a serious attempt at compromise should be made. If the international committee failed to agree no harm would be done; for rosarians, at all events, know how to disagree with urbanity and mutual respect. If, on the other hand, the basis of agreement were found, it would set an example in the horticultural world which would have far-reaching and important effects. *Blue Rose.*

CELMISIA.—The note on *Celmisia Munroi*, (see p. 440) is interesting, and as there still seems too much confusion as to the species—and, apparently, much ignorance as to the best way of cultivating these elusive plants—I

in a joint of the wall half a foot from the main plant." I introduced this plant from the Andes in 1902, and am even more surprised to hear of his success under conditions so absolutely unlike those of its native habitat, especially as I have lost it when planted out in a crevice of a limestone rockery. The only place where I found it was on the edge of an Alpine rivulet, at 6,000 feet elevation, in a volcanic soil, and though the heat was great in the day, there was frost at night in the height of summer. In winter the plant must be covered with snow, as the snowfall is very heavy in that region. On the plants I have grown in pots no sign of a stoloniferous habit has ever appeared. I showed this plant, in first-class condition, among other new ones of my own introduction, two years ago at the International Show, when it was not considered worthy of an Award of Merit, but I see it has lately received this well-deserved distinction when shown by a nurseryman. Can anyone tell me where to procure a very curious plant which I lately saw in flower in a Cornish garden under the name of *Rheum Alexandrae*, a species which I find was described by Batalin in 1894 from China? It reminded me of a miniature of *Rheum nobile*, one of the most striking Alpine plants in the world, and also, I fear, one of the most difficult to cultivate. *H. J. Elwes, Colesborne, Gloucestershire.*

SEVERING OF IVY STEMS (see pp. 422, 435).—I have known an instance of Ivy growing at least two summers after being severed from the main stem. The plant was growing on a brick wall in the kitchen garden at Little Onn, Stafford, and a thick piece that had grown through an old doorway and taken possession of the other side of the wall was cut through. For all I know the tree may have lived longer than two years, for it was alive when I left there. *W. Marsh, Markeaton, Derby.*

—Mr. Biddlesden will no doubt be interested to know that the Ivy on Riddlesworth Church tower has been completely severed. On making inquiries I was surprised to learn that the stem was cut through 20 years ago. The height of the tower is 50 feet, three sides of which is nearly covered with Ivy looking quite green, and seeming as though it may defy its executioner another 20 years. I observed to-day that the tree is making new growth, and a passer-by would never imagine it to be cut through. I might add that the Ivy is planted on the north side of the tower. *H. Saville.*

—Some years ago a Mr. Lovesay, of the Paragon, Streatham, severed a large plant of Ivy which was growing over the back of two houses there, and the plant certainly looked nearly as well 18 months after as before he interfered with it. There is no doubt but that the stem was completely severed, as a portion some 6 inches long was removed from the stem, which was very thick, and as there was an area and stone-paved yard there, there was no possibility of any roots having been missed. *E. Jones.*

GRASS IN THE ROCKERY.—I was surprised to read on p. 435 Mr. Wood advocating grass for the purpose of growing Gentians and *Primula farinosa*. I do not think any practical purpose would be served by his suggestion of a shallow peaty stratum on a solid bed of soft magnesian limestone; I would suggest that peat is altogether a wrong compost for the cultivation of *Gentiana verna*. As to Mr. Wood having succeeded a second season with his experiment, I would urge that it is one thing growing such plants in boxes or pans with grass seed sown over for exhibition purposes, but quite a different one to advocate such a procedure on a more extensive scale in the rock garden. The best way I ever saw *Gentiana verna* grown was among *Thymus serpyllifolius*, which is superior to grass for such purposes, but whether in time it would overgrow the Gentians would be interesting to know. For the present there is much speculation as to which is the best plant for such purposes, but I consider the old way will be again adopted, i.e., to top-dress three or four times a year with fine soil in order to keep the growths just above the surface. Is this too much trouble, or why do people wish to introduce lawns into the rock garden? *N. Gardner.*

SOCIETIES.

ROYAL HORTICULTURAL.

(Concluded from p. 443.)

Floral Committee.

Present: H. B. May Esq. (in the chair), Messrs. W. A. Bilney, W. J. Bean, E. H. Jenkins, F. W. Harvey, F. Page Roberts, J. F. McLeod, C. R. Fielder, James Hudson, Chas. T. Druery, G. Reuthe, J. W. Moorman, Thomas Stevenson, J. W. Barr, C. Blick, John Dickson, Chas. Dixon, H. J. Jones, Edward Mawley, Chas. E. Shea, Chas. E. Pearson, W. P. Thomson, W. Cuthbertson, George Paul, J. T. Bennett-Poë, R. Hooper Pearson, Arthur Turner, W. G. Baker, Wm. Howe, and J. Jennings.

Messrs. B. R. CANT AND SONS, Colchester, again exhibited the beautiful single Rose, *Cupid*. Other desirable single varieties were *Irish Glory*, *Irish Elegance* and *Maharajah*. (Silver-gilt Flora Medal.)

Messrs. FRANK CANT AND CO., Colchester, filled tall stands with such Roses as *Tea Rambler*, *François Guillot*, *Diabolo* and *Gardenia*, and arranged vases of *Irish Glory*, *Lady Curzon*, *Rayon d'Or*, and others. (Silver Flora Medal.)

Messrs. PAUL AND SON, Cheshunt, included such varieties as *Naiad*, *Mme. Edouard Herriot*, *Burning Bush*, *Mme. Mélanie Soupert* and *Lady Ashtown*, in a praiseworthy collection of cut Roses. (Silver Banksian Medal.)

Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, displayed many Roses, which included beautiful stands of *Rayon d'Or*, *Liberty*, *Frau Karl Druschki*, *Edward Mawley* and *Lady Pirrie*. Besides the Roses Messrs. LOW AND CO. showed a collection of Carnations, including many standard varieties in fresh and bright condition. (Silver Banksian Medal.)

Mr. ELISHA J. HICKS, Hurst, Berks, exhibited large vases of splendid blooms of Mr. Geo. Norwood, *Princess Mary* and *Mrs. Charles Reed*, and unusually good branches of *Rosa Moysesii*. (Bronze Banksian Medal.)

