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Photograph by John Gregory.

A GROUP OF DENDROBIUMS, AS EXHIBITED BY MESSRS. ARMSTRONG AND BROWN
AT A MEETING OF THE ROYAL HORTICULTURAL SOCIETY.





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NEW ZEALAND PLANTS.

IN 1907 a party of New Zealand scientists, with the assistance of the New Zealand Government, visited the several groups of islands south of New Zealand, of which the Aucklands are by far the largest. The object of the expedition was magnetic observation, botany, zoology, and geology. Captain A. Dorrien Smith, who was a member of the party, and whose account of some of the things he saw was recently published in the *Kew Bulletin*, collected numerous plants and seeds, not only in the various islands visited, but also in New Zealand proper. These he brought home last May, the plants being conveyed in 12 Wardian cases to his father's famous garden at Tresco, where already many New Zealand plants are established and happy. The following list of plants he has collected has been prepared by Captain Dorrien Smith, those marked with an asterisk being, so far as can be ascertained, new to cultivation in this country. In addition to the living plants, he also collected and brought home a great variety of seeds, many of them being of plants not known in gardens, and these were generously distributed among botanical and other establishments.

Kew has been largely enriched with New Zealand plants in consequence of this expedition, and if someone can only discover the right treatment for some of them, either at Tresco or in other gardens in which they are being tried, British horticulture will be considerably the gainer as the result of the enterprise and zeal of Captain Dorrien Smith.

The New Zealand climate is temperate and very healthy; the temperature is more equable than in the British Isles, the summers being cooler and the winters warmer; the annual rainfall varies from 25 inches to 112 inches, and the soil in many parts is "a rich leaf-mould." It might have been expected that both plants and animals would have developed along lines more favourable to man than has proved to be the case, for, with the exception of a few good timber trees and the Flax Lily, there are no plants of any particular economic account. All the fruits, vegetables, and cereals, on the production of which in that country important industries have been built up, are recent introductions from western

Meanwhile, as it is not unlikely that many of the plants will soon have become extinct from such causes as cultivation, animals, fires and introduced weeds, we need to secure all we can get from New Zealand that is likely to make our gardens richer. It is unfortunately true that scarcely any New Zealand plant has proved hardy in this country except in such favoured districts as the West of Scotland and Ireland, the southern coast of Cornwall and Devon, and the Scilly Islands. Some of them will grow fairly well in inland gardens when afforded shelter, but they are never certain, a frost of average severity proving too much for them. Fortunately, however, there are many gardens in the more favoured districts where the New Zealand plants thrive perfectly. There may also be many plants in the alpine regions of New Zealand which only require to be introduced into British gardens to prove quite hardy here. Generally the plants sent home are those that are easily obtained in low-lying, warm districts; it has been too much trouble to go up into the mountains for specimens, and even when this is



[Photograph by Captain Dorrien Smith.]

FIG. 1.—CELMISIA SPECTABILIS GROWING WILD IN NEW ZEALAND.

countries. It would appear that, whilst Nature endowed New Zealand with all the conditions favourable to the development of plants and animals, she omitted to provide an industrious, enterprising race of men until, in 1769, Captain Cook discovered the islands, and even then nothing was done towards making the most of their resources until 1840. Since that time, however, New Zealand has gradually grown until it is now a veritable Land of Promise. Naturally rich and sufficiently isolated to be outside the influence of politics, fortunate also in being peopled with a race which is almost exclusively British, foreigners and Maories counting for very little, the founders of New Zealand have set out to work the country on democratic lines, "unhampered by climate, slavery, vested rights and vested ruts, immigration, or the enervating seductions of power over subject races." From what is known of the country, enterprising young men with a knowledge of soil cultivation need not hesitate to go to New Zealand, where the people are determined to make the millionaire and the pauper equally impossible.

done, such plants either perish on the way or sicken so much as to never recover under the changed conditions of an English garden and climate. Seeds, therefore, should be largely relied upon, and although we have not been fortunate with some of the seeds brought home by Captain Dorrien Smith, still seeds are more likely to enable us to get many of the plants established than are imported living plants.

According to the Kew records there were 83 species of flowering plants and 54 species of Ferns from New Zealand in cultivation at Kew in 1864. There are many more now, including 40 species of Veronica and 10 species of Olearia. Thanks to Captain Dorrien Smith, no fewer than 10 species of Celmisia have recently been added, but these plants have so far proved as difficult to manage at Kew as the beautiful Ranunculus Lyallii and Myosotidium nobile, which in some gardens are fairly easy. It is more than probable that Celmisias are killed by coddling, and if we only had the courage to leave them to fight it out with the weather they would do better. The genus is almost peculiar to New Zealand, where it forms "one of the chief ornaments of

the mountain and alpine flora of the colony, the various species usually composing a large proportion of the vegetation, especially in the South Island, where the mountain slopes and valleys are often whitened for miles from the abundance of their large Daisy-like flowers."

Pleurophyllum speciosum, an ally of *Celmisia*, is one of the noblest of New Zealand plants, but so far no one has grown it in this country. Compositæ are very numerous in New Zealand, constituting about one-seventh of the total number of flowering plants, and many of them are worth growing in gardens. Some of the species of *Ranunculus*, too, are exceptionally handsome. (Such genera as *Gentiana* (16 species), *Myosotis* (22 species), *Dracophyllum* (18 species), and *Veronica* (84 species) are specially interesting horticulturally, some of the species being described as really handsome. *Veronica*, the largest genus of flowering plants in New Zealand, is a conspicuous feature of the vegetation of the higher regions. There are six species of *Fagus* (Beech), the only northern genus of forest trees represented in the southern hemisphere. Whilst Ferns are largely represented in New Zealand, some of the best of those grown in gardens being from that country, there are no Orchids of any account. Iridaceæ are represented by one genus only, *Libertia*; Amaryllidaceæ by one, *Hypoxis*; and Liliaceæ by 10, including *Cordylina*, *Astelia*, *Dianella*, *Phormium*, and *Arthropodium*. It is remarkable that whilst *C. australis* is one of the easiest plants to grow, *C. indivisa*, which grows in the mountains and is by far the finest species of the genus, proves difficult. *Bulbinella Rossii* is another magnificent Lily, which no one has yet managed to grow in this country, although many attempts have been made. Perhaps Captain Dorrien Smith, who saw the plant growing abundantly in the Aucklands, will be able to hit upon the right treatment for it at Tresco. There are only two Palms in New Zealand, both of them being well known in gardens here as *Areca Baueri* and *A. sapida*. Captain Dorrien Smith states that *A. Baueri* occurs in Norfolk and Chatham Islands, not on the mainland, and it is probably scarce in Chatham Islands.

The best book on New Zealand plants is the *Manual of the New Zealand Flora*, by T. F. Cheeseman, published in 1906, under the authority of the Government. It is based on the *Handbook of the New Zealand Flora*, published 40 years ago by Sir Joseph Hooker. The descriptions, which are in English, are excellent for their clearness and thoroughness, and they are often accompanied by observations on the habits, &c., of the plants which are likely to be helpful to cultivators.

List of New Zealand plants brought to Tresco in May, 1908, by Captain A. Dorrien Smith.

- **Aciphylla* Colensoi.
- " " Monroi.
- " " Traversii.
- Agathis australis*.
- **Angelica* Giugidium.
- **Aristolotelia* fruticosa.
- " " racemosa.
- Arthropodium* cirrhatum.
- **Astelia* Cunninghamii.
- " " linearis.
- " " nervosa.
- **Brachyglottis* Rangiora.
- " " repanda.
- **Bulbinella* Rossii.
- " " sp.
- Carex* trifida.
- Carmichaelia* australis.
- Carpodetus* serratus.
- Cassinia* leptophylla.
- **Vanvilliersii*.
- **Celmisia* Armstrongii.
- " " bellidioides.
- " " coriacea.
- " " Dallii.
- " " hieracifolia.
- " " mollis.
- " " Monroi.
- **Celmisia* new species.
- " " rupestris.
- " " spectabilis.
- " " Traversii.
- " " vernicosa.
- **Clematis* foetida.
- " " parviflora.
- Coprosma* Baueri.
- " " cuneata.
- " " depressa.
- " " foetidissima.
- " " grandifolia.
- " " lucida.
- " " robusta.
- Cordylina* Banksii.
- " " pumilio.
- **Coriaria* angustissima.
- " " thymifolia.
- Corynocarpus* laevigata.
- **Cotula* lanata.
- Dacrydium* cupressinum.
- " " intermedium.
- Dodonea* viscosa.
- Dracophyllum* latifolium.
- " " longifolium.
- " " Traversii.
- " " uniflorum.

- **Dracophyllum* Urvilleanum
- **Drimys* axillaris.
- " " colorata.
- Disosylum* spectabile.
- Earina* mucronata.
- " " suaveolens.
- **Ehrharta* Colensoi.
- **Epacris* alpina.
- Fagus* cliffortioides.
- " " fusca.
- " " Menziesii.
- **Fostera* sp.
- Fuchsia* Colensoi.
- " " excorticata.
- Gaultheria* antipoda.
- " " oppositifolia.
- " " rupestris.
- **Gentiana* sp.
- **Geum* uniflorum.
- Griselinia* littoralis.
- **Gnaphalium* trinerve.
- **Gunnera* sp.
- Hedycarya* arborea.
- **Helichrysum* bellidioides.
- Hoheria* populnea.
- Hymenranthera* chathamica.
- Knightsia* excelsa.
- Leptospermum* scoparium.
- " " var. *Chapmannii*.
- " " var. *Nichollii*.
- Leucopogon* Richei.
- Libertia* ixioides.
- Libocedrus* Bidwillii.
- **Ligusticum* antipodum
- Olearia* nitida.
- " " nummularifolia.
- " " Solandri.
- " " virgata.
- **Ourisia* Cockayneana.
- " " macrocarpa.
- " " macrophylla.
- Parsonsia* capsularis.
- " " (rosea).
- " " heterophylla.
- **Panax* lineare.
- " " simplex.
- " " Sinclairi.
- **Persoonia* Toru.
- Phyllocladus* alpinus.
- " " trichomanoides.
- Pbormium* Cookianum.
- " " C. var. with leafy inflorescence.
- **Pimelia* sp.
- Piper* excelsum.
- Pittosporum* Colensoi.
- " " patulum.
- " " Ralpii.
- Plagianthus* betulinus.
- P. (Gaya)* Lyallii.
- **Pleurophyllum* speciosum.
- Podocarpus* dactyloides.
- " " ferrugineus.
- " " Hallii.
- " " Totara.
- Pomaderris* elliptica.
- **Pseudopanax* chathamicum.
- " " crassifolium.

- Veronica* Lyallii.
- " " macrocarpa.
- " " parviflora.
- " " pimelioides.
- " " salicifolia.
- Weinmannia* racemosa.
- " " sylvicola.
- Alsophila* Colensoi.
- Aspidium* aculeatum.
- Cyathia* dealbata.
- " " medullaris.
- Hemitelia* Smithii.
- Lomaria* dura.
- " " fluviatilis.
- Marattia* fraxinea.
- Polypodium* serpens.
- Pteris* incisua.
- Todea* superba.
- Trichomanes* reniforme.

*New to British Gardens. W. W.

FLORISTS' FLOWERS.

THE RETROSPECTIVE CHRYSANTHEMUM SHOW IN PARIS.

FIRST and foremost in the literary and artistic retrospective show held in connection with the recent Chrysanthemum exhibition was the original portrait in oils of Capt. Blancard, the introducer of the Chrysanthemum into Europe in 1789. Beneath the portrait was a coloured plate of the flower introduced by him and figured for the first time in the *Botanical Magazine*, pl. 327.

On the walls right and left of this was a remarkable series of curiosities of all kinds. These included a portrait of Louis Pelé, lent by M. Lemaire, and an oil painting of some Chrysanthemums raised by Pelé in 1846, and a number of photographs of famous growers and raisers, together with many coloured pictures of old varieties long since discarded by growers.

The most interesting and extensive collection came from M. René Momméja, an amateur and collector, well known for the many valuable and artistic curios he possesses relating to the Chrysanthemum. In a series of closed glass cases he showed Japanese silks, pottery, porcelain of the 17th and 18th centuries, lacquerware, &c., all bearing upon them figures or designs of Chrysanthemums. He had a large collection of Japanese books containing pictures of individual flowers, and also other Chinese and Japanese plates and drawings of views of Chrysanthemum gardens and exhibitions. An extensive collection of cultural and other treatises published in Europe also formed a part of this exhibit.

Mr. Harman Payne is another well-known collector, and he, too, made a substantial display. A collection of 299 coloured engravings of Chrysanthemums from all the old botanical and horticultural publications during the past century was staged by him. We also noted a series of large photographs of varieties now no longer in cultivation, some rare old catalogues of Salter and Forsyth, and other literary curiosities. The most curious object in Mr. Payne's collection was a card of invitation to visit the annual Chrysanthemum show held by the Emperor of Japan in the Royal Gardens at Tokio.

The Librarian of the National Horticultural Society staged some rare books and pamphlets from the society's library. We noticed some old volumes of the *Bon Jardinier* containing early references to the flower, also references to John Salter's book, and several others. Especially rare are *Les Chrysanthèmes dans l'Est de la France*, par E. Moreau fils; and *Notice sur les Chrysanthèmes de la Chine*, par M. le Chevalier Soulange-Bodin. There were also kindly lent by the family a bulky volume, of which Capt. Blancard was the author, entitled *Manuel du Commerce des Indes*, and several autograph letters of his. He made several voyages to China and India before the date of his introduction of the Chrysanthemum. In several other glass cases were some rare old catalogues and pamphlets, kindly lent by M. Nonin, M. Philippe de Vilmorin, M. E. Rosette, M. Loizeau, M. Le Colier, and others.



FIG. 2.—MERYTA SINCLAIRI IN MR. CHEESEMAN'S GARDEN, AT AUCKLAND. (The figure is that of Mr. Cheeseman.)

- **Ligusticum* Haastii.
- " " latifolium.
- Linum* monogynum.
- **Litsæa* calicaris.
- Lycopodium* densum.
- Meliclytus* lanceolatus.
- " " ramiflorus.
- Meryta* Sinclairi.
- **Metrosideros* diffusa.
- " " florida.
- " " hypericifolia.
- " " lucida.
- " " scandens.
- " " tomentosa.
- " " villosa.
- " " (Smithii).
- **Muehlenbeckia* australis.
- " " ephedrioides.
- **Myosotis* macrantha var. pulchra.
- Myrsine* Urvillei.
- Myrtus* bullata.
- Nertera* depressa.
- " " dichondraefolia.
- Notospartium* Carmichaelia.
- **Olearia* angustifolia.
- " " avicennifolia.
- " " chathamica.
- " " Colensoi.
- " " Cunninghamii.
- " " furfuracea.
- " " ilicifolia.
- " " ins'gnis.
- " " lacunosa.
- " " Lyallii.
- Pseudopanax* ferox.
- Quintinia* acutifolia.
- Ranunculus* insignis.
- " " Lyallii.
- " " Monroi.
- " " nivicola.
- Rhopalostylis* sapida.
- Rubus* australis.
- **Salicornia* australis.
- **Senecio* Adamsii.
- " " bellidioides.
- " " Buchananii.
- " " compactus.
- " " cleaagnifolius.
- " " Hectori.
- " " lagopus.
- " " Lyallii.
- " " var. *schorzonerioides*.
- " " Monroi.
- " " Stewartii.
- **Sideroxylon* costatum.
- **Sonchus* grandifolius.
- **Stilbocarpa* Ballonsii.
- " " polaris.
- Veronica* anomala.
- " " Barkeri.
- " " Benthamii.
- " " buxifolia.
- " " chathamica.
- " " Colensoi.
- " " Dieffenbachii.
- " " elliptica.
- " " Gilliesiana.
- " " Lewisii.
- " " linifolia.

M. Charles Baltet sent a few framed pictures and engravings of flowers of the Chrysanthemum, and of Japanese Chrysanthemum shows. High above the walls around the show were panels commemorating the four principal epochs in the history of the flower. They were as follows:—

Blancard, 1789, importation of Chrysanthemum.

Bernet, 1826, first seedings.

Fortune, 1846 and 1863, Pompons and Japanese introduced to Europe.

Calvat, 1891, distribution of the modern race of large-flowered varieties.

The society has every reason to be pleased with the result of its efforts. Never before has there been displayed to the public view, either in France or elsewhere, such an exhibition of literary and artistic curiosities relating to the Chrysanthemum. Much interest was excited in the contents of the numerous glass cases containing exhibits, and it was undoubtedly owing to the provision of these cases that so large and valuable a collection was gathered together. The idea originated with M. George Gibault, the society's librarian, and he is to be warmly congratulated on the outcome of his efforts.

The other section of the retrospective exhibition, namely exhibits of old plants and flowers grown anterior to 1895, was scarcely so satisfactory. The growers sent an indifferent collection, and the varieties were not cultivated to the best advantage. A large number of the old Anemone varieties were shown, a good many Pompons, but very few of the old incurved and Japanese.

SINGLE CHRYSANTHEMUMS.

If the value of single Chrysanthemums be estimated by the novelties which were offered for sale last spring—I counted between 90 and 100—it would appear to be very great. But such an overwhelming number of new kinds is of no advantage, for what grower would entail the labour of cultivating so many new kinds unless he had great expectations that they would prove superior to those already in cultivation? It is obvious that size of bloom is being pushed to a detrimental extent, many of the new flowers being too large in proportion to their rather flimsy florets. At the same time, some of the large-flowered varieties are of great value alike for furnishing vases, and for growing in small pots for room decoration. A good-sized, perfectly-furnished plant can be produced in a 6-inch pot, suitable for placing in an ordinary vase, and that alone is a desirable quality. But if the plants are to furnish flowers for cutting, 9-inch to 11-inch pots are to be preferred. A plant of the one size exacts no more labour to cultivate than that of the other, and the bigger plant gives a much larger return of equally fine blooms. The flowers are also suitable for table decorations. There are several pink varieties, but all are a little flimsy, if Miss Rose is excepted. Yellow varieties appear too white by artificial light to be effective, but in the crushed strawberry Mary Richardson we have a very fine flower. *Physalis Franchetii* and this *Chrysanthemum* mixed together are a lovely combination. But the variety that I prefer to all others is Earlswood Terra-cotta when not disbudded. The flowers remain fresh and unaltered in tint for many weeks, and, by artificial light, the colour is much softened. Browned pieces of the Royal Fern form an ideal setting. There is no reason why single varieties of suitable colours should not be mixed with each other, but, on the whole, the most charming arrangements are those which are not mixed. At the Edinburgh Chrysanthemum exhibition there were a few decorated tables of great beauty, but, undoubtedly, the most pleasing and artistic exhibit was that in which only yellow flowers were employed. B.

THE BULB GARDEN.

IRIS HIMALAICA.

MAY I suggest the above as a name for a species of Iris, hitherto, I believe, undescribed, which was sent to me from a locality within sight of Darjeeling in February, 1907? In the case of these plants the colour of the flower was a deep violet blue, and I find that Mr. T. Smith, of Newry, grows a sky-blue form under the name of *I. Clarkei* and a purple variety under that of *I. decora*, both having been raised from seed received from the Himalayas. The true *I. Clarkei* and *decora* are, of course, quite distinct.

This Iris has been thought by some to be a form of *I. sibirica orientalis*, but in reality it is far more closely related to the Chinese *I. Delavayi* than to any form of *I. sibirica* with which I am acquainted. Its falls are always blotched like those of *I. Delavayi* and not veined as in the case of *I. sibirica*, and the capsule and seeds closely resemble those of the

ing; sheaths splitting into fine fibres. Leaves linear, moderately firm at first, but drooping when full grown, upper surface smooth and polished, under surface finely ribbed and slightly glaucous, 2 to 3 feet long, $\frac{3}{4}$ inch broad. Stem slender, lozenge-shaped rather than round in section, solid, 2 feet high, overtopping the leaves, branched, bearing three heads of flowers. Spathes two-flowered, valves yellowish green 3 inches long; pedicels 3 inches long. Perianth tube triangular, $\frac{1}{2}$ inch long; standards spreading, lanceolate, with deeply-channelled limb, $1\frac{1}{2}$ inch long and $\frac{3}{4}$ inch broad, violet-blue veined with a deeper shade; falls 2 inches long by 1 inch broad, obovate-cuneate, violet-blue blotched with white and yellow at the throat. Style branches very broad, keeled and conspicuous, $1\frac{1}{2}$ inches long; crests small, overlapping. Capsule 2 inches long, oblong, trigonous; seeds flat, circular, with dark centre and pale margin. *W. R. Dykes, Charterhouse, Godalming.*

COLONIAL NOTES.

NOTES ON BRITISH COLUMBIAN SHRUBS.

BRITISH Columbia is a country of flowering shrubs. Wherever the giant conifers have been cleared shrubs spring up rapidly, one of the first to appear being *Sambucus pubens*, which is common around Vancouver, growing to a height of 15 feet. The creamy spikes of blossom are by no means the most showy parts, as in July their place is taken by the scarlet fruits which make a fine show in contrast to the abundant foliage. This is, I think, the most effective subject around here, the berries hanging until at length they are eaten off by little birds.

Spiraea Douglasii is a weed here, spreading quickly on the edges of swamps in company with *Ledum latifolium*, *Kalmia glauca*, and other similar shrubs. It flowers abundantly and continuously from July to October, the later flowers being of a much deeper colour, as they are seedling plants.

Another noteworthy subject which attracts attention when in flower is *Cornus florida*, which very often attains the proportions of a tree. When burnt over by a bush fire, it is one of the first to spring up again, clumps of suckers coming from the old roots. The colour of the leaves in the autumn is very distinct, being a mixture of yellow and pink. The fruits when ripe are eagerly eaten by the native grouse.

Amelanchier canadensis is a pretty shrub to be found here, although not very common. It is not vigorous in growth, but flowers freely along the whole length of the branch; the purple pome and autumn colour of the leaves also enhance its decorative value for the garden.

Acer rubrum is one of the most ornamental and common shrubs. It is ornamental the whole year round, with ever-changing attire. In winter the young shoots are crimson, in spring they are hidden by the delicate tints of the young leaves, which in summer are green, but in autumn turn to brilliant scarlet in the open and yellow in the shade, rivalling *Liquidambar styraciflua* for colour effect.

High up the mountain side, never below 3,000 feet, grows *Rhododendron albiflorum* in the shade of *Abies balsamea* and other conifers. Towards the end of July its freshly-opened, creamy flowers and shining green leaves are like a drink of cold water to the hot, tired climber. It is a lovely shrub this, living for six months among the snows. When the spring flowers are over down on the lowlands, the little humming birds come up the mountains where spring has just awaked, to sip the honey from the wide-open flowers.

All of these shrubs are worthy of a place in British gardens, as are many others which grow in nature's garden here. *R. Glendenning, Vancouver.*



[Photograph by Captain Dorrien Smith.]

FIG. 3.—OLEARIA INSIGNIS GROWING IN NEW ZEALAND.

former. It differs, however, from *I. Delavayi* and *I. sibirica* in having a solid stem at all stages of its growth, while the drooping leaves are also very characteristic, having a curiously smooth and polished upper surface, which contrasts strongly with the slightly glaucous under-surface.

My plants came into flower this year about the middle of June, having grown well under fairly moist conditions in a soil rich in humus. The blooms have the drooping appearance so characteristic of the Himalayan Irises, such as *Duthiei*, *Kumaonensis*, &c., and the style branches rise above the tips of the spreading standards. The markings of the falls consist of white blotches on a violet-blue ground, and the throat is tinged with yellow. There is no trace of either crest or beard, so that the plant belongs to the *Apogon* section and has nothing to do with *I. Clarkei*, the name under which it was sent from Darjeeling.

The following is a more detailed description: *I. himalaica*.—Rhizome slender, wide-creep-

VEGETABLES.

NOVELTIES IN VEGETABLES.

THE French gardeners are cultivating for early forcing a Carrot named Paris Egg, a very rapid grower. This may be followed by Early Nantes, a Carrot that has become a great favourite with English gardeners, the roots being of nice form and a bright-red colour. Another variety-resembling Early Nantes is Lobberich, a stump-rooted variety, and late in coming into use; very sweet and good, and deserving to be better known.

heavy croppers. The stalks of these varieties sometimes weigh 4 lbs. each. They are tender when properly cooked, and pleasant to eat. The plants are not to be despised as decorative objects in the pleasure grounds or the mixed flower border.

The Australian brown-skinned Kangaroo differs from most Onions raised in warm countries in being a long-keeping bulb. The skin is amber-coloured, the bulb in shape almost globular, of middle size, firm of flesh, and weighty for its size. The variety should have a good future, it is an excellent market Onion.

be sown weekly—the earliest in mild hot-beds—from the end of the month of March onwards. In the open ground this Radish makes quick growth, and the flesh remains tender for a long period of time, and free from woolliness. The netted Sedan Radish is the equal of Salvator; the root long, pear-shaped, smooth as to skin, and netted black on white. Seeds may be sown at frequent intervals from March onwards.

Of Runner Beans the variety Ohne Gleichen (Peerless) was introduced in 1907; and, judged by the crops of that year, it is a thoroughly valuable variety, which will take a higher rank than the July Runner, from which it was raised. The pods are about 7 inches long, and very freely produced; as good a Bean for the private garden as for marketing.

Among Dwarf Kidney Beans, Thuringia is a fine late-cropping variety, with long and broad pods. The plant is well adapted for cultivation in a cool climate. White Paris Flageolet resembles the variety Thuringia, excepting that the pods are of greater breadth.

The white-flowering, white-podded, conserving variety of Broad Bean that originated in Holland is certainly worth cultivation. The plant has great vigour, it crops heavily, and the pods are well filled and of great length. The seeds may be conserved in the green as well as ripe state. The colour, yellowish-white, is appreciated in a preserved vegetable. *F. M.*



FIG. 4.—A SNOW-SCENE IN THE ROYAL BOTANICAL GARDENS, EDINBURGH.
(See page 11.)

In Celeriac, the variety *Délicatesse* (Delicacy), introduced into commerce several years ago, has maintained its good reputation. The plant has fine foliage, the root is oval-globular and smooth, and it possesses but few fibres. It is peculiarly white in the flesh, and tender in eating. The short-leaved Apple-shaped Celeriac is a highly-esteemed variety.

Among Rhubarbs, a vegetable which in culinary uses is treated as a fruit, the novelties Cyclops and Monarch are valuable as being

Amongst the earliest short-topped and bright-coloured varieties of forcing Radishes are First Crop and Non Plus Ultra, adding to these Drie Brunnen, a famous Erfurt variety. Würzburg Giant is unexcelled as a variety for cultivating in cold frames. The seeds should be sown thinly, or the plants liberally thinned, in order to get fine-sized roots with tender flesh. The Salvator white Radish has been some years in commerce. It is a summer variety, and is becoming a favourite with the public. Seeds may

NOTICES OF BOOKS.

* "THE PLANTER'S HANDBOOK."

MR. BUNYARD has produced a useful handbook, which conveys in plain language much information of a practical nature, easy of reference, well illustrated by line drawings, and handy in form. Directions are briefly given as to the manner of employing trees and shrubs in gardens and parks, the kinds of soils in which they succeed best, proper seasons for planting, and the treatment afterwards necessary. Mention is made of most of the species and varieties of trees and shrubs of recent introduction which are hardy in these islands, the number of which is very large; yet it is regrettable to note how few are those which the ordinary planter and gardener puts to any useful purpose. In this regard we may take as examples Maples (*Acers*), which, if more freely planted, would impart a distinct and pleasing character to the garden and park. How seldom do we note such varieties of the Norway Maple (*Acer platanoides*) employed as *A. p. Reitenbachii*, and *A. p. Schwedleri*, with claret-coloured leaves, or *A. californicum texanum*, a grand, hardy tree, succeeding on dry as on wet land; *Acer dasycarpum*, a species with striking foliage, and capable of growing in any ordinary soil; *Acer Negundo*, of which there are several variegated varieties, *Acer colchicum rubrum*, *A. c. aureum*, and *A. tataricum Ginnala*, all of which Mr. Bunyard includes in his list of desirable trees. We think that he has made his list of *Quercus* too brief, although mention is made of the finer American species. We take it that by *Quercus macrophylla* is intended *Q. macrocarpa*—an Oak with very striking foliage. Flowering shrubs come in for plentiful notice, for which planters should be thankful, and there are useful lists of trees and shrubs with silvery and golden leaves, and of coniferous trees suitable for a variety of purposes. This last list might have been extended with advantage to many readers.

* *The Planter's Handbook*, by George Bunyard, V.M.H. Published by George Bunyard & Co., Ltd., Maidstone. 1908. Price 3s. 6d. net.

NOVELTIES OF 1908.

AGAIN the season has come when it is customary to pass in review the garden acquisitions of the past year. Although many are engaged in the search for new plants, and in the work of raising hybrids, it is the few who, having secured the lead, are able to keep it, therefore most of the better novelties have been shown by the well-known amateurs or nurserymen.

THE ORCHIDS.

In the matter of showy Orchids, the hybridist seems to have it all his own way, for but few new species have been imported. It is pleasant to note that what are known as botanical species of Orchids, having interesting but small flowers, have met with the recognition they merit.

Baron Sir H. SCHRÖDER, The Dell, Egham (gr. Mr. H. Balfantine), secured five First-class Certificates for plants exhibited from his famous collection, viz., for the handsome *Odontoglossum Bingleianum*, *O. Wilckeanum Schröderianum*, *O. crispum Princess of Wales*, a charming flower of perfect form; *O. Phœbe*, and the new and pretty *Miltonia St. Andre*.

Lieut.-Col. G. L. HOLFORD, C.I.E., C.V.O., Westonbirt (gr. Mr. H. G. Alexander), as in former years, takes the lead in the number and quality of the many fine home-raised hybrids which he has shown. First-class Certificates were obtained by *Cypripedium Sultan*, C. Helen II. Westonbirt variety, and *C. Actæus Bianca* (three noble flowers); *Brasso-Cattleya heatonensis* Westonbirt variety, *Lælio-Cattleya Elva* Westonbirt variety, *L.-C. Clive magnifica*, and the famous *Cattleya Schröderæ* "The Baron," a superb variety imported by Messrs. Sander & Sons. Awards of Merit were given to *Lælio-Cattleya Corunna*, *L.-C. Pizarro*, *L.-C. Cornelia* Westonbirt variety, *L.-C. Lustre gigantea*, *L.-C. Ortrude*, *L.-C. luminosa* Westonbirt variety, *Cattleya Enid magnifica*, *Cypripedium Arethusa*, *C. Dante magnificum*, *C. Rossettii*, one of the best of yellow *Cypripediums*; *Sophracattleya Saxa* Westonbirt variety, *Sophracattleya Danæ superba*, *S.-L.-C. Medea* vinicolor, *Brasso-Cattleya Madame Hye* superba, *Odontoglossum Eleanor* Westonbirt variety. At the last show of the season the handsome *Cypripedium Antinous* secured a First-class Certificate.

Sir TREVOR LAWRENCE, Bart., K.C.V.O., Burford (gr. Mr. W. H. White), who combines modern Orchid growing of the showy class with his favourite culture of rare, pretty and curious botanical species, has the longest list of certificated plants, visitors to the Royal Horticultural Society having to thank him for the opportunity of seeing some thirty charming and rare species for which he has been voted Botanical Certificates in addition to a good number of showier floral novelties. These latter include *Cattleya Mossiæ Goossensiana* and *Odontoglossum Wiganianum superbum*, which secured First-class Certificates; and *Cattleya Maronii aurea*, *Catasetum Russellianum*, *Cirrhopetalum Wendlandianum*, *Angræcum angustum*, *A. Germinyanum*, *Dendrobium Jerdonianum*, *Odontoglossum platycheilum superbum*, and *Epidendrum virens*, which obtained Awards of Merit. The thirty Botanical Certificates were awarded to a remarkable and varied collection of rare species, many of which will be found in the appended reference to illustrations in the *Gardeners' Chronicle* during 1908.

Sir JEREMIAH COLMAN, Bart. (gr. Mr. Collier), in the first half of 1908 secured Awards for a number of handsome Orchids chiefly raised in his fine collection at Gatton Park. These were *Cymbidium Gattouense* (*Tracyanum* × *Lowianum*), *C. Lady Colman* (*eburneo-Lowianum* × *Tracyanum*), both elegant hybrids; the pure white *Diacattleya Colmanæ*, *Dendrobium Cybele* Gatton Park variety, *D. Thwaitesiae Bound's* variety, *D. Chessingtonense* Gatton Park variety, and among species the yellow *D. Brymerianum* Gatton Park variety, *Cirrhopetalum pulchrum*, and the singular *Bulbophyllum mirum*, which attracted so much attention in the handsome group staged at the last Temple Show. Sir JEREMIAH COLMAN also flowered for the first time the remarkable *Bulbophyllum lemniscatoides*.

J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis), had one of the finest novelties of the year in the rich scarlet

Sophracattleya Doris, which obtained a First-class Certificate on November 10; his other best exhibits being *Odontoglossum perculatum* J. R. Roberts, *O. Ossulstonii* Glebelands variety, *Cypripedium Ernest Read* and *Catasetum maculatum*.

NORMAN C. COOKSON, Esq. (gr. Mr. Chapman), in *Odontoglossum crispum* Leonard Perfect, which secured a First-class Certificate and Medal, showed the finest "crispum" of the year; his *O. crispum* Kenneth being also good. In *Calanthe Angela* (F.-C.C.) and *C. Norman* (A.M.) Mr. COOKSON beat his own record for brilliant ruby-crimson *Calanthes*. Phaius Clive secured a First-class Certificate; *Cattleya Fabia* Cooksoniæ is a showy white flower with purple blotch on the lip, and *Cypripedium Fairrieanum* Cookson's variety, one of the darkest yet shown.

FRANCIS WELLESLEY, Esq., Westfield, Woking (gr. Mr. Hopkins), has shown some distinct hybrids during the year, and at the Temple Show staged one of the finest of *Cattleyas*, viz., *Cattleya Mendelii* His Majesty the King, which secured a First-class Certificate, and whose picture it is said was accepted by her Majesty Queen Alexandra.

H. S. GOODSON, Esq., Fairlawn, West Hill, Putney (gr. Mr. G. E. Day), received First-class Certificates for *Odontoglossum cœruleum* "King of England," with violet and white flowers; the scarlet *Odontioda Charlesworthii* Goodson's variety; *Lælio-Cattleya St. Gothard*, and *Cattleya Venus*; and Awards of Merit for *Cymbidium eburneum Goodsonianum*, *Lælio-Cattleya Elva* var. *St. Vincent*, and *L.-C. Golden Oriole* Goodson's variety.

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks, produced the fine *Odontoglossum crispum* "Queen of the Earth" (F.-C.C.), the rosy-purple *O. illustre* Theodora; also *O. Queen Alexandra* Crawshayanum, one of the finest coloured hybrid *Odontoglossums*, *O. Zenobia* (Hallii × Edwardii), and several other hybrid *Odontoglossums* of merit.

R. G. THWAITES, Esq., Chessington, Streatham (gr. Mr. Black), showed the distinct novelty *Odontioda Thwaitesii* (*vulcanica* × *Harryanum*), the richly-coloured *Sophracattleya Warhamiensis* "J. M. Black," and the pretty white-petalled *Cattleya Maggie Raphael* delicatissima.

GURNEY WILSON, Esq., Haywards Heath, showed the fine pure white *Brasso-Cattleya Queen Alexandra* Glenthorpe variety, and several interesting species of Orchids.

HUBERT GROGAN, Esq., Slaney Park, Baiting-glass, exhibited the dark violet *Odontoglossum Groganæ* (*Edwardii* × *Uro-Skinneri*).

LEOPOLD DE ROTHSCHILD, Esq. (gr. Mr. Jas. Hudson), showed the deep magenta-rose *Cattleya Clarkiæ intensa*; J. S. MOSS, Esq., sent the white *Odontoglossum nebulosum* Mossiæ; W. THOMPSON, Esq., Walton Grange (gr. Mr. Stevens), the floriferous *Miltonia Bleuana Stevensii*; J. FORSTER ALCOCK, Esq., Northchurch, the dark-coloured *Cypripedium bellatum* Exhibis variety, and *C. Berkleyanum* Exhibis variety.

NURSERYMEN.

MESSRS. SANDER & SONS, St. Albans and Bruges, have obtained First-class Certificates for the showy *Cymbidium Sanderi* (*insigne*) *superbum*, *C. Sanderi splendens*, the violet-blue *Vanda cœrulea* "R. Chollet," *Brasso-Cattleya Madame Chas. Maron* Sander's variety, *Cypripedium Dreadnought*, *Odontoglossum MacNabianum* and *O. Magali* Sander, the last-named being one of the largest and most remarkable *Odontoglossums* yet raised. The Award of Merit plants were *Cattleya Schröderæ* "Queen Alexandra," the unique blotched *Odontoglossum Pescatorei* Sanderæ, *O. Lord Ossulston* Sander's variety, *Vanda amœna* Sanderæ, *Cypripedium Troilus* Lord Nelson, and *Oncidium bicallosum* Sander's variety. Messrs. SANDER & SONS also received Botanical Certificates for *Cymbidium Dayanum* and *Megaclidium colubrinum*.

MESSRS. CHARLESWORTH & Co., Haywards Heath, have exhibited many excellent hybrids, including the handsome *Brasso-Cattleya Cliftonii* and the pure white *Vanda cœrulea* Charlesworthii, both of which secured First-class Certificates; *Sophracattleya Antiochus rubra*, *Sophracattleya Felicia*, *Sophracattleya*

Marathon, *Cattleya Rhoda* (*Iris* × *Hardyana*) in several fine and distinct forms; the deep red *Odontioda Charlesworthii* (F.-C.C.), one of the finest novelties of the year; *Odontoglossum Clytie*, *O. Gladys*, *O. hibernicum*, *Lælio-Cattleya Elinor*, *Trichopilia nobilis alba*, *Bifrenaria tetragona* and *Phalænopsis Lindenii*.

Messrs. JAS. VEITCH & SONS, King's Road, Chelsea, the pioneers of the Orchid-raising industry, are beginning to show the good results of secondary crosses of some of their earlier productions, the very handsome *Cypripedium Elatior* (*Leeanum* × *Baron Schröder*) far surpassing *C. Baron Schröder* at all points while retaining its rich, deep claret-purple, white colouring and fine substance, and *C. San Actæus Etoniense* being the result of transferring the size and shape of *C. insigne* Ilarefield Hall to the good habit and white dorsal sepal of *C. Actæus Langleyense*.

Orchid novelties were also shown during the year by Messrs. ARMSTRONG & BROWN, Tunbridge Wells, Messrs. HUGH LOW & Co., Messrs. STANLEY & Co., Messrs. J. & A. A. McBEAN, Cooksbridge; Messrs. MOORE, LTD., Rawdon, Leeds, and others.

CONTINENTAL EXHIBITS.

Mons. CHAS. VUYLSTEKE, Loochristi, Ghent, whose hybrid *Odontoglossums* are the envy of all Orchidists, showed a selection of varieties at the Temple Show, those of violet-blue colour being specially novel and attractive. First-class Certificates were awarded for *O. illustre* luxurians and *O. eximium* Queen Alexandra, and an Award of Merit for *O. laudatum*.

At the same exhibition Mons. GRAIRE, of Amiens, showed *Odontioda St. Fuscien*, a pretty scarlet-mottled flower.

Earlier in the year Mons. JULES HYE DE CROM, Ghent, secured First-class Certificates for his white *Cattleya Suzanne Hye* de Crom and for the variety *Jungfrau*. Mons. MERTENS, Ghent, has been a frequent exhibitor of good *Odontoglossums* at the Royal Horticultural Society's meetings. Mons. CHAS. MARON, Bruoy, France, received Awards for *Cattleya Rutilant* (F.-C.C.) and *Brasso-Cattleya Helene Maron* (A.M.).

The following new and rare Orchids are among those illustrated in the *Gardeners' Chronicle* during 1908.

- Bulbophyllum mirum*, May 30, p. 348.
- Bulbophyllum orthoglossum*, June 20, p. 406.
- Catasetum Claesianum*, Sep. 19, p. 211.
- Cattleya Mendelii* Holford's variety, May 2, p. 278.
- Cattleya Venus*, Oct. 10, p. 258.
- Cypripedium Actæus*, Oct. 10, p. 261.
- Cypripedium Charlesworthii* Bromilowianum, Oct. 31, p. 210.
- Cypripedium Dreadnought*, Dec. 5, p. 389.
- Cypripedium Minos* Young's variety, Feb. 1, p. 74.
- Cypripedium San-Actæus Etoniense*, Dec. 12, p. 425.
- Cypripedium ventricosum* album, June 27, p. 414.
- Dendrobium Brymerianum* Gatton Park variety, Suppl., Aug. 8.
- Dendrobium criniferum*, Mar. 28, p. 194.
- Dendrobium Madonnenæ*, Mar. 14, p. 162.
- Diacattleya Colmanæ*, Feb. 22, p. 114.
- Epidendrum costatum*, Dec. 19, p. 425.
- Epidendrum falcatum*, Suppl., Nov. 28.
- Epidendrum Lambeauianum*, Sep. 26, p. 228.
- Lælio-Cattleya Elva* Westonbirt variety, May 30, p. 349.
- Maxillaria luteo-alba*, Mar. 14, p. 165.
- Miltonia vexillaria virginalis*, May 30, p. 351.
- Miltonia vexillaria* Westonbirt variety, May, 30, p. 352.
- Odontioda Charlesworthii*, May 30, p. 353.
- Odontioda St. Fuscien*, May 30, p. 353.
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(To be continued.)

The Week's Work.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Preparations for forcing.—In every establishment where large quantities of soft fruit are required, it is imperative that a programme should be drawn up at the beginning of the season, thus systematising the procedure in regard to the forcing operations. In most cases it



is not only necessary to cultivate fruit of the highest excellence, but it is of equal importance that the crops shall ripen at the proper time. More especially do these remarks apply to crops of a temporary character. The gardener should obtain information as far as it is possible as to the approximate dates

when any special demand for fruit is likely to be made upon him. In the case of permanent crops such as Grapes, Peaches and Figs, it is a help to have neat boards hanging in each house, recording on these boards the dates of the stages in the new development of the season, from closing the house before growth has commenced to the gathering of the fruit. Such records have a great value in the following season.

Fruit trees at rest.—Fruit trees under glass need a period of absolute rest. When the pruning has been done, the house should be cleared of any pot plants it formerly contained and the ventilators opened widely at all times unless there is danger of the water in the pipes becoming frozen. If this can be done for several weeks before the house has to be closed for forcing so much the better. The presence of pot plants on fruit-tree borders during the resting season has a very prejudicial effect upon the roots, often causing shanking and bud dropping.