Mr. WALTER EASLEA, Leigh-on-Sea, also exhibited cut Roses.

Mr. H. BURNETT, Guernsey, exhibited a magnificent collection of Carnation blooms (Silver Flora Medal), and Mr. C. ENGELMANN, Saffron Walden, arranged a stand of Carnations. (Silver Banksian Medal.)

Mr. JAMES BOX, Haywards Heath, who was the only exhibitor of a collection of Sweet Peas, showed many excellent varieties. This exhibit participated in the award of a Silver Flora Medal.

Mr. G. REUTHE, Keston, Kent, contributed his customary exhibit of uncommon plants and shrubs.

The LISSADELL HARDY PLANT NURSERY CO., Sligo, exhibited excellent hybrid Primulas, of which *Primula Alannah* (*Bulleyana* × *Beesiana*), bearing strong spikes, with whorls of coppery-red flowers, which have golden centres, and *P. Asthore*, the same cross, but which has flowers of old-rose colour, were splendid. (Bronze Banksian Medal.)

Messrs. JOHN WATERER, SONS AND CRISP, Liverpool Street Arcade, London, showed border flowers and a neat rock-garden, which contained *Genista humifusa*, *Potentilla nitida alba*, *Asperula hirta*, *Mazus Pumilio* and similar plants. (Silver Banksian Medal.)

Messrs. R. TUCKER AND SONS, Oxford, built a very pleasing rockery. (Bronze Flora Medal.)

Messrs. KELWAY AND SONS, Langport, Somerset, again showed double herbaceous Paeonies in such splendid varieties as *Dorothy Kelway*, *Paderewski*, *Lady Curzon*, and *Lady Alexandra Duff*. The exhibit also contained good Delphiniums. (Silver Flora Medal.)

Mr. L. R. RUSSELL, Richmond, filled a length of tabling with a rockery exhibit and border flowers. (Silver Banksian Medal.)

Mr. JAMES BOX, Haywards Heath, filled his customary corner of the hall with a group of magnificent herbaceous flowers. (Silver Flora Medal.)

Messrs. W. T. WARE, LTD., Feltham, contributed many herbaceous Paeonies and Delphiniums in a collection of border flowers. (Silver Banksian Medal.)

Messrs. R. H. BATH, LTD., Wisbech, specialised in herbaceous Paeonies, of which they showed gorgeous blooms of *Marshal Oyama*, *Mandarin*, *Duchesse d'Orléans*, and *General Nogi*. (Silver Flora Medal.)

Messrs. J. PIPER AND SONS, Bayswater, had an attractive arrangement of border flower and rockery plants. Amongst the latter were *Erodium Reichardii*, *Androsace lanuginosa*, *Pratia linnaeoides*, and *Gentiana dahurica*. (Bronze Banksian Medal.)

Messrs. BLACKMORE AND LANGDON, Bath, displayed a collection of exceedingly well-grown Delphiniums. At one end of the Delphiniums they showed *Begonia semperflorens virginialis*, a strong growing variety, which would be useful for growing in pots, as well as for summer bedding. (Silver Banksian Medal.)

Messrs. BARR AND SONS, Covent Garden, London, displayed bold masses of Delphiniums, Paeonies, Lupins, and Lilliums, with an attractive bordering of *Nepeta Mussinii*. (Silver Banksian Medal.)

Messrs. R. WALLACE AND CO., Colchester, included in a miscellaneous collection of border flowers cut blooms of *Lilium marmoratum aureum*, *L. sanguineum*, *L. Golden Gleam*, *Brodiaea ixioides*, and *B. capitata*. (Silver Banksian Medal.)

Messrs. BUNYARD AND CO., Maidstone, set up very fine vases of attractive herbaceous Paeonies, chiefly of such double-flowered varieties as *Marquise of Lorne* and *Comte de Paris*. (Bronze Banksian Medal.)

Mr. MAURICE PRICHARD, Christchurch, Hants, included floriferous plants of *Mitraria coccinea*, *Wahlenbergia vincaeflora*, and *Hemerocallis aurantiaca major*, amongst a collection of Delphiniums. (Silver Banksian Medal.)

Mr. G. FERGUSON, The Hollies, Weybridge (gr. Mr. F. W. Smith), showed Delphiniums. (Silver-gilt Banksian Medal.)

Mr. AMOS PERRY, Enfield, arranged *Thalictrum aquilegifolium compactum*, *Isatis glauca*, *Arenaria plantaginea gigantea*, *Gillenia trifoliata*, and many varieties of *Papaver orientalis*. (Silver Flora Medal.)

Messrs. GEO. JACKMAN AND SON, Woking, contributed many excellent herbaceous flowers, and a large quantity of a pretty border Pink named *Elsie*. (Silver Banksian Medal.)

Messrs. FRED. SMITH AND CO., Woodbridge, arranged cut blooms of *Gaillardias*, *Anchusa Opal*, and *Oriental Poppies*. (Silver Flora Medal.)

Hardy flowers were also shown by Mr. VERNON T. HILL, Langport, Bristol (Bronze Banksian Medal), Messrs. THOMPSON AND CHARMAN, Adam Street, London (Bronze Banksian Medal), Messrs. G. and A. CLARK (Dover), Messrs. CARTER, PAGE AND CO. (London Wall, London), the Misses HOPKINS (Shepperton-on-Thames), and Mr. E. A. T. TURNER (Enfield).

Messrs. WM. CUTHRUSH AND SON, Highgate, contributed interesting varieties of *Hydrangea hortensis*. The collection of plants also included beautiful *Crozy Cannas* and *Gloxinias*. (Bronze Banksian Medal.)

Messrs. WILKS AND SEGAR, Onslow Crescent, London, also showed various *Hydrangeas*.

Messrs. J. VEITCH AND SONS, LTD., Chelsea, exhibited splendid plants of *Elaeagnus*, literally wreathed in bloom. (Bronze Flora Medal.)

Messrs. H. B. MAY AND SONS, Upper Edmonston, had many exceedingly good standard plants of *Lantana*, *Fuchsia*, *Heliotrope*, and *Lippia citriodora*, arranged over dwarf flowering plants and hardy Ferns. (Silver Flora Medal.)

Fruit and Vegetable Committee.

Present: C. G. A. Nix, Esq., in the chair, Messrs. W. Bates, Edwin Beckett, H. Markham, A. R. Allen, F. Perkins, W. E. Humphreys, Horace J. Wright, P. C. M. Veitch, A. Bullock, J. Jacques, J. Willard, Wm. Pope, A. Grubb, and A. W. Metcalfe.

Messrs. J. VEITCH AND SONS, Chelsea, arranged a magnificent collection of pot fruits on a large floor space. At the back there were fan-shaped Peach trees, with each branch trained with almost mathematical exactitude. Not only were the trees—no matter what their shapes—well balanced and symmetri-

cal, but they all bore full crops of perfect fruits; all, except on the bush trees of Jefferson's Plum, being ripe and ready for the table. The principal varieties of Peach were Amsden June, Early Alexander, and Hales's Early. Nectarine Cardinal was represented by several trees, and in the front of this splendid exhibit there was a small bush of Cherry Bigarreau de Schrecken, bearing more fruit than we remember having seen on a pot Cherry of its size. (Gold Medal.)

Messrs. G. BUNYARD AND SONS, Maidstone, Kent, exhibited a very fine collection of Cherries in pots. These were large bushes, and all bore ripe fruits of good size and luscious appearance. The chief of the red-skinned sorts were Governor Wood, Elton Heart, and Napoleon Bigarreau, whilst amongst the black varieties Werder's Early Black and Black Tartaricas were equally as fine. (Silver-gilt Banksian medal.)

SWANLEY HORTICULTURAL COLLEGE was awarded a Silver Banksian Medal for soft fruit packed in attractive manner, so as to travel unbruised, either by rail or post. Each of the eight Peaches had a strip of cotton wool wound around it, and was embedded in the same substance sufficiently to keep it steady, but exposing about one-third. The fruit had travelled perfectly, but the box was so large as to give the fruits a meagre appearance.

Messrs. BARR AND SONS, Covent Garden, London, set up a collection of splendid seasonable vegetables arranged in the best exhibition manner. The heads of Cauliflowers were of perfect shape and as pure a white as possible, and the Cabbages, Carrots, Peas, Beans, and Tomatos were equally good. (Silver-gilt Knightian Medal.)

TRIAL OF AQUILEGIAS.

A Sub-Committee of the Floral Committee recently visited Wisley, and recommended the following awards to strains of Aquilegias now on trial, which were confirmed by the Council of the R.H.S. on June 16.

HIGHLY COMMENDED.

Aquilegia coerulea hybrida, from Messrs. VEITCH, Exeter.

Aquilegia New Rose shades, from Messrs. BARR, Covent Garden.

Aquilegia Long Spurred Hybrids, from SIMPSON AND SONS, Birmingham.

Aquilegia canadensis Turk's Cap, from Messrs. BARR, Covent Garden.

COMMENDED.

Aquilegia Haylodgensis delicatissima, from Messrs. R. VEITCH, Exeter.

Aquilegia New Hybrids, from Messrs. R. SYDENHAM, Birmingham.

Aquilegia coerulea White Lady, from Messrs. BARR, Covent Garden.

Aquilegia Munstead White, from Messrs. BARR, Covent Garden.

The late May frost had caught the majority of plants under trial, unfortunately rendering them unsuitable for consideration by the Sub-Committee. W. Wilks, Secretary.

NATIONAL ROSE.

CONFERENCE AT THE WHITE CITY.

JUNE 23.—There was a gratifying attendance at the conference held at Shepherd's Bush on the above date. Mr. Chas. E. Shea presided. After a few remarks concerning the objects of the conference, he informed the meeting that he had received a telegram from Mr. E. G. Hill expressing his inability to give his promised paper on "The Position of the Rose in America." Mr. H. R. Darlington then proceeded to give his lecture on "One Hundred Years of Progress in the Development of the Rose." He reviewed the enormous increase in the numbers of varieties and the improvement which has been effected in the Rose during the past century. There was a certain difficulty in arriving at the precise number of varieties that were in cultivation a hundred years ago, because then, as now, names

in the trade lists did not always represent distinct varieties; he felt sure that more care was now exercised in this respect than formerly. In 1815 there were probably 200 varieties; two years later the Noisette Rose was raised in America by Philip Noisette, who sent it to his brother in Paris for propagation. This variety, which would be of great interest, the lecturer feared had entirely disappeared. Two years later saw the advent of the perpetual Damask Rose. From that time numbers increased at the average rate of 176 per year, so that by 1858 there were some 2,500 varieties in cultivation. In 1906 the number swelled to 11,000, and at the present time there were probably 12,000 varieties. Whilst the increase in numbers had been at a fairly steady rate the development of new groups had been intermittent.

The Rev. J. H. PEMBERTON spoke of the great impetus which has been given to the raising of new groups and varieties by ladies, and the greatest credit was due to the Empress Josephine, who set a fashion in France which continues throughout the temperate world. In those days, he said, collections of various plants, notably Tulips, were the fashion, but the Rose in this respect had not been considered, so the Empress caused a rosary to be formed, and planted there specimens of the 250 varieties then in cultivation, whilst her gardener set to work to raise new sorts. Mr. Pemberton, mentioning the name of Noisette, the raiser of the group which is immortalised by his name, appealed for official recognition to the group Pernetiana, which would give due credit to the French raiser, to whom the world is indebted for so many beautiful Roses. What was now wanted in the Rose was colour and freedom of flowering, such as were found in Prince de Bulgarie, Joseph Hill, Mme. Abel Chatenay, and also H.P. varieties, which will be as good in autumn as the present sorts are in summer. Whilst all rosarians are, he continued, sensible of the great work done by specialists in France and America, we must not overlook the strong claims of our English and Irish Rose growers.