Melons.—If ripe fruits are desired at the end of April or early in May, no time must now be lost before sowing seeds of some trustworthy sort. Fill, therefore, some 2½-inch pots with loamy soil containing a little finely-broken mortar rubble, and warmed to the temperature of the house. Insert two seeds in each pot, and if both germinate, remove the weaker plant as soon as this can be determined upon. Plunge the pots in a moderately warm hot-bed until the seedlings are well through the soil, afterwards placing them on a shelf near to the glass. Although the earliest Melons may be grown successfully in pots, we find that the plants cultivated in beds are most satisfactory. The earliest crops need the advantages of a hot-bed, and the material for forming this should be prepared at once using partially decomposed leaves and stable litter in equal parts. In our case we have the benefit of hot water pipes under the fermenting materials, and it is therefore only necessary to have a small hot-bed, the top of which is raised to within a foot of the trellis. On this hot-bed is placed a bed of soil 18 inches wide by 9 inches deep. The soil is made quite firm, this point being essential. If the loam is of a retentive nature, the inclusion of some old mortar rubble will improve it, and poor soil may be enriched by the addition of finely-crushed bones.

Cucumbers.—Young plants must be raised without delay to fruit in succession to the old plants now showing signs of exhaustion. Sow the seeds singly in 2½-inch pots containing a compost of loam and leaf-mould in equal parts. The soil should be warm when used, and in a sufficiently moist condition that no water will be required until the seeds have germinated. Plunge the pots in a similar hot-bed as advised

for Melons. A hot-bed will afterwards be needed, as in the case of Melons, for forming the beds upon, and if a covering a few inches deep of half-rotten Oak leaves is placed over the bed it will be of great benefit. An atmospheric temperature at night of 65° to 70°, and an increase of about 10° during the day will alike be suitable for the Melons and Cucumbers.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Failures.—Every gardener is bound to meet with failures sooner or later, some owing to unavoidable circumstances, but others are due to improper methods and other adverse conditions which experience will in the future enable him to overcome. It will be well at this season to look



back over the old year and note as far as possible the reason why such and such a crop was not the success it might have been, and take steps to rectify this during the New Year.

Hot-beds.—It will be necessary in many gardens to augment these considerably during the present month as there are very many choice vegetable

ables which can be brought forward with the aid of hot-beds and portable frames. We should hear much less of the French system of gardening if, as I have long advocated, gardeners were provided with a greater number of these portable frames and learned to put them to the best use. They are invaluable to the gardener who has to supply large quantities of forced vegetables, and not only are these of use during the spring months, but they can be utilised with advantage every day in the year, and with the aid of freshly-fallen leaves much less expense incurred in providing the requisite heat. The chief danger in hot-beds lies in the engendering of too much, rather than too little heat, and before adding the soil one should make absolutely certain that the heat is well on the decline, for if once the soil becomes baked, as it most assuredly will if the heat is excessive, no crops will grow in it satisfactorily. Asparagus, Carrots, Turnips, Potatoes, Radishes and such crops are all suitable to this kind of treatment. Cucumbers, Marrows and Melons can also be successfully grown by this method later in the year.

Carrots.—Late sowings made either in heated pits or on hot-beds for supplying young roots early in the year should now be thinned just sufficient to prevent the young plants from becoming drawn. The soil should be stirred between the rows, and air admitted to the frame cautiously whenever the weather is sufficiently mild, on bright days syringing the plants and closing the ventilators at 1 p.m.

Peas.—Those which were sown last month in pots will now have germinated. These should be kept as near the glass as is possible in a cool house or even a cold frame, avoiding the use of fire heat at all times. Make another good sowing of some of the early large-podded varieties in 10-inch pots, and raise the plants in cold frames.

Broad Beans.—These require similar treatment, and provided they are not unduly forced, will produce splendid crops long before one can expect them in the open.

Spinach.—If from any cause the autumn-sown crops prove to be a failure, it will be found a capital plan to sow one or other of the very large-leaved varieties thinly in cold frames. It is surprising what large quantities may be picked from an ordinary-sized three-light frame.

I have found the "Carter" a very reliable variety for this kind of treatment.

Lettuce.—Make small sowings of this in a gentle heat for cultivation under glass. Choose those varieties best adapted to forcing.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Open spaces in London.—During the past two years much interesting and valuable information has been published in the *Gardeners' Chronicle* on park management by the superintendents in the great provincial cities of Cardiff and Glasgow. My own efforts, I fear, will be less successful than theirs have been, and I have some difficulty, from the fact that the parks and other open spaces of London are not under one authority. It has therefore appeared to me desirable in my first article to convey an accurate idea of London's open spaces, and of the divided responsibility that exists for their maintenance and control. The increase in the number and extent of the public parks, gardens, and open spaces within the county of London has been most remarkable during the past 20 years. They are controlled either by the Government, the London

County Council, the City of London Corporation, or the Metropolitan borough councils, of which there are 28 separate governing authorities.

The Royal parks.—The Government have the control of about 1,460 acres, which includes, among others, the important spaces of Green Park, Greenwich Park, Hyde Park, St.



James's Park, Kensington Gardens, Regent's Park, and Primrose Hill. These are all situated within the county, and in close proximity to thickly-populated districts. They are under the management of H.M. Office of Works, and their maintenance is defrayed from the Imperial Exchequer.

The L.C.C. parks.—The London County Council's area of parks, gardens, churchyards, and open spaces comprise about 5,000 acres, and number 112 places, extending from Hampstead and Highgate in the north-west to Tooting and Streatham in the south-west, and from Hackney Marshes and Hainault in the north-east sections to Sydenham and Eltham in the south-east.

The City Corporation.—The City of London Corporation has only a few small places within the county, but outside they have the charge of nearly 6,500 acres, which includes Epping Forest, Burnham Beeches, and Coulsdon Common.

The borough councils.—The 28 metropolitan boroughs have the management of 160 small enclosures, principally small squares, greens, and churchyards, bearing a total acreage of 266 acres. These are controlled and maintained by the borough council in whose area these small but useful enclosures are situated. A large number of them are admirably kept, and all fully justify their cost in procuring and adapting them for the use of the public as an aid to healthful recreation.

Open spaces as playing grounds.—When one considers that within the small area of the London county there are nearly 7,000 acres of park land and open spaces already secured for the use of its inhabitants and visitors, the fact is a very gratifying one. The admirable provision of land for sports and games causes one to wonder how Londoners existed prior to the development of these open spaces. Encouragement is given to basket ball, bathing, boating, bowling, croquet, cricket, football, golf,

gymnasium, hockey, hurley and shinty, lacrosse, lawn tennis, quoits, roller skating, skating on ice, and spiro pole, and a large sum of money is annually expended on bands and other forms of music.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

The forcing house.—Place successional batches of bulbous and other plants in this structure. Tulips will bear harder forcing than most bulbs, but Narcissi and Hyacinths must be brought on gradually or the results will be disappointing. It is essential that all bulbs for forcing should be well rooted before their introduction to heat. Among shrubs suitable for the forcing house at the present time are Acer, Laburnum, Lilac, Prunus triloba, Staphylea colchica, and Azaleas of all kinds (see article on this subject in *Gardeners' Chronicle*, December 12, 19,



26, 1908). Solomon's Seal (*Polygonatum multiflorum*) forces well, and if properly hardened afterwards may be used even in draughty corridors and similar places where most forced plants are not capable of remaining in a good condition. From the present date home-grown Lily of the Valley crowns may be forced successfully, and the flowers from these are usually much more fragrant than those obtained from crowns retarded last season. The moss that is laid over the Lily crowns should be kept in a moist condition, and it must not be allowed to become so matted together that the flower-spikes can only penetrate it with difficulty.

Hippeastrums.—In gardens where there is a considerable stock of *Hippeastrum* bulbs, a batch may now be started into growth, selecting for the purpose firm bulbs that do not require repotting. Carefully remove a little of the surface soil with a pointed stick and afterwards apply a light top-dressing. These plants should be labelled so that they may not be selected for early forcing next season. They will need to be repotted then and will flower later.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Fruit trees on walls.—The pruning and training of hardy fruit trees should be pushed forward in favourable weather. After one of the best autumns on record, the weather broke in December, and caused this work to be delayed. With the aid of planks, however, to walk upon,



training can be carried out when ground-work must of necessity be postponed. On no account permit the ground to be trampled upon when it is in a wet and pasty condition. If any trees have suffered neglect it will be well to cut out a considerable amount of the old wood, even if this involves the sacrifice of a little fruit for a season.

Morello Cherries.—The season of Morello

Cherries may be lengthened by planting a few trees in different aspects, though trees for supplying the main crop should be planted on the north side of a wall. The Morello is not fastidious either as to soil or situation, and if they are planted in a position where fruit trees have not been grown previously, but the soil is in a fair condition, it is not necessary to provide new soil for them. In such a case, spread a coating of wood ashes and lime rubble over the top of the soil and let this be thoroughly incorporated with the staple as the work proceeds. On the contrary, if fruit trees have formerly occupied the site, then apply a compost of good loam, lime rubble and wood ashes. Good drainage is of the first importance, and if this does not exist naturally it must be provided. If fresh drainage is required, place a quantity of brickbats, clinkers or stones in the bottom of the hole, adding slightly smaller material, then placing some turves with the grass downwards, this keeping the fine soil from clogging the drainage. After the turves, put in sufficient soil to bring the trees to the desired height, carefully spreading out the roots to their full length. Fill in between the roots with fine soil, then make the whole quite firm, this latter point being important, as trees planted loosely in rich soil are apt to make unfruitful growth. When finished, the soil should be slightly higher than the surrounding ground to allow for sinking, and till this has taken place, the trees should not be permanently tied. If the trees are young, very little pruning will be necessary the first season, beyond shortening any extra strong shoots. Mulch with some light protective material, but not with heavy manure.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Alterations.—The commencement of the year is a favourable time for altering beds, borders, or shrubberies, either in regard to their outline or in the rearrangement of the plants. The fashions in flower gardening change from time to time, and in very recent years there has been



decided reaction from the formal system of planting. Whatever style is favoured, the flower garden should not be limited to a set of beds of geometrical character collected around the dwelling-house, but should be spread over the entire area of the pleasure grounds.

Every gardener should think out some different mode of planting for particular beds each season. *Bulbs.*—If there are still some bulbs that have not been planted, they should be put into the ground at once. There is something to be said for keeping Anemones over until January before planting them, and in such cases where the soil is of a stiff nature some leaf-mould and sand had better be mixed with the staple before planting, placing a little sharp sand under the base of each tuber. It is rather late to plant Narcissi, but if any are still left over they may yet be capable of giving good returns. Shoots that are appearing now above the soil may need to be guarded from insects and birds.

Protection from frost.—Certain plants are apt to suffer injury from cold reaching their roots, and in such cases a thick covering of fine ashes or some other suitable material will afford them useful protection. Dracenas and Palms may require to have their tops protected, and whilst not neglecting to do this, be careful to avoid placing an excessive amount of covering on them

before it is really necessary. Heather and Bracken are suitable materials for protecting such plants, provided they were cut and dried for the purpose some months ago.

General work.—Present work may include the making or renovating of old paths that have become green. Flower-beds may be dug or trenched, if the ground is not very wet. Fresh turf may be laid on parts of the lawn that have become shabby in appearance.

THE ORCHID HOUSES.

By W. H. WHITE, Gardener to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Platyclinis.—One of the most attractive plants now flowering in the Orchid houses at Burford is *P. uncatata*; although the individual flowers are very small, they are produced on elegant thread-like racemes. The inflorescences arise from half-grown shoots, and the plant having to support so many flowers, and also continue growing, abundance of water must be given to the roots. *P. Cobbiana* has just passed out of bloom, and should also be kept well supplied with water. Plants of the spring-flowering *P. glumacea* have already commenced to grow, and from the present time



until the new pseudo-bulbs are thoroughly matured the plants will need plenty of water at the roots. The summer-flowering *P. filiformis* is now at rest, but the roots must at all times be kept moist. Either of these plants, if they require it, may be repotted immediately they commence to grow, or within a very short time after flowering. To enable the plants to show off to the best advantage when in bloom, shallow Orchid pans are the most suitable receptacles. By using these pans very little drainage is required, thus lessening the weight which would inevitably occur with the well-drained ordinary flower-pot. For many years the plants at Burford have grown exceedingly well when potted firmly in a compost of fibrous peat and Sphagnum-moss in equal parts, both materials being chopped up finely and mixed well together; a moderate quantity of finely-broken crocks is added. An intermediate temperature where such plants as *Miltonia*, *Sobralia*, *Cymbidium*, and *Celogynes* are grown, will suit *Platyclinis* the whole year round. Suspend them near to the roof glass in a light but not sunny position, and on very bright mornings syringe the underparts of the leaves with tepid rainwater.

Cattleya house.—Such plants as *Vanda tricolor*, *V. suavis*, and *Aerides crispum* are now producing quantities of aerial roots. It is advisable to tie in each of these, at intervals, and without unduly cracking them, towards the stem of the plant, and afterwards to gradually guide the young points down into the potting material. The roots will then afford more support to the plant, and be less likely to suffer injury at their points. Afford these Vandas sufficient moisture to preserve the Sphagnum-moss in a fresh-growing condition, and the surface of the stage upon which they stand should be kept moist. *Oncidium cheiroporum*, which has been growing in this house is prominently showing its flower-buds, and the flowers will open better if the plants are now placed in a light position in the East Indian house. While the plants are in bloom, keep the compost rather on the dry side. After flowering, return the plant to its former quarters, and when growth recommences it may be repotted as advised for the *Platyclinis*, with the addition of an equal proportion of leaf-soil. This *Oncidium* will also thrive when suspended or elevated upon suitable stands near to the roof of the intermediate house.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—

Herbaceous and Border Plants, Bulbs, Liliacs, Azaleas, &c., at 12; 1,000 Roses, at 1.30, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY—

Hardy Border and Herbaceous Plants, Liliacs, Ferns, Bulbs, &c., at 12; 4,000 Roses and Fruit Trees, at 1.30; Palms, Azaleas, Rhododendrons, &c., at 5, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

Choice Burmese Dendrobes, Established Orchids, &c., at 67 and 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—39.3°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, December 30 (6 P.M.): Max. 25°; Min. 18°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, December 31 (10 A.M.): Bar. 30.3; Temp. 40°; Weather—Slight rain.

PROVINCES.—Wednesday, December 30 (6 P.M.): Max. 53° Sligo; Min. 21° Colchester.

A Volcanic Island and its Flora.

The process of the colonisation of a new land by the vegetation that will ultimately cover it, has formed an attractive subject for investigation ever since attention was directed to the new islands, coral and otherwise, that from time to time emerge from the sea. The wholesale destruction of vegetation produced by violent volcanic activity is followed by the recovery of their temporarily lost territory by the adjacent survivors, or by those which are reintroduced through human agency. But it can only happen at infrequent intervals that it is possible to study on a large scale the solution of problems of distribution involved in the re-establishment of the flora upon an island, somewhat remote from the nearest land, which has had its covering of plants entirely removed by a catastrophe such as that which devastated the island of Krakatau (or Krakatoa, as it is sometimes spelt) in the great eruption of 1883. The island, which lies about 22 to 28 miles to the north-west of Java, experienced an outburst of volcanic activity before which even the eruption of Mt. Pelée, in Martinique, appears almost commonplace. The dust that was ejected from the crater passed into the upper atmosphere, and is believed to have been concerned in the production of the marvellous sunsets that formed the subject of so much comment in Europe for many months afterwards. It is estimated that something like four cubic miles of solid matter was shot out of the volcano, and the adjacent islands were covered to a depth of over 100 feet with pumice and ashes. The roof of the cavernous space below the craters then fell in, and the whole of the northern part of the island was submerged. The water which thus poured into and surged out of the depression formed great waves, which

rose to a height of about 130 feet and washed the coasts of Java and Sumatra, whilst the effect of the disturbance even extended into the North Atlantic.

The remaining part of Krakatau was sterilised, so far as all things living were concerned, by the rain of hot stones and pumice which fell over its whole surface.

The island to-day, a quarter of a century after the event, is once again clothed with vegetation, and though it has been as yet imperfectly explored, the results of several botanical visits made for the special purpose of investigations of this nature have yielded results of great interest. The first visit after the eruption was made in 1886 by Dr. Treub, the Director of the Botanic Garden at Buitenzorg, in Java, and 11 years afterwards, in 1897, he again visited its shores. After a further interval of nine years another expedition was made to Krakatau and the nearest islands, and a very interesting account of the results of the discoveries thus made has been given by Prof. Ernst, of Zurich*.

It might have been expected that the process of colonisation would have followed the same general lines as have prevailed in coral islands, but this is not the case, doubtless owing to the existence of the high land formed by the volcanic mountain Rakata, which rises abruptly to about 2,728 feet above the sea level.

Dr. Treub, in the earliest visit, found that vegetation was not confined, as he had expected, to the coast, nor were the immigrants derived from ocean-borne seeds and fruits. The winds had clearly formed the means of introduction of the earlier plants, consisting as they did mainly of the lower types of the vegetable kingdom. Algæ, especially the gelatinous "blue-green" forms, and the Ferns were the first to arrive, and although a few flowering plants had established themselves round the coast, they formed but a small proportion of the whole vegetation. In other words, the ocean currents were not the immediately effective agents of transportation, as seems to be generally the case with the low-lying coral islands. When Treub paid his second visit to the island the strand flora had markedly increased, and the characteristic dominant plants of the eastern tropical coasts were establishing themselves. The creeping *Ipomea Pes-capræ*, and other plants along with it, had already begun to form a characteristic association on the beach. Further inland a sort of grass steppe constituted almost a jungle of grasses, which in many places attained to a height of 5 or 6 feet. Shrubs were still scarce, and trees were conspicuous by their absence.

To-day the picture is largely changed. Many flowering plants, including trees, have reached the island, and the photographs of the coast show that in some districts there is an arborescent vegetation which is invading the coastal as well as the inland zones. *Casuarina equisetifolia* and the splendid *Barringtonia*, together with other trees, such as *Calophyllum*, and *Terminalia*, have established themselves, whilst the Screw Pines (*Pandanus*) and Coco Palms are also spread-

ing over the littoral regions. The remarkable discovery was made of a fine *Cycas circinalis*, with fertile leaves arising from a stem over 5 feet in height. The ovules were not fertilised, and no male plants were seen, a circumstance which accounts for the isolation of the specimen. It was unfortunate that, owing to the expedition being imperfectly provided with the means of travelling in a land offering considerable obstacles to exploration, it proved to be impossible to investigate the vegetation of the peak. The lowland flora was already so dense that a way had to be cut through it, whilst, as might be anticipated, the heavy rains had ploughed out gorges and ravines in the soft, volcanic ash and pumice, and thus rendered rapid progress impossible.

The analysis of the soil showed that it was remarkably poor in phosphorus and nitrogen. It was of importance, therefore, to ascertain how the plants obtain these indispensable elements. As to the former, we know nothing positively as yet, but it is interesting to find that the leguminous species have already the bacteria associated with them which are responsible for the well-known leguminous tubercles on the roots of these plants. A new bacillus was also isolated from the soil which, like some others already known to science, has the power of fixing free nitrogen from the atmosphere, thus rendering it available for other forms of plant life.

The existing vegetation, taken as a whole, and so far as it is at present known, has reached the island by three principal agencies. The wind, by which the earliest immigrants were imported, accounts for about 37 per cent. of the vascular plants, and this includes about 25 flowering plants and 16 Ferns, but leaves out of account the lowest organisms to which we have already referred. Sea currents and birds are mainly responsible for the remainder, and as time goes on it is likely that the proportion of those thus introduced will be increased.

But, of course, as the land becomes occupied, the chances in favour of additional immigrants succeeding in gaining a permanent footing in the land will become diminished, inasmuch as the newcomers will have to compete for growing space with individuals that have already established themselves.

The vegetation as it now exists is already beginning clearly to show that sub-division into plant associations which, in all places where free competition can occur, result from what we might term the political differentiation of the vegetable world. The strand flora is an easily recognised type. The grass steppe is another, as is also the *Barringtonia-Calophyllum* belt. As time goes on we may expect the forest to invade the grass land, and each of these larger complexes will undergo further sub-division on lines which will be mainly determined by physical and biological factors working independently of human interference. For it seems improbable, with so much fertile country still open to settlers, both in Java and Sumatra, that man will find it worth his while, at any rate for the present, to spoil the progress of this large-scale experiment. We venture to express the hope that so great an opportunity for study will not be neglected, and that observations will in the future be made at intervals considerably shorter than decades.

* *The New Flora of the Volcanic Island of Krakatau*, by A. Ernst, Ph.D.; translated by Prof. Seward, F.R.S. Cambridge: University Press, 1908.



FIG. 12.—CHONDROPETALUM FLETCHERI, A DIGENERIC HYBRID (ZYGOPETALUM MACKAYI X CHONDROKORHYNCHA CHESTERTONII). SEPALS AND PETALS BRIGHT EMERALD GREEN WITH PURPLE MARKINGS; LIP WHITE, TINGED WITH SULPHUR YELLOW; CREST, A SHADE OF ROSY-LILAC.

CHONDROPETALUM FLETCHERI.—Our illustration (fig. 12) represents this singular bigeneric hybrid, raised in the nurseries of Messrs. SANDER & SONS, St. Albans, by crossing *Zygopetalum Mackayi* with the totally dissimilar *Chondrorhyncha Chestertonii*, whose deeply-fringed labellum was expected to appear in some degree in the hybrid. But the strong individuality of *Zygopetalum Mackayi* has been proved before by crosses made between it and various widely-separated genera, the result of which has been false hybrids, the progeny still remaining *Z. Mackayi* in effect. In this case, although the expected result was not arrived at, a decided step has been made in securing a very beautiful hybrid of neat habit and quite distinct from *Zygopetalum Mackayi*, although a botanist, without knowledge of the manner in which the plant has been obtained, would not find any botanical feature to separate it from *Zygopetalum*. The plants, which are very floriferous, have conical pseudo-bulbs furnished with bright-green leaves. The inflorescence is about 18 inches in height, the handsome flowers, having the sepals and petals nearly equal, bright emerald green with short lines and spots of purplish-chocolate colour. The broad lip is white, tinged with sulphur yellow, and bears no trace of the blue veining of the seed-bearing parent, although the crest, which is of true *Zygopetalum* form, has a delicate rosy-lilac fringe in front of it. The plant was exhibited by Messrs. SANDER & SONS at the Royal Horticultural Society's meeting on November 10 last.

ROYAL HORTICULTURAL SOCIETY.—The first meeting of the Committees in 1909 will take place on Tuesday, January 12, in the Society's Hall, Vincent Square, when there will be competitive classes for late Grapes.

ROYAL GARDENERS' ORPHAN FUND.—We are informed that the Duke of PORTLAND will preside at the annual festival of this fund, which will take place at the Hotel Cecil on Thursday, May 6.

BEFORE THE SNOW.—The weather up to Christmas was as remarkable for its mild character as the present weather is for its severity. Now that most gardens have been so recently buried in snow, it is difficult to realise that last week many were gay with a host of flowers, including not a few tender species. In last week's issue, on page 451, we published a list of 88 species in flower in the gardens of Lord MOUNT EDGEMORE, at Tre-widden, Cornwall, on December 8, and we have received further communications respecting similar abnormal flowering. An interesting list is sent from Abbotsbury, near Dorchester, the residence of Lady MARY LECHESTER, by the gardener, Mr. KEMPSTALL, of plants in bloom on Christmas Day. There are 119 species enumerated, including such tender genera as *Nicotiana*, *Fuchsia*, *Hydrangea* and *Dahlia*. Mr. KEMPSTALL informs us that nearly all these flowers were destroyed on December 27, when 2 inches of snow fell, followed by 8th of frost. Another list has been forwarded by Mr. HENRY D. McLAREN, Bodnant, Tal-y-Cafn, North Wales, of the plants in flower in his garden at Christmas. Mr. McLAREN states that he can usually find between 50 and 60 species in bloom at the end of the year, but this season the number at Christmas was 80. Sir ARCHIBALD BUCHAN-HEPPEN sends a list including about 40 species, and the range of subjects is a very wide one. Sir ARCHIBALD BUCHAN-HEPPEN's garden at Prestonkirk is situated on the south-east coast of Scotland, 100 feet above sea level and 23 miles from the sea.

SWEET PEA TRIALS FOR 1909. We are informed that the Committee of the National Sweet Pea Society will continue its series of trials at the gardens of the University College, Reading, in 1909, and will test novelties, and grant Awards and Certificates according to merit. For these trials the varieties will be accepted only from the raiser or introducer; a charge of 2s. 6d. for each variety will be made. At the request of numerous seedsmen, the Committee will conduct another trial solely for the purpose of testing correctness and purity of stocks of Sweet Peas. A charge of 5s. per variety or stock sent for trial will be made. Sweet Peas for these trials should be sent to Mr. C. FOSTER, University College Gardens, Reading, not later than January 25. For the Novelty Trials not fewer than 15 seeds should be sent, and for the Purity Trials not fewer than two dozen seeds of each variety or stock. At the same time, a list of the varieties, together with the amount due for trial charges, should be sent to the hon. sec., Mr. C. H. CURTIS, Adelaide Road, Brentford, Middlesex. Novelties will be received under number, although names are much preferred. Any variety meriting an award must, if under number, be named before such award can be granted. The proceedings of the Floral Committee will be printed in the autumn of 1909, and a copy will be sent to every person or firm sending seeds to either or both of the sets of trials.

CULTIVATION OF LEONOTIS LEONURUS AT THE CAPE.—The Lion's Tail (*Leonotis Leonurus*) has recently been referred to in some of our contemporaries as a plant that should be more extensively grown for autumn and winter flowering. Besides the attractive character of the plant, it may be interesting to those who grow it or intend to do so, to know that it possesses narcotic properties (notwithstanding that it belongs to the usually considered harmless Order Labiatae), and that its cultivation at the Cape of Good Hope, where it is a native, is a subject that recently occupied the attention of the Legislative Council, which brought in a Bill to prohibit the cultivation of this plant as well as *L. ovata* and the common Hemp (*Cannabis sativa*), the same narcotic property being contained in all three plants. It is a well-known fact that in tropical countries the Hemp plant develops a narcotic resinous coating on the leaves, stem, and flowering tops, which is used either for smoking or for infusing in water in the preparation of an intoxicating beverage. In India the gum resin is known as Churrus or Charas, and is said to be collected by men clothed in leather garments brushing about amongst the plants, and thus bruising them, so that the resin exudes and becomes attached to the clothing of the collectors. The dried flowering tops, called Gunja, are smoked, and they are sometimes to be seen in the London market, where the article is generally known as Guaza. The intoxicating effects of all these preparations of Hemp are well known, and a similar principle seems to be contained in the plants of *Leonotis*, hence the action of the Cape Legislative Council, whose Bill provided that it should not be lawful for any person to sell or grow and cultivate either of the three plants before-mentioned under a fine of £25. Provision, however, is made that nothing should hinder a registered chemist and druggist from using any of these plants for medicinal purposes under the directions of a medical practitioner. It is provided also that licenses should be obtainable from a minister by anyone intending to cultivate the plants for purely medicinal purposes. The reasons for the necessity of legislative restrictions were stated to be that the habit of smoking the plants by the natives

caused them to become indolent and stupid, resulting in insanity and consequent confinement in lunatic asylums and prisons. In India similar effects are produced by the continued use of Hemp—exhilaration at first, followed by great depression but often with "wild reveries and causeless laughter." Long continued use is said to be a prominent cause of insanity. In some parts of India an Excise license is required to cultivate the plant.

BIRDS AND THEIR FOOD. The recently-published Supplement to the *Journal of the Board of Agriculture* (December) is devoted to the consideration of the food of British birds from the economic standpoint, as affecting the farmer and gardener. Mr. NEWSTRAD is to be congratulated on this first instalment of the results of an investigation that has long been greatly needed, and the booklet ought to be in the hands of everyone who is interested in this important subject. It should serve as the means of cutting the ground from under the ignorant statements so often made as to the utility or injury done by this or that native bird. For example, it is stated on p. 28 that the stomach of a blue titmouse which had been shot as "red-headed at the Peas," was found not to contain a single Pea, but to have been filled with American blight insects. We note earwigs are said to be not eaten apparently in large numbers, but amongst its destroyers the Robin is mentioned. We recall an instance that came under our own notice, in which a partly tame robin would always fly down when earwig traps were examined, and greedily devour every individual that it could catch. We have also known of a case in which rooks have saved a large field of Wheat from wireworm. A specimen was shot and examined, and its stomach was filled with the larvæ, and only contained a few grains of the sprouted Corn. It is pointed out that many hard-billed birds feed their young on caterpillars and other pests, and thus a bird which, in its adult state, may ordinarily be a great source of damage, may, in the breeding season, do much good. The work should do much to stimulate further research, and the directions given for collecting useful and accurate observations add greatly to its value.

MASTERS' MEMORIAL LECTURES.—The Royal Horticultural Society has arranged with Professor HUGO DE VRIES to deliver two lectures during 1909 in connection with the fund raised as a memorial to the late Dr. MAXWELL TYLDES MASTERS. The first lecture will be delivered on June 22, the subject being "Masters' Vegetable Teratology." The second lecture, on "The Production of Varieties," will be given by Prof. DE VRIES on September 28. Both the dates are those of ordinary fortnightly meetings, and the lectures will be delivered at 3 p.m. in the lecture-room.

THE YELLOW STRIPE DISEASE OF DAFFODILS.—The current number of the *Journal of the Royal Horticultural Society* contains an account of "Yellow-stripe" in Daffodils, contributed by Mr. H. R. DARLINGTON. This malady, which appears to be on the increase, has been ascribed to various causes. Some have regarded it as being due to over-manuring; others to the presence of *Bacterium hyacinthi*, a microbe which is known to cause disease in the stored bulbs of Hyacinths. Mr. DARLINGTON believes that Yellow-stripe is due, in some cases, to cold, in others, to the consequences of the destruction of the roots by the caterpillar of the Swift moth. He concludes that the malady is not infectious, and that, therefore, there is no need to destroy infected plants.

BRITISH GARDENERS' ASSOCIATION.—The next meeting of the London branch will be held on January 9, at Carr's Restaurant, Strand, at 7.30 p.m., when Mr. CYRIL HARDING, of the Parks Department, Cardiff, will deliver an address upon "Garden Cities: What they are and what they might be."

THE VICTORIA MEDAL OF HONOUR.—We understand that the President and Council of the Royal Horticultural Society have filled the two vacancies caused in the roll of the Victoria Medal of Honour in Horticulture caused by the death of Mr. MARTIN SMITH, V.M.H., and Mr. GEORGE NICHOLSON, V.M.H., by appointing to this honour Sir JEREMIAH COLMAN, Bart., and Mr. CHARLES ROSS. Sir JEREMIAH COLMAN has done much service for horticulture by a long series, extending over many years, of experiments in Orchid breeding and by the instructive exhibits which he has sent to the Society's shows. Mr. CHARLES ROSS is one of our veteran gardeners and fruit growers, and has raised a larger number of seedling Apples than any man living—more probably than any one ever has done before him—and many excellent ones amongst them, such as "Encore," "Charles Ross," and "The Houblon." We are very glad to find that his persevering work has at last been recognised by the bestowal of the highest honour the Society has it in its power to confer. An appreciative notice and portrait of Mr. Ross appeared in our issue for October 24, 1908, p. 299.

ROSE CANKER.—Rose growers will read Mr. H. T. Güssow's account in the *Journal of the Royal Horticultural Society* of a new parasitic Rose canker with mingled feelings. Whilst they cannot but admire the admirable account which he gives of the disease, they will regret that they have a new enemy with which to contend. The disease, which the author shows to be due to a fungus, *Coniothyrium Fuckelii*, starts on the one-year-old wood, but is not readily recognised till its attack is well advanced. The first indication of the presence of the parasite consists in red-brown or purplish spots on the young wood. Mr. Güssow considers that *Coniothyrium* is a wound-parasite, and suggests that a careful watch should be kept for the disease in its early stages, and that, when it makes its appearance, the affected shoots should either be removed altogether or the diseased spots cut out and the wound dressed with creosoted wood tar.

THE ROYAL BOTANIC GARDENS, EDINBURGH.

WHEN the experimental garden of the Caledonian Horticultural Society was added to the Royal Botanic Gardens, Edinburgh, in the sixties of the last century, part of the area was devoted to the cultivation of Conifers, and many new kinds were being introduced from America at about that time. The ground was laid out by James McNab, whose artistic feelings found expression in the admirable curves of the pathways through the newly-formed Pinetum. The illustration at fig. 4 shows one of the paths in winter, bounded on the left by a belt of *Abies* and *Picea*, and on the right by *Cupressinæ*. Conifers do not thrive luxuriantly in the Edinburgh garden. As young plants they succeed well, but the expectations formed 40 years ago upon the aspect of the young specimens in the collection have been by no means realised. The appearance of the taller trees, *Abies grandis*, *A. Lowiana*, *A. firma*, and *Pseudotsuga Douglasii*, on the left of the illustration, were planted by McNab, and their condition at the present time is not satisfactory.

It has been the practice in these gardens for some years past to cultivate, as far as possible,

the plants under glass in borders, rather than in pots. The illustrations at figs. 13 and 14 show the new fernery which was planted late in the spring of 1908. This house replaces one of the old houses which had fallen into disrepair—the very house in which William McNab cultivated his wonderful specimen Heaths. Large blocks of red sandstone have been used for the rock-work, with here and there a tree stump for the epiphytic Ferns, Mosses, and Hepaticæ. Although the Ferns were only planted in May, their growth has been marvellous. Fine examples of many species are seen, amongst which may be noted *Lindsaya retusa*, *Acrostichum viscosum*, *Davallia tenuifolia Veitchii*, *Platy-*

THE AGRICULTURAL HOLDINGS ACT, 1908.

REMARKABLE INNOVATIONS.

THOSE who, for some years past, have been agitating for codification of the law relating to Agricultural Holdings and Market Gardens by combining into one statute the principal Acts of Parliament relating thereto, will have good reason to congratulate themselves on the advent of the New Year, as on January 1, 1909, the Agricultural Holdings Act, 1908, which effects this reform, came into force. This Act (which, for the sake of brevity, we will term the new Act) repeals not only the Market Gardeners' Compensation Act, 1895, but also the



FIG. 13.—A CORNER IN THE NEW FERNERY AT EDINBURGH ROYAL BOTANIC GARDENS.

cerium grande, *P. angolense*, *P. æthiopicum*, *Polypodium quercifolium*, as conspicuous examples. The *Lygodium*s form graceful plants for the pillars of the central dome. In one respect cultivation of this kind is very easy in Edinburgh. The low intensity of insolation renders elaborate shading unnecessary. The shading furnished by the growth of climbing plants is sufficient even during the short period of hot summer days. The Fernhouse was erected by Messrs. Mackenzie & Moncur, of Edinburgh, and it is an admirable example of their work. R. L. Harrow.

Agricultural Holdings Acts of 1883, 1900 and 1906, together with certain sections of other Acts and embodies their provisions in a single new statute.

The benefit conferred upon agriculturists and market gardeners by this partial codification of the law should be considerable, as, although the new Act does not purport to embrace in addition the numerous decisions given in the courts on the effect of various words and phrases so as to bring to light the numerous traps which lie in the path of the unwary, yet it at least enables those affected to obtain a rough idea of their

rights, and will induce many to weigh with more care than hitherto the effect of tenancy agreements to which they are invited to bind themselves. It is, unfortunately, true, however, that although the new Act is of vast importance to the market grower, it does not yet interest the nurseryman, inasmuch as the Government has not yet found leisure to make the promised enquiry into the possibility of extending to nurserymen the benefit of the Agricultural Laws.

In proceeding to explain the effect of the new Act, it may be useful to point out that many of its provisions will be familiar to those who watched the stormy passage through Parliament of what was once known as the Land Tenure Bill; on its becoming law, this Bill was legally termed the Agricultural Holdings Act, 1906, and was due to come into force on January 1, 1909. For the sake of convenience, however, it now stands repealed, and its provisions, with those of the other statutes referred to above, are together incorporated in the new Act.

COMPENSATION FOR IMPROVEMENTS.

Those who perused certain articles on the subject of agricultural law which appeared in these columns on November 3 and 10, 1906, may recollect that the question of compensation for improvements was explained at some length, and it was then pointed out that, as regards improvements to which the Market Gardeners' Compensation Act, 1895, applied, the Act was not retrospective; that is to say, compensation could not be claimed thereunder in respect of improvements made before January 1, 1896. As a matter of fact, those who framed that Act did not intend to make any distinction between improvements carried out before the date in question and those carried out afterwards; but the section which dealt with this point was not worked quite so clearly as could have been desired, and in a case which was taken to the House of Lords, it was decided that the Act of 1895 only applied to improvements effected after it came into force. It was felt at the time that this decision involved a hardship which was not intended by the legislature, and the matter has now been put right in the new Act, with the result that after January 1, 1909, a considerable benefit is conferred upon market gardeners whose holding was, on January 1, 1896, in use or cultivation as a market garden with the knowledge of their landlord. In future they will be entitled to claim compensation for improvements which they carried out before January 1, 1896, provided they had not received written notice from their landlord that he objected to such improvements before they effected them.

Such remaining sections of the new Act as create new law apply equally to farmers and market gardeners, and in connection with improvements there is a further enactment of considerable importance. It was pointed out in the previous articles referred to above that when a tenant, on quitting his holding, claimed compensation from his landlord for improvements, he must not seek to take credit for that part of the increased value of the land which was really attributable to the special character of the soil; that is to say, the inherent capabilities of the landlord's property, as distinguished from works carried out by the tenant. This is no longer the law, as the outgoing tenant now becomes entitled to claim, in respect of various improvements mentioned in the new Act, such a sum by way of compensation as fairly represents the amount of increased value to an incoming tenant, even though part of such increased value is clearly attributable to the inherent capabilities of the soil itself. The improvements to which this provision refers cover the items Nos. 1 to 16 in the previous articles referred to above, and include such matters as the reclaiming of waste land, planting orchards, laying down land to pasture, draining, etc.

ARBITRATION.

The new Act provides that all disputes are to be referred to a single arbitrator, and any agreement between the parties to refer the matter to more than one arbitrator is absolutely void. This provision applies irrespective of whether the dispute arose either before or after the passing of the new Act. Furthermore, the arbitrator is bound, if desired by either party, to specify the amount awarded in respect of not only any particular improvement but also of any other

special matter dealt with by his award. If, as is highly probable, the parties cannot agree on the person who is to act as sole arbitrator, then either party can call upon the Board of Agriculture to nominate someone to act in that capacity.

DAMAGE BY GAME.

In country districts the damage caused to crops by the depredations of game leads to many disputes between landlords and their tenants. The latter already have statutory protection in the case of hares and rabbits, but a different question arises when the damage is caused by what is legally regarded as "game" for this purpose; that is to say, deer, pheasants, partridges, grouse and black game. The new Act provides that the tenant is to be entitled to compensation from his landlord for damage caused by such game (in cases where the tenant has not the right to take and kill the game) where the damage caused amounts to more than a shilling per acre. Any agreement to the contrary between landlord and tenant is void, and any agreement made beforehand to limit the amount of compensation is also void. If, after the damage is caused, the landlord and tenant cannot agree on what would be reasonable compensation, the matter has to be referred to arbitration, but before seeking to recover compensation the tenant has to take several important steps, viz. :—

1. He must give notice in writing to the landlord as soon as he observes the damage.

2. He must give the landlord a reasonable opportunity of inspecting the injured crop; that is to say (a) in the case of a growing crop he must do this before the crop has begun to be reaped, raised or consumed; or (b) if the damaged crop is already reaped or raised he must give the landlord a similar opportunity for inspection before beginning to remove the crop from the land.

3. He must claim the compensation by notice in writing given to his landlord within one month after the expiration of the calendar year (or such other period of 12 months as the parties may have agreed to substitute for the calendar year) in respect of which the claim is made.

At first sight these provisions may appear a little contradictory, but on closer scrutiny it will be observed that the effect of them is that the tenant need only give notice of the damage to his landlord immediately, and is not obliged to give notice of his actual claim until a period which may be much later.

Landlords reading the Act may perhaps be excused for feeling a considerable amount of anxiety with regard to amounts which they may have to pay by way of compensation for damage thus caused by game, but they may possibly feel some slight measure of relief when they reach a further clause which provides that in the case of tenancy agreements made before January 1, 1909, the arbitrator, in fixing the amount of compensation for damage of this kind, must give the landlord due credit in those cases where he has already made allowance for the anticipated depredations of game by accepting a lower rent than he would otherwise have demanded. Further, relief is also afforded to the landlord by a provision to the effect that if the right to kill and take game belongs to some person other than the landlord (e.g., a person holding the sporting rights), then such other person is bound to make good to the landlord any compensation which the latter has to pay to the tenant. *H. M. V.*

(To be continued.)