Mr. E. J. HOLLAND fully agreed with the concluding remark of the last speaker, and said that, whilst we, as a nation, were slow in taking up any fresh pursuit, we afterwards entered into it heart and soul, and so soon made up the leeway. He also spoke of the great difficulty, due to crossing and intercrossing, in defining an H.T. Rose, and frankly admitted his own inability. With regard to the development of the Rose during his own recollections, he gave the palm to Crimson Rambler, a variety which changed the whole style of Rose-growing. He was of the opinion that our pressing need was for the perfect crimson and then the perfect yellow Rose.

Mr. FRANK CANT disagreed with a previous speaker, and contended that the supply created the demand, and instanced the new Roses on show in the building. The Roses of forty years ago, he said, compared badly with the beautiful varieties of to-day, and such varieties as John Hopper, Duchess of Vallembrosa, Souvenir de la Malmaison and Victor Verdier, which were considered indispensable exhibition varieties thirty years ago, were rarely seen at the present time.

Mr. EDWARD MAWLEY claimed that the National Rose Society had done very important work in developing the present love of Roses. In 1884, when the first official catalogue was compiled, it included 600 varieties, of which only eighty-one now find a place. He reminded the meeting that during the past sixteen years we had escaped severe winters, and remarked that he was of the opinion that many of the new Roses would not prove to be really hardy. The "Butterfly" Roses—those which had but few petals and no lasting qualities, should, he contended, be discouraged. He paid a tribute to the memory and work of the late Mr. George Gordon.

The following awards were made for exhibits of Roses arranged around the lecture hall.

Silver-gilt Medals to Messrs. B. R. CANT and Co., and Mr. E. J. HICKS. Large Silver Medals to Messrs. FRANK CANT AND Co. and Mr. GEORGE PRINCE. Silver Medals to the Rev. J. H. PEMBERTON, Messrs. C. C. WILLIAMSON, STUART LOW AND Co., and BURRELL BROS. Bronze Medals to Mrs. C. C. WILLIAMSON, Mr. H. S. BARTLETT, and Messrs. MORSE BROS.

SOME ASPECTS OF MODERN GARDENING.

(Continued from page 444.)

MR. R. W. WALLACE continued his paper as follows:—

In addition to Irises, there are, of course, many other plants suitable for cultivation in the wild garden, and I would emphasise the use of Verbascons, particularly *V. vernale*, *V. Caledonia*, *V. densiflorum*, *V. phlomoides* (the leaves of this species are splendid), and the new Warley Rose variety when possible to acquire it. Verbascons should be grouped in irregular masses with occasional solitary specimens apart from the main planting. If they can be used near any old spreading Yews, their tall spikes against the dark background will tell. Campanulas, such as *C. macrantha* and *C. alliariaefolia*; Columbines, the tall *Centauria ruthenica* and *C. macrocephala*, *Paeonies* (particularly the European species), *Rudbeckias*, and *Michaelmas Daisies*, are other fine wild garden plants.

Epilobium angustifolium (Willow Herb) in sandy soil is a glorious plant, as one often sees it growing in dense masses round Woking, with the dark Pine background. *Linaria dalmatica*, a splendid, tall-growing form of the Tead Flax, with glaucous foliage and yellow flowers, seeds itself in the grass: *Thalictrum* (Meadow Rue), the tall forms of *T. aquilegifolium* in shades of pink, purple and white, with their fine-cut foliage are delightful in the misty effect they produce when grouped in irregular masses. *Thermopsis montana* (the yellow Californian Lupin), flowering at the same time as the foregoing, may be grown near the *Thalictrums*, one colour helping the other; for a waste piece of poor, stony ground, if it is anywhere near a frequented spot, make good use of the Evening Primrose (*Oenothera Lamarckiana*). Its clear yellow flowers shine out in the twilight like stars, and on a succeeding dull morning the flowers last till noon time.

Time prevents me from more than mentioning the use of spring-flowering bulbs in grass, *Chionodoxas*, *Scillas*, *Daffodils*, *Fritillarias* and *Tulips*.

Now, leaving the open ground, let us pass into the woodland. Here it is essential that the tree growth be not too dense, and the trees be largely deciduous. If one is possessed of a wood where Oaks abound, with some Birch and Beech, and an occasional Scotch Fir and undergrowth of Hazel and Ash, which may be cleared as required, and in addition if a stream or streams running through, and damp places abound, then there is really no limit to opportunity.

Here in the cool recesses of the wood can be massed exotic Primulas, following the examples shown us in the planting of our native Primrose. Full use should be made of *P. denticulata* in its many shades, coming into flower early in February, followed by *P. rosea*, *P. japonica*, *P. pulverulenta*, *P. Bulleyana*, and *P. sikkimensis* in broad masses, also in groups and scattered plantings by the stream-side. This will carry on the effect until June, and the Primulas seed naturally and increase without difficulty. In open clearings masses of *Azaleas* and *Rhododendrons*, not overlooking *Rhododendron racemosum*, the small early-flowering pink Chinese species; and if the situation is favourable to the growth of the Himalayan species, your opportunity is to be envied, and you can also use many of the forms of *Azalea amoena* and the Japanese forms, including *rosaeflora*.

Associated with these will be found congenial spots for many *Liliums*, especially *L. giganteum*. This noble Himalayan species is rightly placed in the wood. It grows magnificently in the woods at Caer Hays Castle here, in scattered colonies, some comprising forty to fifty flower-spikes, 10 to 15 feet in height, carrying many flowers; and to descend quickly from the tallest species to one of the smallest, do not omit *Lilium rubellum*, a diminutive pink species, which delights to grow in semi-shade amongst the roots of low-growing

shrubs, and has been so beautiful at Wisley this summer.

Other species of *Lilium* to be prized are *L. Szovitzianum* and the Martagons, which require open and sunny positions either in small clearings or on the fringe and approaches to the wood. The Californian Panther Lily and its forms should be planted in sandy pockets, well drained, by the stream. With it we may use *L. canadense* and *L. superbum*. I will not name more for general use in the woodland, because so much depends on the soil and situation of the site. But one can always find some members of this lovely family capable of thriving in any woodland scheme.

If your wood is dense, then you must clear out some open grassy ways, and let the principal ones be fairly straight, and not serpentine, because, above all, you want to see into the woodland, and get the distant effect of light and shade. An occasional fine tree trunk or group of stems makes a splendid termination to a vista or a centre for tracks to cross; on either side of the green ways there must be informal groupings, saving what is best of the natural growth, and adding to it.

The use of free-growing Roses in informal masses, such as The Garland, Carmine Pillar, Una and Penance Briars, which only require a little thinning and cutting back. These will form large mounds, and running up adjacent trees, cascades of flowers. Plant also Clematis of the montana type, and flammula and viticella forms. I would have the planting of my broad vistas dealt with in rather a bold way, using large subjects, and plenty of them, and then from these broad vistas many smaller paths, which would lead to the quieter parts of the wood, such as a group of Silver Birches that stand in a small clearing.

Here, all around, I would mass many of the beautiful forms of Lady Ferns, Polystichums, and others, amongst them Foxgloves and occasional Mulleins, and a few *Lilium Szovitzianum* and *L. Martagon album*. There will be colonies of Cyclamen, both spring and autumn, and on one side a low carpet of *Gaultheria procumbens*, from which would rise the taller species *G. Shallon*, Honeysuckle in masses, and, perhaps, one Rose in a tangled mass of beauty from behind a group of *Cytisus praecox*, carpeted with the double lilac Primrose, now long past its beauty.

Besides British Ferns, use freely some of the North American species, such as the *Onclea struthiopteris*, Ostrich Fern (*Osmunda claytoniana*), the Crozier Fern, and *Osmunda cinnamomea*, not forgetting our own Royal Fern for damp spaces and hollows, also the hardy Canadian Maidenhair Fern (*Adiantum pedatum*).

Associated with these Ferns, the better forms of the wood Anemone and the North American Trilliums and Dog's Tooth Violets can be freely used.

I know of no finer plant for individual effect in the open woodland than a colony of the blue Himalayan Poppy, *Meconopsis Wallichii*. Choose a position fairly damp, where the woodland is thin, and yet affords shelter from wind, and here you may plant it, and from the day its foliage begins to form until possibly eighteen months or two years later, when the stem has developed to a height of 8 feet, or the last pearly blue flower has faded, it will be an object of beauty. The effect of many spikes of shimmering pale opalescent blue flowers, and the foliage on damp days studded with drops of water like diamonds, is irresistibly lovely.

If your wood should by any chance contain peat then great will be your opportunity with such glorious plants as *Kalmias*, *Pernettyas*, *Andromedas*, *Epigaea*, *Shortia*, *Schizocodon*, *Galax*, and hosts of other peat-lovers. Of other woodland plants I have not time to speak, but, according to your surroundings, you can use Broom, Gorse, Heather, *Cistus*, in open, sunny spots on gravel. In cool recesses, *Funkias*, *Convallaria*, *Tiarella*, *Trillium*, *Epimedium*, the small habited Ferns, *Asperula*, etc. Such lists as this might be indefinitely extended, but I fear would only weary my audience, and I have thought it best to dwell on a few points in rather greater detail, as it is the method of planning I have tried to explain.

(To be concluded.)

BIRMINGHAM BOTANICAL AND HORTICULTURAL.

JUNE 11.—The above society's annual show of Orchids and other flowers was held at the Botanical Gardens, Edgbaston, on this date. Although the entries were hardly so numerous as those of a year ago, the Exhibition Hall presented a very pretty sight. Orchids were arranged along two sides of the hall, and table decorations filled the centre floor.

Messrs. JAMES CYPHER AND SONS, Cheltenham, had a pleasingly arranged group of Orchids, which included some very well grown *Odontoglossums*, with long, arching spikes of bold, shapely flowers of great substance; also *Cattleya gigas*, *C. imperialis*, *Laelio-Cattleya Helius*, *L.-C. Cappel*, and excellent specimens of *Odontioda Lambeauianum*, *O. Lutetia*, and *O. Boltonii*. *Cypripediums* were represented by *C. callosum* *Sanderæ*, *C. bellatulum album*, and *C. niveum*. The dainty little *Bulbophyllum barbigerrum* attracted attention. *Masdevallias* and varieties of *Miltonia vexillaria*, *Phalaenopsis*, *Dendrobium Thwaitesiae*, *Anguloa Ruckeri*, and a profusely flowered plant of *Dendrochilum latifolia* were also included in this attractive exhibit. (Silver-gilt Medal.)

Mr. EDWARD V. LOW, Vale Bridge, Haywards Heath, sent eighteen choice Orchids—principally hybrids—of which the following were specially meritorious:—*Cattleya Mossiae Arnoldiana*, *Odontoglossum crispum xanthotes Walkeræ* (see Awards), *Laelio-Cattleya Aphrodite*, *L.-C. Cowanii*, and *L.-C. Canhamiana alba*. (Bronze Medal.)

W. WATERS BUTLER, Esq., Southfield, Edgbaston (gr. Mr. R. H. Jones), contributed a group of Orchids remarkable for the extent, variety, and excellent condition of the specimens exhibited. It is only possible to mention a few of the many good things included in this fine display, which was rich in varieties of *Miltonia*, many of the specimens carrying upwards of a dozen long flower-spikes. The varieties *Bleuana*, *Bellissima*, *G. D. Owen*, *gigantea*, and *Empress Victoria Augusta* were strikingly beautiful. *Laelia purpurata*, and *L. p. Mrs. R. A. H. Mitchell* had stout spikes, and huge, shapely flowers. A plant of *Laelio-Cattleya eximia*, with a strong spike, carried four huge well-formed blooms, and *L.-C. Iolanthe* had eight very fine flowers, with a beautifully frilled lip. Other good *Laelio-Cattleyas* were *L.-C. Gottoiana Southfield Variety* (see Awards), *L.-C. Gottoiana The President*, and *L.-C. Canhamiana*. *Odontoglossums* were used with charming effect, especially those in the upper part of the group, where graceful Bamboos and Palms formed a pleasing setting to the long flower-spikes. Excellent examples of *O. eximium* *E. C. Rogerson*, with fifteen large flowers, *O. ardentissimum Sanderæ*, *O. a. Prince of Wales*, with sixteen shapely flowers, *O. crispum* *G. F. Moore* (good spotted form), *O. Pescatorei*, and its beautiful variety *Grand Duchess* were well shown. *Cymbidium*s were represented by upwards of twenty large plants; the long flower-spikes were allowed to hang over and mingle with the adjacent subjects. *Odontioda Lambeauiana* (extra good), *Cypripediums*, *Cattleya gigas* *J. Charlesworth*, *C. intermedia White Queen*, *C. Mendelii Southfield Variety*, and other choice varieties; *Oncidiums*, *Phalaenopsis*, *Vandas*, *Thunias*, and *Masdevallias* were represented by profusely flowered specimens. (Gold Medal.)