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

GRAPES.—There can be no doubt as to the variety named "Canon Hall" Muscat being distinct; but whether it is a sport or seedling from Muscat of Alexandria is a question of some uncertainty. I am inclined to think it is a seedling, the result of a cross between Muscat of Alexandria and some European variety. With a view to raising new varieties, numberless attempts have been made to cross "Asiatic" and

European kinds of Grapes. As an instance of this, I may mention Melville's Muscat Champion, Thomson's Duke of Buccleuch, and Thomson's Golden Champion. These are all said to be crosses between the Asiatic Muscat of Alexandria and the European Hamburgs, and, like "Canon Hall," not one of these can be said to be satisfactory, although all of them are remarkable for their large, handsome bunches and berries of excellent flavour. Like "Canon Hall," they are gross and robust growers, but, except in young vines that are grown in light, airy vineries, there is a great deficiency of firm pith in the wood. In consequence of this, the buds rarely produce compact, shapely bunches, and the spurs often fail altogether after a few years, showing clearly that something is wrong in the constitution of these hybrids. At this season, horticultural societies usually revise their schedules of prizes, and in cases where Muscat of Alexandria classes are provided, it would be well if the word "Alexandria" were omitted, making it to read "White Muscat," and thereby prevent those unpleasant differences between judges and exhibitors that have been frequent in the past. I note in the columns of the *Gardeners' Chronicle* that the Council of the Royal Horticultural Society has decided to hold fortnightly exhibitions of fruit during the forthcoming year. This is a step in the right direction, and it is to be hoped that Grape growers will come forward with the best varieties in their proper season. It would be instructive as well as interesting if a special effort were made to bring as many as possible of these so-called varieties of Muscats together, say, at one of the autumn shows. *J. McIndoe.*

MELONS.—Seeds of an approved variety should be now sown. Take a number of carefully-drained 2½-inch pots, and fill them with moderately-moist, fine compost consisting of loam and leaf-mould. Plant a seed ½ inch deep in each pot, and cover with shaded pieces of glass. Plunge the pot in a hot-bed of 80°, and maintain an atmospheric temperature at night of 70°. No water will be required until the plants appear, when they should be placed near the glass in a house having a night temperature of 70°. Keep the plants carefully watered, and in bright weather syringe them, in each case using tepid water. The plants may be fruited in 10 or 12-inch pots, or be planted out at 2 feet apart upon a ridge or hillock of compost, placed well up to the glass, upon a hot-bed. The bed should be composed of carefully-prepared stable litter and tree leaves, or, as in our case, hot-water pipes may be used for affording the necessary bottom heat. *Thomas Coomber.*

MANURING OF LAND.—The weather having been unusually dry and mild, ground operations have been carried out under most favourable conditions. A general survey should now be made to ascertain which fruit trees need manure, as by so doing matters will be greatly facilitated later, when on frosty mornings manure may be wheeled to the different trees. No hard-and-fast rule can be laid down, as some soil requires much more manure than others, and trees that annually carry good crops of fruit need most assistance. Where farmyard manure is procurable, this should form the staple, using as auxiliaries wood ashes, lime, and such chemical manures as kainit and super-phosphate. Unless well manured every year or two, Apples and Pears grown on the dwarfing stock soon become exhausted, a frequent error with regard to these trees being to apply too much manure when planted and too little afterwards. On heavy soils inclined to hold water, it may be better to defer mulching with manure until the growing season. Old-established Apple and Pear trees in orchards will be greatly benefited by a surface mulch of manure, as the winter rains will then wash the manurial properties down to the roots. All bush fruit quarters are also considerably improved by a good dressing of manure annually, which should be lightly pointed over afterwards, as digging too deep injures the roots of these trees. *F. Jordan.*

ESCALLONIA.—Mr. Divers (p. 438, vol. xlv.) remarks on the probability of these lovely shrubs doing well in the climate of south-west Ireland. He is quite right, and it would doubtless surprise many if they were to see how remarkably vigorous most of the Escallonias are here. *E. macrantha* is almost as vigorous as the Laurel, and a variety with rather smaller leaves is a more continuous flowerer, but equally as strong in growth. *E. montividensis* attains to a height of 7 or 8 feet, and is about the same in diameter, flowering for fully three months (October to January); it has some fine paniced corymbs open now (December 22). *E. Philippiana* is a wonderful sight in June and July, with its dense panicles of small, white flowers. What I take to be *E. pterocladon* is a shrub about 12 feet high, and, at the present time, has quite a number of

viding there be an eye at each piece, are planted in March, 5 rows in the bed, plant not deep, neither in wet or stiff ground; spend them with Parsneeps, and in housing spread only through a board floor." Lawson, in *Scottish Agricultural Products*, says: "To Thomas Prentice, a common day labourer, who lived near Kilsyth, is the honour due of bringing this useful esculent into general culture in Scotland in 1728." He adds there was long a prejudice against it, because it was not one of the food roots mentioned in the Bible. The first book on the Potato is that by John Forster, in 1664, entitled, *England's Happiness Increased, etc., by a Plantation of Roots called Potatoes*. This work is also exceedingly scarce, and I wonder if it is in the Earl of Haddington's famous library at Tynninghame? *Donald McDonald*.

the ordinarily blue *Gentiana campestris*, remarking that he had found it occupying an area of several square yards at an elevation of about 1,000 feet in the Scottish Highlands, while all the plants at a lower elevation were of the usual blue colour. The plant had evidently come true from seed, and this, he thought, was probably true of the majority of albinos when self-fertilised. There are numerous examples of albino varieties of British wild plants occurring naturally, and Mr. FRASER produced a list which, supplemented by other members, is here reproduced, but it is by no means exhaustive.

Papaver Rhœas
Matthiola incana
Viola odorata
" *hirta lactiflora*

Centaurea nigra
Carduus nutans
Cnicus palustris
" *arvensis*



FIG. 14.—VIEW IN THE NEW FERNERY AT EDINBURGH ROYAL BOTANIC GARDENS.
(See p. 11.)

its pretty whitish panicles in flower. *E. langleyensis*, although occupying a somewhat poor position, does equally well. The Escallonias make magnificent hedges here, the refreshing gloss of the foliage is ever attractive, and they bear close clipping quite as well as the Yew. *A. J. Elgar, Killarney House Gardens, Co. Kerry*.

THE POTATO IN SCOTLAND.—With regard to Mr. R. P. Brotherton's note on p. 451, vol. xlv. although James Donaldson's little book, published in 1697, may contain matter of no value, the book itself is very scarce. I saw £4 given for a copy last year in a London auction-room, and my own copy cost me 50s. John Reid, who wrote *The Scots Gardener*, and produced it in 1683, gave us the first book on gardening in Scotland. He states, on page 107: "Potatoes being cut in as many pieces as you please, pro-

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

DECEMBER 22.—*Present*: Mr. E. A. Bowles, F.L.S. (in the chair), Messrs. A. W. Sutton, G. S. Saunders, J. T. Bennett-Poë, E. M. Holmes, H. J. Chapman, L. Crawshay, A. Worsley, F. J. Baker, J. Fraser, and F. J. Chittenden (secretary).

Malformed Cyclamen.—Mr. CRAWSHAY showed an interesting, though not very uncommon, malformation of the Cyclamen, where two flowers had been produced in the axils of two of the sepals of an otherwise quite normal flower. All the flowers on the plant, which was a seedling, were similarly malformed.

Albinos among British wild flowers.—Mr. J. FRASER showed specimens of an albino form of

Viola lutea amœna
Polygala vulgaris
" *serpyllacea*
" *calcareæ*
Silene acaulis
Malva moschata
Geranium Robertianum
Ononis spinosa
Trifolium incarnatum
Rubus rusticanus
Rosa canina dumalis
" *succulosa*
Rosa dumetorum
Epilobium hirsutum
Scabiosa succisa

Campanula rotundifolia
Calluna vulgaris
Erica tetralix
" *cinerea*
Centaurium umbellatum
Gentiana campestris
Verbascum nigrum
Bartsia Odontites
Ballota nigra
Thymus Chamædryas
Galeopsis Tetrahit
Ajuga reptans
Polygonum Bistorta
Orchis muscicola
" *maculata*
Scilla nonscripta

Plants in bloom.—Mr. BOWLES showed specimens of *Felicia petiolaris* gathered from the open in a Wimbledon garden, where the plant had flowered up to the present since the autumn. He also showed specimens of the following species of Crocus, which were flowering out-of-doors considerably before their normal period

of bloom:—*Crocus Imperati* (monophyllus) and a depauperate form of the same species; *C. Selberi* and *C. chrysanthus*. *C. Imperati* was also shown from Wisley.

Grease bands.—Mr. J. WATKINS, orchard foreman to Sir Edmund Loder, Bt., Maplehurst, Sussex, sent a grease band from an Apple tree with an enormous number of winter moths (*Cheimatobia brumata* and *Hybernia aurantiانا*), both male and female, adhering to it. Mr. WATKINS wrote that when he took the band off nearly 400 male and female moths were upon it, and that there were many bands on which 200 and upwards have been caught. The trees had never been banded before; but now some 10,000 had been done. The mottled umber moth was the first to be caught, but later the small winter moth was entrapped in much greater quantities. Birds appear to take a great number of the moths from the bands and devour them, particularly the blue tits. Few moths were caught when the bands were first put on (in the first week in October). The larger proportion of females was caught from the middle to the end of November, and a few are still attempting to ascend the tree stems. Males were most abundant earlier.

LINNEAN SOCIETY.

DECEMBER 17.—Mr. W. C. Worsdell exhibited living specimens of various forms of *Selaginella*, and remarked that in *Selaginella inequalifolia*, Spring, *S. Willdenovii*, Baker, *S. canaliculata*, Baker, *S. serpens*, Spring, *S. Mettenii*, A. Br., he observed rhizophores which had grown out spontaneously into leafy shoots. The mode in which this takes place shows that the rhizophore has the morphological character of a shoot, as there is clearly but a single organ here concerned, and there is no question of the shoot developing out of an organ of a different nature represented by the extreme base of the whole structure. The exogenous origin of the normal rhizophores, the fact that the two (upper and lower) at the base of each dichotomy of the stem form therewith a tetrachotomy, two arms of which are in a plane at right angles to the other two, and their constant, definite place of origin, are all in favour of their shoot-nature. Transitions occur between the normal rhizophore and the extreme leafy form. The rhizophore is probably homologous with the "protocorm" of *Lycopodium* and *Phylloglossum*, and with the organ known as *Stigmara*; if so, it follows that both the "protocorm" and *Stigmara* are also of shoot-nature. It is very unlikely that organs intermediate between shoot and root can exist in Nature.

Mr. George Massee exhibited preserved specimens and lantern-slides of the "Black Scab" of Potatoes. During the past few years this disease, caused by a parasitic fungus, has assumed the proportions of an epidemic in various parts of this country. The tuber is the part most frequently attacked, but very young leaves are sometimes infected. In tubers the young "sprouts" are attacked, and, owing to the stimulation induced by the parasite, the infected sprouts rapidly increase in size and form large coralloid masses or warts, which frequently cover the greater portion of the surface of the tuber (see fig. in *Gardeners' Chronicle*, August 22, 1908, p. 146). These masses eventually become blackish-brown in colour, due to the presence of myriads of dark-coloured resting-spores. Infection always takes place from without, consequently the epidermal or peripheral cells alone are infected. The presence of mature resting-spores imbedded deeply in the tissue of the host, at first sight appears to contradict this statement, but this appearance is due to the rapid growth and division of uninfected epidermal cells, which soon forms a tissue superposed on what was previously the periphery. A point of interest in connection with this disease is the absence of periderm, which in other diseases of Potato tubers is so readily formed. On germination, the inner, thin hyaline wall is extruded in the form of a sphere, through a crack in the thick-coloured outer wall of the resting-spore. The thin wall of the extruded inner membrane soon deliquesces, and liberates myriads of elliptical, 1-ciliate zoospores. The facts that the host is infected through the epidermal or peripheral cells, and the extrusion of the inner wall of the resting-spore as a sphere,

from which the zoospores escape in an active condition, indicate that the parasite belongs to the old and well-known genus *Synchytrium*. What happens to the zoospores after their liberation into the ground remains to be discovered, but experiments conducted at Kew prove that soil once infected produced a diseased crop even after a period of five years.

Messrs. H. and J. Groves exhibited specimens of *Luzula pallescens*, Besser, collected in Woodwalton Fen, Hants., by Mr. J. Groves in company with Mr. E. W. Hunnybun, who discovered the plant there last year.

Dr. Otto Stapf, F.R.S., Sec.L.S., exhibited, for comparison, specimens of *L. pallescens* from Central Europe.

Mr. G. Claridge Druce, M.A., exhibited as a probable new British plant, *Montia lamprosperma*, Chamisso; the characters by which it is distinguished from *M. fontana* being, it was stated, the larger, Chestnut-brown, shining seeds, reticulate rather than tubercular. In *M. fontana* they are small, dull-black, and strongly tubercular. The plant has a distinctly northern range, and from its being the only form found in the Faroes, and from its occurrence in Scandinavia, Russia, and North Germany, it might be expected to grow in Scotland. Mr. Druce has specimens which he found in Ross-shire in 1881 in Glen Spean, and on Loch na Gar, the latter at an altitude of 3,400 feet.

Mr. Clement Reid believed he had met with the seeds of both species in his researches in British leaf-beds.

A paper, by Mr. R. P. Gregory, M.A., was communicated by Prof. A. C. Seward, F.R.S. The author stated that in 1877 Hermann Müller described four forms of *Valeriana dioica*, distinguished from one another by the size of the flower and by the relative development of the male and female reproductive organs. The phenomenon appears to be very similar to that which was described by Darwin in *Rhamnus catharticus*. It has been found that the individuals of *Valeriana dioica* may be conveniently arranged in four groups, which are distinguished as, respectively, "Female," "Hermaphrodite," "Long-styled Male," and "Short-styled Male." But while the central types of each group are readily distinguishable, it must be distinctly recognised that they are connected by a series of intermediate forms, and that there is no discontinuity between successive groups.

ROYAL HORTICULTURAL OF IRELAND.

DECEMBER 17.—The 79th annual meeting of this Society was held at 33, Dawson Street, Dublin, on this date.

The following is an extract from the report of the Council:—"The Council's arrangements with the National Sweet Pea Society to hold its provincial show in Dublin was a prominent feature. Public patronage, nevertheless, fell short of expectation, and this in spite of judicious advertising. The spring show, extending over two days, came out somewhat better, yet, in hopes of obtaining more satisfactory results in the near future, the Council have considered the possibility of holding the next spring show in conjunction with the Royal Dublin Society's spring show at Ballsbridge. Sixty-two new members joined during the year, while losses by resignation and death totalled 16. The membership includes three honorary members, 45 life members, 268 annual members, and 63 practical members, or 377 in all. Seven members of the Council retire by triennial rotation, viz., Messrs. G. Watson, J. McDonough, J. W. Henderson, Rev. Canon Hayes, E. D'Olier, Hamilton Drummond, and H. Crawford. Mr. Hamilton Drummond does not seek re-election, leaving two vacancies to be filled."

The Chairman, Sir John Nutting, Bart., said the Royal Horticultural Society had 10,000 members, and the Irish Society ought to have 1,000. The holding of their spring show in connection with the spring show of the Dublin Society was a step in the right direction. Agriculture and horticulture were very closely allied. He wished that something could be done to induce the artisan classes to take an interest in the Society's shows.

The report was unanimously adopted.

The Secretary stated that the Society would

hold three shows next year, namely, one at the spring show of the Dublin Society, a Rose show in July, and a third show later on.

The following were then elected to replace the outgoing members of the Council:—Mr. George Warren, Mr. James M'Donough, Mr. Wylie Henderson, Mr. Edmond D'Olier, the Rev. Canon Hayes, Lady Alhreda Bourke, and Mrs. Grier. Mr. Knowlden was appointed secretary.

ST. IVES (HUNTS.) HORTICULTURAL.

DECEMBER 21.—The 10th annual show of the above society was held on this date in a large marquee in the centre of a wide street known as the Broadway, and consisted of garden, farm, and dairy produce. Being market day, the tent was at times crowded with visitors. Amongst the principal classes in the garden section were those for Apples and Pears. Of three dishes of cooking Apples there were 12 exhibits. The 1st and 2nd prizes were won by the Earl of SANDWICH, Hinchinbrooke, Huntingdon (gr. Mr. J. Barson), with large and richly-coloured fruit; 3rd, Mr. C. COUSINS, Croxton Park, near St. Ives. Of three dishes of dessert Apples there were 12 exhibits. Mr. C. COUSINS won the 1st prize splendidly with Cox's Orange Pippin, Ribston Pippin, and King of the Pippins; 2nd, R. M. COPLEY, Esq.; 3rd, The Earl of SANDWICH.

For three dishes of dessert Pears, of which there were six exhibits, the 1st prize was well won by Sir A. W. MARSHALL, Buckden Towers, with Josephine des Malines, Glou Morceau, and an unnamed variety; R. M. COPLEY, Esq., followed closely with Josephine des Malines, Winter Nelis, and Glou Morceau. For one dish of dessert Pears there were 10 exhibits, and in every case these were of a high quality. Mr. T. LONGLOD was 1st with a magnificent dish of Doyenné du Comice. For one dish of Apple Cox's Orange Pippin, there were 16 entries. R. M. COPLEY, Esq., easily won the 1st prize with perfect specimens. For one dish of any other dessert variety, R. M. COPLEY, Esq., again led amongst 11 entrants, staging very fine and well-preserved fruits of Ribston Pippin.

The Earl of SANDWICH showed the best cooking Apples. Prizes were also awarded for Onions, Carrots, and Potatoes, and in each case these vegetables were well shown. E. B.

NATIONAL DAHLIA.

DECEMBER 29.—The first meeting of the Executive Committee of the above society was held on this date at the Hotel Windsor, Victoria Street, W., under the presidency of Mr. George Gordon.

It was decided to hold one exhibition on Thursday and Friday, September 2 and 3, 1909, at the Crystal Palace, and another on Tuesday and Wednesday, September 21 and 22, at the Royal Botanic Gardens, Regent's Park. The schedule was passed for both shows, and in addition to providing competitive classes for decorative and garden Cactus Dahlias, Certificate of Merit will be awarded for seedling varieties suitable for this purpose.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending December 30.

The coldest night for nearly 14 years.—After six weeks of unseasonably warm weather a change took place on December 23, since which date some very low readings have been recorded. On two days the highest reading in the thermometer screen rose only to respectively 24° and 25°, while on the last three nights the exposed thermometer has registered from 23° to 31° of frost. The latter is the lowest reading recorded here since February 7, 1895, or for nearly 14 years. The ground temperatures have fallen considerably during the week, the reading at 2 feet deep being now only of about seasonable warmth, and at 1 foot deep 2° colder than the average. Snow has fallen on each of the last three days, and on the evening of the 29th covered the ground to the depth of 5½ inches. The sun shone on an average for 26 minutes a day, or for about 50 minutes a day short of a seasonable duration at the end of December. During the nine days ending the 27th no sunshine at all was recorded. Light airs alone prevailed during the week, the direction being almost exclusively some easterly point of the compass. There was about a reasonable amount of moisture in the air at 3 o'clock in the afternoon. E. M., Eerhamsted, December 30, 1908.

MARKETS.

COVENT GARDEN, December 30.

[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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices, including Acacia (Mimosa), Azalea, Bouvardia, Calla, Camellias, Carnations, and others.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage and plants, including Adiantum, Asparagus, Berberis, and others.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various potted plants and their prices, including Aмпelopsis, Aralia, Araucaria, and others.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices, including Apples, Grapes, Lemons, and others.

Potatos.

Table listing various potato varieties and their prices, including Kents, Lincolns, and others.

REMARKS.—Prices are about the same, but trade is not so good. Very small consignments are arriving on account of the severe weather. Edward J. Newborn, Covent Garden and St. Pancras, December 30, 1908.

COVENT GARDEN FLOWER MARKET.

The Christmas trade finished satisfactorily, though no exceptional prices prevailed. In some few instances, chiefly for best quality produce, things were a little dearer. The sudden change in the weather may make a considerable difference in the value of all things, and if the conditions remain severe the supplies from France will fall off.

CUT FLOWERS.

Good Chrysanthemums are becoming scarce, but ordinary blooms are plentiful, although dearer. Supplies of Roses have fallen off considerably, and their value is sure to advance.

POT PLANTS.

There was the usual activity caused by the Christmas trade, but since then there has been practically no demand for plants. Azaleas are a leading feature; these plants are well flowered this season.

CATALOGUES RECEIVED.

SEEDS.

Table listing various seed catalogues and their publishers, including HARRISON & SONS, LEICESTER, and others.

MISCELLANEOUS.

Table listing various miscellaneous items and their suppliers, including ISAAC GODBER, STANCLIFFE ESTATES CO., LTD., and others.

REMARKS.—All vegetables are very dear owing to the wintry weather. The Christmas trade generally was good, Apples especially maintaining good prices. The supply of Pineapples was greater than the demand, and consequently, these fruits did not realise the high prices anticipated by the brokers.

Obituary.

ALEXANDER WHYTE.—We regret to announce the death of Mr. Alexander Whyte, F.L.S., F.Z.S., the well-known explorer and authority on economic botany. Mr. Whyte was a son of the parish minister of Fettercairn, Kincardineshire. As a young man he went out to Ceylon; Coffee-planting was then in its heyday. His interests were markedly scientific. He studied tropical botany, particularly in its economic and trade aspects. When he left Ceylon Mr. Whyte became attached to Sir Harry Johnston's expedition to Central Africa in the official capacity of naturalist, and in the course of these journeys in Nyassaland and Uganda, he laid the foundations of a knowledge of the plant and animal life of the continent possessed by few, if any, men of the time. Some 500 new species were discovered by Mr. Whyte in these journeys. In 1898 his services were secured by the British Administration in Uganda. His headquarters were at Mengo, the native capital of Uganda, and there he started experimental gardens and commenced other branches of research work. On his return from Mombasa to Uganda, Mr. Whyte had passed through British East Africa, and in 1902 the Government selected him as Director of Agriculture in that Protectorate. Here he made many and important discoveries in the botany and natural resources of the Protectorate. He retired in 1903 from the Government service, but in the two succeeding years he made visits to Liberia to investigate the rubber resources of that country in the interests of a London company, which held important concessions from the Liberian Government. He travelled widely through Liberia, and made many discoveries of scientific and commercial importance. He brought home with him a large collection of herbarium specimens. These were classified at Kew, between 60 and 70 of the plants proving to belong to genera and species new to science. These plants have been described and named by Dr. Stapf in the *Journal of the Linnean Society*. Among them are many new rubber-yielding vines of genera closely allied to *Landolphia*, the well-known rubber vine of the Congo. These rubber vines are distinct from the Brazil rubber tree, which was introduced some years ago in Ceylon and the Malay Peninsula. Mr. Whyte was never married, and is survived by a sister.

JOHN LEWIS.—The death of Mr. John Lewis occurred recently in Canterbury, New Zealand, where he had built up a most successful florist's business. Mr. Lewis was born in Herefordshire in 1842. He began his career in England with the late James Cranston in 1852, and, after serving for a few years, he went to Messrs. R. Smith & Son's nursery at Worcester. Later, he worked in turn at the nurseries of Mr. C. Turner, Slough, and Messrs. Lee Bros., of Hammersmith, being manager of a branch for the latter firm. After this, he left for New Zealand. He proceeded to Lyttelton in the ship "Blue Jacket" in 1866, and a few months afterwards settled in Timaru. Having taken out an assortment of seeds, he commenced nursery work on some land near the Smithfield Freezing Works. About three years later he established himself at Maori Hill, where he bought several acres of land for nursery work, and erected six glasshouses—three being devoted to Grape growing and three to flowers. These houses, it may be mentioned, contain 4,000 square feet of glass. Mr. Lewis was one of the originators of the Timaru Floral and Horticultural Society over 30 years ago, and he has been one of its most enthusiastic supporters. The deceased leaves a widow and two children.

GEORGE WALPOLE.—The news of the death of Mr. George Walpole, of Mount Usher, Rathnew, Co. Wicklow, will be received with regret by the many garden lovers who have visited the famous gardens at Mount Usher, and more especially by those who had the privilege of Mr. Walpole's personal friendship. Mount Usher was jointly owned by the late Mr. Walpole and his brothers, and the gardens have developed to their present dimensions from a comparatively small beginning. Those who have seen Mount Usher can never forget it with its sparkling streams, shady trees, and wonderful store of horticultural trea-

tures. There is no other such garden in Ireland, and the writer has never met anyone who was disappointed with it. The brothers Walpole retired to this beautiful spot every Saturday morning, and there they worked, and planned, and enjoyed the company of their plants until Monday morning, welcoming any of their friends who came to see them. Each individual opinion and prospective change was carefully considered on these occasions, and altered or modified, as required, until unanimity prevailed. The late Mr. George Walpole was one of the kindest, most hospitable, and generous of men, and was universally loved and esteemed. It is a regrettable coincidence that Mr. Acton, the Earl of Annesley, and Mr. Walpole, all of whom were connected with important gardens in Ireland, should have died within a short period. *F. W. M.*

GARDENING APPOINTMENTS.

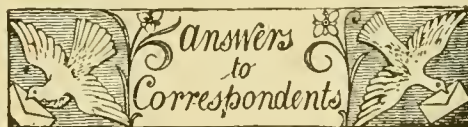
[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made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

Mr. JAMES A. COOK, for 2½ years Assistant Gardener at Kingsgate Asylum, Newmachar, Aberdeenshire, as Gardener to Colonel JOHN LEITH, J.P., Arnage Castle by Ellon, Aberdeenshire, in succession to Mr. WILLIAM EUHART, who has been appointed Gardener at Kingsgate Asylum.

Mr. L. PERFECT, for the last 8 years Orchid grower to R. BROOMAN WHITE, Esq., Arddarroch, Garelochhead, as Gardener to JAMES WATSON, Esq., Caldwell, Irvine. (Thanks for 2s. which has been put into R.G.O.F. box.)

Mr. R. LICKMAN, for the past 9 years Foreman in the Gardens, Coombe House, Kingston-on-Thames, Surrey, as Gardener to J. E. GREAVES, Esq., Bron Eifion, Criccieth, North Wales.

Mr. JAMES A. PAICE, as Gardener to Rear Admiral Sir JOHN JELlicoe, "Thornton," Harrow Weald, Middlesex.



APPLE SHOOTS DECAYING: *C. H.* The twigs are attacked by Brown Rot. All dead branches should be cut off, and the bushes sprayed next spring with the Bordeaux mixture at half strength just when the leaves are unfolding.

APPLES: *C. W., British Columbia.* Cox's Pomona is said to have been raised by Mr. Cox, of Colnbrook Lawn, who also raised Cox's Orange Pippin.

CHRYSANTHEMUMS FOR MARKET: *S. G. R.* It is difficult to give a definite answer to your questions, for some of the early varieties may also be flowered later. Take *Mme. Paolo Radaelli* for an instance. This was shown in the first week in October and also in December. Yet it may be classed as a mid-season variety. The following varieties may be recommended:—*Early flowering:* *Roi des Blanches*, *Boule de Neige*, *Carrie*, *Lady Mary Fitzwigram*, *Miss B. Millar*, *Horace Martin*, *Goacher's Pink*, *Harvest Home*, *Goacher's Crimson*, *Nina Blick*, *Le Pactole*, *Polly*, *Nellie Blake* and *Black Prince*. *Mid-season:* *Alice Byron*, *Mme. Paolo Radaelli*, *Mme. G. Rivol*, *W. Holmes*, *Mrs. Millar*, *Moneymaker*, *J. Shrimpton*, *Mrs. Wingfield*, *W. Duckman*, *Mrs. W. J. Scott*, *Cullingfordii*, *F. S. Vallis* and *Western King*. *Later flowering:* *Negoya*, *W. H. Lincoln*, *Mrs. Thompson*, *Golden Ball (new)*, *Violet Lady Beaumont*, *Snowdrift*, *Mme. R. Oberthur*, *Mathew Hodgson*, *Winter Cheer*, *Mme. Pankoucke*, *Mme. L. Charvat*, *Lord Brooke*, *Framfield Pink* and *Tuxedo*. Many others might reasonably be added to the above list, and it must be borne in mind that considerable variation occurs in the same varieties when grown under different conditions. Some varieties which flower early may also be flowered late. Of new varieties we may mention *Felton's Favourite*, which flowers early, and continues to bloom on the secondary growths. *December Gold* and *R. F. Felton* are two good yellow varieties. These should be tried, but do not cultivate them in large quantities until you have proved their value. Varieties which succeed with one grower sometimes fail with another. The

incurved varieties are favourites in the market, and such old sorts as Mr. G. Glenney, Mrs. G. Rundle and Mrs. Dixon are of better form than some of the more recent additions.

CINERARIAS FAILING: *G. W.* The plants appear to have suffered from the effects of frost before they were removed to the greenhouse.

CUCUMBERS FAILING: *A. E. P.* We have submitted the fruits to our fungus expert, who states that no disease is present. The trouble must, therefore, be due to some cultural error, or to something that has caused a check to the plants.

FIG TREES: *F. S.* The pruning should be done first and the prunings removed to the fire for burning, but it is more convenient to paint the trees before they are trained, always, of course, drawing the brush in the direction in which the buds are growing. It is not a good practice to smear the buds themselves over with this kind of insecticide, and where harm results from the painting, it is generally traceable to carelessness in its application.

NAMES OF FLOWERS, FRUITS AND PLANTS.—We are anxious to oblige correspondents as far as we consistently can, but they must bear in mind that it is no part of our duty to our subscribers to name either flowers or fruits. Such work entails considerable outlay, both of time and money, and cannot be allowed to disorganise the preparations for the weekly issue, or to encroach upon time required for the conduct of the paper. Correspondents should never send more than six plants or fruits at one time; they should be very careful to pack and label them properly, to give every information as to the county the fruits are grown in, and to send ripe, or nearly ripe, specimens which show the character of the variety. By neglecting these precautions correspondents add greatly to our labour, and run the risk of delay and incorrect determinations. *Correspondents not answered in one issue are requested to be so good as to consult the following numbers.*

FRUITS: *Expectans.* Mannington's Pearmain.—*C. L., Colburg House.* Striped Beefing.

PLANTS: *W. A. B.* A very pretty form of *Cypripedium Leeanum*, but we know of no distinguishing name for it. So many varietal names have been given that there seems to be no room for others. Many thanks for the postal order for the Gardeners' Royal Benevolent Institution.—*R. A.* *Epidendrum O'Brienianum*.—*P. M. 1.* *Calanthe rosea*; 2, *Oncidium flexuosum*; 3, *O. sphacelatum*.—*J. M. 1.* *Cassinia fulvida* (syn. *Diplopappus chrysophyllus*); 2, *Cupressus pisifera variegata*; 3, *Pinus Strobus*; 4, *Cupressus Lawsoniana stricta*; 5, *Pernettya mucronata*; 6, *Cupressus Lawsoniana*; 7, *Phillyrea media*; 8, *Ilex aquifolium* var. *crispa*; 9, *Cupressus sempervirens*; 10, *Berberis stenophylla*; 11, *Thuja borealis*; 12, *Cupressus Lawsoniana erecta viridis*.

PURCHASE OF GOODS: *Holt.* Judging from the facts as related in your letter, you are entitled to reject the whole of the goods, but if you prefer it you may accept such as are in accordance with the contract and reject the rest. In either case, you are not bound to return the rejected goods to the seller; it is sufficient to intimate to him your refusal to accept them. But you might send them back to him, leaving him to pay the carriage. It would be desirable to have the goods examined by an expert, so as to have an independent witness in case of further trouble.

ROMAN HYACINTHS: *G. W.* The bulbs, though of fair size, do not appear to have developed an inflorescence, due probably to improper ripening last autumn. In cutting them through, there is no appearance of a flower-spike.

VIOLETS DISEASED: *F. A.* The plants are infested with *Botrytis*. Spray them with sulphide of potassium at the rate of one ounce in three gallons of water twice a week. Decaying wood harbours the fungus, and any dead shoots of trees should therefore be removed.

COMMUNICATIONS RECEIVED.—*F. W. M.*—*J. E. R. F.*, New South Wales—*A. T.*—*S. J. M.*—*W. H. S.*—*J. W. G.*—*Rev. T. A. H.*—*J. O'B.*—*A. W.*—*R. R.*—*P. W.*—*H. S. T.*—*E. B.*—*E. M.*—*H. W.* (not suitable for our columns)—*Rev. C. B.*—*W. E. B.*—*W. J. G.*—*J. F. McL.*—*W. H.*—*R. L. H.*—*B. L.*—*C. T. G.*—*W. W.*—*W. W. N.*—*E. S.*—*J. V.*—*Lady D.*



THE
Gardeners' Chronicle

No. 1,150.—SATURDAY, January 9, 1909.

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THE COMMON MYRTLE.

OF the 100 or so species of Myrtus, the best known is Myrtus communis, which was first described by the great botanist Linnæus. The "Common" Myrtle, as it is called, is very widely distributed, being found as far west as the Azores and as far east as Afghanistan and Beluchistan. Forms of it—there are, apparently, many—are found on both shores of the Mediterranean, and also for some miles inland, the chief habitat ranging between the 30th and 40th degree of northern latitude. In looking over the specimens in the herbarium at Kew I noticed one fine, large-leaved form, almost identical in appearance with that illustrated at fig. 15, with a Geneva label attached to it. As Geneva is slightly above the 46th degree of latitude, and probably too cold for the Myrtle in winter, it is possible the specimen may have been taken from a cultivated plant accustomed to have protection of some kind during the coldest period of the year.

One is apt to think that there is only one

form of the Common Myrtle, but an examination of specimens from different parts of the geographical area mentioned shows that there are considerable differences between the plants from various regions—geographical forms, no doubt, modified by soil, climate, altitude and general environment. This accounts in a measure for such names as Dutch, Italian, Roman, Box-leaved, &c., which have been applied to certain forms.

Myrtus communis is a beautiful evergreen shrub varying from 3 to 10 or 12 feet in height, and, in the Holy Land and Afghanistan, even forming a small tree. The leaves vary much in size, some being large and ovate lance-shaped, tapering to a sharp point; others are smaller, but similar in shape; while others, again, are even smaller, not exceeding half an inch in length and not more than a quarter of an inch in width. Some forms appear to be stunted and "scrubby" in appearance, owing to the fact that, the internodes being shorter, the leaves are much closer together. Others have a more luxuriant appearance, with larger leaves and longer internodes.

Speaking broadly, the Common Myrtle may be said to have three distinct forms, namely, the large or broad-leaved (as shown in the sketch), the medium-sized, and the small or narrow-leaved, with intermediate variations.

The flowers, which appear during the summer months, are pure white, with numerous conspicuous stamens. They are, in all cases that I have seen, borne singly in the axils of the almost opposite leaves and on the young wood only. The flowers are, as a rule, freely produced, even on plants two or three years old raised from cuttings, slips or layers. It is not often, however, that one sees a Myrtle not only flowering freely, but also producing its fruits abundantly in the open air in such a fickle climate as that of Middlesex. The spray illustrated is from a plant about 10 years old and nearly 4 feet high grown in a 14-inch pot. Each year it is exceedingly effective when clothed in its white blossoms, but until this season I have never noticed it in fruit before. The shape of the fruits is as drawn, each being three-celled and containing several kidney-shaped seeds, as shown in the illustration.

Just as the leaves of the Common Myrtle vary considerably in shape and size, so do the fruits. In some cases they are smallish, globular berries, but in the herbarium specimens examined none was quite so large or so long as those shown in the illustration. At first they are green, but assume a dark or blackish-purple colour when ripe. There seems, however, to be a white-fruited form (baccis albis) of the Italian Myrtle, but it is exceedingly rare. Another form, cultivated at Kew in 1885 and 1886 under the name of M. mucronatus, has yellowish-white fruits. This is apparently identical with another form called "tarentina," the leaves of which are about half an inch long, narrow, lance-shaped, acute, and about a quarter of an inch in width.

So far as cultivation is concerned, plants flourish in a compost of loamy soil and leaf-mould, which should be firmly rammed round the roots when pots are used. The plant from which the illustration at fig. 15 was prepared receives practically no attention during the year beyond the usual watering. From

April or May to October or November it stands outside the house, facing westwards. This year, however, it was still outside until Christmas Day, but the fall of snow and the frost necessitated its removal to a greenhouse on the morning of December 28. The plant itself was raised from a shoot placed in a bottle of water. This seems to be an easy method of propagation, as roots are soon produced even in an ordinary dwelling room if the atmosphere is not too hot and dry. Cuttings of the half-ripened shoots inserted in moist, sandy soil during July and August also root freely.

Of the other species of Myrtle, perhaps the best known is the more tender Chilean plant, Myrtus Ugnii, known formerly under the name of Eugenia Ugnii. This species produces, under greenhouse culture, roundish, red or black fruits of an agreeable taste. Other species of Myrtle are distributed over Peru, India, the Falkland Islands, and other parts of the world, but from a garden point of view they do not possess the importance of the Common Myrtle, which, in the most favoured parts of the kingdom, can be grown out-of-doors against walls or in other sheltered positions. J. Heathcote.

ORCHID NOTES AND GLEANINGS.

LÆLIO-CATTELEYA COUNTESS TORBY. (L.-C. HIPPOLYTA VAR PHOEBE × L.-C. EXIMIA.)

THIS is a pretty new hybrid raised by Messrs. Moore, Ltd., Rawdon, Leeds, and flowered by J. Talbot Clifton, Esq., Lytham Hall, Lytham. In size and colour it approaches L.-C. eximia (L. purpurata × C. Warneri), the orange-yellow colour of L.-C. Hippolyta (L. cinnabarina × C. Mossiæ) being entirely eliminated, as we have seen in other instances where varieties with deep shades of yellow have been crossed with rose-tinted flowers. The sepals are lanceolate, nearly 3 inches long; the ovate-acuminate petals 1½ inches wide; both silver-white, delicately tinged and veined with pale lilac. The base of the lip is white, with a yellow flush extending to the chrome yellow disc, the front being deep rose-purple. It is a very attractive winter flower.

ODONTIODA GATTONENSIS.

(ODONTOGLOSSUM KEGELJANII (SYN. POLYXANTHUM) × CODILIODA NOEZLIANA.)

THIS hybrid has flowered in the collection of Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), from a cross made and raised by Mr. W. P. Bound, until recently gardener at Gatton Park. It may be compared with O. Bradshawii, illustrated in the *Gardeners' Chronicle*, January 19, 1907, p. 36, but it has a yellow ground colour and firmer texture, inherited from O. Kegeljani. The sepals are lanceolate, the upper the broadest; the ground colour lemon-yellow, showing on the reverse side in a broad band up the middle, the face being reddish-orange, with the lemon-yellow ground showing at the base and tips. The petals are broader than the sepals, and similarly coloured, except that on the lower halves a few lemon-yellow markings appear. The lip has the expanded side lobes striped with reddish-brown, the front lobe having a large reddish blotch surrounded by a narrow primrose-tinted band, the toothed margin being deep orange colour. The callus has four strongly-developed teeth of a yellowish tint, and an imperfectly-developed ridge on each side. The column is reddish-purple, darkest on the wings. It is a charming flower; the nearly scarlet surface colour is on a substantial lemon-yellow ground.

NEW OR NOTEWORTHY PLANTS.

*WEDELIA OBLONGA.

THE species here described is a pretty novelty which has been grown by Messrs. J. Veitch & Sons from seed collected in British East Africa by Mr. Diespecker. The flower-heads measure from $1\frac{1}{2}$ to 2 inches in diameter, and are of a pleasing lemon-yellow colour, whilst the ray-florets are somewhat conspicuous by reason of the deeply-trifid corolla limb. From the absence of a pappus in this species, one would expect it to have a very restricted distribution. As we have no information, however, as to the exact locality in which the seeds were collected, a correct idea cannot be obtained until additional material is forthcoming.

The genus *Wedelia* consists of about 90 species, the greater portion of which are American. It is very difficult to distinguish it from *Aspilia*, which differs merely in having neutral ray-florets, the latter being fruitful in *Wedelia*. Indeed, Bentham considered that *Wedelia*, *Aspilia*, and *Blainvillea* might be regarded as one large genus, the whole group scarcely distinct from several other purely American genera. He, however, kept them apart, chiefly for practical purposes. *Wedelia* belongs to the sub-tribe *Verbesineæ*, which, as defined by Bentham and Hooker in the *Genera Plantarum*, comprises about 700 species, contained in 71 genera. The great majority of these are American, and they are very difficult to separate into groups, except into very artificial series. Bentham was of the opinion that the tribe *Helianthoideæ* was probably the most ancient of the order *Compositæ*. The species referred to it are usually rather coarse herbs or shrubs, with more or less scabrid or hirsute indumentum, and leaves, or, at any rate, the lower ones, mostly opposite.

The following description was drawn up from a living plant sent to Kew by Messrs. Veitch & Sons:—A subprocumbent plant, attaining a height of almost 3 feet. Branches grooved or somewhat angular, more or less densely covered with white, glandular hairs. Internodes $2\frac{1}{2}$ to 3 inches long. Leaves oblong or oblong-lanceolate, acute, mucronulate, auriculate at the base, 3 to $3\frac{1}{2}$ inches long, $\frac{3}{4}$ to 1 inch broad, with glandular hairs on both surfaces; lateral nerves seven to ten on each side of the midrib, immersed above, prominent below. Heads pedunculate, $1\frac{1}{2}$ to 2 inches in diameter; peduncles $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long. Outer bracts of the involucre foliaceous, ovate-lanceolate, about $\frac{1}{2}$ inch long, glandular-hairy, ciliate; inner bracts somewhat scarious. Palea of the receptacle lanceolate, ciliate towards the apex, subacute. Ray flowers about 12, tridentate; achenes somewhat four-angled, glabrous; pappus absent; tube densely pilose; limb oblong connate, deeply trilobed. Disk flowers about 30; achenes subterete, glabrous; tube densely pilose on the lower portion; style branches apiculate, acute, pilose. *J. Hutchinson, Kew.*

* *WEDELIA OBLONGA* (*Hutchinson*), *sp. nov.*—*Planta subprocumbens, circiter 1 m. alta, ramis sulcatis vel subangulatis plus minus dense glanduloso-pubescentibus, internodiis 6-7 cm. longis. Folia oblonga vel oblongo-lanceolata, acuta, mucronulata, basi-auriculata, 7-9 cm. longa, 1.5-2 cm. lata, utrinque glanduloso-pilosa, nervis lateralibus 7-10 supra immersis subtus prominentibus, venis arcte anastomosantibus. Capitula pedunculata, 3-4 cm. diametro; pedunculi 4-6 cm. longi. Involucri bracteæ externae foliaceæ, ovato-lanceolatae, 8-10 mm. longæ, 3.5 mm. latæ, utrinque glanduloso-pilosæ, ciliatæ; internæ subscariosæ. Receptaculi palea lanceolatae, versus apicem ciliatæ, subacutæ. Flores radii tridentati, circiter 12; achænia subquadrangularia, 2 mm. longa, glabra; pappus 0; tubus 2 mm. longus, dense pilosus; lamina oblongo-cuneata, 1.5 cm. longa, 7 mm. lata, dentibus 3 mm. longis, 2 mm. latis obtusis. Flores disci circiter 30; achænia 1.5 mm. longa, subteretia, glabra; tubus 4 mm. longus, inferne dense pilosus. Antheræ 2 mm. longæ. Stylis ramis apiculatis, acuti, pilosi.*

British East Africa: from seeds collected by *Diespecker* 1 Eldoma Ravine, *Whyte* 1



FIG. 15.—FRUITING SPRAY OF THE COMMON MYRTLE (*MYRTUS COMMUNIS*).

(See p. 17.)

NOVELTIES OF 1908.

(Concluded from page 5.)