Messrs. SANDER AND SONS, St. Albans, exhibited a large assortment of Orchids, in which *Odontoglossum crispum*, *O. Wilckeanum*, *O. eximium*, and *O. ardentissimum* were noteworthy. *Laelio-Cattleya Fascinator*, *L.-C. Sylph*, *L.-C. Martinetti*, *Sunburst*, *Brasso-Cattleya Empress of India*, and *Dendrobium cymbidioides* were well shown. *Masdevallias*, *Odontioda Charlesworthii*, *Bulbophyllum Lobhii*, and *Cypripedium caudatum* were also included. (Silver Medal.)

Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, occupied the orchestra end of the Exhibition Hall with an arrangement of Carnations, Orchids, and Roses. The Carnations, which were displayed in large mounds or pyramids, and in vases of various sizes, were of good quality and beautifully fresh; they included

such varieties as *Baroness de Brien*, *Princess Juliana*, *Salmon King*, *Ceres*, *Mauveen*, and *Princess of Wales*. Of Orchids, *Ceolygne paudrata*, *Miltonias*, *Phalaenopsis*, *Odontiodas*, *Laelia Canhamiana*, *Dendrobiums*, *Renantheras*, and *Cattleyas* were the best. (Silver Gilt Medal.)

Messrs. BAKERS, Wolverhampton, had a large group of a very fine strain of *Columbines*, but unfortunately the heavy rains a few days prior to the show had disfigured many of the flowers. Messrs. BAKERS also showed a collection of *Iris*. (Bronze Medal.)

Mr. C. H. HERBERT, Acocks Green, had a group of miscellaneous plants and cut flowers, consisting principally of *Eurybia Gunniana*, *Pyrethrums*, *Saxifragas*, *Lupins*, *Pinks*, and *Oriental Poppies*. (Silver Medal.)

W. BYNG KENRICK, Esq., Metchley House, Edgbaston (gr. Mr. James Webb), sent a group of *Gloxinias*. The plants were well grown, and represented a very good strain. (Bronze Medal.)

Miss S. S. THOMPSON, Handsworth, sent an interesting collection of *Cacti*. (Bronze Medal.)

Messrs. ROBERT SYDENHAM, LTD., Birmingham, exhibited Spanish *Iris* and *Ranunculus*. (Bronze Medal.)

The Silver Medal offered by the National Viola and Pansy Society for the best vase of *Violas* in the show was won by Mr. A. BASTOCK, Hall Green, Birmingham. The variety exhibited was *Mrs. S. Mason*.

AWARDS.

AWARD OF MERIT.

Laelio-Cattleya Gottoiana Southfield Variety, from W. WATERS BUTLER, Esq., Edgbaston (gr. Mr. R. H. Jones).—A handsome form, with a strong spike, and five very large purple flowers with a velvety crimson, purple lip.

Odontoglossum perculatum, from Messrs. JAMES CYPHER AND SONS, Cheltenham.—A splendid variety, with a long, arching spike, the large, pale, purplish-white flowers heavily spotted with chocolate-brown.

Odontoglossum Jasper, from Messrs. JAMES CYPHER AND SONS.—Flowers large, purple spotted, and marked with chocolate-brown.

Odontoglossum crispum xanthotes Walkeræ, from Mr. EDWARD V. LOW, Haywards Heath.—Large white flowers, spotted with yellow.

Pink "Eclipse", from Mr. C. H. HERBERT, Acocks Green.—A variety with large, Carnation-like flowers of a pleasing shade of pink, and very sweetly scented. The plant is said to be of strong habit and free in flowering.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MAY 28.—Committee present: R. Ashworth, Esq. (in the chair), Messrs. J. Bamber, J. J. Belton, J. Cypher, A. G. Ellwood, J. Evans, A. Hanmer, Dr. Hartley, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, C. Parker, W. Shackleton, P. Smith and H. Arthur (secretary).

Messrs. CYPHER AND SONS, Cheltenham, were awarded a Silver Medal for a group.

Col. J. RUTHERFORD, M.P., Blackburn (gr. Mr. Lupton), staged a group to which a Silver Medal was awarded.

JOHN LEEMAN, Esq., Heaton Mersey (gr. Mr. Smith); O. O. WRIGLEY, Esq., Bury (gr. Mr. Rogers); WM. THOMSON, Esq., Walton Grange (gr. Mr. Howes); Messrs. A. J. KEELING AND SONS, Bradford; Messrs. CHARLESWORTH AND Co., Haywards Heath; Mr. W. SHACKLETON, Highfield, Bradford; Mr. D. McLEOD, Chorltoncum-Hardy; and Mr. J. EVANS, all contributed exhibits.

FIRST-CLASS CERTIFICATE.

Odontoglossum Promerens "Our King", a large well-set flower with dark purple markings, from Wm. THOMSON, Esq.

AWARDS OF MERIT.

Odontoglossum Hereward and *O. x Leander* (*Haryana-crispum* x *Mirum*), both from JOHN LEEMAN, Esq.

O. Amandum magnificum (*Wilckeanum* x *Pescatorei*), and *Odontioda Schröderæ*, both from Messrs. A. J. KEELING AND SONS.

Odontoglossum × *Edward Thompson*, from Wm. Thomson, Esq.

FIRST-CLASS (BOTANICAL).

Nanodes Medusae, from Messrs. A. J. Keeling and Sons.

ARRANGEMENTS FOR SPECIAL PRIZES.