IN its application to garden plants, the term novelty admits of very broad interpretation, for it is usual to describe as novelties plants long known to science, but only recently introduced to cultivation, and also plants already known in gardens, but whose uses for decorative purposes have only recently been fully recognised. Then we have the florists' varieties obtained by hybridisation and selection—an ever-productive and remunerative field of operation which is, perhaps, the most interesting of garden pursuits.

The seedsmen may be said to produce the largest number of sterling novelties, which are all the more to be held in esteem in that they are within the reach of all lovers of pretty flowers, from the cottager to the millionaire. Yet it is this class which is the most difficult to deal with in the matter of recording novelties, for such novelties are seldom exhibited at public exhibitions, and, even in the gardens which they beautify, their names are often not recorded. Yet, if we take, for instance, Stocks, Wallflowers, Dianthus, Primulas, and other showy flowers, usually obtained from the seedsmen, and compare these now sent out by Messrs. Sutton & Sons, Messrs. Jas. Veitch & Sons, Messrs. Carter & Co., Messrs. Webb & Sons, Messrs. Cannell, Messrs. Dobbie & Co., and other of our seedsmen, with those we knew even a few years ago, the improvements wrought will be evident. Would it not be possible for the Royal Horticultural Society to arrange for periodical displays of annuals and biennials?

Sir TREVOR LAWRENCE, Bart., K.C.V.O., Burford (gr. Mr. Bain), has flowered many pretty and rare shrubs during the year, and received awards at the Royal Horticultural Society for Viburnum Carlesii, Philadelphus Lemoinei rosacea, Asparagus filicinus, and Zephyranthes aurea, the last-named a pretty, yellow, Vallota-like flower.

MESSRS. JAS. VEITCH & SONS, Chelsea, continue to exhibit desirable novelties, chiefly new Chinese species, plants from this firm certificated during the past year including Deutzia Wilsonii, Rosa Moyesii, Eremurus Bungei magnificus, Thalictrum dipterocarpum, Sarcococca ruscifolia, the compact-growing Ilex Pernyi, Populus lasiocarpa, Stock (Matthiola) Veitch's Magenta, Begonia Col. Laussedat (good yellow bedder), B. Kewensis (a cream-white variety, excellent for baskets), Acanthus montanus, the elegant Dracæna Doucettii var. de Grootii, and Nepenthes Dr. John McFarlane, which secured a First-class Certificate, and which Messrs. VEITCH consider one of the best they have shown.

MESSRS. SANDER & SONS, St. Albans and Bruges, exhibited a remarkable selection of new Palms and foliage plants at the Ghent Quinquennial Show, and at the last Temple Show, a number of which will be found in the appended list of novelties illustrated in the *Gardeners' Chronicle*. One of the most generally useful, Pereskia Godseffiana, with beautifully-coloured leaves tinted with gold, green, and purple, may be grown for all decorative purposes and also as a bedding plant. Caladium Centenaire is a robust and strong-growing variety with beautifully-coloured leaves.

LEOPOLD DE ROTHSCHILD, Esq., Gunnersbury House, Acton (gr. Mr. J. Hudson), grows with his fine-coloured Nymphæas, a selection of the best Nelumbiums, and secured a First-class Certificate for the crimson *N. speciosum* Osiris. On September 29 he showed 18 varieties of hardy Heaths from his novel Heath-garden at Gunnersbury, many of them new varieties.

HIPPEASTRUMS have made good progress, as shown by the exhibits of Lt.-Col. G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. Chapman), ALFRED DE ROTHSCHILD, Esq. (gr. Mr. Sander), MESSRS. KERR & SONS, and Mrs. BURNS, Hatfield (gr. Mr.

Fielder), the last-named of whom obtained a First-class Certificate for Purity, the best pure white Hippeastrum yet raised.

MESSRS. BLACKMORE & LANGDON, Bath, secured awards for tuberous Begonias Empress Marie, Duchess of Cornwall, and Frilled Queen.

Begonia Clibran's Pink, shown by Messrs. W. CLIBRAN & SON, is also a pretty novelty, and one of the very best of the winter-blooming section, obtained by crossing *B. socotrana* with a tuberous-rooted variety.

FERNS appear to be returning to favour, and deservedly so, if we call to mind the varied and beautiful collections shown by Messrs. HILL & SONS, of Edmonton, who received a First-class Certificate for *Nephrolepis rufescens* amabile; and Messrs. H. B. MAY & SONS, Edmonton, whose best new exhibits were *Aspidium falcatum* Mayi, *Pteris aquilina* Nicholsonii, and *Nephrolepis rufescens* Mayi ornata. Mr. C. T. DRUERY obtained a First-class Certificate for the elegant *Polystichum aculeatum gracillimum* Drueryi.

ROSES.—While the large double Hybrid Perpetual and Tea-scented sections have been strengthened with new seedling varieties, the elegant Ramblers and Wichuraiana hybrids have increased in favour, especially the Wichuraianas whose glossy leaves, graceful climbing habit and profusion of flowers render them among the best of garden subjects for cultivation on pillars, arches, and rockeries. The gold-medal novelties of the year are Mrs. J. Campbell Hall, shown by Dr. J. C. HALL, Monaghan; Mita Weldon, Alex. Hill Gray, and Dr. O'Donnell Brown, by Messrs. ALEX. DICKSON & SONS, Newtownards; Lady Alice Stanley and His Majesty, shown by Messrs. MCGREEDY & SONS, Portadown. Others, which have received awards and attracted attention, are Florence Edith Coulthwaite, Geo. C. Waud, Mrs. David Jardine, and Molly Sharman Crawford, all from Messrs. ALEX. DICKSON & SONS; Rosa Wichuraiana Lady Godiva, Messrs. GEO. PAUL & SONS; Tausendschön, HOBBIES, Dereham, and WM. PAUL; Elaine, Refulgence, White Dorothy Perkins, B. CANT; Mrs. E. J. Holland, Mrs. Alfred Tate, and Mrs. Christie Miller, the last three from Messrs. MCGREEDY & SONS, Portadown.

CARNATIONS have been shown at the meetings of the Royal Horticultural Society, and it is noteworthy that the method of showing the flowers with a proportionate length of their own stems and foliage is preferable to the old-time method. The groups of these beautiful florists' flowers shown by LEOPOLD DE ROTHSCHILD, Esq., from his gardens at Ascott, Leighton Buzzard (gr. Mr. Jennings), by Messrs. HUGH LOW & CO., CUTBUSH & SONS, MORTIMER, BURNETT, and DOUGLAS were most artistic. Mr. JAS. DOUGLAS, Edenside, Great Bookham, received awards for Cardinal, Hercules, and Splendour. With Auriculas, Mr. DOUGLAS stands almost alone in the novelty list, having secured awards for Vanguard, Harrison Weir, Mrs. Jas. Douglas, and Phyllis, at the National Primula and Auricula Society, on April 29, and with Coronet, Mayday, and Mildred Jay, on May 12.

CHRYSANTHEMUMS AND DAHLIAS have received great augmentation by novelties, which have been regularly reported in the *Gardeners' Chronicle*, and some of the best of them illustrated.

MISCELLANEOUS.—Gladioli, Delphiniums, Pyrethrum, and other showy specialities of Messrs. KELWAY & SONS, Langport, have been much in evidence, Gladiolus Golden Measure and G. White Cloud gaining Awards of Merit on September 1. At the same meeting, Messrs. WALLACE & CO., Colchester, secured similar awards for a new and beautiful strain of Gladiolus raised between *G. primulinus* and varieties of *G. gandavensis*; also for Kniphofia R. Wilson Ker, K. Goldelse, and Delphinium Progression. Narcissus novelties have also been evolved during 1908, but the recognition of distinct new

kinds becomes difficult. Messrs. BARR & SONS, Covent Garden, showed many good novelties, and secured awards for *Dimorphotheca aurantiaca* and the dark-coloured *Helleborus* "Peter Barr." Mr. G. REUTHE, Keston, continually shows rare Alpines, Himalayan *Rhododendrons*, and other rare flowering shrubs, his awards being for *Rhodothamnus kamschaticum*, *Campanula Raddeana*, *Erica cinerea pygmaea*, and *Tunica Saxifraga flore pleno*. Other exhibitors have brought to notice novelties of varying degree of value.

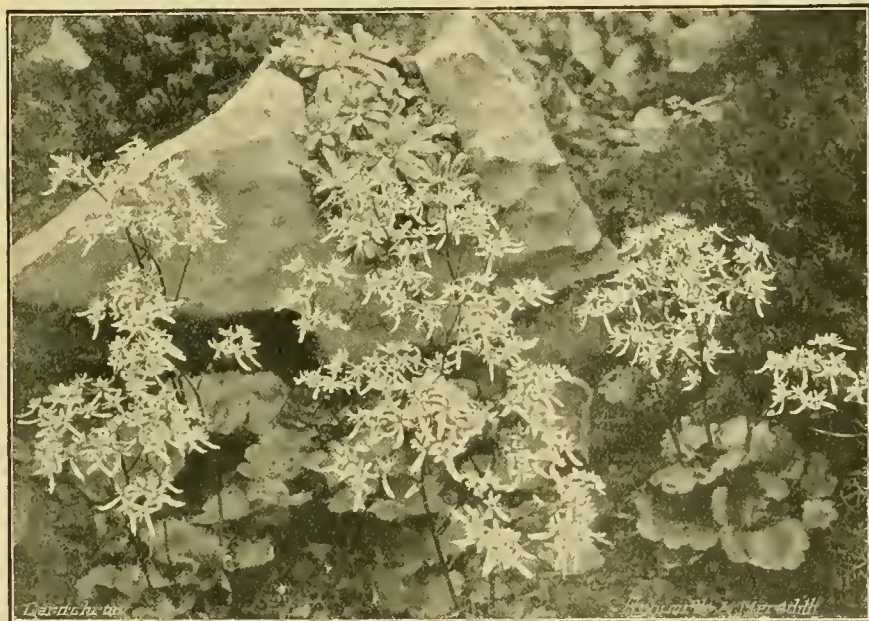
The following new or specially noteworthy plants and fruits have been illustrated in the *Gardeners' Chronicle* during 1908:—

- Acacia podalyriifolia, Jan. 4, p. 11.
- Acantholimon venustum, Oct. 11, p. 259.
- Acleris obesa, April 11, p. 226.
- Androsace imbricata, May 30, p. 344.
- Anthurium Laucheanum, April 25, p. 258.
- Anthurium Sanderi, Supp., May 7.
- Apples Feltham Beauty, Sep. 5, p. 178; Red Victoria, Oct. 24, p. 297; Renown, Oct. 24, p. 292.
- Arctostaphylos manzanita, Aug. 29, p. 163.
- Asparagus filicinus, Aug. 15, p. 122.
- Asparagus filicinus Giraldui, Aug. 15, p. 123.
- Aster Climax, Oct. 21, p. 308.
- Auricula Phyllis, May 16, p. 320.
- Begonia Clibran's Pink, Nov. 21, p. 357.
- Brachyglottis repanda, July 18, pp. 52-53.
- Bromelia tricolor, April 25, p. 261.
- Caladium Centenaire, Supp., April 25.
- Campanula Raddeana, Aug. 22, p. 139.
- Carnation Enchantress, Aug. 8, p. 107.
- Carpenteria californica, Aug. 8, p. 112.
- Celastrus articulatus, April 18, p. 242.
- Cocos nucifera aurea, May 2, p. 279.
- Codium Fred. Sander, May 2, p. 275.
- Columnnea magnifica, Feb. 1, p. 66.
- Cyclamen Mont Blanc, April 18, p. 253.
- Cytisus kewensis, Nov. 7, p. 323.
- Dahlia Snowdon, Sep. 19, p. 220.
- Darwinia Hookeriana, April 18, p. 243.
- Dianthus arboreus, Jan. 25, p. 52.
- Dimorphotheca aurantiaca, June 6, p. 364.
- Dipelta verticosa, Aug. 8, p. 102.
- Encephalartos Woodii, Supp., May 2.
- Erythronium, species of, April 4, pp. 212, 213 and 215.
- Eucryphia cordifolia, Aug. 15, p. 129.
- Euphorbia, species of, Nov. 28, p. 372.
- Grape Prince of Wales, Oct. 24, p. 301.
- Greya Sutherlandii, Feb. 29, p. 138.
- Helianthemum roseum, June 27, p. 419.
- Hillebrandia sandwicensis, Supp., Dec. 12.
- Huernia brevirostris, Sep. 12, p. 198.
- Iris Amethyst, June 13, p. 356.
- Iris gracilipes, Aug. 15, p. 125.
- Iris tectorum and var. album, Aug. 22, pp. 142-3.
- Juliania (new genus) adstringens, Feb. 15, p. 99.
- Leonotis Leonurus, Feb. 29, p. 139.
- Lewisia Cotyledon, May 30, p. 342.
- Libertia grandiflora at Kew, Jan. 4, p. 2.
- Lopezia lineata, May 9, p. 294.
- Lupinus arboreus Snow Queen, Nov. 7, p. 324.
- Malvastrum hypomadarum, June 20, p. 394.
- Meconopsis sinuata, Sep. 12, p. 202.
- Melon Eminence, Nov. 14, p. 343.
- Mesembryanthemum pyropeum, Jan. 18, p. 42.
- Montanoa mollissima, Supp., Jan. 18.
- Moræa iridioides, Supp., Feb. 8.
- Narcissus Evangeline, April 11, p. 227.
- Nephrolepis rufescens Mayi ornata, Dec. 5, p. 391.
- Nigella integrifolia, Sep. 26, p. 227.
- Nuttallia cerasiformis, with flowers and fruit, April 25, pp. 266-267.
- Oliveranthus elegans, Oct. 17, p. 275.
- Ozothamnus rosmarinifolius, Aug. 1, pp. 82-83.
- Pæonia lutea superba, Supp., July 18.
- Pæonia Mlokosewitschii, Supp., July 25.
- Peach Albatross, Oct. 24, p. 294.
- Pear Blickeing, Feb. 22, p. 122.
- Pereskia Godseffiana, April 25, p. 260.
- Philadelphus grandiflorus laxus, Feb. 8, p. 82.
- Philodendron Ilsemanii, May 2, p. 289.
- Pinanga Micholitzii, April 25, p. 259.
- Platytheca galioides, Oct. 24, p. 290.
- Polystichum angustifolium densum, June 13, p. 381.
- Polystichum falcatum Mayi, May 16, p. 312.
- Primula malacoides, Dec. 5, pp. 396-397.
- Prunus tomentosus and fruits, May 9, pp. 296-297.
- Ptychoraphis Siebertiana, Supp., April 25.
- Rhododendron Countess of Haddington, Mar. 28, p. 197.
- Rhododendron Pink Pearl, July 18, p. 48.
- Rhodothamnus kamschaticum, Aug. 15, p. 128.
- Robinia Kelseyi, Dec. 19, p. 427.
- Rodgersia tabularis, Sep. 19, p. 210.
- Roses Albatross and Lyon-Rose, Supp., Dec. 5; Alex. Hill Gray, Sep. 26, p. 236; Blush Rambler, July 11, p. 39; Elaine, July 11, p. 29; Lady Alice Stanley, Sep. 26, p. 237; Lady Godiva, July 11, p. 25; Madame Plantier at Frogmore, Nov. 21, p. 361; Mrs. Ed. J. Holland, Mrs. Alfred Tate, Supp., Dec. 12; Tausendschön, Supp., July 11; The Garland, July 4, p. 14; White Dorothy Perkins, July 11, p. 27.
- Sempervivum holochrysum, July 25, p. 62.
- Stapelia Bayfieldii, Aug. 29, p. 168; S. bella, Aug. 29, p. 168; S. flavirostris, Sep. 5, p. 188; S. gigantea, Sep. 5, p. 182; S. glabriflora, Sep. 5, p. 186; S. Hanburyana, Aug. 29, p. 167; S. hirsuta var. depressa, Aug. 29, p. 170; S. hirsuta unguiculata, Aug. 29, p. 169; S. longidens, Sep. 12, p. 166; S. olivacea, Sep. 12, p. 197; S. Pillansii, Sep. 5, p. 187.
- Stachyurus præcox, Mar. 28, p. 196.
- Tropæolum double-flowered, May 16, p. 311.
- Viburnum Carlesii, May 30, p. 346.
- Zephyranthes aurea, June 20, p. 405.

—James O'Brien.

SAXIFRAGA FORTUNEI.

WHILE the great majority of Saxifragas flower in spring and early summer, there is a small group, consisting of some three or four species, which do not open their flowers until autumn. Perhaps the best-known species belonging to this group is *S. sarmentosa*, more often grown for its foliage than for its flowers. Of the others, the best is *Saxifraga Fortunei* (*Botanical Magazine*, t. 5377), which is illustrated in fig. 16 from a photograph taken in the Kew rock-garden at about the beginning of November. It was introduced to cultivation from Japan by the traveller after whom it is named nearly 50 years ago, and is hardy when planted in sheltered positions. The reniform cordate leaves are lobed, lacinatedly toothed, and form a rosette, from which arise the stout stems bearing panicles of pure white flowers. These flowers are remarkable for the unequal petals, of which one or more may be twice or thrice as long as the others. The petals, which vary in length from $\frac{1}{4}$ to 1 inch, are unequally serrated. Although hardy, and capable of flowering outside in favourable seasons, *Saxifraga Fortunei* succeeds best when grown in a pot and kept under



[Photograph by W. Irving.]

FIG. 16.—SAXIFRAGA FORTUNEI AS IT FLOWERED AT KEW IN NOVEMBER LAST.

the cover of a cold frame, where it is protected from any frosts that occur about the time when it is in flower. Closely resembling this species, but with a less hairy stem, is *S. cortusifolia* (*Botanical Magazine*, t. 6680), which flowers about the same time. The chief difference lies in the petals, which, in this species, are entire. It is a later introduction than *S. Fortunei*, having been sent home by Mariès in 1883 from the central mountains of Japan, where it is found at a high elevation. Another species, closely resembling *S. Fortunei*, is *S. madida*, seeds of which were received from Tokio in 1907. This species also has entire petals, but the leaves are more deeply, 8-9 lobed. Broadly speaking, these three plants may be considered as distinct forms of one variable species, for they are all of the same habit, and flourish under similar conditions. Owing to their lateness in flowering, they do not produce seed in the open, but may be readily propagated by division of the crowns in the spring. The other species belonging to the group is *S. cuscutæformis*, which may be described as a miniature *S. sarmentosa*. W. I.

EXPERIMENTS ON THE VALUE OF NITRO-BACTERINE.

As all horticulturists know, Nitro-Bacterine is the name given to the preparation of the nodule-organism *Pseudomonas radiculicola*, which we owe to Professor Bottomley, and for which it is claimed that, when applied to the seed of leguminous plants, or to the soil in which such plants are grown, it increases the yield of the crop. Mr. Chittenden, the director of the research station of the Royal Horticultural Society, has published recently (*J. R. H. S.*, xxxiv., November, 1908) the results of an extensive series of experiments made at Wisley on the value of this preparation. Mr. Chittenden's paper is prefaced by an excellent review of the history of the progress of our knowledge concerning the nitrogen-fixing powers of leguminous plants.

Since the history of this subject has already been dealt with in these pages (*Gardeners' Chronicle*, Dec., 7, 14, 21, 1907) we need not now recapitulate the whole story. Nevertheless, it is essential to make clear, with respect to this subject, what is known with certainty and what is doubtful or conjectural.

Ind., 26, 304, 1907) has shown that, when cultivated, apart from the leguminous plant, in an alkaline medium containing saccharine substances, the micro-organism produces a nitrogenous slime. This substance, gum-like in nature, he considers to be that which, when produced by the bacterium in the nodules of the root, is taken up by the cells surrounding the nodules, and so serves as the source of nitrogen to the leguminous plant. That some such series of events occurs in the plant is undoubted, though the exact nature of the nitrogenous substance produced by *Pseudomonas* and laid hold of by the plant is not yet known. Further, there appears to be no doubt that Nitro-Bacterine, like its commercial forerunners, is capable of inducing nodule-formation.

So much for the undisputed facts; now we turn to the consideration of what is not certain. It is not certain whether nodule-formation, without which nitrogen-fixation is impossible, necessarily and always means nitrogen-fixation. Greig Smith states, for example, in contradiction to earlier investigations, that *Pseudomonas* occurs not only in the roots but in the stems of leguminous plants, and points out that, in the stem, nitrogen-fixation does not occur, owing to the unfavourable (acid) medium in which the bacterium finds itself. In such situations then, *Pseudomonas* must not only not be yielding up combined nitrogen to the plant, but must, in some measure, be actually robbing the plant of its nitrogen compounds.

This conclusion is supported by the facts that under certain conditions *Pseudomonas* in pure cultures loses its powers of nitrogen-fixation.

In the light of these facts, *Pseudomonas* appears in a very different character from that commonly ascribed to it. Instead of being an inevitable nitrogen-benefactor, disinterestedly handing over its nitrogen-wealth to its host, the leguminous plant, we see it as an invader which may at one time, and under one set of circumstances, succeed in plundering the scanty store of nitrogen in the plant, and at another time and in other circumstances, may be subdued by the plant and, domesticated within its tissues, serve as a source of nitrogen to the plant.

Just as disease-producing organisms may, under certain conditions, become attenuated and so fail to exert their characteristic effects, just as the fungus responsible for the germination of various Orchids may, in certain circumstances, lose this power (*Gardeners' Chronicle*, November 14, p. 344), so *Pseudomonas* may lose its virulence of nitrogen-fixation and, though in the plant, it may cease to play the part of a paying guest. It is of no use to point to the success of leguminous plants on poor, uncultivated land in support of the argument that the nodule-organism does supply the plant with nitrogen compounds. The fields of nature's battles are broad and cover many failures. It is not enough to be able to say in favour of Nitro-Bacterine that it may do good. It must be proved that it must do good or at least it must be known that, under such and such precise conditions, it does good.

The horticulturist is not practically interested in sterile soils. Those which he labours may not always be ideally rich, but it is doubtful whether they are ever without their own home-made brand of Nitro-Bacterine.

It is, therefore, incumbent on any one who advocates the use of artificial cultures of Nitro-Bacterine for horticultural purposes to demonstrate that the bacteria which constitute the essential part of such preparations are more potent agents of nitrogen-fixation than are the races which, as there is every reason to believe, are universally present in ordinary cultivated land.

Again, it is not known whether very early inoculation of leguminous seedlings is beneficial or not. It does not follow that, because seedling Peas develop nodules at a very early stage, they will grow into more vigorous plants than they would have done had inoculation followed its normal, more tardy course.

As to known facts: It is certain that most leguminous plants avail themselves of atmospheric nitrogen. Unlike the generality of plants, which soon perish unless provided with suitable supplies of coloured nitrogen, leguminous plants may flourish in the absence of such supplies.

It is also known that the power of nitrogen-fixation does not reside in the green plant itself, but in a colourless micro-organism, the bacterium known under the name of *Pseudomonas radiculicola* of Beijerinck. This bacterium is a member of the large community of micro-organisms which inhabit the soil. *Pseudomonas* gains access to the leguminous plant through its roots, multiplies therein and sets up the abnormal growth of the tissues of the root which results in the formation of nodules or tubercles.

It has been isolated, cultivated in the laboratory on suitable artificial media, and has been shown under these conditions to bring the free nitrogen of the air into combination with other elements, and so, ultimately, to construct the protein—substances on which its life and growth depend.

Quite recently Greig Smith (*J. Soc. Chem.*

If these arguments are admitted, and they could be reinforced by many other considerations, it will be recognised that the application of Nitro-Bacterine to horticultural practice cannot as yet be based on scientific knowledge, but only on empiricism.

We must either relegate the problem to the laboratory and wait with what patience we may till more is discovered as to the detailed behaviour of *Pseudomonas* under rigidly controlled conditions, or we must submit Nitro-Bacterine to the test of experiment and be guided by the results.

It must, of course, be admitted that if the horticulturist had to wait, before consenting to try new methods, till they had received the imprimatur of the scientist, his advance would indeed be slow. For the scientist has to adopt the laborious practice of unravelling, thread by thread, the intricately tangled skein of Nature. Therefore, it is well that the readier though rougher empirical method—that of giving the thing a trial—should proceed in pioneer fashion in advance of the slow-moving scientific body. But the method of large-scale experiment has its own difficulties, and must be tested by such trials as those carried out by Mr. Chittenden at Wisley. *Frederick Keeble, Sc.D. D.M. Cayley.*

(To be continued.)

THE ROSARY.

CULTURAL NOTES FOR JANUARY.

MATERIAL used for protection, whether straw, Fern or litter, should be as loose and as dry as possible when applied, as it will then resist the action of severe frost much better. This applies also to drawing up the soil about tender dwarf varieties—if planted against a wall they will require the protection of a mat.

As I have before stated, October is the best month to plant most classes of Roses, for the ground is then warm and favours root action long before the top growth is active. In spring-planted Roses the reverse is often the case, the wood breaking into growth first. But in town gardens, where the atmosphere is heavily laden with impurities, the trees do better if planted in the spring as they will thus escape much of the dirt and smoke, and the new growths will suffer less injury. The success of spring-planting will be more assured if the land to be planted has been well trenched and manured during the autumn, since this affords the ground time to settle. Moreover, the soil will not be liable to shrink as in the case of planting on freshly-dug ground.

Dwarf-budded Roses should be planted 2 inches below the union of stock and scion, but previous to this operation all suckers and bottom growths should be removed. There is much to be said in favour of employing budded plants rather than those on their own roots, for one year's growth on worked plants will equal that of two years' or more made by varieties grown from cuttings. Of course, if these latter plants can be had of equal strength to worked plants there will be no objectionable suckers, for all the shoots will be of the proper variety. Hardy climbing and pillar Roses may be thinned out where the growths are much crowded, removing the unripened and weakly shoots. This will permit increased light and air to reach the shoots which are left. The following Roses can be recommended for spring planting and growers can depend on their distinctive character.

Hybrid Teas.—Caroline Testout (satin pink), Liberty (bright crimson), Madame Ravary (golden yellow), Madame Abel Chatenay (pink and salmon), Countess Gosforth (pink, suffused yellow), Grace Darling (creamy white), Gros an Teplitz (bright crimson), Florence Pemberton (creamy white), and Frau Carl Druschki (snow white). *Hybrid Perpetuals.*—Ulrich Brunner (bright red), Mrs. R. G. Sharman Crawford (soft pink), Margaret Dickson (white and

pink), Hugh Dickson (brilliant crimson), Prince Camille de Rohan (velvety crimson), Mrs. John Laing (brilliant soft pink), Duke of Edinburgh (bright crimson) and Marchioness of Londonderry (ivory white). *Tea-scented varieties.*—Madame Hoeste (pale lemon), Madame Lambard (salmon), Madame Cochet (rose), Marie van Houtte (yellow), Mrs. E. Mawley (carmine), Perle des Jardines (rich yellow), Souvenir de S. A. Prince (white), Madame Falcot (apricot), Devoniensis (white), and Papa Gontier (rosy-crimson).

Forced pot Roses may, at the beginning of the New Year, be given a few more degrees of heat up to and not exceeding 50°, except when caused by the sun, when the temperature may be allowed to reach 60°, provided that a free circulation of air is maintained and that the syringe is freely used during the day. Should red spider or aphid be troublesome, fumigate

forced Roses that have been cut down should be placed in a cool house or frame. This will furnish room for the newly-grafted plants as they are taken from the frames.

Another batch of Roses can now be pruned and brought into the cool end of the forcing house for furnishing a succession of flowers. These plants, having plenty of root action, will bear a considerable rise of temperature with abundance of ventilation, but the house should be closed early, leaving the ventilators open a little during the night.

Planted-out Roses under glass which have made much progress may be given gentle warmth during the day, with a good circulation of air. A small quantity of fresh air may be admitted at night time also. One good syringing during the day, with a slight damping late in the day, will suffice for the present. *J. G. D.*



FIG. 17.—NEW DESSERT APPLE WILLIAM CRUMP.

APPLE WILLIAM CRUMP.

or vaporise the house towards evening, when the foliage is dry. If mildew appears use "sulphur-vivum" and soft soap. These should be well dissolved and applied to the hot-water pipes when they are fairly warm. One or two applications will generally suffice to kill the fungus. Towards the end of the month, when the flowers and buds are ready to cut from the earliest batch of plants, there will be a plentiful and continuous supply of green wood for herbaceous and soft-grafting, which can be used after the flowers are gathered. The dormant grafting under glass will now soon cease, and as the earliest-worked plants are taken from the frames their places can be filled by stocks grafted with green shoots until all the stocks, Briar, Manetti, and De la Griffieræ are dealt with. The early

This new variety of dessert Apple was exhibited at the last meeting of the Royal Horticultural Society, when it received an Award of Merit from the Fruit and Vegetable Committee. It was shown by Mr. W. Crump, of Madresfield Court Gardens, Malvern. It is the result of a cross between Cox's Orange Pippin and Worcester Pearmain. The fruits, as shown, vary a little in form, for, whilst some of them bore a considerable likeness to Cox's Orange Pippin, one fruit in particular had the upper portion cone-shaped, as in Worcester Pearmain. The fruits have much of the high colouring of Worcester Pearmain. In the illustration the fruits are shown of the natural size.

The Week's Work.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Early vines in pots.—If the vines were started at the beginning of November, the buds should now be breaking freely. Until the vines have safely passed through the flowering stage, be careful not to employ high temperatures at night, especially during cold weather. Should it be necessary to resort to hard forcing in order that the crop may ripen at the earliest possible time, such forcing may be more safely employed when the days become longer and the roots of the vines are more active than at present. Examine the hot-bed, and if it is found that the plunging materials are declining in heat, remove part of the bed, and afterwards add some fresh stable litter and leaves, mixing the whole together. These materials should have been previously prepared for this purpose, and if this has been done they may be used with greater safety. Extra care is necessary in watering until the weather becomes more favourable to growth. At the same time, when a plant is receiving water, fill up the pot twice, that the whole of the soil in the pot may be moistened. Diluted liquid manure and an occasional watering with weak soot-water will provide sufficient stimulants until the fruits are set. On fine days the vines may be syringed in the morning and again at noon. The atmosphere should be kept moist by damping the paths and other ground surfaces in the house at frequent intervals. When it is necessary to commence disbudding, remove the weakest growths first, and afterwards, when it can be seen which shoots are required to furnish the trellis, the surplus may be also removed. At the disbudding stage, the atmospheric temperature at night may be increased to 60° or 65°, according to the weather, but full advantage should be taken of the sun's rays, admitting air only on the most favourable occasions.

Early permanent vines.—Do not be in too great a hurry to remove growths from these vines. Although useless shoots may be rubbed off at once, the general disbudding should be deferred until it can be determined which shoots are likely to develop the best bunches of fruits. In the case of these vines, I always defer the removal of surplus shoots to a later stage than is usual with crops that are not forced so early. If the borders were thoroughly watered before the house was closed, they should need no more until the vines have passed out of flower; but they must be examined, and, if water is necessary, let it be applied in a clear, tepid state. When there are both inside and outside borders, it is sometimes necessary to place coverings on those outside to carry off excessive rain or snow; but, except in very cold districts, it is not wise to cover the borders with fermenting materials, which are apt to sour the soil.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Planting an orchard.—Autumn is undoubtedly the best time for planting fruit trees, but circumstances sometimes arise which compel the work to be postponed until the spring. In cases where this has occurred, there is no reason why complete success should not be obtained, provided the work is now taken in hand, and a little extra care is extended to the trees in the event of a period of dry weather coming before they have become established. When a new orchard has to be planted, it frequently happens that the gardener is not able to choose the most suitable site for fruit culture, but has to select a piece of ground convenient to the existing garden, and make the best of it. The best site is one sheltered on the north and east sides, lying pretty high, having a gentle slope to the south or south-west, and where the natural drainage is more or less perfect. The soil should be of a deep loam, but if it is not exactly what is required, its condition may be improved by adding various materials. Having selected a site, it has to be decided whether the orchard shall be cultivated for crops or laid down in grass. It is much better to cultivate the ground, cropping it with vegetables or small fruits between the rows of trees. This culture will bring

in a return the first season for the capital invested, and the trees will afterwards succeed better than if the surface is covered with grass. Supposing the former plan is adopted, the land should be bastard trenched, and, as the work proceeds, thoroughly cleaned of all the perennial weeds. When this is finished and the ground has settled, any addition of wood ashes or lime rubble which may be thought necessary may be made. The ground may afterwards be marked out in rows according to the style of tree to be planted. Half standards, such as trees with stems 3 to 4 feet high, are suitable for this class of plantation; but if it is intended to graze calves or other animals in the orchard, trees with 6-foot stems will be better. On the exposed and colder side of the orchard, Damson trees may be planted somewhat thickly, following next with Apples and Plums, thus reserving the warmest positions for Pears, in localities where these will succeed. The distance allowed between the trees may vary from 12 to 20 feet, according to the variety and style of tree chosen. The intervening spaces in the rows should be filled with bush fruits, leaving the open breaks to be planted with Potatoes and other vegetables, or with small fruits. Strong stakes should be in readiness to secure the trees from damage by winds, immediately after planting. Planting should be carried out as soon as the ground is in a workable condition; but it is better to delay it for a few days if the soil is wet or pasty. Before planting a tree, shorten any damaged or excessively strong roots in order to encourage the formation of fibres. Plant the trees firmly, and apply a light mulching when the work is completed. I always prune newly-planted trees, but not excessively, merely shortening the shoots until they are 12 to 18 inches long, removing all weak wood, especially any in the centre of the trees. Do not allow such trees to ripen fruits the first season after planting.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Trenching.—I do not advise this work to be practised, in the case of heavy lands, before the New Year; but where a large area of ground has to be trenched, no time should be lost in pushing forward with the work. I advocate deep cultivation and the working of the soil, wherever possible, to a depth of at least 3 feet. Moreover, it is of the utmost importance that the bottom layer of the soil should be brought to the surface and exposed to the influence of the weather, whatever its condition or nature may be. By such treatment, a considerable depth of soil can be quickly converted into a suitable medium for the growing of all kinds of vegetables. There is probably no land more difficult to work in anything but the most favourable weather than stiff, retentive clay, having, perhaps, only 2 or 3 inches of surface soil. In order to convert such a soil into good garden mould, considerable perseverance must be exercised. But, assuming that the garden has been well drained to the depth of 3 feet 6 inches, the conversion can be brought about in a very few years by deeply working the soil and adding to it various ingredients for making it more porous and less adhesive. Such a soil is frequently lacking in lime. A liberal surface dressing of this material will therefore be very beneficial if applied every alternate year. Wood ashes, or ashes from the refuse heap, leaf-mould, road-scrapings, soot, and especially old mortar rubble, are other valuable ingredients to mix with such a soil. Burnt ballast, which is generally known as burnt or charred clay, is frequently used for lightening and assisting in draining stiff land; but I am not persuaded of its good results and consequently am unable to recommend it.

Leeks.—In order to obtain the finest specimens of Leeks, it is necessary to sow seeds at once in a gentle heat. Much the same treatment is required as that previously recommended in the case of Onions. Seeds may either be sown in boxes and the seedlings pricked out into other boxes when quite young, or they may be sown in 3-inch pots and potted on as required. For the purpose of getting extra fine specimens during August and September, the latter method is to be preferred.

Potatoes.—The earliest crop of Potatoes in pots should not be unduly forced, but the growths

should be kept in an upright position by supporting them with neat, bushy sticks. At this season the plants require all the light possible, but not much water. Potatoes growing in heated pits should be moulded up directly the shoots are from 3 to 4 inches in length, using a light compost, which has been previously warmed to the same temperature as the atmosphere in the pit, and choosing the warmest part of the day for the operation. A little fresh air should be admitted to these pits each day when the weather is favourable. Plant successive batches of tubers, and see that sufficient stock for succession is laid out to form sprouts in a light position where frost cannot enter.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Dendrobium Wardianum.—Plants of this species that have been rested in a cool house, and on which the flower-buds are well advanced, may now be placed in a slightly warmer house. The cool part of the intermediate house will be warm enough for these plants for a week or two, after which time they will require the lightest position available in the Cattleya house. Notwithstanding that the plants are pushing forth new growths simultaneously with the flower-buds, the cultivator must not be tempted to afford them much water at the roots, or the new pseudo-bulbs will grow too rapidly and prevent the proper development of the flower-buds. If the plants are removed from their resting quarters and placed in a high temperature, the flower-buds are liable to turn yellow and fall off. Until the inflorescences open, water must be given at comparatively long intervals of time and then not in sufficient quantity to saturate the compost.

Dangers of excessive warmth in early stage of flowering.—Beginners in Orchid culture will probably have noticed that for several weeks past some of these plants have been pushing their flower-buds at the extreme nodes of the pseudo-bulbs only, and that the blooms on the back nodes are gradually developing. If these plants had been removed into the warmer house when the first flower-buds appeared, the later would never have developed. These remarks apply to nearly all of the *D. Wardianum* hybrids, including *D. Aspasia*, *D. micans*, *D. Wardiano-japonicum*, *D. Juno*, *D. Clio*, and *D. Euterpe*. Very large numbers of Burmese *Dendrobiums*, including *D. Wardianum*, *D. thrysiflorum*, *D. crassinode*, *D. primulinum giganteum*, *D. Devonianum*, *D. Falconeri*, and *D. Pierardii*, are, at this season, being imported into this country, therefore a few notes on their cultivation may prove useful.

Treatment of newly-imported plants.—The plants, when received, should be placed in a moderately cool and dry atmosphere. After a few days, they may be potted in pots or pans just large enough to accommodate them for one season. With the exception of *D. thrysiflorum*, the other species mentioned are all of pendulous habit. For these, shallow pans, or ordinary flower pots, with suitable wire handles attached, should be used in order that they may be easily suspended from the roof of the house. *D. thrysiflorum* succeeds best in pots. The plants, on being placed in the pots or pans, should be made quite firm by placing broken crocks around them up to the rim of the receptacle, and also by tying a few of the pseudo-bulbs to the wires or to neat sticks. The crocks in which the plants are fixed should be well watered two or three times each week, and as soon as root and top growth have started freely, the potting materials may be added. In doing this, take out the crocks to about one-half of the depth of the pot, and refill with a compost of *Osmunda* fibre and *Polypodium* fibre in equal parts, cutting the substances up moderately fine, and adding plenty of small crocks to assist proper drainage. Some growers prefer to add *Sphagnum* moss to the compost, but I find it is immaterial whether moss is used or not. After potting, place the plants in a warm atmosphere, such as is maintained in a Cattleya house, and afford light waterings at first, being careful not to over-water them. As the new growths gain in strength and roots become plentiful, water may be more frequently and liberally given.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Salvia.—As *Salvias* pass out of flower most of the plants should be destroyed, retaining scarcely more than are sufficient to supply cuttings for propagating purposes later on. Plants thus kept for stock purposes should be pruned to induce them to make strong, clean growths. When the plants have again started into growth, a few specimens of *S. splendens* and its varieties may be potted on to furnish extra large plants.

Plants in frames.—As the weather may become colder, provision should be made for protecting plants in frames by means of outside coverings. Field mice are sometimes driven into frames by stress of weather and if they are not detected and trapped will quickly do irreparable damage. Ventilate the frames freely in favourable weather and exercise great care in watering. Encourage the plants growing in these comparatively cool conditions to become of sturdy habit, and therefore the better able to withstand low temperatures.

The conservatory.—Now that most of the late-flowering *Chrysanthemums* have been removed from the show house, there may be a deficiency of bright-flowering plants of fair size. For placing at the front of the groups, or on the side stages, scarlet Tulips are obtainable in abundance; but amongst the taller, forced plants, the paler shades of colours largely predominate. This lack of brightness may be remedied in some degree by the use of tall plants of some of the perpetual-flowering *Begonias*, such as *B. fuchsoides*, *B. coccinea*, and *B. gracilis*, which flower very freely. During the winter months such *Begonias* may be exposed to all the light available; but later, as the sun gains power, they require partial shade. Careful consideration must be given to the ventilation of the house and the watering of the plants, for on most days at the present season the out-of-doors atmosphere is heavily charged with moisture and moisture of this kind is apt to prevent the flowers lasting so long as they would otherwise. At the same time, it is necessary to admit some air to the conservatory each day, and, in the matter of watering, it must be remembered that, whilst it is better to keep most plants on the dry side at this season, yet extremes of dryness must be avoided. Any water that may drain, or be spilt, on the slate or stone pathways must be mopped up at once, for cleanliness in every particular should be rigidly insisted upon in the house where the preservation of flowers is a matter of the greatest importance.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Plants in flower.—Christmas Roses are now gay, and should be afforded some protection from slugs and worms. If soot and lime be mixed in equal quantities and spread around the plants it will answer the purpose.

Erica lusitanica is perhaps one of the best of the Heather family, on account of its early and free-flowering character. It grows 6 to 8 feet high in a short time. *Chimonanthus fragrans grandiflora* is beautiful. Against a wall, the plants in the open are only now in bud. *Jasminum nudiflorum* is well adapted for walls or pergolas or for training up the stems of trees or on fences. *Rhododendron Nobleanum*, flowering during mild weather, affords a touch of colour which is much appreciated from the present time until March.

Bamboos.—These are a fine feature in the dull winter months. They may be planted at the present time if the weather is of a suitable character. *Arundinaria anceps* is one of the first to feel the effects of a shift, and therefore should be moved some day when the weather is moist.

Protection of tender plants.—It should be remembered that, although certain plants need protection from frost, the protective material should not be applied until the last possible moment, nor should the covering be so dense as to exclude light and air; for otherwise it would have the effect of making the plants even more tender. It is important also that the material should not be allowed to remain upon the plants for a longer time than is absolutely necessary. The

material employed should be of a light character, such as dry Bracken leaves or Heather. Heather may be entwined amongst the branches in such a manner that it will not cause a great weight upon the plants in the event of heavy snowstorms. As the roots of many plants are liable to suffer considerable injury from frosts, these also should be protected with dry peat, leaves, or ashes, applying the material in sufficient quantities to repel frosts. *Gunnera manicata* should have its crowns wrapped up in dry bracken, or even dry hay and over the protective material may be tied an old leaf belonging to the same plant. This will serve as a sort of waterproof, keeping the crown dry, and therefore less liable to injury. *Rhododendron Thomsonii* should have some dry material placed around its base and similar treatment is required by many tender species of *Rhododendron*, such as *R. Aucklandii*, *R. Edgworthii*, or any hybrids of these species. *Crinum*s should have their tops protected. *Draecenas* need to have their stems bound up. *Romneya Coulteri* requires protection for its roots. *Phormium*s not only need to be tied up, but some slight protection should be afforded to the roots also. In some districts it is necessary to protect the choicer Tea and Hybrid Tea Roses. *Choisya ternata* should have some long branches placed over it, fixing the branches in the ground. *Carpenteria californica* should be

well, Peckham, Finsbury, Dulwich, Southwark, Golder's Hill, Avery Hill, Ravenscourt, Springfield, Waterlow, Ruskin, Kennington, and Myatt's Fields. Each park is in the care of a superintendent who is responsible to the chief officer of the L.C.C. Parks Department. The largest of these parks is Victoria, consisting of 217 acres, and Myatt's Fields is the smallest, being only 14½ acres. They are classified according to size as first, second, third, and fourth class parks.

The staff.—Employment is found in the L.C.C. parks for nearly 900 persons, some for the maintenance of order, but the greater number for the carrying out of park work. It is open to anyone in the gardening department to qualify for promotion to the position of a first-class superintendent; but, before promotion can be gained by one of the lower ranks, it is necessary to pass an examination in horticulture. These examinations are undertaken every year by the Royal Horticultural Society. The object of the test is to stimulate observation and interest in all the details of park work, and all those who pass in the first and second classes are given a weekly increase in salary of 2s. or 1s. respectively. Upwards of 100 young men sat for this examination in January, 1908, and it is probable that there will be more candidates at a similar examination to be held in the course of a few days.

The removal of snow.—The recent heavy fall of snow caused considerable work in the parks: snow being so great a hindrance to locution that it is the superintendent's duty to remove it from the paths as quickly as possible. Carriage drives are best cleared by snow ploughs drawn by horses. Every effort has to be made to clear the snow from all thoroughfares before a thaw takes place, or the paths would remain in a most unsatisfactory condition for a long time.

Skating on ice.—For a few days it appeared as if there would be skating on some of the park waters—a recreation eagerly sought after by the public. Everything should be done for the purpose of meeting any emergency that may arise; fortunately the regulations require the ice to be 3 inches thick before the public is allowed to use it. There are about 24 places under the control of the L.C.C. where skating is permitted. Everything is done to render the pastime available to the greatest number of persons possible, and also to prevent accidents. When skating can be carried on safely the parks remain open until 10 o'clock at night.

THE APIARY.

By CHLORIS.

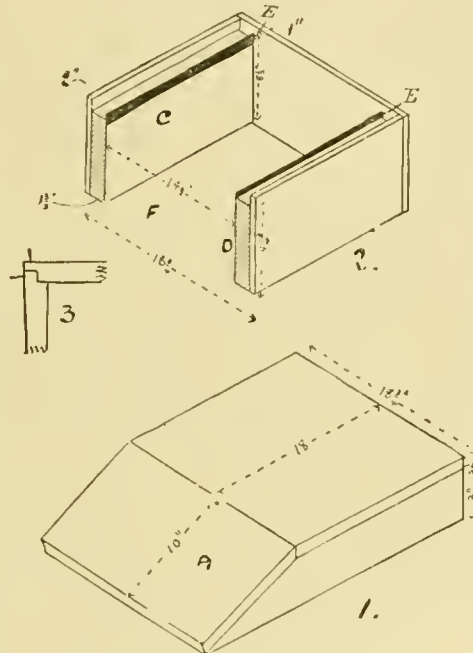


FIG. 18.—THE MAKING OF A BEE-HIVE.

1, base of the hive showing the alighting board at A; 2, body or brood-chamber; D and C, sides; E, E, iron band on which the upper frame rests; F, position of front of frame; 3, plan of the angle joints.

given some protection over the roots, and similar protection is also needed by the more tender *Arundinarias*, such as *A. falcata*, *Falconeri*, *A. nobilis*, and others. Among Alpine plants, the *Androsaces* should be kept dry by a handlight or some squares of glass placed over them.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Acquisition of sites.—If we except the Royal parks and those open spaces over which the public have obtained common rights, which were rendered inviolable by the Act of 1866, all other sites now utilised either as parks or open spaces in the London district have been secured by the municipal authority for London: in the past by the Metropolitan Board of Works and since 1889 by the later-instituted authority, the London County Council. These authorities have availed themselves of every opportunity of securing vacant land in all parts of the county, and have frequently paid large sums of money for small sites in congested and densely-populated districts. What are distinguished as L.C.C. parks are known as Victoria, Battersea, Brock-

Hive-making.—In order to save trouble when fitting up hives, it is desirable to make every part of new hives to a standard dimension, for then all the portions will be interchangeable. There are many patterns, all embodying the same idea, but the one illustrated at fig. 18 is one of the best. At diagram 1 is shown the floorboard. This requires little explanation, as the dimensions are clearly indicated. The portion marked A is the alighting board and, if it is desired, it may be made larger than the dimensions indicated. This would be an advantage during stormy weather, for heavily-laden bees are often blown to the ground when, if the wind is very cold, they perish. The hive should be raised on four legs, so that the floorboard is about 1 foot from the ground. At diagram 2 is shown the body of the hive or brood-chamber. The outside walls of this chamber should be made of ¾-inch boards at the least and, to make the joints watertight, the ends should be doubly rabbeted and nailed, as shown at diagram 3. If the inside pieces (C and D) are 8½ inches high, and strips of tin or iron are nailed, as at E, E, so as to stand above C and D about three-eighths of an inch, there will be left a sufficient space for the fingers to be inserted under the frame-ends when it is desired to remove it. But, besides affording a further grip of the frame, it leaves less space for the bees to propolise and, further, it provides fewer risks of bees getting crushed under the frame-ends. The front of the hive, when fixed at F, should have a passage-way about 10 inches long and ¾ inch high cut out in order to enable the bees to enter. A porch constructed over the entrance to the hive would serve to keep out the wet.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY, JANUARY 9—
London Branch B.G.A. lecture on "Garden Cities."

MONDAY, JANUARY 11—
R.H.S. Examination for Public Parks and Garden Employés.

TUESDAY, JANUARY 12—
Roy. Hort. Soc. Coms. meet. (Competitive Classes for Grapes. Lecture at 3 p.m. by Mr. C. D. McKay, on "the French System of Intensive Cultivation").
British Gard. Assoc. Ex. Council meet.

WEDNESDAY, JANUARY 13—
Ann. meet. Bolton Hort. and Chrys. Soc.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—38°.

ACTUAL TEMPERATURES:—
LONDON.—Wednesday, January 6 (6 P.M.): Max. 45°; Min. 36°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, January 7 (10 A.M.): Bar. 30.2; Temp. 44°; Weather—Fair.

PROVINCES.—Wednesday, January 6 (6 P.M.): Max. 47° Cornwall and Ireland S. coast; Min. 35° York.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—
Herbaceous and Border Plants, Liliiums, Bulbs, Azaleas, &c., at 12; Roses at 1.30, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY—
Perennials and Herbaceous Plants, Liliiums, Hardy Bulbs, &c., at 12; Roses and Fruit Trees at 1.30; Palms, Azaleas, Rhododendrons, &c., at 5; thousands of miscellaneous Bulbs, &c., at 11.30; 776 cases Japanese Liliiums at 1, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

The Absorption of Moisture by Leaves.

In a recently-published lecture on "The Absorption of Rain and Dew by the Green Parts of Plants,"* Prof. George Henslow endeavours to disprove the current view that the amount of absorption of water by the leaves of ordinary plants is normally but small.

Professor Henslow criticises Duchartre's experiments which showed that, with pot-plants, no water is absorbed by the leaves during the night or that the quantity absorbed is so small as to be negligible; according to the former authority, little or no absorption of water by leaves takes place at night except when the leaves are exceptionally flaccid at the beginning of the period of darkness.

This is a considerable admission. For plant-physiologists would not be disposed to deny on general grounds that wilted leaves of such plants as do not close their stomata in darkness may absorb a certain amount of water from the atmosphere. Professor Henslow does not appear to have made experiments in support of this suggestion, but he thinks that absorption of rain or dew by leaves may take place in the morning. To use his own words, "then, any part that may be the first to become dry will begin to transpire and so cause an indraught of dew in any neighbouring spot where it may have been retained" (p. 169).

It is not clear what is meant by "an indraught of dew" set up in consequence of transpiration. By far the greater amount of transpiration of water from leaves takes place through their stomata, and, in the process of transpiration, water-vapour escapes by diffusion from the inter-cellular spaces of the leaf through the stomata into the surrounding air. Now, diffusion is a molecular—and not a mass—phenomenon. It is not possible that the movement of molecules of water-vapour can produce an indraught.

Professor Henslow's experiments do not prove his thesis that an ordinary plant in the open absorbs water-vapour, rain, or dew in appreciable quantity. They show that if young shoots or leaves, or even older leaves, the cuticle of which is thin, are dipped in water or wrapped in wet blotting-paper they absorb a certain amount of water.

But facts of this kind, which are dealt with in the ordinary text-books, cannot be admitted as evidence of any considerable water-absorptive powers under ordinary conditions.

The present position of our knowledge on this subject may be briefly stated. In such parts of plants as are concerned with absorption of water, as, for example, in the root-hairs, the layer of water-proofing material (cuticle) present in other parts of the integumentary system (epidermis) is wanting. In special cases, for instance, in the leaves of epiphytes such as Tillandsias, where, owing to their situation and to their poorly-developed root-system, it is necessary for the leaves to undertake the work of supplying the plant with water, there are special uncuticularised water-absorbing cells. In ordinary plants a layer of cuticle covers the epidermal cells of the leaf, and with greater or less efficiency, according to the degree of its development, prevents the loss of water from the general leaf surface, thereby confining that loss to that due to stomatal transpiration.

We may go further, and say that the presence of rain or dew on the surface of a leaf may in the long run tend to provoke more active transpiration, and so cause actual loss of water. For it has been shown that the stomata open more widely when the leaf is actually wetted than even when it is in a saturated atmosphere. If, then, this widely-open state persists for some time after the rain or dew is removed, transpiration will proceed more rapidly than would have been the case had the leaf not been wetted.

Professor Henslow has made a good point in suggesting that wilted leaves may possibly absorb a certain amount of water from the air. We are not aware of any accurate experiments bearing on this question and would suggest that it is a subject which, together with the effects of spraying, would well repay careful investigation.

Plant-collecting in China.

We are indebted to Professor C. S. Sargent for further information extracted from a letter written by Mr. E. H. Wilson on October 1 last at Kiating, near Szechuan.

"The trip through the wilderness behind Mounts Omi and Wa proved fairly profitable, but, owing chiefly to bad weather, hard and uncomfortable. Above 4,000 feet altitude the country is of limestone formation. As is usual

with this rock, it is much broken up, forming steep cliffs and crags which present wild and savage scenery. Charcoal burners have destroyed all the forest, leaving in its place a dense jungle of shrubs; above 7,000 feet (to 10,000 feet) Bamboos form one absolutely impenetrable thicket. Nothing is more disheartening to a botanical collector than these Bamboo jungles. Practically nothing can grow in them but Bamboos. There is no traversing them, save by the recognised paths, unless there is time to cut a new track, and if there is the slightest rain falling at the time one is drenched through by the overhanging culms.

"I ascended the famous Mount Wa-wu, unvisited previously by any foreigner, but was very disappointed. The summit is only 9,200 feet altitude, undulating and park-like, clothed with a dense jungle of Bamboo scrub with Silver Fir and a few Tsuga interspersed. This mountain is sheer on all four sides for fully 4,000 feet. We ascended by a precipitous path up the north-north-east angle. Formerly magnificent trees of Magnolia, Davidia, Tetracentron, Æsculus, Betula, Acer, and Castanopsis were abundant on this mountain, but now only mere shrubs and the stumps of felled giants remain. Iron, copper, and lead are common in this region, and it is the making of charcoal for the smelting of these ores that has caused the total destruction of all forest trees. Even the soft-wooded Silver Fir is now used in making charcoal for lead-smelting. Had the weather been better, one might have got some enjoyment out of the trip. But wet through day after day, with bedding and clothing drenched, sleeping in the filthy dilapidated huts of the charcoal burners at night, and enveloped by dense mists nearly every day with a perspective limited to a radius of 40 yards, enjoyment was out of the question.

"By dint of much exertion I managed to secure quite a number of seeds, and also a certain amount of herbarium material. I saw many trees of Silver Fir and Tsuga, and also a few Spruces, but not a single new cone could I discover. I am afraid we shall have but poor luck this year in the matter of Conifers.

"Details of the seeds forwarded are given in the lists enclosed, but as some are of exceptional interest, a few extra details may be acceptable. Of *Lonicera*, several species are sent. Without instituting comparisons, *Lonicera* No. 942 and *L. subæqualis* may be instanced as of unusual interest. The No. 942 is possibly one of the forms of the variable *L. hispida*, but the flowers are enormously large, creamy yellow in colour. It inhabits thickets on Mount Wa, and is only known to me from this one locality. *L. subæqualis* is one of Rehder's new species; the fruits, which are red, globose, the size of a small Pea, and somewhat glandular, were heretofore unknown. I have sent several species of *Sorbus*—all interesting, but Nos. 874 and 941, on account of the curious colour (pale purple) of their fruit, are more than ordinarily so.

"The pubescent form of *Idesia polycarpa* (No. 962) has been given varietal rank by Dr. Diels. It occurs at higher altitudes than the type; unfortunately, there are very few seeds. The *Schizandras* are all ornamental in fruit, and No. 921, with large, rich maroon flowers and scarlet fruit a foot or more long, is very fine.

"*Styrax* (No. 884) is a very pretty species, forming a bush 4 feet high, with small leaves and ivory-white flowers. I enclose a fragment of this *Styrax* and also a flower and leaf of *Clematis* No. 868. This latter is the largest-flowered *Clematis* in the West of China and possibly in the whole of the country. It is evidently allied to *C. montana*, but, to my mind, distinct. The flowers are white—2 to 3 inches across, solitary, axillary, on stout peduncles 4 to 6 inches long.

"The *Piptanthus* (No. 885) forms a bush 3 to 6 feet high, and has rich, golden-yellow flowers.

* *Journal of the Royal Horticultural Society*, vol. xxxiv., pt. 2.

From the altitude at which it occurs (7,500 to 10,000 feet) it should be hardy. It is finer than *P. nepalensis*.

"Seeds of a number of species of *Actinidia* have been sent, and I should like to say a word in favour of this genus. The four or five Japanese species in cultivation in England of this genus are regarded as doubtfully hardy, and of very little horticultural value. *A. chinensis*, introduced by Messrs. Veitch, has so far failed to do itself full justice; but, in the years to come, I believe it will be one of the finest ornamental climbers in cultivation. In the west here, and to a lesser degree in Hupeh, there are many kinds of *Actinidia*, several of them undescribed. With their wealth of fragrant flowers, snow-white, salmon-red or yellow, *Actinidia*, with *Clematoclethra*, make the finest display of any scandent shrub in the west. The flowers are borne in myriads, and their fragrance is an additional attraction. The fruits of all are edible, and some, notably *A. chinensis* and *A. No. 934*, are delicious. A difficulty to the classifier and a drawback from the cultivator's point of view is the fact of the flowers being polygamous. However, in spite of this, I believe there is a future for these climbers, and I hope the Chinese species will be more amenable to cultivation than the Japanese appears to have been.

"Closely allied to *Actinidia* is the comparatively new genus *Clematoclethra*. Of this genus seeds of three species have been sent. What has been said in regard to the ornamental value of *Actinidia* applies equally to *Clematoclethra*, save that the fruits, though succulent and edible, in this latter genus are of little value. An interesting feature (shared by one or two species of *Actinidia* also) is that a large percentage of the ordinary foliage leaves are constantly snow-white, becoming pinkish with age. A light, well-drained soil, rich in decayed leaves and a sunny position, where they can remain undisturbed for years, are the essentials for the successful culture of both *Actinidia* and *Clematoclethra*.

"In addition to *Magnolia villosa*, of which I hope to send more seeds and a note later, seeds of one, possibly two, new species of *Magnolia* have been forwarded. These latter are large trees with ovate to obovate leaves, densely pubescent below. The fruits are irregular in shape, resembling those of *M. Yulan*, but much stouter. The flowers are unknown to me, but the country-folk describe them as rosy-pink."

OUR SUPPLEMENTARY ILLUSTRATION represents a hybrid *Nepenthes*, raised by Messrs. JAMES VEITCH & SONS, from a cross between *N. sanguinea* and *N. Curtisii* superba. The plant was exhibited by the raisers at the meeting of the Royal Horticultural Society on September 29, 1908, when the Floral Committee granted it a First-class Certificate. The pitchers of *N. Dr. John MacFarlane* have a shape similar to those of *N. Curtisii*, and are about 7 or 8 inches long. The tone of the body of the pitcher is brownish-red and there are splashing of a deeper colour, which add additional beauty. The interior of the pitcher, just below the handsome rim, is bright green, with frequent purple markings. The leaves are very broad, measuring as much as 5 or 6 inches across, a width greater than in the foliage of either parent. The plant bore five large pitchers and several smaller ones.

HORTICULTURAL CLUB.—The next house dinner of the club will take place on Tuesday, January 12, at 6 p.m., at the Hotel Windsor. The Rev. Canon HORSLEY will deliver a lecture on the "Flowers of Switzerland," which will be illustrated by unpublished slides of the people and scenery of the Bernese Oberland.

THE NICHOLSON LIBRARY.—Many of our readers will be interested to know that the books which belonged to the late GEORGE NICHOLSON, F.L.S., V.M.H., will be offered for sale at Messrs. SOTHEBY & COMPANY'S Rooms on Friday, the 15th inst. The first lot is numbered 617. It will be offered at 1 o'clock p.m. There are 66 lots.

CHANGES AT KEW.—On the retirement of Mr. W. BOTTING HEMSLEY, F.R.S., from his official position in the Royal Gardens, Kew, Dr. OTTO STAFF, F.R.S., has been appointed Keeper of the Herbarium. Mr. C. H. WRIGHT, A.L.S., is now the Chief Assistant in the Phanerogamia.

THE SELBORNE SOCIETY.—We are informed that this society has revived the old title of its magazine, which will henceforth be called *The Selborne Magazine (and Nature Notes)*, and will be published by Messrs. GEORGE PHILIP & SON, LTD., of 32, Fleet Street, E.C. All communications with regard to the society should be addressed, as heretofore, to the Honorary General Secretary of the Selborne Society, 20, Hanover Square, London.

PUBLIC PARK FOR LURGAN.—Public competition having been invited for plans for laying out 72 acres of land as a public park for the town of Lurgan, Co. Armagh, we are informed that Messrs. J. CHEAL & SONS have been awarded the first premium, and that their plan is accepted by the council.

THE "BOTANICAL MAGAZINE."—The January number of the *Botanical Magazine* contains illustrations and figures of the following plants:

ENCEPHALARTOS BARTERI, tab. 8232.—This tropical African species is described by Lt.-Col. PRAIRIE. It was originally met with during Dr. BAIKIE'S Niger Expedition of 1858, when it was collected by the late Mr. C. BARTER, "three miles south of Jebu on the Yorubna side." The species is described as resembling *E. villosus*. Its value for cultivation in this country appears at present undetermined, it being stated that at Kew the plants have rarely more than three leaves, and although carefully grown in a moist tropical house, only one of the stems has produced a cone. The largest stems ever received at Kew have not exceeded a foot in height. The female cone figured is one of a number received from Labo Labo on the Volta, early in 1908, having been sent by Mr. J. ANDERSON. A male cone collected by BARTER is also depicted.

ANGADENIA NITIDA, tab. 8233.—This Apocynaceous plant has been known as *Echites nitida*, *Odontadenia nitida*, *O. cordata*, &c. In MIERS' Monograph of the genus *Angadenia*, he included 26 species, but Dr. STAFF proposes to treat *Angadenia* in a narrower sense, limiting the name to a smaller group of forms more or less resembling *A. nitida*. The restricted genus includes MIERS' species *A. hypoglauca*, *A. coriacea*, *A. elegans*, and *A. geminata*, and appears to be confined to North-eastern Brazil, Guiana and Trinidad. *A. nitida*, which extends from Para, through Guiana to Trinidad, was received at Kew in 1906 from the Trinidad Botanic Gardens, where it was known as *Echites neriandra*. It grows freely in the tropical house at Kew, extending its shoots for several yards along the rafters under the roof. It flowers freely in July, and has the appearance of a small-flowered yellow *Dipladenia*. It is described as a useful plant for clothing a pillar in a tropical house.

ERIA RHYNCHOSTYLOIDES, tab. 8234.—This new species was originally described in the *Gardeners' Chronicle* for November 30, 1907, page

370, by Mr. JAMES O'BRIEN. The figure now published in the *Botanical Magazine*, like the original description in our own pages, has been prepared from a plant which was presented to Kew in 1908 by the Hon. WALTER ROTHSCHILD.

CLERODENDRON UGANDENSE, tab. 8235.—This species is described as differing from *C. myricoides* as figured in the *Botanical Magazine*, tab. 5838, in having much shorter, semi-orbicular calyx-lobes, a shorter corolla-tube, and larger, more deeply-coloured corolla-lobes. Seeds of *C. ugandense* were received at Kew in 1906 from Mr. M. T. DAWE, who had collected them in Voi, Uganda, 2,000 feet above sea level. The plants have grown freely in an intermediate house, quickly forming shrubs 2 to 3 feet in height, with long, slender, leafy branches terminated by loose racemes of blue flowers. Young plants raised from cuttings formed of the young shoots flowered freely in October. The species is recommended as a winter-flowering decorative greenhouse shrub.

LONICERA GIRALDII, tab. 8236.—Seeds of this new species were first obtained by Mr. M. L. DE VILMORIN from Szechuen in 1899, and with whom it first produced flowers in 1903. The figure has been prepared from specimens received from Messrs. VILMORIN-ANDRIEU in 1908. Although very nearly allied to *L. acuminata*, a Himalayan species, this Chinese plant, Mr. HUTCHINSON points out, is readily distinguished by the somewhat narrow leaves, which are clothed on both surfaces with a yellowish, somewhat stiff indumentum. The flowers are about 1 inch long, the corollas red, and the fruits globose and purplish-black.

ORPHAN FUND DINNER.—The Duke of RUTLAND will preside at the forthcoming festival dinner of this fund. Owing to a printer's error last week, it was announced that the Duke of PORTLAND would preside.

SEED FIRM EMPLOYEES DINNER.—The annual dinner of the employés of Messrs. DICKSON & ROBINSON, Seedsmen, Manchester, took place on December 22, at the Victoria Hotel, Manchester. Mr. ROBINSON, the senior partner, occupied the chair. The gathering afforded opportunity for the presentation of a timepiece, subscribed for by the employés, to Mr. W. P. ROBINSON, marking the occasion of his recent marriage.

"MY GARDEN DIARY."—This dainty annual, published by Messrs. SUTTON & SONS, contains excellent reminders of the work to be done in the various departments of the garden during each month in the year. These are based upon actual experience, and may be relied upon by amateur growers, whilst they will refresh the memory of professional gardeners. Space is left for the insertion of memoranda, and altogether the pamphlet is a most desirable companion for the gardener. The issue for 1909 has a cover beautifully illustrated with blue, pink, and white *Cinerarias*.

AGARICUS ELVENSIS.—Dr. M. C. COOKE, in the *Journal of the Royal Horticultural Society*, describes the reappearance of specimens of *Agaricus elvensis*, a species of Mushroom received by the late Rev. M. J. BERKELEY in 1865 from Wales. This species appears to have a predilection for the neighbourhood of Pear trees, for twice in Dr. COOKE'S experience it has turned up in gardens in which fragments of the Agaric had been thrown, and in both cases it made its appearance under the drip of a Pear tree. Dr. COOKE expresses the hope that there may be a future in store for *Agaricus elvensis*, whose esculent qualities, he says, are excellent.

A LARGE-FLOWERED IPOMŒA.—Mons CHABAUD, writing in the *Revue Horticole*, draws attention to the fine Convolvulaceous plant, *Ipomœa mexicana*. Unfortunately, the blossoms only open late in the afternoon and close on the following morning, but the delicious perfume, and the large size of its white flowers (6 to 8 inches in diameter) when they are open, compensate in a great measure for their shyness during the greater part of the day. The plant was described in 1854 by VERLOT, from the Botanic Garden at Grenoble. It is a tender plant, though it succeeds in the open in the south of France. In suitable conditions, it is a vigorous grower, and the flowers are said to be useful for cutting.

Publications Received.—*Fourth Report of the Board of Commissioners of Agriculture and Forestry of the Territory of Hawaii*, for the year ending December 31, 1907. (Honolulu: Bulletin Publishing Co.)—*Kew Bulletin of Miscellaneous Information, Appendix I.*—1909. Containing list of seeds of hardy herbaceous plants and of trees and shrubs. (London: Wyman & Sons.)—*Transactions of the Royal Scottish Arboreal Society, January, 1909.* Vol. XXII., Part I. (Edinburgh: Douglas & Foulis, Castle Street.) Price to non-members, 3s.—*Contributions from the Botanical Laboratory of the University of Pennsylvania.* Vol. III., No. 2. A comparative study of the genus *Pentstemon*, by Louis Krautter, B.S., Ph.D. (Philadelphia: The John C. Winston Co., 1,006-16, Arch Street.)—*The Estate Magazine* (January). Price 6d.—*Beautiful Flowers and How to Grow Them* (Part 6). Edited by Horace J. and Walter P. Wright. (London: T. C. & E. C. Jack.) Price 1s.

FLORISTS' FLOWERS.

SOME NEW FRENCH CHRYSANTHEMUMS.

THE Chrysanthemum is more popular in France than ever now and there are more raisers than at any time during the past 25 years. At the exhibitions at Tours and at Paris, seedling Chrysanthemums were shown in great quantity. Many of these varieties would have been warmly welcomed by our own growers 15 years ago. But with the present keen competition there is little chance for any raiser who has not already made a name in this country introducing his novelties into Britain. There is practically no room for him unless he specialises in the decorative or early-flowering section.

Amongst the raisers of large exhibition flowers there is practically only one name to be considered: that of M. Ernest Calvat. American, French or Belgian growers who cultivate the popular autumn flower for exhibition are still in a large measure dependent upon M. Calvat for all that is newest and best in the way of novelties, and with good reason.

In England the other French raisers, excepting M. Aug. Nonin, whose chief work has been amongst the decorative section of the flower, have had no chance of obtaining a footing.

M. Calvat's displays, both at Tours and at Paris this year, were quite up to his usual standard. At the former place they gained one of the leading awards, and at the latter a Grand Prix d'Honneur and 18 First-class Certificates. I have compiled a selection which includes the best of those which will be put into commerce.

Belle Estevelle.—A large Japanese variety with long-spreading florets, very full and double; colour a shade of rich golden yellow.

Calvat 1908.—A Japanese variety with rather broad florets, the tips incurving slightly inwards. The bloom is very full, compactly formed and of great size and substance. The tone is a beautiful, bright rosy-amaranth with a silvery reverse to the florets.

Paul Delaroche.—Another Japanese Chrysanthemum of large dimensions; the florets are of medium size, twisted and intermingling. It is a very compact and closely-built flower, with a pearly-blush colour slightly tinted and shaded with lilac-mauve.

Le Maroc.—A large Japanese variety of the Edwin Molyneux type, with very broad florets slightly pointed at their tips. The inside of the florets is of a rich, bright crimson; the reverse side is golden.

Ulysse Lafont.—Japanese, a large bloom, with rather narrow florets, and very full and double. It is a very close, compact flower of massive proportions, the colour being ochre-yellow shaded golden apricot. It forms an effective and distinct variety.

Henry Decault.—Also of the Japanese type and of fine form. The blooms are densely packed with long florets forming a spreading flower of striking effect. The tone is a very delicate and rich shade of pale rosy-amaranth.

of a medium size, arranged compactly, forming a deep solid flower of massive appearance. Colour pure white slightly tinted.

Thamara.—A very close, compactly-formed Japanese variety, having florets of a medium size. The colour is purplish-mauve with a reverse of silvery pink.

Cularo.—This also is a Japanese variety, the florets being rather broad. The flower is full, double and large in size, the tips of the florets being pointed. The colour is chestnut-yellow.

Alceste.—A fine Japanese bloom of great merit. The florets are of medium size and of a good length. It forms a big, solid, double flower. The colour is pale yellow.



FIG. 19.—CYCNOCHES WITH MALE AND FEMALE FLOWERS: THE MALE FLOWERS IN THE LONG RACEME; THE FEMALE FLOWERS IN THE SHORT SPIKE.

(See page 27.)

Ferdinand de Bièvre.—A Japanese Chrysanthemum with florets of great width. It forms a rather finely-built flower of spreading form. The colour is pale yellow. This variety was one of the biggest shown by this raiser.

Reine Fiammette.—A Japanese variety of large size. The medium-sized florets form a reflexing Japanese bloom of the old type. The colour is a pale rosy-amaranth with purplish shading.

Thais.—A Japanese bloom of medium size and very deep and globular in build. The narrow florets are richly shaded a chestnut-crimson with a golden reverse.

Miarka.—An old type of incurved Chrysanthemum. The big blooms have grooved florets

Mme. Travouillon.—A very large Japanese variety, shown in fine form at Tours. The long spreading petals are numerous and double to the centre. The colour is a bright lilac rosy-mauve.

Belle Trouchoise.—Another Japanese variety with very long florets. A big, imposing bloom, very effective in its rich shade of reddish salmon-rose and reverse of gold.

Cecilia Monteil.—A large, solid bloom of the Japanese type and with very long florets. The colour is pure white, but towards the outer edge it becomes shaded with pale purple.

Rev. W. G. Sharpin.—Of the Japanese section and with grooved florets. It forms a flower of

the greatest possible size and substance. The inside of the florets, which are of good breadth, are coloured a dull shade of old rose with a reverse of golden yellow.

Dr. Nicolas.—A large Japanese variety with rather broad, flat florets. The colour is deep purplish-violet with a silvery reverse.

Rachel l'Abbé.—A Japanese bloom of large size, with rather long, narrow, twisted and intermingling florets curling at their tips. It is a deeply-formed flower, the colour being white slightly tinted with green in the centre.

Mme. E. Bonnefond.—Another huge Japanese Chrysanthemum of much merit and forming a graceful, reflexing flower, very full and double. The florets are of a medium width. Colour a rich golden apricot passing to golden yellow.

General Sauret.—Another large Japanese bloom of great solidity and depth. The medium-sized, grooved florets are curly at the tips. This variety is of great promise. The colour is rich golden yellow.

Souvenir de Mme. Gagnaire.—A Japanese Chrysanthemum of the largest dimensions with very long florets which are of a medium width. The tone is a bright pinkish-rose with a reverse of silver.

Claudius Denis.—A very deep, medium-sized flower of the Japanese type with narrow florets. The colour is a rich golden yellow. *C. Harman Payne.*

CHRYSANTHEMUM FRAMFIELD PINK.

DURING the past two seasons this Chrysanthemum has been of a very poor colour in these gardens, and I should like to know if any other gardener has experienced the same difficulty with it. I obtained last spring a fresh stock of plants, which were treated in the way usual with other late Chrysanthemums. I find the variety *W. Duckham* a most useful late Chrysanthemum as a bush plant. It is of a colour greatly appreciated at this time of the year. *R. Richards, The Hermitage Gardens, Holmes Chapel.*

CHRYSANTHEMUM VIOLET LADY BEAUMONT.

This variety, raised some five years since, is never seen in a competitive stand of Japanese flowers, to which class it belongs; but as a late-flowering sort for Christmas decoration it is distinctly valuable. In sprays of half-a-dozen or so nice blooms on stiff stems, its rich surface colour of crimson and reverse of chestnut are distinctly effective. *E. M.*

CYCNOCHES MACULATUM.

OUR illustration at fig. 19 represents *Cycnoches*, which Messrs. Hugh Low & Co. obtained as *C. pentadactylon* (fig. 20), but which is doubtless *Cycnoches maculatum*, a species which has appeared in gardens frequently of late, sometimes under the name of *C. peruvianum*. The illustration is from a photograph kindly sent by Messrs. Low. The feature pointed out by them is that the specimen bears both male and female flowers. A similar plant, however, which flowered with Messrs. Low, was acquired by Sir Trevor Lawrence, Bart., K.C.V.O., whose Orchid grower, Mr. W. H. White, concludes that the larger flowers are of *Cycnoches chlorochilon*; and that, however closely united they may appear to be, the two species are growing together. Considering that both species are found in Nature in juxtaposition, this is very probably the case. The dissimilarity in the male and female flowers of *Cycnoches*, which are sometimes produced separately, and sometimes on the same inflorescence, has provided a botanical puzzle for many years. From time to time fresh evidence on the subject has been recorded in the

columns of the *Gardeners' Chronicle*. But still much remains to be known both as to the specific distinctness of some of the allied forms and as to the true character of their sexual forms.

Cycnoches Egertonianum in the male form produces a long raceme of purple flowers, and the variety *viride* has pale green flowers; but in 1813 there appeared at Westerbirt, then, as now, famous for its Orchids, an example in which the raceme bore flowers which were purple in some cases, green in others, and in one instance mottled green and purple.

A plant of *Cycnoches Warscewiczii* also flowered with both sexes present in 1879. We reproduce the illustration of this plant in fig. 21.

No more interesting class of plants than the *Cycnoches* can be found by reason of the won-



FIG. 20.—CYCNOCHES PENTADACTYLON. A, male; B, female flowers.

derful peculiarities of their floral structure. It is, therefore, to be hoped that the genus will be given the place it deserves in collections and that structural peculiarities will be noted and communicated.

Species of *Cycnoches*, best known by the less variable *Swan Orchid* (*C. chlorochilon*), grow well with the allied *Catasetums* and *Mormodes* in an intermediate or *Cattleya* house. They are best suspended in baskets or Orchid pans, and should have a well-marked growing season with plenty of water at the roots, and a thorough resting season when water must be withheld after the mature pseudo-bulbs show, by the turning yellow of the leaves, that active growth for the season is finished. From that time, until growth commences again, the plants should be given a rather lower temperature.

NOTES FROM A "FRENCH" GARDEN.

THE start with the hot-beds has been delayed by the snow and cold weather which have also been the cause of stopping the growth of the young Lettuces. As soon as the weather permits we shall start the hot-beds for Radishes, Lettuces and Carrots. The dry manure has been spread over a very large surface of the soil. The beds will be made 18 inches thick, and will be composed half of hot manure and half dry manure. As soon as the beds are ready the frames are set level and 2 inches deep of dry manure is placed inside, with soil in sufficient quantity to fill the frame to within 2 inches of the top. The soil is levelled and raked over as finely as possible and before the sowing of the seeds it is pressed down by means of a flat board. Some growers sow as many as 100 seeds of Early French Breakfast Radish in each light; but others object to this, since, when sown so thickly, the Radishes require ventilation at a time which is injurious to the Lettuces. We sow 250 seeds of Carrot Early Parisian in each light, and not more, for if the proper quantity of seeds is sown the plants will require no thinning in March. The seeds are covered very thinly with finely-sifted soil and the beds are again pressed down by means of a flat board. They are left for two or three days till the heat comes through the seed-bed into the frame, which may be known by the glass becoming dry. The little Black Gott Lettuces are then taken from their winter quarters, and after removing all decayed leaves, rejecting any plants which show signs of red rust or mildew, 35 Lettuces are put in each light. The lights are afterwards kept closed. If frost seems probable, the lights are covered with mats. If the cold frames and the lights have been put in position before Christmas, seeds of Early French Breakfast Radish may at once be sown. The planting of Passion Lettuces may follow, 25 plants being put under each light. If the variety of Lettuce to be cultivated is that known as Little Black Gott, it will be better not to plant until the end of the present month.

When a succession of salads is required, a few seeds of *Cos Lettuce White of Paris* or *Cabbage Lettuce All the Year Round* may be sown on the hot-beds among the Carrots; but if larger quantities are needed, a small bed of three lights or more can be made up for the purpose.

In the gardens around Paris, large quantities of Radishes being constantly in demand, some growers place a layer of 5 or 6 inches of manure on the ground, cover it with 2 inches of well-decomposed manure, and sow seeds of the early Radish already mentioned. The only protection afforded is that given by mats, which are supported by wire or sticks. These are only used if frost is anticipated. *P. Aquatias.*

THE AGRICULTURAL HOLDINGS ACT, 1908.

REMARKABLE INNOVATIONS.

(Concluded from p. 12.)

FREEDOM OF CROPPING.

THE new law which is laid down under this head represents perhaps the most remarkable of any of the provisions of the new Act. As regards freedom of cropping and disposal of produce, the new law overrides not only any custom of the country, but even any agreement made between landlord and tenant. In future, the tenant is to have full right to practise any system of cropping he chooses on his arable land and to dispose of the produce grown by him without incurring any penalty for departing from the old practice of leaving certain produce on the land.

As is often the case, he may have entered into the most solemn promises with his landlord to grow various crops in rotation for the benefit of the land. All these solemn promises now become null and void, subject only to

certain qualifications, the principal of which are as follows:—

1. The tenant must make adequate provision to protect the land from injury or deterioration. In the case of disposal of the produce, this "adequate provision" is to consist of the return to the land of the full equivalent manurial value of all crops sold off or removed when in so doing the tenant is acting contrary to the custom of the country or to his agreement with his landlord.

2. In cases where the tenant has a lease for some years, he must not crop the land or dispose of the produce in such a manner as to be contrary to his obligations as mentioned above during the year before his tenancy expires. If he holds only from year to year he must not so act either during the year before he quits the land or at any time after he has given or received notice to quit.

3. If the tenant actually injures the holding or is likely to do so by thus acting, the landlord may recover damages, and, if necessary, obtain an injunction restraining the tenant from further injuring the land; and if the parties cannot agree on the amount to be paid for the damage, this is to be fixed by arbitration.

4. Where the tenant carries out certain improvements merely for the purpose of avoiding injury to the land, which would otherwise result from his acting in the arbitrary manner above explained, he is not to be entitled to compensation for these improvements.

5. The landlord may still insist on the tenant carrying out an undertaking given by him not to plough up grass land.

COMPENSATION FOR DISTURBANCE.

We now pass to another important innovation which seems calculated to pave the way towards "fixity of tenure." Hitherto, when the owner of land has let his property to a tenant for a fixed period of years, he has naturally expected to get back possession of his land at the expiration of the agreed term. From the legal point of view this certainly appears to be reasonable enough; but it has been urged that certain landlords have sometimes exercised their rights very harshly in refusing to renew a tenancy, especially in the case of yearly tenants. The new Act therefore provides that if "without good and sufficient cause and for reasons inconsistent with good estate management" (whatever that may mean) a landlord (a) puts an end to a tenancy by giving the tenant notice to quit or (b) refuses to grant a renewal of the tenancy in cases where the tenant has made a written request for such renewal at least one year before the tenancy would expire in the ordinary course; or (c) demands from his tenant an increased rent on account of an increase in the value of the premises owing to improvements which have been executed by the tenant or carried out at his cost (and for which the tenant has not received some equivalent benefit from the landlord), then the tenant, if he leaves owing to any of these causes, is to be entitled not only to compensation for his improvements, but also for the loss or expense which he may thus unavoidably incur in connection with the sale or removal of his household goods or his implements of husbandry or his produce or his farm stock. The tenant cannot agree to give up his rights in this respect, as "contracting out" is expressly forbidden. It will be noticed also that nothing is said with regard to the manner in which the expenses of removal are to be estimated. The Act does not say whether the tenant is to be allowed just such an amount as might enable him to remove into a neighbouring farm, market garden, parish or county, or whether he may claim for the cost of removing from one end of England to the other. There are, however, certain steps which the tenant has to take before he can claim expenses of this nature, namely:—

1. He must give the landlord a reasonable opportunity of valuing the stock.

2. He must give the landlord written notice of his intention to claim compensation, and must be careful to do this within two months after he has received notice to leave or after the landlord has refused to renew the tenancy as the case may be.

3. In addition to giving notice of his intention to claim as mentioned in item No. 2, the tenant must also make his formal claim for compensation within three months after leaving the property.

4. Where the tenant, with whom a contract of tenancy was made, has died within three months before the date of the notice to quit, or before the landlord has refused to renew the tenancy, his executors, legatees, or next-of-kin, as the case may be, cannot demand any compensation for disturbance.

Before leaving this subject, it may be pointed out that, owing to slovenliness in the wording, numberless disputes are likely to arise in deciding as to whether the landlord has turned out his tenant or refused to give him a new lease "without good and sufficient cause and for reasons inconsistent with good estate management" so as to entitle his tenant to claim this compensation for disturbance. What is precisely meant by this vague wording will have to be decided by the law courts, and an enormous amount of litigation is likely to result unless an Explanatory Act is speedily passed. For this the draftsman of the Act can scarcely be held responsible, as the words were inserted by way of compromise during the debate in the House of Commons when the Land Tenure Bill came up for discussion in 1906.

REPAIRS TO BUILDINGS.

In addition to compensation for the erection or enlargement of buildings, a tenant will in future be entitled to claim for repairs to such buildings provided the buildings are necessary for the proper cultivation or working of the land, and provided also that these repairs are not such as the tenant is already under an obligation to execute. The tenant is not obliged to obtain the landlord's consent before executing such repairs, but is nevertheless obliged to give him written notice of his intention to execute them so as to give his landlord the option to carry them out within a reasonable time instead of allowing the tenant to do so.

RECORD OF CONDITION.

In the case of any tenancy entered into after January 1, 1909, either the landlord or the tenant may, at the commencement of the tenancy, require a record to be kept showing the condition of the fences, gates, roads, drains, ditches and cultivation of the land. This record has to be made within three months after the tenancy commenced, and if the landlord and the tenant cannot mutually agree on nominating a person to make such record, then, on the application of either party, the Board of Agriculture will appoint a suitable person and, unless the parties otherwise agree, the cost of making the record is to be shared between them in equal proportions.