The following competitions have been arranged:—The President's Cup and Prize to Gardener, for Cattleyas, Laelias, etc.; J. J. Bolton's Gold and Silver-Gilt Medals, with prizes to Gardeners, for Cypripediums; Evans' Silver Trophy and Prize to Gardener, for *Odontoglossum*s and their hybrids; Royal Botanic Society of Manchester's Gold Medal, for *Odontiodas*, *Miltonias*, etc.; A. Hanmer's Silver Cup and Prize to Gardener, for most points during the session; P. Smith's Gold Medal and Prize to Gardener, for most points during the session; The Sander Prizes to Gardeners, for groups; Cypher's Gold Medal and Prize to Gardener, for arrangement; Charlesworth's *Objet d'Art*, for new awards; the Society's Medals will also be awarded as before.

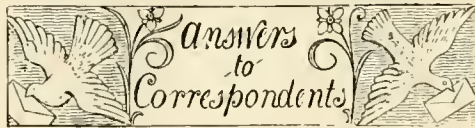
Obituary.

PROFESSOR REYNOLDS GREEN, F.R.S.—We learn with regret of the death of Professor Reynolds Green, Hartley Lecturer on Vegetable Physiology in the University of Liverpool. Professor Green was among the pioneers in the biochemical investigation of plants. He made important contributions to our knowledge of plant enzymes, and was the author of several standard textbooks, all of which were characterised by a remarkable lucidity of expression. Professor Green held for many years the Professorship in Botany in the Pharmaceutical Society. He was elected to the Royal Society in 1895, and was President of the Botany section at the Belfast meeting of the British Association (1902).

JOHN PERKINS.—Readers will learn with regret of the death of Mr. John Perkins, on the 19th, at the age of 73. Deceased was the senior partner in the firm of Thomas Perkins and Sons, Northampton, and he had been in failing health for the last eighteen months. A native of Northampton, he commenced travelling at the age of 23, and continued to call upon the wholesale horticultural trade up to two years ago. The surviving partner (Mr. Fred Perkins), who has managed the outdoor departments of the nursery, will for a time control the business, with the aid of his two sons and two nephews. The late Mr. Perkins devoted a considerable time to the public service; he was Overseer of the Poor Law, a member of the Local Board, Urban District Council, Town Council, a county magistrate, trustee of charities, and a member of the Northants Agricultural Society. Mr. Perkins was twice married, and leaves a widow, two sons and a daughter.

THE LATE MR. GEORGE GORDON.—The funeral service of the late Mr. Gordon, which was conducted at the Kew parish church on June 18, was attended by many prominent horticulturists. Mrs. Gordon, supported by her son, Mr. Fred Gordon, her daughter and youngest son, were the chief mourners, and amongst those present were Sir David Prain, director of the Royal Gardens, Kew; Sir Harry J. Veitch and Mr. James Hudson (representing the Council of the R.H.S.); Messrs. Arthur Turner and Will Taylor (National Rose Society); Messrs. J. Riding, J. A. Jariatt, J. T. West (National Dahlia Society); F. W. Harvey (National Sweet Pea Society and *The Gardener*); Mr. G. Collins Levey (Administrator of the Anglo-American Exposition); Mr. Chas. H. Curtis (*Gardeners' Magazine*); Mr. T. W. Sanders (*Amateur Gardening*); Mr. Horace J. Wright (*Journal of Horticulture*); Mr. H. H. Thomas (*The Gardener*); Mr. A. C. Battlett (*Gardeners' Chronicle*); Messrs. Leonard Collingridge, O. Thomas, John Heal, Jos. Cheal, C. T. Druery, R. Pinches, D. McDonald, J. W. Moorman, G. W. Valentine, J. Emberson and G.

Davidson. Floral emblems were sent by the family, the Earl of Kintore and Administration of the White City, Horticultural Executive of the White City, Proprietors and Staff of the *Gardeners' Magazine*, Executives of Royal Gardeners' Orphan Fund, Horticultural Club, National Rose Society, National Sweet Pea Society and National Dahlia Society, and others. The interment was at Richmond Cemetery.



CALIFORNIAN PLANTS: *T. G. R.* *Lathyrus violaceus* has flowers about eight lines long, violet-blue in colour, the banner being veined with darker, nearly parallel veins. The flowers of *L. laetiflorus* are larger (about 11 lines long), but not so showy, being nearly white or faintly flesh-coloured, the banner veined, nearly as in *L. violaceus*, and suffused with bright pink at the back; the racemes are longer, and less compactly-flowered than in the former species. The plants of both species grow from 6 to 8 feet high, are abundantly covered with light-green foliage (there are about twelve small leaflets to each leaf), and are profuse flowerers, each leaf-axis bearing a raceme of ten to fourteen flowers. Both species grow wild in the mountains of Los Angeles co., Southern California. So far as we are aware *Delphinium Emiliae* is not in cultivation in this country; it is near to *D. variegatum* and should prove a valuable plant for the perennial flower border.

ELECTROCUTION OF GREEN FLY: *H. H., Co. Kilkenny.* There is no reason to doubt the accuracy of the statement that has appeared in the daily Press to the effect that green fly (aphis) may be killed by means of an electric discharge; nor is there much reason to doubt the possibility of so adjusting the strength of the current as to kill the fly without injuring the plant; but there is reason to doubt whether any gardener would find this method applicable in ordinary practice. The time taken to rid one plant by this means would be about equal to that required to spray 100 trees. Therefore, pending the further perfection of the method by electrocution, we recommend you to treat your Roses and other infested plants by means of sprays.

NAMES OF PLANTS: *W. T.* 1, *Carpenteria californica*; 2, *Rosa Moyesii*.—*J. A.* 1, *Phlomis fruticosa*; 2, *Carduus* sp., cannot name without flowers; 3, Garden variety of Rose, cannot match; 4, *Sedum rupestre*; 5, *Allium sphaerocephalum*; 6, *Veronica Teucrium*; 7, *Juniperus Sabina*.—*G. H. S.* 1, *Lilium pyrenaicum*; 2, *Coronilla varia*; 3, *Pernettya mucronata*; 4, *Pittosporum tenuifolium*; 5, *Buddleia globosa*; 6, *Helixine Soleirolii*; 7, *Anchusa semper-virens*.—*W. J. R.* 1, *Laelio-Cattleya albanensis* (*C. Warneri* × *L. grandis*). It first appeared as an imported plant (natural hybrid) with Messrs. Sander in 1893; 2, *Cattleya Mossiae*; 3, *Aërides crassifolium*; 4, *Dendrobium suavisimum*. There is little to separate this species from *D. chrysoxanthum*, except the dark blotch on the lip.—*F. W. Norris.* *Quisqualis indica*, a very common plant in the tropics.—*W. H. Sharpe.* *Olearia macrodonta*.—*T. S. N. G.* 1, *Onosma echioides*; 2, *Kalmia latifolia*; 3, *Polygonum alpinum*; 4, *Rhodotypos kerrioides*; 5, *Codonopsis ovata*; 6, *Deutzia crenata flore pleno*; 7, Too scrappy for identification; 8, Cannot name without flowers; 9, *Hydrangea petiolaris*; 10, *Escallonia langleyensis*; 11, *Amorpha canescens*; 12, *Amelanchier alnifolia*.—*E. G. J.* 1, *Spiraea canescens*; 2, *Lathyrus sativus* (annual); 3, *L. grandiflorus*.—*Newt.* 1, *Hesperis matronalis*; 2, *Valeriana Phu.*—*G. F.* *Galtonia candicans*.—*Cumbrian.* *Trifolium hybridum*, "Alsike Clover."—*Surrey.* *Lithospermum intermedium*.—*G. G.* A very pretty form of *Laelio-Cattleya Martinetii* (*L. tenebrosa* ×

C. Mossiae.—*F. M. F., Cambridge.* *Leycesteria formosa*.—*M. H.* 1, *Odontoglossum aspidorhinum*; 2, *Odontoglossum sceptrum*; 3, *Ada aurantiaca*; 4, *Bletia hyacinthina*.—*R. G.* 1, *Nephrodium molle*; 2, *Pteris serrulata*; 3, *Nepeta Glechoma variegata*; 4, *Carex japonica variegata*; 5, *Ficus repens variegata*.—*A. Wilson.* *Magnolia acuminata*. The flowers will not improve in colour.—*E. S. W.* Probably *Hymenocallis littoralis*; specimen too poor to determine with certainty.

PEACH LEAVES DISEASED: *A. J. B.* Your trees are attacked with the shot-hole fungus, *Cercospora circumscissa*, and should be sprayed with the ammoniacal solution of copper carbonate about every fourteen days. The recipe for carbonate of copper solution is as follows:—Mix the carbonate of copper, 1 oz., and carbonate of ammonia, 5 ozs., in a quart of hot water, and when quite dissolved add 16 quarts of cold water. The solution may be applied to quite young Peach leaves, as it will not harm them, as would the Bordeaux mixture.

ROSE: *T. Adams.* The Rose has no special merit. If it is a seedling, insert cuttings in September, and when rooted plant in good soil. You would then be able to judge better of its value.

SCUM ON PONDS: *A. P.* The green or brown scum on ponds is chiefly due to the smaller algae, and for their destruction use copper sulphate. If there are no fish in the pond apply 1 lb. of copper sulphate to each 100,000 gallons of water. Ordinary commercial copper sulphate is effective, and should be distributed rapidly and thoroughly throughout the pond. For a small pond, enclose the copper sulphate, broken small, in a bag of loose texture, tie to the end of a pole, and drag backwards and forwards through the water. For a large pond, tow the bag behind a boat, and row to and fro in parallel paths not more than from 10 to 20 feet apart.

SYCOMORE OF SCRIPTURE: *V. H. L.* The Sycamore referred to in the Bible is *Ficus Sycomorus*, a species related to the common Fig, and it has no relation to our Sycamore, which is *Acer Pseudo-platanus*. At one time *Ficus sycomorus* was a common tree in the plains of Egypt and the valleys of Palestine, and according to Professor Balfour in *The Plants of the Bible* it is still cultivated near Cairo. You will find further details in Mr. Leo Grindon's book on *Scripture Botany*. *Ficus sycomorus* has substantial boughs, which spread in every direction, after the manner of our British Oak, and may be very easily climbed.

VINES: *M. A. Willis.* You do not give sufficient particulars, and we doubt the accuracy of your thermometer, which shows a maximum of "76° with sun heat" in a vinery facing due south in Kent during such weather as we have recently experienced. From some cause the soil has become sour, probably from too much water, or it may be due to either an excess of manure or want of aeration. If the border is mulched, take off the mulching material, loosen the top soil as deeply as it can be done without injuring the roots, and give a drenching with water, not quite boiling, but so hot that you cannot bear your hands in it. Then apply a good sprinkling of newly slaked lime, and leave the border exposed to the air till such time as there is an improvement in the colour of the leaves, when, if the weather is still hot and dry, a slight shading of loose, strawy manure may be temporarily applied. The leaves should be shaded from bright sunshine till they partially regain their normal colour.

Communications Received.—"Constant Reader"—*F. E. G.*—*G. J. W.*—*A. H.*—*Baker, The Grange*—*R. R. G.*—*W. H.*—*P. B.*—*R. B.*—*J. W. H.*—*Purley*—*G. D. E.*—*A. G. S.*—*F. G.*—*H. C.*—*T. D.*—*J. C.*—*W. B. F.*—*W. B.*—*O. N.*—*S. A.*—*W. T.*—*A. H.*—*E. B.*—*Roger Sear*—*Inquirer*—*F. C. M.*—*P. Beer*—*G. H. T.*—*E. Y.*—*Somerville*—*J. D.* and *H. F. K.*—*W. J.*—*O. L.*—*J. W. G.*—*F. D. E.*—*G. C.*—*S. J.*—*H. E. H.*—*L. C.*—*F. W. N.*—*M. G.*—*W. G.*—*W. W.*—*N.*—*F. A. A.*—*Sir Herbert M.*—*Hon. Vicary G.*—*Burford*; *F. A.*; *Wakeford*.