Enough perhaps has been said to show that a statute of far-reaching importance is about to come into force. Time alone will show whether its effect will be precisely that which was intended by its promoters, but in any case it must be obvious that the new law demands the very careful consideration of both landlord and tenant. *H. M. V.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

CHRISTMAS AT PADDOCKHURST.—A Christmas entertainment took place at Paddockhurst, the seat of Sir Weetman D. Pearson, Bart., on the 30th ult. Tea was provided for upwards of 500 tenants and employés, with their wives and families. The snow being thick on the ground, the aged and very young were conveyed to and from the house by motor-cars. During the afternoon Sir Weetman and Lady Pearson paid a visit to the tea room and said a word to each of those present. Subsequently the company adjourned to the heated motor-house, where a gramophone concert, followed by a cinematograph display, was given. Before leaving for their homes, each of the visitors received a present from the brand. *W.*

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The voting papers issued by the committee of this gardeners' charity show a list of no fewer than 73 candidates for election. If it is comforting to think that at least 18 out of that very large number will be elected, it is not otherwise than distressing to realise that some 58 out of the total number must be disappointed. Yet no fewer than 58 of the applicants have in the past been subscribers to the institution, or are widows of subscribers. Two candidates apply for the sixth time, three for the fourth time, and 11 for the third time. Fourteen candidates are already credited with more than 2,000 votes and five others have to their credit over 1,800 votes. Hence it will be seen that those candidates whose present totals are much below the latter figures have little hope of success. One applicant is aged 81, and two others are 80 years of age. The list of candidates includes 19 widows of gardeners and in only two cases were the husbands subscribers. *Subscriber.*

TABLE DECORATIONS.—I was pleased to see Mr. E. Molyneux's comments on the table decorations displayed at the November Show of the N.C.S. at the Crystal Palace. The exhibit which was passed by the judges and favourably mentioned by Mr. Molyneux was, in the opinion of many, distinctly better than any other. I do not agree with Mr. T. S. Williams' criticism (p. 451). The flowers were better grown and of a higher class than those in any other exhibit and the blending of the colours was charming and harmonious. The flowers were not pressed together and sufficient stalk was visible and the foliage ample and perfect. The white flowers were arranged in silver vases of refined pattern. For several years the table decorations have been of one stereotyped pattern, especially those found at the autumn shows; yellow and bronze have been the predominating colours; and the receptacles in which the flowers have been arranged of the so-called rustic pattern. Recently I heard a gardener protesting against the use of these stands or vases, saying that they were only so much tinsel. There is nothing handsome, striking or beautiful in most of the present-day table decorations; all other considerations are being surrendered to the securing of so-called "lightness." *W. J. G.*

RESTING FRUIT TREES UNDER GLASS.—In his admirable notes on "Fruits under Glass," p. 6, Mr. Harriss points out the need of allowing fruit trees under glass a period of absolute rest. In most cases that have come under my observation neither vines nor Peach trees are given the period of rest they require. Ventilation should be ample at all times during that period, even when frost is present. To obviate the danger of the water in the pipes becoming frozen, the fruit houses here are built in four sections, which embrace early, second early, mid-season, and late houses. They are separately heated from independent boilers, each separate stokehole being provided with two 9-foot boilers. The supply of water to each boiler is also separate. The water of any one system can thus be drained from the pipes by simply drawing a plug fixed over a drain. This can be done as soon as the leaves have fallen, except, of course, where there are late crops still hanging on the trees. The ventilators are thrown open to their fullest extent and no fears are entertained of burst pipes. It is better to have movable roof-lights; ours, unfortunately, are all fixed roofs. The strongest and best break of vines I ever saw was in ainery containing Gros Colmar, with a vine of Canon Hall Muscat on either side of the doorway. The roof of this house was entirely removed by high wind in December, 1892, and the vines were left exposed to all weathers throughout the winter, being sometimes covered with snow; the inside borders being often frozen hard. After the roof was replaced, the vines developed strong shoots and the crop of Grapes was exceptional, both in weight and in quality. Pot plants should be wintered in houses suited to their needs and not be allowed to interfere with the proper winter treatment of the fruit trees. *A. B.*

TROPICAL FRUITS.—As supplemental to the interesting article on "Tropical Fruits" in the *Gardeners' Chronicle* for December 26 last, I should like to add the following notes. First, with regard to the Kaki (*Diospyros Kaki*), it is satisfactory to learn that the fruit travels well from the south of Europe to the London market, as this leads to the hope that the supplies will be larger, so that the fruits may be retailed at a cheaper rate than 8d. to 10d. each. My experience of this fruit does not quite agree with that of Mr. Macmillan, who says that it has "a peculiar astringent flavour, for which a taste has to be acquired before it can be enjoyed." Some years ago, when the plant was first fruited at Kew, I had an opportunity of tasting it. My description of it at the time was that it had a flavour resembling that of the Apricot, with a slight suspicion of the Medlar. It must be remembered that, to eat it in perfection, it must be absolutely ripe, or even in a blotted condition. In a less ripened state the fruit is frequently preserved in syrup by the Chinese and Japanese. Samples of such preserved fruits have been shown

End grocers', are, or used to be, sometimes roasted. With regard to the Liches, or Lychee, as it is most generally spelt in the shops, it seems a great pity that we should get only the dried, shrivelled fruits in this country. The "sweet, jelly-like, opaque pulp," described by Mr. Macmillan, has, before it comes into the hands of the English buyer, mostly changed into a black, shrivelled condition, in the centre of which is the big, bony seed. The pulp or aril has, in this state, but little to recommend it beyond an ordinary Raisin or Muscatel; but, in the fresh state (in which condition I had an opportunity of tasting it at one of the international exhibitions), it is of a pale pink colour, cooling, refreshing, and of a delicious sub-acid flavour. Specimens of these pulpy arils, deprived of their seeds and preserved in syrup, were shown at the exhibition referred to, thus suggesting capabilities for their preservation and export in syrup, as is now so extensively done with the Pineapple. Referring to the Durian (*Durio zibothimus*), my experience is somewhat limited. Only once have I had a chance of smelling a

juice and should not be eaten until it is absolutely ripe or blotted. A ludicrous illustration of the necessity of this precaution was witnessed in the colonial market attached to the Colonial and Indian Exhibition in 1886, where more than one consignment from the West Indies was offered for sale. The really ripe fruits were pronounced delicious by the purchasers, whilst those who were unfortunate enough to get unripe fruits suffered from the milky juice coagulating with the warmth of the lips and sticking them together: thus considerable inconvenience to the eater and much fun for the onlookers were provided. This fact of the introduction of the fruit into London may be of interest to Mr. Macmillan, who says he is not aware that it has ever been seen in Europe. In conclusion, I may, perhaps, add that sliced Papau is frequently to be found in pickles from tropical countries, introduced on account of the papain, as an aid to digestion, as described by Mr. Macmillan.

WEATHER IN CORNWALL.—In some districts there appear to have been snowstorms



FIG. 21.—CYCNOCHES WARSCEWICZII, WITH MALE AND FEMALE FLOWERS.
(See page 27.)

at the several international exhibitions, so that the Kaki, or Chinese Date Plum, as it is sometimes called, might be also introduced to the English market in this form, or even crystallised with sugar. The name Persimmon, which seems to be the Covent Garden name for it, has apparently been adopted from the North American allied species, *D. virginiana*, the fruit of which is so astringent that it is impossible to eat it until it is dead ripe. A word or two may be added about the Cashew Nut (*Anacardium occidentale*), and this, perhaps, by way of a warning, for it is necessary that the kernel should be carefully removed from the hard, brown shell, which contains a powerfully acrid and vesicating oil, becoming black by exposure; while the oil from the kernel itself is sweet and of a pale yellow colour. The kernels, as occasionally seen in some of the best West-

raw, unripe Durian fruit, which was sufficient to prove the appropriateness of one of its names, "Civet Cat Fruit," and to endorse the following extract from Sir George Watt's *Dictionary of the Economic Products of India*: "It has a strong odour, considered by Europeans as highly offensive, which resembles that of putrid animal matter, combined with rotten Onions." With these opinions attaching to the fruit, notwithstanding all that has been said on the other side, it will probably be difficult for the Durian to capture the palate of the ordinary Englishman. The Sapodilla or Naseberry (*Achras sapota*) stands on a different footing from the Durian and deserves all that Mr. Macmillan says of it. It may be added, however, that, as the plant belongs to the Natural Order Sapotaceæ, which is a rubber or gutta-yielding family, it contains, in an unripe state, a proportion of elastic, milky

such as have not been experienced for 28 years, but beyond a little hail and sleet, with 2" of frost on one night, there was nothing here to show that such storms had occurred. Fuchsias are still flowering in the open garden, also Abutilons, *Eupatorium glabratum*, *Calceolarias*, *Nicotianas*, *Roses*, *Schizostylis coccinea*, *Heleniums*, *Veronicas* in variety, *Cliaanthus puniceus*, and the white variety; *Cytisus racemosus*, *Habrothamnus elegans*, which is splendidly in flower on an east wall; *Solanum jasminoides*, *Hydrangeas*, *Choisya ternata*, *Pittosporum*, one or two plants of *Rhododendron*, and *Camellias*. This list will show what mild weather prevails in this district. With these laggards of one season there are mingled flowers of *Polyanthus*, *Narcissus*, *Primrose*, and *Snowdrop*. R. W. Norman, *Heligan Gardens, St. Austell, Cornwall, Jan. 5.*

MUSCAT GRAPES, &c.—Mr. McIndoe (see p. 12) strikes the right note in respect to the wording of schedules in classes relating to Muscat Grapes. If his advice is followed much friction will be avoided in the future. Then there is that source of perennial trouble, "What are herbaceous plants?" I would suggest that the Royal Horticultural Society should issue a list of species and varieties that are to be considered as herbaceous plants; that such lists should be available for purchase by Horticultural societies who have classes for these plants in their schedules; and that copies of the lists should be handed to judges for their guidance (to be returned to the secretary on completion of their duties). If exhibitors in these classes will also purchase the list and exhibit only such plants as are enumerated, much friction will be avoided, and time saved to the judges. *J. Tunnington, Ferne Gardens.*

THE AUTUMN FRUIT-SHOW OF THE ROYAL HORTICULTURAL SOCIETY.—Whatever may be the result of the competitive classes instituted this year by the council of the Royal Horticultural Society for fruits and vegetables at the ordinary meetings it is certain that many gardeners and others who have regarded the Autumn Fruit Show as a sort of pomological Mecca will be greatly disappointed by its abolition. Certainly in the few classes to be established at each meeting there will be no substitute for the fruit show, any more than a series of similar classes for Orchids and other plants or trees and shrubs would compensate for the omission of the Temple Flower Show. These two annual shows, one in the spring and the other in the autumn, have proved to be strong attractions to gardeners from all parts of the kingdom and the discontinuance of one of these can only be regarded with regret. It will not perhaps be so much regretted by the habitual frequenters of the Society's numerous meetings, for, to them, doubtless, a great, if rather monotonous, show of fruit, repeated year after year, becomes in time unattractive. Whether it is possible to institute next October some more than usually attractive meetings or competitions is for the council to determine; but country gardeners and fruit growers, now deprived of their annual fruit exhibition and special attraction, certainly merit sympathy and consideration. *A. D.*

CATTLEYA MENDELII HIS MAJESTY THE KING.

—In to-day's *Gardeners' Chronicle* (January 2), at page 5, I read, anent my *Cattleya Mendelii* His Majesty the King, "whose picture, it is said, was accepted by her Majesty Queen Alexandria." The fact is that her Majesty greatly admired this *Cattleya* when she visited the last Temple Show and was graciously pleased to accept from me Mr. Lamont's painting of it. In acknowledging this painting, her Majesty was pleased to thank me for "such an artistic representation of such a magnificent flower." As "*His Majesty the King*" is considered to be the finest variety of *Cattleya Mendelii* yet seen, I think it is proper for me to add that, although the plant flowered for the first time here, it was, nevertheless, imported by Messrs. Hugh Low & Co., of Bush Hill Park, from whom I obtained it, together with several other imported and unflowered *Cattleyas*. *Francis Wellesley.*

SOCIETIES.

ROYAL HORTICULTURAL.

The following circular letter is being distributed by the Royal Horticultural Society for the purpose of obtaining information in regard to the "Scab" disease in Apples and Pears:—

WISLEY, RIPLEY, SURREY,

Dear Sir,—Some investigations in connection with the disease of Apples and Pears, known as "Scab," are being carried out at Wisley, and, being desirous of obtaining as full particulars as possible concerning the extent of the damage caused by this disease, I am venturing to send you a number of questions, with the request that you will be so good as to furnish me with replies to as many as possible and return the signed

form to me at the laboratory at your earliest convenience.

A considerable number of questions are asked, but it is felt that the larger the amount of information that can be collected, the greater the chance will be of suggesting a really efficient method of dealing with this disease, which probably does more damage at present than any other to Apples and Pears.

The replies received will be collated and a report upon the occurrence of the disease will be drawn up and will appear in the *Journal* of the Society. It is therefore hoped that growers will not think the trouble of filling in answers to these questions too great when they remember that their work will be for the benefit of the fruit-growing industry the country through.

I may point out that replies from those who are fortunate enough to be free from the disease are as important as from those whose fruit suffers.

If in doubt as to the disease in any particular case, I should be glad if you would send specimens to the laboratory that they may be examined.—Yours truly,

FRED. J. CHITTENDEN, Director.

SCHEDULE OF QUERIES

1. Has the Apple or Pear scab made its appearance among your fruit during the past season?
2. If so, what is your estimate of the proportion of the crop damaged by the disease? (a) Apples. (b) Pears.
3. What is the total quantity (estimated) of fruit damaged by the disease? (a) Apples. (b) Pears.
4. Are the damaged fruits allowed to rot on the ground or fed to pigs?
5. Do you find that the fruits slightly attacked tend to rot in the store more quickly than others that show no attack?
6. Is the disease, in your experience, more prevalent now than in years past?
7. What is the kind of soil and sub-soil on which your trees are planted?
8. Is any system of manurial treatment practised?
9. Are the trees growing in grass or in cultivated land? If in both, do you find any difference in the amount of disease under the different conditions?
10. Do you find the disease more prevalent in some parts of the plantations than in others? If so, what is the character of those parts?
11. Are the trees grown mainly dwarfs or standards? Do you find any difference in the amount of the disease on the two forms where both are grown?
12. About what age are the bulk of the trees? Do you find the disease worse on the older or the younger trees?
13. Are the trees systematically pruned in the winter? In the summer? Is all dead wood, both branches and twigs, cut out every year?
14. What is done with the prunings?
15. Have you noticed whether, in the case of your trees, the leaves are attacked or not? (a) In Apples. (b) In Pears.
16. Do you find any trace of the disease upon the shoots in the shape of small scabby spots or otherwise?
17. At what time and upon what part of the plant is the disease usually first noticed?
18. Are there (a) in the near neighbourhood any old and neglected orchards and (b) Crab Apples or wild Pears in any considerable number in the hedges, &c.?
19. Do you suspect any conditions, seasonal or otherwise, to favour the appearance and spread of the disease?
20. Do you find some varieties are more severely attacked than others? If so, what are they? Please indicate which varieties are caused to crack badly? (a) Apples. (b) Pears.
21. Do any varieties growing amongst others which are diseased remain free from the attack? If so, please give their names. (a) Apples. (b) Pears.
22. Have any remedial or preventive measures been tried, and with what success?

MANCHESTER AND NORTH OF ENGLAND ORCHID.

DECEMBER 17th.—A meeting of this society was held on the foregoing date in the Coal Exchange, the building being filled with exhibits.

G. SHORLAND BALL, Esq., Burton, Westmoreland (gr. Mr. Herdman), was awarded a Silver-gilt Medal for a group of *Cypripediums*, the best of which was C. × Germaine Opoix, Westfield variety, which was awarded a First-class Certificate. Other choice plants in the group were *Chondropetalum* × *Fletcheri* (see fig. 12 in the last issue), and *Cypripedium* × *King Edward*. *Cypripedium* *insigne* var. *Francis Wellesley* was brought before the deliberations of the committee, and was declared to be synonymous with C. *insigne*, *Harefield Hall* var.

DREWETT O. DREWETT, Esq., Riding Mill-on-Tyne (gr. Mr. Renwick), was awarded a Silver Medal for a group of *Cypripediums*, principally seedlings of *Cypripedium* *insigne*, many of which were of great merit. C. *insigne* var. *James Renwick* was awarded a First-class Certificate, whilst C. × *insigne* var. *Northumbria*, C. *Spicerianum* "Orchidhurst variety," and C. *insigne* var. *The Sultan* also received Awards of Merit.

H. J. BROMILOW, Esq., Rainhill (gr. Mr. Morgan), staged a large and choice group of *Cypripediums*, for which a Gold Medal was awarded. Amongst the plants shown were many elegant forms of *Cypripedium* *insigne*, C. × *Minos Youngii*, C. × *Fulshawense*, C. × *Thalia Rann Lea* variety, and C. × *Germaine Opoix*.

A. WARBURTON, Esq., Haslingden (gr. Mr. Dalgleish), was awarded a Silver Medal for a group of *Cypripediums*, which included C. × *Fulshawense*, C. × *Gaston Bultel* var. *King Edward*, and C. × *Euryades Sanders'* variety.

E. ROGERSON, Esq., Didsbury (gr. Mr. Price), was awarded a Silver Medal for a group of plants, including a specimen of *Odontoglossum crispum*, with 40 fine flowers on one inflorescence. *Cypripedium* × *Ardwickense* (parentage unknown) received an Award of Merit.

Mr. H. ARTHUR, Blackburn, was awarded a Silver Medal for a group of plants, which included some well-grown *Oncidiums*, *Cymbidium* × *Winnianum* and several varieties of *Cypripedium* *insigne*.

Z. A. WARD, Esq., Northenden (gr. Mr. Weatherly), staged a charming group of plants consisting principally of *Odontoglossums*. (Silver-gilt Medal.)

E. ASHWORTH, Esq., Wilmslow (gr. Mr. Holbrook), was awarded a First-class Certificate for a hybrid *Cypripedium*, the parentage of which was C. *insigne* var. *Sanderæ* × C. *insigne* var. "Laura Kimball." The quality of the seedling was good, and there was an entire absence of the tiny spots seen in C. i. var. *Sanderæ*. It is named C. × *Sanderæ-Kimball* Ashworth's variety.

S. GRATRIX, Esq., Whalley Range (gr. Mr. Shill), was awarded a First-class Certificate for a choice hybrid named C. × *Sir W. Houldsworth*, the parentage of which was not recorded. The plant was slightly past its best condition, but it has good qualities.

Mr. C. PARKER, Preston, was awarded a Silver Medal for a group of *Cypripediums*, which included several good forms of C. × *Leeanum*.

J. MCCARTNEY, Esq., Bolton (gr. Mr. Holmes), was awarded a Silver Medal for a miscellaneous group.

R. ASHWORTH, Esq., Newchurch (gr. Mr. Fletcher), was awarded a Silver Medal for a group of plants, which included *Odontioda* × *Bohnhoffia*.

Messrs. CYPHER & SONS, Cheltenham, were awarded a Silver medal for a beautiful group of Orchids.

Mr. J. ROBSON, Altrincham, exhibited *Cypripedium* × *Evansianum* and C. × *exquisitum*.

Messrs. ARMSTRONG & BROWN, Tunbridge Wells, showed a large and valuable collection of Orchids.

Other exhibitors at the meeting were Messrs. KEELING & SONS, Bradford; Mr. J. BIRCHENALL, Alderley Edge; Mr. J. STOTT, Radcliffe; Mr. WEBSTER, Shackleton; Messrs. BOLTON, of Warrington; J. H. CRAVEN, Esq., Keighley; Messrs. MOORE & Co., Leeds; Messrs. LOW & Co., Enfield; Messrs. CHARLESWORTH & Co., Haywards Heath; and O. O. WRIGLEY, Esq., P. W.

MARKETS.

COVENT GARDEN, January 6.

[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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Acacia (Mimosa), p.doz. bunches	10-12-0	
Azalea, p. dz. bchs.	4-0-5-0	
Bouvardia, per dz. bunches	6-0-8-0	
Calla aethiopia, p. dozen	2-6-4-0	
Camellias, per doz. carnations	2-0-2-0	
dozen blooms, best American	2-6-3-6	
various	1-0-2-0	
second size	1-0-2-0	
smaller, per doz. bunches	9-0-12-0	
Cattleyas, per doz. blooms	10-0-12-0	
Chrysanthemums, specimen	2-0-3-0	
p. doz. bunches	9-0-18-0	
Cypripediums, per dozen blooms	1-6-2-6	
Daffodils, per hch.	1-0-1-3	
Eucharis grandiflora, per doz. blooms	2-0-3-0	
Gardenias, per doz. blooms	3-0-6-0	
Hyacinths (Roman), per doz. bchs.	9-0-12-0	
Lilac (French) per bunch	3-0-4-0	
Lapagerias, p. doz.	1-6-2-0	
Lilium auratum, per bunch	2-0-3-0	
longiflorum	3-0-4-0	
lancifolium, rubra	1-0-1-6	
album	2-0-2-6	
Lily of the Valley, p. dz. bunches	8-0-9-0	
extra quality	12-0-15-0	

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum cuneatum, dz. bchs.	4-0-6-0	
Asparagus plumosus, long trails, per doz.	8-0-12-0	
medm., hch.	1-0-2-0	
Sprengeri	0-9-1-6	
Berberis, per doz. bunches	2-6-3-0	
Croton leaves, per bunch	1-0-1-3	
Cycas leaves, each	1-6-2-0	
Ferns, per dozen bchs. (English)	2-0-3-0	
(French)	0-6-0-9	
Galax leaves, per dozen bunches	2-0-2-6	
Holly, per crate	4-0-6-0	

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Ampelopsis Veitchii, per dozen	6-0-8-0	
Aralia Sieboldii, per dozen	4-0-6-0	
large specimens	9-0-12-0	
Moseri	4-0-6-0	
Araucaria excelsa, per dozen	12-0-30-0	
Aspidistras, p. dz.	15-0-24-0	
green	30-0-42-0	
variegated	12-0-18-0	
Sprengeri	9-0-12-0	
tennis minus	9-0-12-0	
Azaleas (Indian), p. dozen	30-0-42-0	
Begonia Gloire de Lorraine, p. dz.	12-0-18-0	
Bouvardias, per dz.	6-0-9-0	
Chrysanthemums, per dozen, best disbudded	12-0-18-0	
Clematis, per doz.	8-0-9-0	
Cocos Weddelliana, per dozen	18-0-30-0	
Crotons, per dozen	18-0-30-0	
Cyclamen, pr. doz.	10-0-15-0	
Cyperus alternifolius, dozen	4-0-5-0	
Cyperus laxus, per dozen	4-0-5-0	
Dracaenas, per doz.	9-0-24-0	
Erica gracilis, per dozen	12-0-15-0	
gracilis nivalis, per dozen	15-0-18-0	
hyemalis, per dozen	10-0-15-0	

Fruit: Average Wholesale Prices.		s.d. s.d.	
Apples, Foreign			
California			
Newtown Pippin, per case, 4 tiers	8-6-10-6		
4½ tiers	7-6-10-6		
(American), per barrel	23-0-25-0		
Baldwin	26-0-28-0		
Greening	28-0-35-0		
Newtown Pippin	28-0-35-0		
Oregon Newtown Pippin, per case	13-0-14-0		
per case (165-185)	10-0-14-0		
(Nova Scotian), per barrel	21-0-25-0		
Spys	23-0-25-0		
Russet	18-0-23-0		
Baldwin	9-0-10-0		
French Russet, per case	6-6-8-0		
Bananas, bunch:	8-0-9-0		
No. 2 Canary	10-0-12-0		
No. 1	5-0-7-6		
Extra	5-0-5-6		
Giants	0-6-1-0		
(Claret)	5-0		
Jamaica	4-0-12-0		
Loose, per dz.	5-0		
Cranberries, per dozen punnets	4-0-12-0		
Custard Apples	4-9-5-0		
Dates (Tunis), per dozen boxes	4-3		
Figs (Eleme), p. dz.	5-0-7-6		
puller, per dz.	10-0-13-0		
Grape Fruit, case	0-6-1-6		
Grapes (English), per lb.	0-6-1-6		
Hambros	1-0-2-0		
Gros Colmar	1-0-1-3		
Alicante	2-0-6-0		
Muscot of Alexandria	2-0-8-0		
Cannon Hall			
Muscot			

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Artichokes (Globe), per dozen	3-0-5-0	
white, p. bushel	1-0	
Asparagus, per bundle:		
Spruce	0-8-1-0	
Paris Green	4-0-4-6	
Beans—		
(French), p. lb.	0-6-0-8	
(Guernsey), per lb.	1-0-2-0	
(Madeira), per basket	2-0-4-0	
Beetroot, per bushel	1-6	
Brussels Sprouts, ½ bushel	3-0-4-0	
Cabbages, per tally	8-0-10-0	
per mat	4-0-5-0	
Greens, per bushel	2-0-2-6	
Cardoon (French), per dozen	12-0	
Carrots (English), dozen bunches	2-0	
washed, bag	2-3-2-6	
unwashed	1-6-1-9	
Dutch, p. bag	1-6	
(French), p. pad	2-6	
Cauliflowers, per dozen	2-6-5-0	
per tally	10-0-20-0	
Italian Heads, per basket	3-9-4-0	
Celery, per roll	0-11-1-0	
unwashed, per dozen	7-0-10-0	
Celeriac, per doz.	3-0-4-0	
Chicory, per lb.	0-5	
Cucumbers, per dz.	10-0-18-0	

Potatoes.

	s.d.	s.d.
Kents	4-0-4-2	
Snowdrop	3-6-3-9	
Sharpe's Express	3-3-3-6	
Epicure	3-0-3-6	
Up-to-Date	3-0-3-6	
Lincolns	2-9-3-0	
Epicure	3-0-3-3	
British Queen	3-0-3-6	
Up-to-Date	3-6-3-9	
Maincrop	3-0-3-3	
Sharpe's Express	2-9-3-3	

REMARKS.—There is a slightly better trade, but prices have not altered. Stocks in London are not quite so heavy as recently. *Edward J. Newborn, Covent Garden and St. Pancras, January 6, 1909.*

COVENT GARDEN FLOWER MARKET.

Owing to the severe weather of last week, prices advanced for all flowers and plants, but with the warmer conditions which followed prices have again dropped. Trade fluctuates greatly at this season of the year, and should another cold spell of weather occur, which appears likely, there will be a shortage of supplies, especially of good flowering plants. On Tuesday morning there were many empty stands, for growers find it more profitable to be engaged with their early spring crops than in marketing their produce when trade is uncertain. Many market nurserymen have finished with flowering plants by the end of the year. I have lately visited several nurseries and have found preparations already made for the spring trade. In one establishment I noticed both Ivy-leaved and Zonal Pelargoniums in large quantities in their flowering pots. It is possible to have some crops, and especially flowering plants, too forward, but in the case of the London trade, provided the weather is favourable, good flowering plants are always in demand early in the season.

POT PLANTS.

Good Chrysanthemums are still available, but in some instances, whilst the flowers are good, the foliage is sparse. *Ericas* are not quite so abundant as formerly. *E. hyemalis* is very good. *E. ovata* is pretty and of good habit. Good plants of *E. gracilis* in both the white and the normal red variety are still obtainable. *Azaleas* are not quite so well flowered as they were last week. *Genistas* are well flowered, but they are not selling readily. *Begonia Gloire de Lorraine* was in demand at Christmas, but since then this plant has not sold so well. The cold weather has stopped the demand for *Euphorbia pulcherrima* (Poinsettias), and well-flowered plants have realised good prices. *Marguerites* are remarkably good, considering the time of the year. *Hyacinths* in all shades of colours are now offered for sale; the white varieties are best. The blue kinds are of a pale shade, but pink and red varieties are moderately good. Very few Tulips in pots are seen, but boxes containing about 24 plants are over-plentiful. As bulbs generally were dear last autumn, it is surprising that so many growers have them in large quantities. *Solanums* have been over-plentiful and some plants left over since the frost have a rather bad appearance. Orange trees with ripe fruits in various sizes are very good. *Ferns* and *Palms* are not quite so abundant as formerly, but the supplies are equal to the demand.

CUT FLOWERS.

Chrysanthemums are still plentiful, and it is difficult to estimate their prices. Fine blooms of *Madame Charvet* are offered at 2s. per dozen. The blooms of this variety are not of the best colour this season, and care needs to be exercised in selecting the stock plants. *Roses* are plentiful but rather small. I noticed blooms of *Ulrich Brunner* or *Captain Hayward* on long stems, with beautiful foliage, but they were worth more than about 6s. per dozen. *Lilbert*, however, has risen in value to 8s. per dozen. Blooms of *Madame Abel Chatenay* are small, but prices are rather high, varying from 3s. to 6s. per dozen. *Lilac* from English growers is good. *Lily-of-the-Valley* does not advance in price; there is a great variation seen in the quality of this flower. *Violets* are plentiful, both from French and English growers. *Acacia* (Mimosa) from France is very pretty. *Ranunculus* in various colours have been making high prices. *Carnations*, which appeared likely to be scarce, are over-abundant; they are one of the most prominent features in the market. The blooms need to be very good to realise more than 2s. 6d. per dozen. *Eucharis* is cheaper, also *Tuberoses*. Many growers sell their *Tuberoses* on the stems. *Camellias* are also plentiful. *Roman Hyacinth* is very good and has been making better prices. Tulips are abundant; the majority are procurable with fairly long stems, though some are still rather short. Of ornamental foliage that of *Ruscus racemosus* is one of the most useful, as it lasts fresh for a long period; the American *Galax* leaves will last fresh for several weeks. *Asparagus*, *Smilax*, and other cut foliage is plentiful. *A. H., Covent Garden, Wednesday, January 6, 1909.*

GARDENING APPOINTMENTS.

- Mr. H. LLOYD, for 4 years Gardener to Major WYNDHAM PAIN, Beech House, Christchurch, Hants, as Gardener to the same gentleman at his new place, Bransgore House, Christchurch, Hants. (Thanks for contribution to R.G.O.F. box.)
- Mr. ARTHUR WALLING, for the past 3 years Foreman in Chevet Park Gardens, as Gardener to J. D. COBOLD, Esq., and Lady EVELYN COBOLD, at Holy Wells, Ipswich.
- Mr. J. E. ROBERTS, for the past 18 months General Foreman at Strensham Court, Worcester, as Gardener to Miss A. J. BEHRENS, Ripple Hall, near Tewkesbury, Gloucester. (Thanks for contribution to R.G.O.F. box.)
- Mr. G. W. LONGHURST, for the past 3 years Gardener to GEORGE BLACKALL-SIMMONS, Esq., Bradfield House, Berks, as Gardener to W. A. HORN, Esq., Wimbledon Park House, Wimbledon, S.W.

TRADE NOTICE.

Mr. F. W. RUSSELL, for some years Gardener at Paxton Park, St. Neots, and recently of Ashby St. Ledger's Gardens, Rugby, has purchased the Bienheim Nurseries, Ramsey, Hants., which until recently were carried on by the late Mr. Redman.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending January 2, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The weather.—The earlier days of the week were rough and wintry, with heavy falls of snow in nearly all parts of Great Britain, and of rain, sleet, or snow in Ireland. After Wednesday the general condition was much milder and quieter. The atmosphere became very humid and slight rain was experienced at times.

The temperature was below the average throughout Great Britain, the deficit being about 6° over the major portion of England, and rather more than 7° in England S.E. In Ireland, where the change to a milder condition arrived earlier, the week was warm for the time of year. The highest of the maxima occurred in most places on January 2, when they ranged from 55° in England N.W. and the English Channel to 49° in England E. During the earlier days of the week the day temperatures were extremely low in many parts of England, the thermometer sometimes standing between 14° and 20° for some hours. The lowest of the minima were generally registered on December 29 or 30, and were as low as 3° in England S.E. (at Swarraton on the 30th), 5° in the Midland Counties, and 7° in England E. (at Cambridge). In the other districts the readings ranged from 15° in England S.W. to 22° in Scotland N. and W., 27° in the English Channel, and to 29° in Ireland S. In addition to the very low readings quoted the following temperatures were registered at some supplementary stations. At Liphook the screened thermometer fell to 1° below zero on the 30th, at Buxton and Epsom to 4°, and at Great Billing, Northampton, to 6°, while at Tunbridge Wells the thermometer exposed on the snow descended to 2° below zero, and at Epsom to 8° below zero.

The mean temperature of the sea.—Except at Eastbourne and Aberdeen and one or two other places the water was again warmer than during the corresponding week of last year. The actual values for the week ranged from 51½° at Plymouth, to about 39° at Eastbourne and Scarborough, and to 36½° at Aberdeen.

The bright sunshine was less than the average in all districts, the percentage of the possible duration ranging from 17 in the English Channel to 11 in England E. and S.E., 1 in England N.W. and to 0 in Scotland W.

THE WEATHER IN WEST HERTS.

Week ending January 6.

Mild, damp, calm and gloomy.—The recent spell of cold weather lasted eight days, but on only three of these was the temperature exceptionally low. The first day of the past week was very cold, but since then the weather has been warm for the time of year. On the warmest day the temperature in the thermometer screen rose to 50°, and on the one cold night the exposed thermometer registered 21° of frost. The ground is now 2° warmer than is seasonable, both at 1 and 2 feet deep. Rain fell on three days, but the total depth was only one quarter of an inch. Nevertheless, owing to the melting of the snow which fell in the previous week, three and a quarter gallons of water, or more than twice the rainfall of the past week, passed through the bare soil percolation gauge, and two and a half gallons through that on which short grass is growing. The sun shone on an average for only 11 minutes a day, which is 1 hour 10 minutes a day short of the average duration for this period of the year. On five days no sunshine at all was recorded. This was a very calm week; in fact, in no hour did the mean rate of movement of the air exceed 8 miles. The average amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by 7 per cent.

DECEMBER.

The coldest December day and night for at least 23 years.—Taken as a whole, this was a month of about average temperature. During the first three weeks the weather remained, as a rule, warm both during the daytime and at night, whereas the last nine days were all more or less cold, and for three consecutive days and nights exceptionally cold. On the warmest day the temperature in the thermometer screen rose to 52°, which is an unusually low extreme minimum for the month. The lowest maximum day temperature was 24° on the 29th, making this the coldest day I have yet recorded here in December. On the coldest night the thermometer exposed on the surface of the snow indicated 31° of frost, making this also the coldest night I have yet recorded here in December. Rain or snow fell on as many as 21 days, but to the total depth of only 2½ inches, which is one quarter of an inch below the average for the month. On the 23rd the ground was covered with snow to the m an depth of 5½ inches. This was a remarkably calm winter month. In fact, in the windiest hour the mean velocity only amounted to 13 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 3 per cent.

THE YEAR.

Rather warm, dry and very sunny.—The mean temperature of the past year was slightly in excess of the average. The most unseasonably warm months were February, May, and October, whereas only April was as unseasonably cold. On the hottest day, July 3, the temperature in the thermometer screen rose to 83°, and on the coldest night, December 29, the exposed thermometer indicated 31° of frost. The total rainfall fell short of the average for the previous 52 years by 3½ inches. The only three months when the total fall exceeded the average were March, April, and August. Taking the year as a whole, the sun shone on an average for 10 minutes a day longer than is usual. The sunniest month of the year was June, when the record of bright sunshine exceeded the average by one and three-quarter hours a day.

OUR UNDERGROUND WATER SUPPLY.

The total rainfall for the last three months has fallen short of the average for the same period in the previous 52 years by 3½ inches, which is equivalent to a loss of 71,200 gallons on each acre in this district. Last year at the same time there was an excess of 61,300 gallons per acre. *E. M., Lerkhamsted, January 6, 1909.*

Obituary.

GEORGE FIELD MORRIS.—We regret to have to announce the death of Mr. George Field Morris, F.S.I., which took place at his residence, Cambridge Park, Wanstead, early on Saturday, January 2. Mr. G. F. Morris, who was born on September 2, 1831, may be said to have been the founder of the widely-known firm of Messrs. Protheroe & Morris, auctioneers, of 67 and 68, Cheapside, London, on its present lines, for he, in conjunction with Mr. W. H. Morris, about the year 1874, opened the City branch, then at 98, Gracechurch Street, and later at the present headquarters in Cheapside. As an auctioneer, when conducting sales, either indoors or out, in good or bad weather, his cheerful and pleasant demeanour always led to the best results. He conducted many sales at the old Auction Mart, Bartholomew Lane (now Parr's Bank), the London Tavern, Bishopsgate Street, and at Garraway's Coffee House, Change Alley, and was a well-known figure at the present Auction Mart, Tokenhouse Yard. The firm was started about 1830 as a nursery business at Highbury by Mr. Thomas Morris (father of Mr. George Field Morris) and Mr. Alexander Protheroe. In 1840 business was commenced at Leytonstone, where the firm even now possesses an establishment.



THE LATE GEORGE FIELD MORRIS, F.S.I.

At the age of 14 years Mr. G. F. Morris entered the nurseries and diligently acquired a knowledge of the trade. In 1860 he conducted his first auction sale, and from that time until his retirement in 1903 he pursued an active career not only as an auctioneer, but as a valuer and arbitrator in railway and other claims. Mr. G. F. Morris enjoyed the best of health, and, making a pleasure of business, he was always to be found in the same pleasant mood. He was smart and alert up to the last, the actual cause of death being heart failure. After Mr. G. F. Morris retired in 1903, the firm was carried on by the present partners, Mr. H. G. Morris, Mr. T. A. Morris, Mr. A. E. Protheroe, and Mr. J. B. Slade. Consequently there will be no change in the management of the business.

DEBATING SOCIETY.

READING AND DISTRICT GARDENERS'.

A meeting was held in the Abbey Hall on Monday, December 28. Mr. T. Tunbridge presided. Officers were nominated for 1909, and they will be elected at the annual meeting on January 11. The subject for the evening was "Strawberries in Pots," the lecturer being Mr. Durbridge, of the Gardens, Mappedurham House. Mr. Durbridge dealt with the general culture of Strawberries in pots and named the varieties he had found best suited for the purpose. The lecturer gave a few useful hints on the packing of Strawberries for transit by rail or post.

ANSWERS TO CORRESPONDENTS.

BEECH AND HORNBAM HEDGES: *A. E. M.* These may be cut any time between September and March.

COST OF DIGGING LAND: *W. R. C.* The usual cost of digging a moderately heavy soil, one spade deep, is from 2d. to 3d. per rod. The price will vary between the sums mentioned according to the texture of the soil, which cannot be accurately described in a letter, and the cost of labour in the locality.

HIPPEASTRUMS: *A. T.* *Hippeastrum Johnsonii* is a hybrid raised earlier than the year 1800 between *H. Reginae* and *H. vittatum*. It is of the class which loses its leaves and requires a long, dry rest each year. You ought to be able to distinguish between it and *H. alicium*, which has much more fleshy leaves and is practically evergreen. If your plant is *H. Johnsonii* and it has fully matured all its leaves, it is natural for them to turn yellow, indicating that the time for rest has arrived. With regard to the inflorescences in nature, they are allowed to die off, but in gardens they are usually cut. We do not know of an importer of South American Amaryllids. Some of the trade bulb-growers catalogue occasionally two or three species of *Hippeastrum*.

MUSCAT GRAPES: *G. D.* Muscat of Alexandria is undoubtedly easier to grow than Canon Hall Muscat. This latter variety does not set its fruits easily, even under favourable conditions, this being the chief reason that it is not more generally cultivated. The flavour is quite equal to Muscat of Alexandria. In size of berry and bunch Canon Hall is superior when seen at its best, which is very seldom. We advise you to plant the house entirely with Muscat of Alexandria, excluding the variety Canon Hall, as you appear not to have had any experience in growing Muscat Grapes of any kind. You should lose no time before securing the young vines for planting. Cut them back to three or four buds in about the middle of the present month. Plant them just when the buds are breaking into growth, which is usually about the end of March or beginning of April.

NAMES OF FRUITS: *E. Shaw.* 1, Ribston Pippin; 2 and 3, Cox's Orange Pippin; 4, Brabant Belle-fleur.—*D. & Son.* 1, D'Arcy Spice; 2, Old Hawthornden; 3, Reinette de Canada.

NAMES OF PLANTS: *Earl Soham.* Iris unguicularis.—*O. H.* 1, not found; 2, *Codiaeum intertextum*; 3, *C. angustifolium maculatum*; 4, *C. elegantissimum*; 5, *C. Johannis*; 6, *C. Mortii*; 7, *C. angustifolium*; 8, *C. Laingii*; 9, *C. pictum*; 10, *C. Queen Victoria*; 11, *Calanthe William Murray*; 12, *C. Bryan*; 13, *C. Sedenii*; 14, *C. vestita rubro-oculata*; 15, *Ophiopogon Jaburan variegatus*, of gardens.—*H. H. T.* 1, *Restrepia maculata*; 2, *Pleurothallis obovata*; 3, *Stelis ophioglossoides*; 4, *Bulbophyllum rufinum*; 5, *Aerides odoratum*; 6, *Brassia verrucosa*—*V. I. R.* 1, *Adiantum hispidulum*; 2, *A. Capillus-veneris*; 3, *Aspidium (Cytromium) falcatum*; 4, *Selaginella paradoxa*.

NERINE: *B. L.* There is a very fine scarlet Nerine named *Coruscans*, which flowers later than *N. Fothergillii* major.

TURF: *J. McG.* The larvæ are those of Melonlithids (Chafer larvæ). They were both dead when received, and their identification is difficult; but they are probably those of the common garden chafer. Trap them by placing, here and there, a grass turf upside down on the earth, or just below the surface. "Vaporite," if worked well into the soil, will destroy Chafer larvæ.

WATER FREEZING IN ORNAMENTAL POND: *S. J. M.* The goldfish will not be killed unless the frost is exceptionally severe. The water can best be kept agitated by a fountain or inlet that is allowed to run continuously. In exceptionally hard frosts even these methods will not avail.

COMMUNICATIONS RECEIVED.—*T. B.*—*F. Boulton*—*A. C. B.*—*J. G. W.*—*W. J. M.*—*W. H. W.*—*W. A. C.*—*W. W.*—*W. E.*—*G. W.*—*E. H. T.*—*Capt. Dorrien S.*—*H. M. V.*—*C. F.*—*T. H.*—*J. E. F.*, New South Wales—*W. R. D.*—*K. & B.*—*H. H. R.*—*W. H. Y.*—*A. B. W.*—*H. W.*—*S. F. W.*—*F. B.*, Straffan—*Rev. C. B.*—*J. W.*—*A. D.*—*F. W.*, Rotterdam—*L. G.*—*R. L. H.*—*W. A. M.*, New Jersey—*E. M.*—*B. R. D.* & Sons.



NEPENTHES × DR. JOHN MACFARLANE, BEING A HYBRID FROM *N. SANGUINEA* AND
N. CURTISII SUPERBA, RAISED BY MESSRS. JAS. VEITCH & SONS.
COLOUR OF PITCHER, BROWNISH RED WITH DEEP RED MARKINGS.

through the soil, with a long stalk, and broadly bipinnatifid; and still later, at some distance from this single frond, an axis of growth reached the surface and produced four other fronds of similar type—the contrast between this and the adjacent plant with normal fronds being very marked indeed. This spring, in order to report it, I extracted this plant and the reverted one and found that they were attached by a string-like stolon, which had first produced the one frond from some depth down in the soil, and then continued its way, until, reaching the surface, it produced the others. Mr. Fraser informed me on enquiry that all his plants had entirely reverted to the normal. We have here consequently a singular case of general reversion of a very marked form found in fair quantity (17 plants, I believe) and then a sudden and entire resumption of the new character by bud-sporting. Spores of the plants found have yielded a number of young *Blechnums* of very foliose character, indicating, I think, that they have inherited the capacity for subdivision, though this remains to be seen.

In another case, within my own experience, the severed base of a frond of a fimbriate crispum form of *Hartstongue* *S. v. Drummondæ* produced two buds, one of which developed a simple crispum or frilled form, the other a form with long, slender, attenuated fronds with ramose tips and spur-like basal lobes: all fronds being exactly alike and as different as possible from the type and from the plant yielded by the companion bud a quarter-inch away on same frond base. This case obviously belongs to the dimorphic category which embraces the *Cornubiense Polypody* (*P. v. cornubiense* or *elegantissimum*). In this instance the plants appear to be built up of a series of cells, in which there is a constant struggle between the normal plan of structure and the abnormal with alternate victories on either side. There is also a curious case in *A. F.-f. setigerum cristatum*. *A. F.-f. setigerum* found in the Lake District has fronds of a normal outline and somewhat bristly edges and points. From it, whether by crossing or otherwise, uncrested when found, a number of very charming cristate and pericristate varieties have been raised. It, however, not infrequently reverts, and I have a plant which partially reverted so far that some of the fronds were crested as before but without a trace of the setigerum character. Eventually, by a process of fission, the one crown became two, one being a constant pericristate setigerum, and the other, equally constant, a mere pericristatum, minus a trace of bristles. Here the two probably parental characters appear to have dissociated themselves in the process of fission to the extent, at any rate, that the crested form has discarded the setigerous character throughout in one case and retained it throughout in the other. That very beautiful, and indeed unique, hardy Fern *A. F.-f. Kalothrix* (beautiful hair), with hair-like, lucent fronds, is also apt, from time to time, to produce merely plumose fronds or portions of fronds of normal texture, and when its spores are sown there invariably results a large percentage of plants so characterised throughout. Apart from these dimorphic or multi-morphic variations, that of "truncation" may also be mentioned, a form which, odd as it is, has occurred in several British and one exotic species, viz., *Lastrea montana*, *L. Filix-mas*, *Athyrium Filix-fœmina*, *Scelopendrium vulgare* and *Polypodium hexagonopterum*. In all these the terminals of both frond and side divisions or pinnæ end abruptly and squarely, the midrib continuing for a short distance as a projecting thorn or bristle. Why in the Fern the lateral leaf tissues should be so suddenly and uniformly suppressed at a definite stage of otherwise normal growth is, like variation generally, a profound mystery, but we give it special mention here on account of its recurrence in the several distinct species named. *Chas. T. Drury, V.M.H., F.L.S.*

EXPERIMENTS ON THE VALUE OF NITRO-BACTERINE.

(Concluded from page 20.)

To these trials we will now devote our attention.

For details of Mr. Chittenden's results we must refer our readers to the original paper.

It is sufficient for us that, in these experiments, culinary Peas were the crop, and that they were cultivated on 2½ plots, each of which had an area of 2 square rods. The plots were in two series, one extending over well-cultivated land, and one over fallow land. Into the manual treatment of these plots we need not enter, the essential point of the trial being that pairs of similar plots, similarly manured or unmanured, were planted, one of the pair with seed treated with Nitro-Bacterine (the inoculated plots), the other with uninoculated seed.

Mr. Chittenden's conclusions are:—That "seven out of the 12 plots on which inoculated seed was sown gave smaller crops than the corresponding uninoculated plots, and one gave an equal crop."

He finds that "the total crop from the whole of the plots receiving inoculated seed was 450 lbs., while the total from the plots in which uninoculated seed was sown was 515 lbs. The uninoculated seed, therefore, gave a crop 14 per cent. heavier than the inoculated.

"The crop from the inoculated seed was no better in any way than that from the uninoculated, nor did it reach maturity earlier.

"It is concluded that the inoculation of leguminous crops with Nitro-Bacterine in ordinary garden soil is not likely to prove beneficial."

As will appear immediately, our own experiments confirm this last and all-important conclusion, but they do not confirm the somewhat surprising conclusions reached by Mr. Chittenden that inoculation generally decreases the yield.

We will first give a brief account of our own experimental results, and then return to this question of decrease of yield from inoculated seed. The experiments to which we desire to refer were conducted during the summer of 1908, in the grounds attached to the Botanical Laboratory of University College, Reading. Though on a smaller scale than the Wis-

ley trials, they were of much the same nature, and consisted in comparing the yield from culinary Peas (Sutton's Early Giant garden Pea) which had been inoculated with Nitro-Bacterine with that from uninoculated seed of the same variety.

The details of these experiments are given in an appendix to the present communication. Here we need only give the actual results.

CULTURE A—		lbs. ozs.
Inoculated seed: Yield	...	6 1½
Uninoculated seed: Yield	...	5 11
Increase in favour of inoculated seed =		6½
		= 7.1 per cent.

CULTURE B—		lbs. ozs.
Inoculated seed: Yield	...	6 3
Uninoculated seed: Yield	...	5 7½
Increase in favour of inoculated seed =		11½
		= 7.6 per cent.

CULTURE C—		lbs. ozs.
Inoculated seed: Yield	...	4 4½
Uninoculated seed: Yield	...	4 5½
Increase in favour of uninoculated seed =		1
		= 1.5 per cent.

Average increase in favour of inoculated seed = 5.6 per cent.

We had intended to defer the publication of these results till next year, when, as we hoped, we should have had others available for comparison. But having regard to the distinctly adverse results obtained at Wisley, it seems only fair to put them on record.

We do not know in what light Professor Bottomley will regard our results; but, for our part, we consider that, though they may be less discomfiting than Mr. Chittenden's, they can afford but cold comfort to ardent believers in Nitro-Bacterine. We may state our own conclusion thus:—*The increase of yield from inoculated seed is so small that it does not represent a sufficient increase of profit as to make the use of Nitro-Bacterine on ordinary garden soils of practical value.*

The detailed records of our experiments also indicate, like those of Mr. Chittenden, that this

APPENDIX. TABLE I.
NITRO-BACTERINE INOCULATION EXPERIMENTS.
BOTANICAL LABORATORY, UNIVERSITY COLLEGE, READING, 1908.

Treatment of Culture A.	Culture A.				Control A.				Treatment of Control A.
	Total Crop.		Marketable.		Marketable.		Total Crop.		
	No. of Pods.	Weight.	No. of Pods.	Weight.	No. of Pods.	Weight.	No. of Pods.	Weight.	
No manure. Watered with Nitro-Bacterine. ½ row once. ½ row twice. No seed-inoculation.	368	lb. 6 oz. 4	313	lb. 6 oz. 1½	275	lb. 5 oz. 11½	328	lb. 5 oz. 13½	Watered with nitrate of soda at the rate of ½ oz. to the square yard. ½ row once. ½ row twice.
Treatment of Culture B.	Culture B.				Control B.				Treatment of Control B.
No manure. Seed-inoculation only.	372	lb. 6 oz. 5½	318	lb. 6 oz. 3	303	lb. 5 oz. 7½	373	lb. 5 oz. 11	No manure. No seed-inoculation.
Treatment of Culture C.	Culture C.				Control C.				Treatment of Control C.
Manured with 4 cwt. super-phosphate and ½ cwt. potassium sulphate (rate per acre). Seed inoculated and soil watered twice with Nitro-Bacterine.	283	lb. 4 oz. 7	238	lb. 4 oz. 4½	248	lb. 4 oz. 5½	297	lb. 4 oz. 8½	Manured with super-phosphate and potassium sulphate as Culture C. Seed not inoculated. Soil not treated with Nitro-Bacterine.

Seed used: Sutton's Early Giant Pea; sown May 29. First picking July 24 (an early variety sown late to get a midsummer crop).
Soil: Fairly deep calcareous loam.
Weather: Dry, hot summer; plots watered equally from time to time.
Number of plants: Seedlings when about 4 in. high, thinned to 60 plants per plot. Rows running N.—S., 5 feet apart.

preparation is without effect in producing earlier crops. Thus two only out of six different "inoculated" plots produced more pods than their corresponding, uninoculated plots on their first pickings, and the plants on all the 12 inoculated and uninoculated plots began flowering at about the same time.

It remains to consider briefly the curious result of the Wisley series of experiments, viz., that the yield from inoculated seed was generally lower than that from uninoculated seed.

Though, as indicated in the introduction to this paper, it is not impossible that Nitro-Bacterine or any similar preparation might not, under certain conditions, exercise results the reverse of beneficial, yet we cannot but think that this lessened yield must be due rather to the method of experiment adopted than to an actual injurious effect on the part of Professor Bottomley's preparation. It appears from Mr. Chittenden's account of his experiments that he used a definite weight of seed for planting each plot (60 grams). Hence the number of seeds per row varied (within narrow limits) from plot to plot. Moreover, Mr. Chittenden does not record in his paper the number of seedlings which germinated, nor the number of plants which matured on each plot. Since the crop suffered from an attack of the Pea-weevil (*Sitones lineatus*), it may be that the chance death-rate was higher in some plots than in others. We have not been able to gather from Mr. Chittenden's paper what was the yield per plant. This, though a matter of no importance in practice, is one of fundamental importance in a trial of this kind. In such experiments, for the testimony of the results to be convincing, the number of plants and the yield of each must be recorded. We think that it would add materially to the value of Mr. Chittenden's results if he would publish the exact details as to the number of plants which actually grew and bore seed on each plot.

Till, therefore, further experiment confirms this adverse effect of inoculation, we need not speculate as to how it is brought about. We do not think that an unprejudiced reader of Mr. Chittenden's very elaborate results can doubt the truth of his main conclusion, for it is too much to believe that the bad luck of a higher chance death-rate can have always befallen the inoculated seed. Moreover, there are our own results, in which the same number of seeds were sown in each plot, and in which the same number of mature plants were cropped, which, as we have already indicated, confirm his main conclusions.

After all, the problem must be sent back to the laboratory, and science must know more before the question as to how *Pseudomonas radicola* may be exploited in the interest of horticulture can be regarded as solved. *Frederick Keeble, Sc.D. & D.M.Cayley.*

NEW OR NOTEWORTHY PLANTS.

IRIS HIMALAICA (Sp. n.).

THE following is the description of the new Iris which formed the subject of my article in the issue for January 2, p. 3:—Species, rhizome gracili repente elongato; foliis linearibus incurvis, 2-3 ped. longis, $\frac{3}{4}$ poll. latis, supra nitidis, infra glaucoviridibus; scapo solido, nunquam fistuloso, folia longe superante, capitulis pluribus; spathis bifloris 3 poll. longis; pedicellis spathis æquantibus; perianthii tubo triquetro $\frac{1}{2}$ poll. longo; segmentis externis, 2 poll. longis, 1 poll. latis, obovato-cuneatis, violaceis albomaculatis, imberibus; segmentis internis, $1\frac{1}{2}$ poll. longis, $\frac{3}{4}$ poll. latis, subpatentibus, violaceis, venis inconspicuis; styli ramis latis, convexis, carinatis, $1\frac{1}{2}$ poll. longis; capsulis trigonis 2 poll. longis; seminibus orbiculis, compressis, tenuibus. *W. R. Dykes, Charterhouse, Godalming.*

ASTER GRANDIFLORUS.

ALTHOUGH this plant was introduced into cultivation by Mr. Mark Catesby as long ago as the year 1720, it is comparatively rare in gardens. This may be accounted for by the lateness of its flowering season, which occurs during the month of November. Hence it is seldom seen in perfection out-of-doors. Last season, however, owing to the favourable mild weather during the autumn months, all the fine large flowers developed, making an effective display after the other starworts were past. The plant is of bushy habit, rather over 2 feet high, with stiff, rigid branches, each terminated by single, purple-blue flowers, about 2 inches in diameter. Unlike most of the other members of this family, this plant does not require any support, the growths being stiff and erect. The foliage is not conspicuous, consisting of small, linear, subamplexicaul leaves, those of the upper branches being reflexed and hispid at the edge. *A. grandiflorus* is found growing in dry and gravelly soil in the United States, extending from Virginia to Georgia. It is hardy in this country, and is easily propagated by division during the winter season, or early in spring. Its late-flowering habit should render it a valuable plant for the greenhouse, as it might be grown out-of-doors in pots, to be brought into the house just when the flowers are opening. *W. I.*



[Photograph by W. Irving.]

FIG. 24.—ASTER GRANDIFLORUS: A LARGE-FLOWERED SPECIES BLOOMING IN NOVEMBER.

SIMPLE METHODS OF KEEPING OUT COLD.

THE Spaniards have a proverb, that what will keep the cold out will keep the heat out, and the proverb may be reversed: what will keep heat out will keep cold out. All that was stated, in connection with the construction of cold stores (see *Gardeners' Chronicle*, November 7, 21, 28, 1908), for keeping plants at a low temperature, applies to the protection of plants from low temperatures. The cabinets described in those articles for keeping small quantities of plants or bulbs at low temperatures should answer equally well for preserving bulbs or plants from frost for a certain time, omitting, of course, the provision of ice or freezing mixtures. Frost attacks plants because the surrounding atmosphere is at a very much lower temperature than the plants are, and, therefore, heat passes from the plants to the surrounding air, their temperature being gradually lowered in the process. If the passage of heat from the plants and from the soil containing the roots can be prevented, or if its rate of passage can be reduced, the lowering of the temperature of the

plants themselves will be prevented or reduced. It need hardly be mentioned that no insulation, such as was described in the articles on "Cold Storage," will furnish heat to a plant. What insulation does is to prevent the passage of heat through the intervening medium. In the case of a cold store or cold cabinet it prevents the passage of the heat from the external air to the substances inside. In the case of plants to be protected from frost, it prevents the passage of heat from the plants to the outside air, and, therefore, prevents or reduces the lowering of the temperature of the plants. Any of the substances mentioned as insulators for cold stores or cold cabinets, if properly placed between the plants and the surrounding air, will keep out frost. In addition, there are several other substances, some of which gardeners have already found useful by practical experience. Such are brown paper, mats, cloths, and even ordinary newspapers. The reason the substances act as insulators is that they are all of a porous nature. They all contain minute air spaces, which resist the passage of heat through them. Still, dry air is one of the best-known insulators, and this has its application in the protection of plants from frost. Dry cloths, particularly woollen ones, dry brown paper, dry newspapers, and, in fact, any dry and porous substances will keep out the cold. But it is absolutely neces-

sary that the substances should be dry. Immediately they become moist they lose some of their insulating properties. Water evaporates at all temperatures and in evaporating absorbs heat. Hence heat is taken from the substances immediately in contact with it; thus, wet wraps produce cold, even in cold weather. The porous earthenware used for flower-pots is a good insulator, provided it is dry. When wet, it has the opposite effect. Almost any degree of protection may be obtained by the careful use of any of the substances named, if applied in sufficient quantity. Two sheets of brown paper should, if carefully applied, give more than double the protection of one, because of the air-space between them. In applying two or three thicknesses care should be taken that the air enclosed has not much chance of getting into motion. The paper or cloth should be so arranged as to break up the air space into as many sections as possible. Air currents, which are produced at all temperatures, are another source of cold. They set up evaporation. Evaporation uses up heat, and, therefore, cold results. *S. F. W.*

THE ROSARY.

NOTES ON NEWER VARIETIES.

THERE are many beautiful, new Roses still to describe, and I will now deal with the dwarf Polyantha or Pompon Roses, which are, at last, beginning to be better known and appreciated. I have also been requested to deal with all the best climbing Roses. Before proceeding with these two most interesting types, I should like to advise readers to include in their collection, if they have not already obtained them, a bed or two, or a long border of "Arethusa" (1903) and "Queen Mab" (1896), both of which were raised by Wm. Paul & Son. A grower asked me the other day "which I considered the two best China Roses?" My reply was these two most wonderful bloomers. I have a row of 300 of these planted alternately. They are a beautiful blend. "Queen Mab" is well known; the blooms are of a lovely rosy-apricot tint with an orange centre; the buds are pretty and of almost perfect shape. "Arethusa"

most beautiful edging plants for other Roses in beds; or they can, grouped by themselves, be used to form very rich colour-effects, but care must be taken to blend the colours nicely. I will now describe all the sorts that I have found worthy of cultivation:—

CÉCILE BRUNNER (*Ducher, 1880*).—This variety remains the queen of all this class of Roses. The blooms are of most distinct and exquisite shape, bright rose in colour: when open, the flower, owing to the colour of the bases of the petals, has a yellowish centre. In the late autumn the colour is intense. The plant is a fairly strong grower for a Pompon variety.

PHILLIPINE LAMBERT (*P. Lambert, 1903*).—My wife calls these our baby "La France." They are hardly that, the flowers not being so high pointed, but they are beautifully imbricated, very full, of a fair size, and produced in clusters of three to eight. The blooms all open well. In colour they are a lovely silvery-pink, and the buds are carmine-pink. The blooming is very free and perpetual, and the habit strong for a Pompon.

MIGNONETTE (*Guillot, 1882*).—The beautiful, soft, rose colour changes to nearly white; the small flowers are borne in very large trusses. With me it is a sheet of bloom during June and July; then it goes off in August, but flowers again in September. This Rose is especially effective when massed in a bed.

GLOIRE DE POLYANTHA (*Guillot, 1887*).—We call this Mignonette's little twin sister, but in colour it is a deep rose with a white base.

KATHERINE ZEIMET (*P. Lambert, 1901*).—A delicate, white variety, undoubtedly the best white Pompon. The very small, full flowers are borne in great clusters, and with me it is extraordinarily free. In addition to this it has, perhaps, the sweetest scent of any Pompon Rose.

MADAME ZELIA BOURGEOIS (*Vilin & Vilin, 1907*).—Another very sweetly-scented variety. The small, white, double flowers are very freely produced.

SCHNEEWITTCHEN (*P. Lambert, 1901*).—This Rose has, in large trusses, ivory-white, very small, semi-double flowers with golden stamens. I do not recommend it, however, as it does not last well, and the quickly-fading flowers give the whole an untidy effect.

SCHNEEKOPF (*P. Lambert, 1903*).—A pure white, fairly large, full flower that opens well, and is produced in large clusters. The growth is erect and bushy. It is to be recommended as a good Rose.

ANNA MARIE MONTRAVEL (*Rambaux, 1879*).—This has pure white, very tiny, full flowers with slightly imbricated petals. They grow in enormous trusses, a hundred or so flowers in each truss. The habit is very distinct.

PERLE DES ROUGES (*Dubreuil, 1897*).—The velvety, crimson flowers have the reflex of their petals cerise; they are small and double and are produced in large clusters. This Rose is the brightest of all the crimson Pompons. It is very free in flowering and is quite a little gem.

MADAME N. LEVAVASSEUR (*Levavasseur, 1902*).—This is nothing more nor less than a perpetually-flowering Pompon Crimson Rambler.

MAMAN LEVAVASSEUR (*Levavasseur, 1907*).—Sometimes called "Baby Dorothy Perkins," is a perpetually-flowering, dwarf-growing form of the well-known "Dorothy Perkins."

PRINCESS ENA (*H. B. May, 1908*).—I am informed this is a very pretty sport from "Madame N. Levavasseur." The flowers are rosy-pink, with small, white centres, and pale yellow stamens.

MARIE PAVIÉ (*Aléatière, 1889*).—I have only had this Rose one season, but think it one of the best. It has a full, large flower for its class, and one that lasts well. *Leonard Petrie, Gayton, Heltenham.*

(To be continued.)



FIG. 25.—ODONTOGLOSSUM MAGALI SANDER: SEPALS AND PETALS CREAM-WHITE, MOTTLED WITH ROSE.

is a clear deep yellow, very slightly tinted with apricot; its habit is exactly similar to that of "Queen Mab," and the blooms are of the same shape. From the last week in May till frost appears these are always literally a sheet of bloom. Indeed, there has never been any Rose yet introduced that can beat these two for freedom of blooming, and, unlike most other Chinas, they are nicely-shaped blooms, too.

COMTESSE DU CAYLA (*Guillot, 1902*) is a sweetly pretty flower in its bud state, but it is nothing like so free a bloomer as those already mentioned.

I will now consider the "Pompon" or dwarf Polyantha Roses. Most of them are of very dwarf growth, and have very small flowers, yet they are nearly all most distinct. I often think how greatly many gardens could be improved by a free use of these little gems in place of such a lot of bedding plants. Once properly planted, Pompon Roses are a joy for very many years, and they need so little attention. They form

LEONIE LAMESCH (*P. Lambert, 1900*).—The blooms of this variety are of an extraordinary colour, being coppery-red with a golden centre, shaded deep red and, as the flower ages, yellow. The blooms are produced singly and are of medium size. The plant has a very erect growth and strong habit for a Pompon. Taking both its flower and beautiful foliage into consideration, it is a very distinct and striking variety.

EUGENIE LAMESCH (*P. Lambert, 1900*).—This is of bushy growth and very dwarf. The colour is a beautiful orange-yellow, passing to clear yellow with age. The delicate little flowers are produced in clusters.

PERLE D'OR (*Rambaux, 1884*).—The flower is of a most striking and extraordinary colour, a coppery-orange, turning, when fully opened, to nankeen-yellow. The bloom is fairly full, but is not of a particularly nice shape: still, it is a lovely little variety and wonderfully free in blooming.

ODONTOGLOSSUM MAGALI SANDER.

(ROLFEÆ × ADRIANÆ VAR. F. K. SANDER.)

Our illustration (fig. 25) represents a flower of this superb *Odontoglossum*, for which Messrs. Sander & Sons were awarded a First-class Certificate at the Royal Horticultural Society, on December 22, 1908. It may be said that it came as a surprise even to Messrs. Sander & Sons, who did not expect that the introduction of the comparatively small *O. Adrianæ*, even in the highest form, as represented by their variety F. K. Sander, would produce such results, for it has indeed increased the already broad proportions of *O. Rolfeæ*, while the deep colouring and even distribution of the blotches are almost identical with the markings of *O. Adrianæ* F. K. Sander. The sepals and petals are cream-white slightly mottled with rose, the blotches being deep claret-purple. The lip is white with a yellow crest, and dark reddish-purple blotches; there being a rose-coloured ray in front of the largest blotch. The plant bore a very large spike of many flowers.

The Week's Work.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart.,
Leonardslee, Sussex.

Planting of trees and shrubs.—Proceed with the planting of all kinds of Conifers, such as Abies, Pinus, Picea, Cedrus, Cryptomeria, Larix, and Taxodium. It is usual either to trench the ground or prepare some good-sized holes for the trees. Whichever system is adopted, it should be recognised that it is impossible to exercise too much care in tree-planting. With species of Pinus success is more difficult of attainment than with other Conifers. But it is possible to give them such a start that they will make good-sized specimens in a few years. Spread out the roots evenly, work in as much fine soil as possible about them, and carry out the planting in every detail with care. Place a support to each tree immediately it is planted.

Montbretia.—It is not too late to lift Montbretia corms for the purpose of sorting the bigger ones out and replanting them. This operation is necessary every two or three years. The largest corms should be selected for planting in clumps or beds. The ground should be enriched with manure and a little sand may be added. Place the corms at distances of 3 or 4 inches from each other. Plant the small corms in some out-of-the-way place in the garden. After the planting has been done, the ground should be mulched with long manure. Montbretias have the best effect when planted in large breadths.

Erica.—Ericas may be planted at the present time. They do not require as much peat as is sometimes given them. They will succeed in a light loam if sand and leaf-mould are added. Some of the earlier-flowering sorts require a sheltered situation. *E. lusitanica* and *E. carnea* are finely in flower at the present time. They will last until the Almond-scented *E. arborea* and *E. Veitchii* flower in March or April.

Annuals.—Seeds of the best annuals should be purchased in order that they may be sown as time and opportunities present themselves. Some of the best sorts are here enumerated:—*Aquilegia cœrulea*, *A. chrysantha*, *Antirrhinum* "Fiery Belt" (coral red), *Carmine Pink*, and *Orange King*; *Chinese Asters*, including a distinct and pretty variety known as "Crushed Strawberry"; *Bartonia aurea*, *Begonias* of various types, *Calendula*, *Calihopsis*, *Candytuft*, *Centaureas* (Sweet Sultan), *Clarkias*, *Cosmos bipinnata*, *Cyanus minor*, *Nigella* "Miss Jekyll," *Delphiniums*, *Dianthus*, including the varieties *Salmon Queen* and *Vesuvius*; *Eschscholtzias*, including *Double Orange*, *Carmine King*, *Diana*, *Dainty Queen*, and *Rose Cardinal*; *Gaillardias*, *Godecias*, *Gypsophila elegans*, and other species; *Hollyhocks*, *Lobelias* in variety, *Lupinus polyphyllus*, *Marigolds*, *Nasturtiums*, *Nemesia strumosa*, *Linarias*, *Nicotiana*, *Sanderae* and *N. affinis*; *Phlox Drummondii*, *Papavers*, including the *Iceland* and *Shirley Poppies*; *Portulacas*, *Salvias*, *Salpiglossis*, *Saponarias*, *Scabious*, *Stocks*, and *Zinnias*.

Sweet Peas are very effective when grown in clumps, and the flowers can be cut conveniently. If the varieties are mixed in long rows they also make an excellent feature in the garden, and yield a great number of flowers. Such rows, however, should be grown in the supply garden rather than in the flower garden.

General work.—Sweet Peas sown in October should have a ridge of dry ashes placed on either side of the rows. Prepare a quantity of soil that it may be ready for use in potting and seed-sowing. The leaf-mould, loam, and other ingredients should be placed under cover where they will remain moderately dry. Protect border Carnations from sparrows either by stretching a netting supported by small sticks, or by straining some black cotton over the plants. Remove all decaying leaves from the Carnations growing in frames and admit air to the plants during favourable weather. Cuttings may now be prepared of such tender bedding plants as *Alternanthera*, *Iresine*, *Lobelia*, and *Pelargonium*.

Border Carnations.—These plants should be treated almost as *Calceolarias*, the difference

being that the *Calceolarias*, being in small pots, will require water, even though it be at long intervals. Spray them occasionally with an insecticide. The borders for their reception should be prepared in fair weather. Let the ground be deeply dug and a liberal application of cow manure be placed under the top spit. The roots will benefit from this manure, and more particularly in dry weather. An application of soot may be worked into the surface soil during the season the plants are making their growth. Good loam, cow manure, and soot are the chief necessities for *Carnation* roots, but sharp sand or road grit may be added if the loam is of a heavy nature.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Early Peach and Nectarine trees in pots.—In gardens where only limited conveniences exist for the forcing of fruit, the cultivation of early Peaches and Nectarines in pots has much to recommend it. A longer supply of ripe fruits may be thus maintained, which is a consideration of the greatest importance in districts where Peaches cannot be successfully cultivated out-of-doors. Trees which were started in December should now be in flower. Therefore the atmosphere of the house should be kept moderately dry, and the flowers should be pollinated in the middle of the day by passing a rabbit's tail carefully over them. Ventilate the house during favourable weather, but exercise care to prevent draughts of cold air. As soon as the fruits have set, any shoots not required for the extension of the trees may be pinched hard back. When and where the permanent shoots must be stopped will be governed by a study of the formation of the tree. Should there set a large surplus of fruits, some of those which are badly placed may be removed, but the final thinning of the fruits should be deferred until the stoning stage is past. Syringe the trees twice each day during fine weather, and damp the walls and paths in the house at frequent intervals. Should aphids appear on the foliage, the house may be lightly fumigated. As soon as it can be seen that the fruits are commencing to swell, occasional application of diluted liquid manure may be given. Weak soot water is also beneficial.

Early Peach trees in borders.—Let disbudding be commenced as soon as the shoots are large enough to handle. It is a good plan to disbud once just before the trees come into flower, so that it will not be necessary to repeat the operation until that stage is past. About half the shoots may be removed at the first operation, taking care to leave one or two shoots as near to the base of the bearing wood as possible, and another at the point of the shoot. When the trees are in flower keep the atmosphere of the house in the condition recommended for the pot trees; pollinate the flowers, especially those on the upper sides of the branches. Before the flowering stage is reached the borders should be examined, and, if they need moisture, a thorough application of clear, tepid water should be given. Fumigate the house just before the trees come into bloom. The atmospheric temperature at night should be 50° to 55°, varying according to the weather, allowing a rise of about 5° during the day. During sunny weather the temperature may even rise to 80°, provided the ventilators are open at the time. A little air may be admitted through the top ventilators during the night.

Strawberries.—When the flower-spikes can be seen the plants should be removed to a warmer house, placing them near to the glass. After that stage has been reached, liberal applications of liquid manure, alternated by some approved fertiliser, should be given two or three times each week, except during the time the fruits are setting. At this season of the year Strawberry flowers need to be pollinated very carefully with a camel-hair brush. Keep the atmosphere dry and admit air when possible. The minimum atmospheric temperature should be 60°.

Late vines.—Now that the fruit has been cleared from the latest vines, the borders will need some attention. If the crops have been satisfactory, it will be sufficient evidence that the roots are in good order. In such a case, water

the borders with clear water, and follow this by a liberal application of dilute, farmyard-manure water. If the vines have been unsatisfactory through shanking, or they have failed to finish their crops properly, some renovation will be necessary. Assuming that there are indoor and outdoor borders, the inside borders may be dealt with at the present time, without interfering with the prospects of the crop this season. The details of the renovation of such borders were fully explained by Mr. T. Coomber in this column a few weeks ago. See pp. 392 (Dec. 5) and 71 (Feb. 1), 1908.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Chrysanthemums.—As soon as any cuttings are sufficiently rooted let them be removed from the propagating frame. During the first few days after their removal from the atmosphere of the propagating frame the newly-rooted plants will be very susceptible to draught, therefore place them for a short time in a temporary frame, which should first be given a layer of the same material as that in which the pots were previously plunged, whether cocoanut fibre, refuse or ashes. Later, the little plants may be placed with earlier ones in a brick pit that can be securely protected on frosty nights. It is time to insert cuttings to furnish plants for general decorative work. If it can be avoided, neither weakly shoots nor those which have flower-buds upon them should be used for this purpose, but instead, sturdy growths which appear as suckers from the base of the old plants.

Carnations.—Inspect frequently the plants of *Souvenir de la Malmaison* for the purpose of removing any portions of leaves which show signs of the rust fungus. This is the best way to eradicate the disease from the collection, but care must be taken to burn the infected leaves directly they have been removed from the plants. Fumigate all *Carnation* plants at frequent intervals, remembering that the presence of a few aphids is sufficient to disfigure the leaves. Propagation of the winter-flowering kinds may be commenced as soon as good cuttings are procurable, but it is better to wait for a month than make use of inferior cuttings. Insert three or four cuttings in sandy soil around the sides of a 3-inch pot. Unless they are too long, the side growths, carefully pulled off with a "heel" attached, will form roots more easily than cuttings made in the ordinary way. Do not keep the frame-lights too close or the cuttings will commence to grow before they have formed roots. Do not allow the bottom heat to exceed 60° or 65°.

Richardia africana.—It being impracticable to fumigate these plants in the show house, it is necessary to watch carefully for the appearance of green fly, and to sponge them from the exterior of the spathes before they unfold. Make frequent applications of liquid manure to the roots.

Dormant bulbs.—These should be examined frequently in order that there may be no losses either through the bulbs being in too dry surroundings, or by any precocious individuals making growth: a condition which calls for their removal from the plunging material. The earliest batches of *Caladiums*, *Gloxinias*, and *Begonias* may now be introduced to heat. Many gardeners obtain good results by at once putting the tubers into pots and using ordinary compost, but others prefer to start the tubers into growth in boxes filled chiefly with leafy mould and sand. This latter method is to be preferred.

Violets in frames.—One of the most essential requirements of Violets is fresh air, and this must be frequently supplied to the plants in frames, whilst, at the same time, cold draughts are prevented. Remove any decaying leaves on any that show signs of disease as soon as they are observed, and stir the surface soil frequently. If advantage was taken of the mild weather at the beginning of December to apply a copious watering, no further water will be needed at the present time. Blooms which are required for vases should be gathered before they are fully expanded, and, if they are placed in a warm greenhouse for a few hours after being gathered, they will develop greater perfume.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE Bart., Burford, Surrey.

Calanthe, Eulophia, Catasetum, &c.—Plants of the *Calanthe vestita* section will now be passing out of flower. Since these plants require a period of thorough rest as soon as the spikes are cut, they should be placed on a dry shelf or in some other suitable position. Keep them well up to the roof glass of a house where the atmospheric temperature at night is maintained at about 60°. Afford them no more water at the roots until new growths develop from the base of the current season's pseudo-bulbs, when it will be time to repot them. The *Calanthes* of the *Regnieri* section like *C. Sanderiana*, and *C. Stevensii*, now opening their flowers, should be kept just moist at the roots until the flowers open, when water should be gradually discontinued. After blooming, the plants require the same resting treatment as those of the *C. vestita* group. *Eulophia guineensis* and *E. congoensis* should be rested with the *Calanthes*. As the leaves ripen and fall off from such species as *Catasetum*, *Cycnoches*, and *Mormodes*, let these plants be elevated to the lightest position available in the *Cattleya* house. Do not apply water at the roots until growth recommences, unless it is seen that the newly-made pseudo-bulbs are commencing to shrivel. All these deciduous plants are liable to become infested with white and brown scale-insects while at rest, therefore they should be periodically examined, for the purpose of cleaning them with brush and sponge.

Zygopetalum.—Plants of *Z. maxillare* that have overgrown the blocks of Tree Fern upon which they were imported, must now be given attention, as they will soon be starting into growth. Cut away as much of the old block as is possible without causing injury to the roots; wire the remaining part with the plant attached to a new piece of Tree Fern. Suspend the plant in a shady position in the intermediate house, and never allow it to become in the least dry. As soon as *Z. Mackayi*, *Z. crinitum*, *Z. Murrayanum*, *Z. brachypetalum*, and the hybrid *Z. Wiganianum* pass out of flower, they should be repotted, if this is necessary. Fibrous loam, peat, chopped Sphagnum-moss, and plenty of small, broken crocks, well mixed together, form a suitable compost for them to root in. Pot the plants exactly in the same manner as for an ordinary stove or greenhouse plant. Such varieties as *Z. Ballii*, *Z. leucochilum*, *Z. Clayi*, *Z. Protheroeianum*, *Z. Burkei*, *Z. Perrenodii*, and *Z. triste*, grow and root well in a mixture of *Osmunda* and *Polypodium* fibre in equal parts, with the addition of small crocks. The same compost will suit *Z. rostratum* and *Z. Roeblingianum*, if an equal ratio of chopped Sphagnum-moss be added. For several weeks after these plants have been disturbed by repotting much judgment is needed in affording water, it being safer to err rather on the dry than on the wet side. As the plants become re-established, gradually increase the quantity of water at the root and in the atmosphere. These *Zygopetalums* thrive best when arranged together in a shady corner of the intermediate house. Small yellow thrips are exceedingly fond of the young growths, and when once they have obtained a footing low down in the growths they are very difficult to eradicate. As a preventive against attacks, place the plants at least once a week in a house that is being treated with a nicotine vaporising compound.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Trees and shrubs in the London Parks.—It is often a matter of comment that the varieties of trees and shrubs in our London parks are restricted to a few genera and species. This is necessarily so because many desirable plants will not succeed in a smoke-laden atmosphere, or because the soil or other conditions are unsuited to them. This is especially true of Conifers generally, and in the more central parts of the Metropolis it would be a waste of time and money to plant them. We have to depend mainly upon deciduous trees for inner-town effects. Any form of plant life that possesses rough or woolly foliage collects the soot and other deleterious substances from the atmosphere, which soon render

the plants unhealthy. In addition to the various forms of deciduous trees and shrubs, Evergreen shrubs with smooth leaves are the most suitable for town-planting.

Some good shrubs for town-planting.—*Aucuba japonica* in all its forms is, without exception, the best Evergreen shrub that can be planted in smoky districts; the bushes are free in growth, soon becoming large-sized specimens. The male and female plants should both be planted, as this is necessary for the production of the beautiful scarlet berries. The variegation of the foliage is not so handsome as in the case of specimens grown under more favourable surroundings, but the symmetry of habit, together with the beautiful, broad, leathery foliage, places the *Aucuba* in the front rank of all other Evergreens. The *Skimmias* in all their varieties are also desirable town shrubs. The dwarf, bushy habit makes them valuable for placing in the front row of a shrubbery or border. The various forms of *Euonymus* are also useful, and these plants, being easily propagated, can be freely planted. Box, again, does splendidly in town parks, where the large bushes with shining, Myrtle-like leaves are always attractive. The Brooms, including *Cytisus albus* and *C. præcox*, find many admirers in spring, when they are in flower. The plants in a few years become "leggy" and need to be replaced with young specimens. *Olearia Haastii* is a shrub that flowers freely in the London parks, producing clusters of miniature white flowers. The *Osmanthus ilicifolius* adds another pleasing variety, reminding one of the Holly (*Ilex aquifolium*) that is freely employed in its many handsome forms. The large-leaved Hollies, such as the variety *Hodginsii*, are far superior for town-planting to the other kinds; they form large pyramidal trees. There are several variegated varieties that might be planted, but their beautiful markings are spoiled by the soot and other dirt in the atmosphere. *Tamarix gallica* is well worthy of inclusion in the list of useful shrubs. *Yucca gloriosa* and other species succeed and flower well with us. They form beautiful plants, thriving in almost any situation, and remain objects of interest for many years. The common Laurel (*Prunus Laurocerasus*) is one of the freest growing and most useful Evergreens, but the environment of a town causes it to lack that free and luxuriant growth that characterises it under more suitable conditions.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

The propagation of bush fruits.—It is advisable to propagate a number of Gooseberry and Currant bushes each year in order to make good any gaps in existing plantations or to form additional plantings. Cuttings of the Black Currant require rather different preparation from those of White or Red Currants or Gooseberries. Select strong, well-ripened shoots about 12 to 18 inches in length, and with a sharp knife make a clean, straight cut across the base of the cutting directly under a node (joint). Cut the weak end of the shoot off at the top and insert the cutting without removing any of the buds. This latter point is important, as the best fruits are always borne on young wood, and, if the cuttings are prepared as I have recommended, there will be young growths produced every year from the ground, this being in every way desirable. The cuttings should be inserted firmly in the ground to a depth of four or six inches. Almost any position will suffice for the cuttings, but a shady border sheltered from drying winds is best. The three best varieties are Boskoop Giant, Lee's Prolific, and Black Naples.

Gooseberry and Red Currant.—Cuttings of these should have the buds removed on two-thirds of the length, leaving an upper portion of four to six inches long to form the foundation of the future bush. If the removal of the lower buds is neglected, the production of suckers will prove a perpetual source of trouble, especially in the case of Gooseberries. Excellent varieties of Red Currants include Comet, La Versaillaise, Mammoth, and Red Dutch, with Raby Castle and La Constante for the latest crops. The varieties of Gooseberries are so numerous that it is inconvenient to enumerate a selection here,

but, in some of the best catalogues, the nurserymen have published lists of varieties best suited for special purposes.

General work.—During frosty weather manure may be wheeled upon the fruit quarters, allowing it to remain in heaps until pruning is completed, when it may be spread over the ground and forked in amongst the trees. If any grafting has to be done later, let the trees to be grafted be headed down at the present time, leaving the branches sufficiently long to allow another few inches to be cut off them immediately prior to the grafting. The requisite scions should be prepared now and laid in the soil in a cool and shady border. They will keep perfectly fresh in such conditions until they are wanted.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

French Beans.—As the days lengthen there will be less cause for anxiety regarding the success of these plants. A maximum temperature of 60° and a minimum of about 55° will suit them admirably. Place them in the lightest position possible, and see that the roof glass is kept thoroughly clean. Maintain a moist atmosphere, otherwise the foliage will become infested with red spider. Liquid manure should be applied every alternate watering to those plants which are fruiting, and they may be syringed thoroughly in the mornings and early afternoons with tepid water. Damp the paths with farmyard manure water last thing in the afternoon. Further sowings should be made in 7 or 8-inch pots in a considerable heat. Support the young plants with neat stakes immediately they require it, and stop the points of the growths soon after they have made the first seed leaf. This will cause them to make two side breaks, and the plants in consequence will be kept dwarf.

Cucumbers.—Plants that were raised last month and have been potted into 6-inch pots may be planted out on a mild hot-bed. At this season of the year it is necessary to use a compost of lighter materials than might be recommended later. Let it therefore consist of decayed leaf-mould and a light, fibrous loam in equal parts, adding a little finely-broken charcoal. Place a neat stake to each plant in order to conduct the growth to the trellis. The atmospheric temperature should range from 60° to 70°, varying in accordance with the weather. Syringe the foliage twice each day with water which has been warmed to the temperature of the house. Pinch out the point from the growth directly it has reached the first wire. Plants in bearing should have as many of the old shoots cut out as can be spared, it being necessary to train in as much young growth as possible. Be careful to avoid over-cropping the plants. Cut the fruits as soon as they are fit for use, placing the ends in water. If any red spider is noticed on the plants, carefully sponge the foliage with water and soft soap. Vaporise the house occasionally with a nicotine vaporising compound to prevent attacks of thrip and aphid. The roots will need a surface dressing of light loam and leaf-mould. Do not allow them to suffer for want of moisture. Make further sowings of some reliable varieties in 3-inch pots and raise the plants over a brisk bottom heat.

Broad Beans.—Seeds may now be sown in boxes, placing the Beans 2 inches apart each way. Place the boxes in a cool house or frame. The plants will eventually be used for producing a very early crop in the open. The long-podded varieties such as Leviathan, Aquadulce, and Mammoth Long Pod are much to be preferred to the older, small-podded varieties.

Radishes.—Sow seeds of Radishes at intervals of a fortnight or so on mild hot-beds. If they are not allowed to become overcrowded they will develop crisp roots that will sure to meet with appreciation.

Cauliflowers.—Seedlings raised last month of such varieties as Early Forcing, Magnum Bonum, and Early Giant should now be pricked out into boxes, the plants being placed at distances of 3 inches apart. Make another sowing of the same sort in a gentle heat.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

Illustrations. The Editor will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but he cannot be responsible for loss or injury.

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

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, JANUARY 20—
Roy. Meteorological Soc. meet.

THURSDAY, JANUARY 21—
Gard. Roy. Benev. Inst. Ann. Meet. and Election of Pensioners at Simpson's Restaurant, Strand, 2.45 p.m. Linnean Soc. meet. Ann. meet. Brighton and Sussex Hort. Soc.

SATURDAY, JANUARY 23—
Ann. Dinner Soc. Franç. d'Hort. de Londres at Café Royal, Regent Street, W.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—38.7°.

ACTUAL TEMPERATURES:—
LONDON.—Wednesday, January 13 (6 P.M.): Max. 46°; Min. 36°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, January 14 (10 A.M.): Bar. 29.3; Temp. 45°; Weather—Sunshine.

PROVINCES.—Wednesday, January 13 (6 P.M.): Max. 48° Cornwall; Min. 35° North Scotland.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY NEXT—
Border Plants and Perennials, Hardy Bulbs, Lilies, Azaleas, &c., at 12, Roses and Fruit Trees at 1.30, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY NEXT—
Herbaceous and Border Plants, Bulbs, Lilliums, Spiræas, &c., at 12, Roses and Fruit Trees at 1.30. Palms, Azaleas, &c., at 5, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY NEXT—
An importation of Burmese Dendrobes in variety, established Orchids in variety, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

Rubber Culture in Ceylon.

Attention was drawn in our issue of October 3 last, to the developments which have taken place during recent years in the cultivation of rubber plants. It was pointed out how largely these developments have been due to the activities of the Government Botanic Departments in various parts of the world. Although the cultivation of rubber is being prosecuted with zeal in the tropical possessions of other nations, it is gratifying to be able to record that the pioneer work was carried on within the British Empire. The first important step was the introduction to Ceylon and elsewhere of the supplies collected by Mr. H. A. Wickham in the Amazon Valley and brought to Kew under circumstances of considerable difficulty. The expense of Mr. Wickham's expedition was borne by the Government of India, but, as Ceylon seemed to offer more suitable conditions, the young plants were despatched thither, and later this colony acted as the distributing centre for other British possessions. The staff of the Ceylon Botanic Gardens, moreover, carried out experimental work and made discoveries which were, in a large measure, instrumental in securing for rubber cultivation the position of a profitable industry.

The world's annual output of rubber is now about 69,000 tons, of which amount tropical America contributes some 64 per cent., tropical Africa 34 per cent., and tropical Asia the remaining 2 per cent. The tropical American yield is credited in the main to three plants, *Hevea brasiliensis* (Para rubber), *Manihot Glaziovii* (Ceära rubber), and *Castilloa elastica* (Central American rubber). Other species of *Hevea* and various species of the allied genus *Sapium* probably also contribute to the output of "Para rubber." More than one species of rubber-producing *Castilloa* have also been recognised, and recent observations point to there being other useful species of *Manihot* besides *M. Glaziovii*. The three plants mentioned may, however, be regarded as being the main sources of American rubber. They have all been introduced into Ceylon, and we may consider separately their histories in the colony.

Of *Hevea brasiliensis*, a supply of some 2,000 young plants was received in Ceylon in 1876, transmitted from Kew in 39 Wardian cases. These plants had been raised from the seed collected by Mr. Wickham in the Amazon Valley. A special garden was prepared for their reception at Heveratgoda in the low, moist country, and some were also planted at Peradeniya, about 1,500 feet elevation. The plants succeeded very well. Heveratgoda soon supplied plants to widely distant parts of the tropics, at first from cuttings and later from seed. As the plants became old enough to yield rubber—usually about their sixth year—experimental tapplings were commenced. To this end V-shaped incisions were made in the bark of the young trees, and the exuding latex collected in cups of cocoanut shell placed at the base of each trunk. In this manner the late Dr. Trimen, F.R.S., the then Director of the Gardens, obtained from one tree, during six years, by tapplings made in 1888, 1890, 1892 and 1894, a yield of over 10½ lb. of good, dry rubber. A definite step forward resulted from the experimental work of Dr. J. C. Willis, the present Director of the Ceylon Botanical Gardens, and Mr. J. C. Parkin, who carried out the investigations from 1897 onwards. They discovered the existence of the phenomenon known as "wound response." It was found that if a definite region of the bark was tapped several times at short intervals the yield of rubber increased considerably at each tapping. Many methods of coagulation of the latex were also tried, resulting in the preparation of the now familiar thin "biscuits." The net result was to show that Para rubber cultivation in Ceylon might be looked upon as a reasonably profitable industry. Planting made such rapid strides that, at the present time, there are in the colony some 180,000 acres under rubber crops. Definite evidence of the progress of the industry is afforded by the increase in amount and value of the exports of rubber from Ceylon during the past seven years. Whereas, in 1900, the quantity of rubber exported from the colony was but 8,223 lbs., of £859 in value, by 1908 it had increased to upwards of three-quarters of a million pounds, and was valued at £195,475.

It was thought at first that Para rubber would not succeed in Ceylon at elevations greater than about 500 feet, but the tree has

since proved to do well at heights even exceeding 2,000, and probably 3,000 feet should be regarded as the limiting altitude in the colony. The tree will grow at much higher elevations, but would not be likely to prove profitable.

The history of *Hevea* cultivation in Ceylon affords an excellent example of the usefulness of Botanic Gardens equipped with proper facilities for the carrying out of experimental work. If the Ceylon Gardens had done nothing else during their history than establish this industry they would have more than justified their existence. But, in addition, they were, as is well known, the means of introducing coffee, tea, and cinchona, to take only the more striking instances, all of which plants have played important parts in the economic history of Ceylon.

Ceära rubber (*Manihot Glaziovii*), another South American tree, was introduced into Ceylon by Kew in 1877, the supplies of seeds and plants having been obtained by Mr. Cross. By 1883 as many as 977 acres were reported as being under this plant. The yield of rubber, however, was very disappointing, and, with the rapid development of the tea industry about this period, the cultivation of the Ceära-rubber tree fell into neglect. The Para rubber tree afterwards gave more promising results and interest was transferred to it. Recently, however, it has been shown that rubber of very high value can be prepared in Ceylon from the *Manihot*, and it is not improbable that, in the future, it will be grown in places too high or too arid for the Para rubber tree but well suited to the more drought-loving Ceära plant.

Central American rubber (*Castilloa elastica*), known to the Spaniards as the *Ulé*, was introduced into Ceylon with the Para rubber plants in 1876. It was grown like the Para rubber at Peradeniya and Heveratgoda. Trees are now distributed about the island, but they have not been cultivated on an extensive scale, and comparatively little is known as to the yields obtainable from this species in the island, although experimental tapplings have yielded rubber of high value.

Amongst other rubber trees introduced into Ceylon are the Assam rubber tree (*Ficus elastica*), the familiar India-Rubber plant of this country. The avenue of this handsome tree leading into the Peradeniya Gardens is well known to visitors to Ceylon, the curious buttress-roots being very characteristic. No serious use has ever been made in the island of *Ficus elastica* as a rubber-producing tree.

From Africa there have also been introduced the Lagos silk rubber tree (*Funtumia elastica*), which has not proved successful owing to the young plants being very liable to defoliation by the attacks of a caterpillar, and the various rubber vines (*Landolphia* spp.) which, from their climbing habit, are not well adapted for estate cultivation.

LINNEAN SOCIETY.—The next general meeting will be held on January 21, at 8 p.m. The following papers will be read:—(1) Mr. ARTHUR W. HILL, "The Genus *Nototriche*, Turcz"; (2) Dr. PERCY GROOM, "The Longitudinal Symmetry of *Centrospermeæ*." Dr. OTTO STAFF, F.R.S., Sec.L.S., will exhibit a peculiar type of *Plagianthus* (Malvaceæ) from Western Australia.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The sixty-ninth annual general meeting of the members and subscribers of this Institution will be held at "Simpson's," 101, Strand, London, on Thursday next, January 21, at 2.45 p.m., for the purpose of receiving the report of the committee and the accounts of the Institution for the year 1908; electing officers for the year 1909; and for the election of 18 annuitants on the funds. Also to consider the following notice of motion by W. A. BILNEY, Esq., J.P. (honorary solicitor):—"That every person having attained the age of 70 years who is in receipt of an annuity from the Institution and is eligible for a Government Old Age Pension of less than the maximum allowance of 5s. per week, or whose total income does not exceed £31 10s. per annum, may have such charitable annuity reduced as the committee may determine under Rule III. 6, so as to render him or her eligible to apply for a pension on the Government scale, provided always that such reduction does not involve the beneficiary in any pecuniary loss." The chair will be taken by HARRY J. VEITCH, Esq., V.M.H., treasurer and chairman of committee, at 2.45 p.m. The poll will be open at three o'clock and close at four o'clock precisely, after which hour no voting papers will be received. The annual friendly supper will be held also at "Simpson's" at 6 p.m., when W. J. JEFFERIES, Esq., of Cirencester, will preside.

ROYAL METEOROLOGICAL SOCIETY.—An ordinary meeting of the society will be held at the Institution of Civil Engineers, Great George Street, Westminster, S.W., on Wednesday, January 20, at 7.30 p.m. The annual general meeting will be held at 7.45 p.m. An address on "Some Aims and Efforts of the Society" will be given by the president, Dr. HUGH ROBERT MILL.

GARDEN CHANGES.—Mr. T. H. SLADE, after managing the gardens at Poltimore, near Exeter, for nearly 14 years, is seeking a re-engagement, owing to the death of the late Lord POLTIMORE. Mr. SLADE is well known to our readers, and on several occasions has contributed to our weekly Calendar. During the time he has been at Poltimore he has carried out many improvements. He has also shown special skill in the cultivation of Carnations, and in the raising of seedling varieties. We hope Mr. SLADE will soon obtain a suitable appointment.—Mr. A. B. WADDS, who has also contributed a weekly Calendar to these pages, will be leaving Paddockhurst, Sussex, at Easter. He has been gardener to Sir WETMAN D. PEARSON, Bart., for the past ten years.

FLORISTS AND THE FACTORY ACTS.—Announcements have recently appeared in some of the papers to the effect that certain regulations, which exempted florists from the operation of various inconvenient sections contained in the Factory Acts, were rescinded. These statements are premature. It is only a few of the regulations referred to which are likely to be rescinded, and no order for rescission has yet been made. When the anticipated order is issued due notice of the fact will appear in these columns.

ROSES ELAINE AND REFULGENS.—These new Roses, of which illustrations have been published in these pages during the past season, are home-raised varieties, being seedlings of Messrs. WM. PAUL & SON, Waltham Cross, who exhibited and obtained awards for them at the R.H.S. meetings. We draw especial attention to them now, because in the article on page 19 in last week's issue these particulars were not given. Elaine is a H.T. variety and Refulgens a hybrid Sweet Briar.

GERMINATION OF THE STRANGLING FIGS.—It is well known that many of the tropical species of Ficus behave in their seedling and juvenile stages as epiphytes: that is, they grow upon other trees, in the crevices of which the seeds lodge and germinate. When growing in this way roots are produced by the seedling, and they extend downwards till they penetrate the soil; whilst in some forms other girdling roots embrace the trunk of the host. As soon as the roots have reached the soil their upper aerial parts thicken rapidly, and roots in contact with each other coalesce by a sort of inarching. In this way they soon enclose the host-tree in a hollow network, the meshes of which may become obliterated as growth proceeds. The unfortunate tree thus included may perish by strangulation if it happens to be one that increases in girth, and even if it does not thicken, e.g., a palm, it may be killed ultimately



[Photograph by H. M. Macmillan.]
FIG. 26.—FICUS PARASITICA STRANGLING A TREE OF ELAEIS GUINEENSIS.

by the shade produced by the Fig. Sometimes these Figs will grow as ordinary trees directly from the ground, without the support derived from other plants, but in certain species this only occurs when the Fig is growing fully exposed to light in the open country. Professor BENEY has made the interesting observation that, in the case of Ficus aurea, the seeds will not germinate unless exposed to light, and thus this plant can only establish itself in the forest when the seeds fall, or are deposited, upon the upper branches of the forest canopy. Other species, e.g., F. populnea, are less exigent as regards light, though their seeds also germinate more quickly in light than in darkness. In correspondence with this, these species do not always grow as epiphytes, even in the forest. The illustration in fig. 26 shows Ficus parasitica

upon Elaeis guineensis, the Oil Palm of West Tropical Africa, in the Botanic Garden, Peradeniya, Ceylon. Ficus parasitica is common throughout the eastern Tropics. In Ceylon it is found throughout the moist region up to about 4,000 feet elevation. It is a parasitic weed in the Peradeniya Botanic Gardens.

MR. W. BOTTING HEMSLEY, F.R.S.—Mr. HEMSLEY desires it to be known that, having retired from the Kew Herbarium, his address will be 24, Southfield Gardens, Strawberry Hill, Middlesex.

"WILLING'S PRESS GUIDE."—We have received the edition of this guide for 1909. It contains an alphabetical list of the principal periodicals published in this country. In addition, the periodicals are classified according to interest, professions, trades, religious denominations, sciences, and subjects. Those published in London are divided into morning, evening, weekly, monthly, quarterly, and so on. There is also a list of the provincial papers, divided into counties, and a list of the London addresses of Colonial and foreign newspapers. Altogether it is a most useful Press guide.

"LE CHRYSANTHEME," the journal of the Société Française des Chrysanthémistes (No. 109, 1908), contains many matters of interest. The number opens with a brief history of the flower, in which it is suggested that the Chrysanthemum as we know it is of Chinese rather than of Japanese origin, though prominence is given to the conviction of M. HAYASHI (*Journal Royal Horticultural Society*, December, 1906) that varieties similar to those at present in cultivation may be obtained by hybridisation of the wild species native to Japan. Among the other subjects dealt with in the number are methods of cultivation and of selection; the types common now in Japan; and the progress made in the flower during the past 25 years.

THE EXTERMINATION OF GOATS IN THE TERRITORY OF HAWAII.—It is interesting to Englishmen to learn that those in charge of the forest reserves of Hawaii are urging upon the legislature of that territory the need for the extermination of the goat within the established forest reserves. The recommendation recalls a famous episode in the history of St. Helena. The forests of that island were once rich in Ebony. Goats were introduced, and, becoming naturalised, increased in such numbers as to threaten the life of the forest trees. But goats were a very marketable commodity, securing, as they did, a high price from ships of call. Those on the spot, recognising the extent to which the goats were damaging the forest, petitioned for permission to destroy them. They received the laconic reply, "Goats are more valuable than Ebony." The goat was spared, the forest spoiled, and thus the permanent source of revenue was sacrificed to the transient source, for, after the destruction of the forest, the goat industry could not long survive.

TREES AND SHRUBS.

THE WITCH-HAZELS.

THE most valuable additions within recent years to trees or shrubs that flower even before winter is past are the Asiatic forms of Hamamelis. The oldest of these, H. arborea, is stated in the *Dictionary of Gardening* to have been introduced in 1862, but when it was awarded a First-class Certificate by the Royal Horticultural Society in February, 1881, it was then very little known. Previous to the introduction of that species, the only Hamamelis in gardens was H. virginica, native of a considerable tract of country in the United States, from whence it was

introduced in 1736. Examples are often to be seen in old-fashioned gardens, but it is the least showy member of the genus, the starry flowers, which are borne in considerable numbers in the autumn, being of a dull brownish-yellow tint.

HAMAMELIS ARBOREA.—This old-world species is the largest growing member of the genus. In this country its usual habit is to form a decided leading shoot, while numerous side branches are pushed out in a more or less irregular manner. The long, strap-shaped petals which go to form a starry flower are peculiarly crinkled and of a bright orange-yellow colour. The rich purple of the calyx is also another notable feature of this species. On a bright, clear day in late winter or early spring this *Hamamelis*, with the sun shining on it, stands out like a golden cloud. If sprays are cut and placed in water the buds will develop and the expanded blossoms last for some time.

H. JAPONICA.—The flowers of this species resemble those of *H. arborea*, but are rather

Gardens, Kew, brought the plant to notice. How this happened it is difficult to imagine, for the large, broadly-ovate leaves are distinct from those of any other species, while the flowers are larger than those of *H. arborea*. In addition, the petals are somewhat broader, and instead of being crinkled are almost straight, with hooked tips.

The order Hamamelidaceæ, which takes its name from the *Hamamelis*, is a comparatively small one, the best-known hardy members of it, beside the Witch-Hazels, being *Parrotia persica*, *Fothergilla alnifolia*, *Corylopsis spicata*, *Loropetalum chinense*, and *Liquidambar styraciflua*. W.

FLORISTS' FLOWERS.

THE CLASSIFICATION OF DAFFODILS.

THE issue, by the Narcissus Committee of the Royal Horticultural Society, of the classified

for their consideration from cultivators interested in Daffodils.

As to the classification in the present list, the addition of a new division (II. Short Trumpets) of secondary crosses, Trumpet \times Incomparabilis, and the suppression of the corresponding class of secondary crosses, the Burbidgei section, Incomparabilis \times Poeticus, will probably cause some dissent. For show purposes, Division II. is no doubt justified in the present condition of Daffodil seedlings, but I do not think it will be possible to maintain it, except as a sub-division, any more than the Burbidgei section. The most awkward result of the principle of measurements as affecting the present list appears to be in the case of the *Triandrus* hybrids. Snowdrop, Cecil Rhodes, and J. T. Bennett-Poë (Trumpet \times *Triandrus*) are in Division I. Countess Grey (Trumpet \times *Triandrus*, Mrs. Berkeley, and Robert Berkeley (*Triandrus \times *Incomparabilis*) are in Division II.; and Agnes Harvey, Ada, Betty Berkeley, and the Tazetta varieties in Division VII. Thus varieties which in common have the distinctive character of *N. triandrus* are dispersed in widely-separated divisions. I hope it will be possible eventually to provide a separate class, or sub-division, for *Triandrus* hybrids. It would add to the usefulness of future editions if the list were interleaved with blank pages, providing space for additions, corrections and notes. It is especially desirable that in a future edition the parentage of the varieties, so far as they are known or can be ascertained, should be added. To the raiser of seedlings, who is seldom a competitive exhibitor, such information would be especially valuable. The list would then form a record which would prove of great use to students of heredity. The question of parentage would entail some extra labour, and extra space would be needed for printing. But some saving is possible in the matter of space by giving merely initials, or by abbreviating the names of the raisers instead of repeating them in full. The Committee need not assume responsibility for the accuracy of parentages given. They would merely collect the information from the raiser.*

It is true that in respect to many varieties no record has been kept of the parentage: in others only the seed parent is known, and in others, again, what information there was has been lost. It is the more desirable to collect as much as is known into a permanent record. A. J. Bliss.

HEDSOR, BUCKINGHAMSHIRE.

(See figs. 27, 28 and 29, also Supplementary Illustration.)

THE beautiful residence depicted in our Supplementary Illustration is situated on high land overlooking the charming scenery of the Thames Valley. The garden front enjoys a magnificent landscape view, whilst at the back is a broad valley with wood-clothed hills skirting it around. Hedsor occupies the spur of a plateau broken by the river's bed. In the distance the land rises almost abruptly again at Cockmarsh, adjoining Quarry Wood, with the well-known riverside town of Cookham on the left. The district is situated in the midst of many towns and villages that are famed as river-side places, including Maidenhead, Marlow, Loudwater and Bourne End. On the occasion of our visit in November we alighted at Maidenhead. Though Bourne End is much nearer, the journey by road from Maidenhead is delightful, and leads past the gates of Taplow Court, which was described in our issue for June 6, 1908, and Cliveden, to which reference has often been made in the *Gardeners' Chronicle*. Hedsor forms only a part of the estate of Lord Boston, which also includes an old-time residence of most picturesque appearance known as the Wharf (see fig. 27) preferred by Lord and Lady Boston to the more modern and commodious mansion of Hedsor. The Wharf



FIG. 27.—THE WHARF HOUSE ON THE HEDSOR ESTATE.

lighter in tint, while the petals are not quite so crimped. The habit is very different, for *H. japonica* naturally forms an open bush, all the branches of which have an upward tendency. As a rule, *H. japonica* flowers somewhat later than *H. arborea*. The variety *Zuccariniana* is very distinct and beautiful. It differs from *H. japonica* only in the colour of the flowers, these being of a clear citron-yellow. This feature causes it to stand out markedly from all members of the genus.

H. MOLLIS.—This species is a native of China and the latest addition into gardens. It is commonly regarded as of recent introduction, Dr. Aug. Henry being in some instances, at least, credited with its discovery. In *Hortus Veitchii*, however, it is stated that this, the rarest and largest-flowered of all the Witch-Hazels found in Kiang-su in the district of Kiu-Kiang, China, by Charles Maries, and sent by him to Coombe, was for 20 years overlooked, till the late Mr. George Nicholson, late Curator of the Royal

list of over 2,000 varieties, marks an epoch in the history of the Daffodil.

From some points of view it is a pity that the old classification based more nearly on a "natural" system can no longer be retained. But for show purposes, for which this new list is primarily intended, and, on account of the authority with which it is put forward, probably everyone will accept the principle of measurements involved in the arrangement of the list as being the best, if not the only one, practicable. The actual scale of measurements in accordance with which the first five divisions are determined is not given. It is, however, intimated that "it is intended in a future edition not only to correct and modify the arrangement according to further experience," but also to elaborate further sub-divisions, especially with respect to the colours of the varieties in the present divisions or classes. It is probable, therefore, that in the meantime the Committee would welcome any suggestions

is very close to the river, and consequently on a much lower level than the modern mansion. It is a very old building. Its walls are clothed with climbers, and it is set in a delightful, old-fashioned garden. Because of his preference for the Wharf, Lord Boston has recently leased the Hedsor residence on a short tenancy, and the present lessee is Mr. Malcolm Aird, a son of the builder of the Nile Dam. There is not so much flower bedding practised at Hedsor as formerly, but notwithstanding this the gardens and grounds are very beautiful, and although summer bedding is not largely practised, the borders and beds are filled with a wealth of flowering plants of a hardy nature, together with Roses and other flowering shrubs and trees, including many Rhododendrons and Azaleas. In front of the mansion is a broad lawn, and surrounding it is a terrace with stone vases, the Ivy-leaved Pelargoniums in which were still in flower at the time of our visit. Towards the south-west is a fine herbaceous border backed by a clipped Yew hedge, and, as we saw it, gay with Michaelmas Daisies, Chrysanthemums, and other autumn flowers. Almost at the termination of

Lord Boston's estate. The estate has had a long ecclesiastical connection, as the old building known as The Priory betokens. The church was built prior to 1220, but whether the one now standing is the original structure we were not informed, although from its appearance it might be. It is a small edifice capable of seating not more than 130 worshippers. A tablet records, well-nigh without a break, the names of incumbents almost from the beginning. The little graveyard surrounding the church has an extraordinary appearance, for all the stones commemorating the dead are placed flat upon the grass. From the churchyard, looking northwards, is seen the curious building shown in fig. 28, and known as The Towers. It is a stiff climb to reach the spot, but the toil is amply repaid by the magnificent view. The Towers are a "ruin" built by a former Lord Boston for the purpose, no doubt, of enhancing the grandeur of the scenery, which takes in a wide sweep of the valley of the Thames. The walls of the ruin are built of flint, solidly enough, and a portion of the building is used as a residence by one of the employes. The upper part of the Ivy-clad Tower is used as a tea-room. Note the incon-

VEGETABLES.

PEAS.

NEW varieties of culinary Peas must be of exceptional merit to surpass in quality the best of those introduced during the past few years. Many of these newer Peas are not only highly productive, but also good in colour of pod and in maturing early. They also have the desirable qualities of withstanding a fair amount of drought, and resisting the attacks of mildew better than the older kinds. These are qualities that have doubtless been considered by the raisers, who have also aimed at securing short internodes and the production of the pods in pairs. Not only are some of these newer Peas large as regards pod, but the Peas themselves are of extraordinary size and of that marrow-like flavour so much appreciated in this vegetable. For market purposes the dealer prefers a fine dark pod, and I know of instances where large, pointed pods have been preferred to those with broad, square ends, although the latter were of excellent quality, well filled, and weighed from 6lb. to 8lb. per bushel more than the others. A good appearance doubtless helps to keep up the price, and, from a market point of view, it does not pay to grow the older, smaller-podded varieties.

The **PILOT** is a fine addition to the early section of culinary Peas, and was, I believe, sent out by Messrs. Alex. Dickson & Sons. It is round-seeded, therefore hardy: the pods are almost equal in size to those from the best stocks of **Gradus**. It may not be generally known that there are light and dark-podded forms of this very excellent Pea, and for private consumption deep-green Peas are usually preferred to paler ones. All growers of early culinary Peas should cultivate this variety.

LAXTONIAN.—This Pea was sent to me by Messrs. Laxton Bros., of Bedford. I consider the variety an advance upon some others of the early dwarf Peas. It is a sturdy grower, with short internodes, and produces a remarkable crop upon its 18-inch-long stems. Both the pods and Peas are of a deep green colour: the haulm is dark and the broad pods are nearly as large as those of the variety **Gradus**.

LIGHTNING and EXPRESS.—Gardeners who cultivated the old **Lightning** and **Express** varieties will be interested to know that these two excellent hardy Peas are being introduced in a "Giant" form. Since the introduction of so many excellent early marrowfat varieties, they have become less popular in this country; but on the Continent, where large size is less insisted upon, these kinds, and especially the free-fruited **Express**, are very popular. Both the varieties are very hardy under ordinary cultivation and produce early pods even if no protection is given them.

READING WONDER is a very dwarf, early variety. For a dwarf Pea it is in every way excellent and one that does remarkably well in shallow frames or under the protecting shelter of warm walls.

WORLD'S RECORD.—This variety is of the **Gradus** type, but it is dwarfer in growth by several inches and not quite so large in the pod as that variety. It has the advantage of being several days earlier and is of the best marrowfat quality.

INTERNATIONAL has for its parents two of the finest of all culinary Peas. From the size of the pods exhibited at the Holland House Show it is sure to become a favourite with gardeners. The haulm is tall growing, and in season it follows the **Gradus** section, but matures before **Duke of Albany** variety.

HARVESTMAN.—This is a distinct podded, heavy-cropping variety growing about 5 feet in height.

SNOWDROP is a blunt-ended pod of the **Thomas Laxton** type, growing about the same height as that variety.

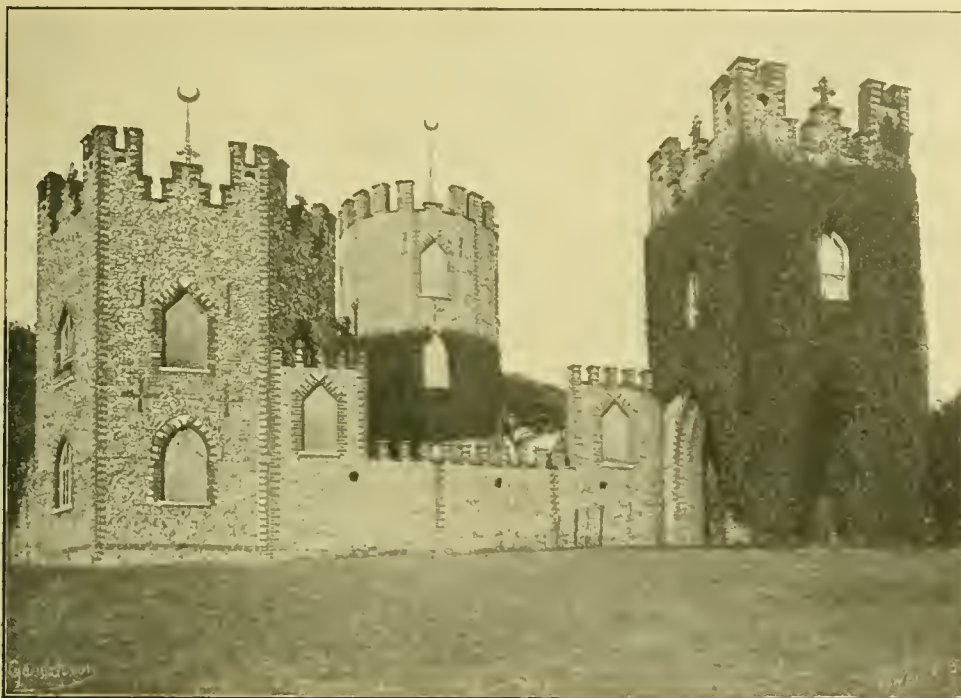


FIG. 28.—THE TOWERS IN THE GROUNDS AT HEDSOR.

the lawn westwards an ornamental pond has been formed for the accommodation of Nymphæas and other water plants. Scattered about the lawns are several large oval beds planted with Rhododendron, and, in the well-kept turf, are planted Almonds, Thorns, Roses, Laburnums, and native trees. Lord Boston has in recent years planted many Conifers. Opposite to a summer-house is the avenue of Sequoias that will form a fine feature in future years. There is an enclosed Rosary that one alights upon unexpectedly, a tall hedge of Portuguese Laurel hiding it from view. On the right is a fine specimen of Weeping Ash. The Rose-garden is very pleasing, the centre being planted with Roses trained on festoons as a bell to a central pole. Animation is lent to the scene by the numerous statues of cherubs which adorn the Rose-garden. Of coniferous trees there are some large Cedars, and *Picea Cephalonica*, *Abies concolor*, *A. canadensis* and Yews in the grounds, but the most important Yew has disappeared. Two venerable specimens still stand in the ground leading from the kitchen garden to the village church of Hedsor, which is situated on

gruous combination of the crescent and the cross. The curious structures seen in fig. 29 are fish-traps. The grounds of the Wharf include a backwater from the Thames, with lock-gates. When the traps are dropped into the water these gates are opened, and, with the flow of water, the fish are trapped. Eels form the majority of the "bag," but roach, perch, carp and bream are occasionally secured. The pointed portions are detachable caps, which permit of the fish being taken when the traps are raised. A bridge leads over to an island, on which are a tea- and a bathing-house.

The kitchen gardens, glasshouses, and a small farmstead lie in the valley to the north of Hedsor. The kitchen garden occupies about four acres, and is surrounded by fine walls, on which are trained fruit trees. There are four ranges of glasshouses, with pits, &c., all in an excellent state of repair. The gardener is Mr. James Wood, who has had the care of the gardens for about 17 years, and who has done much in conjunction with Lord Boston in making Hedsor one of the most beautiful spots in the Thames Valley.

EVERGREEN DELICATESSE is worth a trial in gardens, being a good cropper of very fine quality.

REARGUARD.—I was much impressed by the qualities of this Pea as seen in one of the trials last summer. I look upon it as an advance on the older varieties that crop in the late summer and early autumn. Almost anyone can be assured of a fair amount of success with Peas during the earlier summer months and so long as moisture is present in the soil; but great constitutional vigour must be one of the foremost points about a main crop and late-cropping variety. Rearguard has all the good qualities possessed by Gladstone, and, as seen growing, was more heavily cropped with somewhat longer pods than that variety. The pods are dark green in colour. This Pea promises to become a standard variety. I believe it originated from the same source as The Pilot.

MAJESTIC is a very heavy-cropping variety, having the low-growing habit of Dwarf Defiance. It is recommended as a market Pea.

GLORY OF DEVON and ROYAL SALUTE are two fine Peas not often seen. They have many qualities to recommend them, producing pods of good colour, with Peas of excellent quality, and the haulm has a robust constitution.

TALL VARIETIES FOR MAIN CROP.—Amongst the taller-growing varieties, such Peas as Quite Content, Centenary, Alderman, Duke of Albany, and Telegraph, when cultivated from carefully re-selected stocks, are hard to surpass. Amongst the darker-foliaged, vigorous-growing varieties with good staying powers during hot weather and which mainly grow from 3 to 4 feet in height, I made special note of Superlative, one of the finest of this type for use in July. Distinction and Best of All have plain, dark-green foliage and produce a heavy crop of long, rather narrow pods containing Peas excellent in quantity. Perfection, Kaiser, New Model, Incomparable, and Masterpiece are all very fine Peas. Masterpiece is a wonderful cropper, and Incomparable is also an extra fine variety with a blunt-ended pod. Most of these varieties, if sown the second week in May, will, under ordinary conditions, give a gathering of pods at the end of July, and continue to crop until August.

EARLY TALL-GROWING PEAS.—This type includes varieties varying from 3 to 4 feet in height, that are, if anything, earlier fruiting than the dwarf varieties, with shorter internodes. Excepting that varieties of the dwarf type can be protected more conveniently and are suitable for planting near to sheltered fences and walls, there is otherwise no gain to the grower in their culture. The following varieties have, after repeated trials, been found excellent, and, with ordinary cultural care, will not fail to satisfy both as regards crop and quality:—Gradus, Early Giant, Early Morn, Ideal, Duchess of York, World's Record, Pilot, Thomas Laxton, and a good stock of All. Ideal is a Pea I prefer to any other in the early section. Sown in February in the open in exposed positions, on a well-drained soil, I can usually gather Peas the second week in June, although the dates vary from a day or two to sometimes a week, according to the weather conditions.

EARLY DWARF-GROWING PEAS.—Reliable varieties in this section are Little Marvel, a small-podded, very prolific variety, suitable for home use, Pioneer, Sherwood Green Gem, Mayflower, Chelsea Gem, Carter's Eight Weeks, and Reading Wonder. The three last named are very early of their class.

SECOND-EARLY DWARF-GROWING PEAS.—Apart from the foregoing Peas named, there are those of the dwarfier, second-early type, usually of free cropping quality and yielding Peas of excellent flavour. These include Daisy, Dwarf Defiance, Stratagem, King Edward, a fine square-ended pod of the type of Defiance; and Rentpayer, a desirable market Pea. There are doubtless other varieties amongst Peas that, for particular purposes may be valuable to some growers, yet those named, for high-class quality and general productiveness would not be easily surpassed. *Charles Foster.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

GRAPE MILL HILL HAMBURGH.—It is remarkable that this excellent variety of Grape is neglected. It possesses all the good qualities of the Black Hamburg variety and colours as well as Gros Maroc. The splendid "hammered" berries are as noble in appearance as those of the latter variety. I was disappointed to observe that it was not represented in the Wisley collection exhibited at the Horticultural Hall on September 29 last. I fear that inferior varieties have been sold as Mill Hill Hamburg, and, for this reason, the variety has fallen into bad repute. An excellent description of this Grape is given in *Hogg's Fruit Manual*. *F. B. S.*

GRAPE CANON HALL MUSCAT.—It is generally recognised that this well-known Grape was originally a seedling of Muscat of Alexandria, but no proof has been furnished as to such origin, and the late Mr. A. F. Barron stated that its origin is uncertain. Sports have originated from Muscat of Alexandria, but few of these have proved worthy of cultivation. One which originated on a Muscat of Alexandria vine in the great vinery at Chiswick presented all the external characteristics of the Canon Hall form, but proved to be very unsatisfactory. There is, however, one notable exception to the common rule of failure on the part of these sports. It will be remembered that the late Mr. William Cole, of Feltham, when at Ealing Park Gardens, was a first-class grower and exhibitor of Muscat of Alexandria Grapes. Some years later at Feltham, he grafted Muscat of Alexandria on to a stock of Lady Downe's Seedling, with the result that he obtained fine fruiting rods. On one of these branches a spur developed a distinct sport similar in bunch, berry and foliage to the Canon Hall variety. Vines were propagated from that sport, and two span-roofed vineries were planted with them. The crops of Grapes were excellent. After Mr. Cole's death, his sons continued in possession of these vineries. In a recent communication from them respecting the vines, I learn that whilst the first generation from cuttings did not always come true to character, the second generation has done so, and the sport is now thoroughly fixed. Altogether the second stock is a material improvement on that of the first. The fruits of this form set equally as well as those of Muscat of Alexandria. The bunches are always well filled with berries, and a better price is obtained for the Grapes than for the true Muscat of Alexandria. A vine of the Canon Hall variety was planted in one of the houses as a test; whilst it is similar in all other respects, the Feltham sport is superior in setting quality and it therefore produces heavier bunches. *A. Dean.*

THE AMERICAN CARNATION.—If the American or winter-flowering Carnation is to be judged by the standard of the few novelties noticed at a recent exhibition in Vincent Square, the only conclusion to be arrived at is that a turn for the worse has been taken. I am referring more particularly to such varieties as Mrs. Sarah A. Hill, Afterglow and Winona, all thin and papery in texture and inferior to varieties already in cultivation. The American Carnation is said to "improve with America's sun," and doubtless there is truth in the remark. It will take much sun, however, to raise Mrs. Sarah A. Hill to the standard of White Perfection, to render Afterglow a fit companion to Aristocrat, or to make Winona a flower equal to Winsor. Some of these Carnations, and in particular such as Afterglow, whose flowers have much blue in them, are ill-suited to an ordinary English winter, and quickly feel the bad effects of the fog and sunless days. Therefore, apart from the thinness of petal and other shortcomings, they are not likely to be regarded with much

favour. On the contrary, such varieties as Beacon, the magnificent vase of Victory staged by Mr. Dutton, or the superb white-flowered varieties from leading growers in Hampton, Balcombe and other places, unmistakably demonstrate the perfection to which this type of Carnations can be grown on this side of the Atlantic. A noticeable feature at the exhibitions is the number of pink-flowered seedlings from English raisers, no fewer than four of those displaying varieties of merit, Rose Felton and Evangeline being among those to which names had been given. These are of deeper colour-tone than Enchantress, and will be seen to advantage under artificial light. The only certificated variety, Rose Doré, is a superb flower from certain points of view, viz., size, shape, and length and strength of stem. The calyx, too, is all that can be desired. The shade of colour—between red and rose—is novel if not striking, and the flower is of exceptional fullness. As shown, the variety had many erectly-disposed petals towards the centre of the flower, and these reveal too much the less well-coloured parts of the flower. *E. H. Jenkins, Hampton Hill.*

APPLE AND PEAR SCAB.—It is to be hoped that the investigations that are being carried out by Mr. Chittenden, on behalf of the Royal Horticultural Society, concerning the Apple and Pear scab fungus may result in helping fruit-growers to prevent this disease. In spite of the great increase in the practice of spraying with the alkali and other washes, the disease seems to be more prevalent than ever. Apples are keeping very badly this winter. If I except Bramley's Seedling, nearly all other varieties are turning soft. What with "scabby" Apples and Pears, Black Currant mite, and Gooseberry-mildew, fruit-growers are experiencing a very bad time. *W. H. Y., Rotherfield Park Gardens, Alton, Hants.*

THE COMMON MYRTLE (see p. 17).—An old specimen of *Myrtus communis*, growing at the foot of a south wall in the kitchen garden here, produces every year its pretty white flowers, though in some years they are more abundant than in others. Four years ago I inserted in the spring several cuttings which rooted with freedom and became by the second autumn 18 to 24 inches in height. During July and August these small plants were covered with flowers, and these set fruits which eventually ripened. Out of curiosity, I separated the kidney-shaped seeds from the pulp of several fruits and sowed them in pots of fine soil, placing them in a warm greenhouse. The seeds germinated within a month, yielding a high percentage of plants which made excellent growth, the strongest reaching a height of 10 inches the first season. With the exception of the seedlings, all the other plants are grown out-of-doors during the summer, being generally housed with the *Chrysanthemums* in autumn. The soil of this district is largely composed of chalk, yet it never adversely affects the free development of the common Myrtle, either when grown in pots or as cultivated in the open air. In the last five winters, that of 1907-8 is the only one in which the points of the shoots upon the old plant were injured by frost. *Thomas Smith, Walmsgate Gardens, Louth, Lincolnshire.*

THE ABSORPTION OF WATER BY LEAVES.—In the article dealing with my paper (*Gardeners' Chronicle*, January 9, p. 24), it is said, "It is not clear what is meant by 'an indraught of dew.'" What I meant was, that, as transpiration is renewed by the oncoming of light, the dew deposited on the surface of a leaf during the night is presumably absorbed as soon as light causes transpiration to commence. Of course, no drop of water can enter a stomate if air be below, as the orifice is far too small to admit it. A point I wanted to emphasise was, the great ease with which any ordinary leaf (not provided with a very thick cuticle, like that of desert Xerophytes) can absorb water by either surface. If the upper surface of any leaf having no stomata be gently laid on water it will remain fresh for a long period, enabling axillary buds to develop into leafy shoots, if the stem and bud be attached and raised into the air. The stomata being on the surface exposed to air, transpiration can, of course, go on uninterruptedly. *George Henslow.*

CATTLEYA LABIATA.—Some few years ago I sent you some notes on growing this well-known early winter-flowering *Cattleya* on rustic blocks. At that time several horticultural friends told me the method would only answer for a year or two, when fresh blocks would be required. I enclose a recent photograph (not suitable for reproduction) of a plant which has been grown for seven years in this manner, having been transferred to fresh blocks but twice in that time. The gardener, Mr. Taylor, tells me there are 15 flowers on the plant. Elder wood was used each time, and this for two reasons: (1) it was thought that the bark, when freshly cut, is not liked by insects; (2) when decayed, the bark peels freely from the wood, thus allowing the living roots to be separated therefrom when it is necessary to move them to a new block. A mixture of peat fibre and Sphagnum-moss was affixed, by means of thin copper wire, to the blocks as a rooting medium. The plant in question is one of several grown thus in a roomy plant stove at Byram Park in this county, being suspended at a distance of about 3 feet from the roof glass. During the growing season these blocks require dipping in the water-tank almost daily, and they are regularly sprayed over with the syringe when the house is closed for the night. For placing in a lady's boudoir or drawing-room where there is an equable tem-

perature of from 55° to 60° no other floral object can be more appropriate at this time of the year. This note is not meant for Orchid specialists, but for that larger class of plant-lovers who, having a plant-stove at command, wish to grow a few good Orchids in it. *Yorkshire Gardener*, December 7.

methods of culture, except that during the summer months all the flower-heads were pinched off. The shoots were also pinched down to about 2 feet 6 inches from the ground, as I supposed the pinching might encourage the formation of tubers, but the result was no better. Our seed came from the Consul-General at Rome, and no doubt it is the correct variety. The experience of other cultivators of this *Fennel* would no doubt interest other readers. *R. B.*

ERYNGIUM PANDANIFOLIUM.—Those who are looking for something uncommon to plant in the herbaceous border, would do well to give this plant a trial. As its name implies, it is very like a *Pandanus*; the leaves of a well-grown plant are about 5 feet long, glaucous, concave, with spiny margins. It throws up high spikes of purplish flower-heads about 7 or 8 feet high, which, although not particularly pretty, always command attention. The group in these gardens threw up eight of these noble spikes last summer, causing many enquiries from visitors. It is described as being merely half hardy, but I should expect it to succeed in the south and west of England; it is certainly more hardy than the New Zealand Flax (*Phormium tenax*), as a clump of this in the same part of the garden was injured two winters back, whilst the *Eryngium* did not appear

old stubby besoms and large, hardwooded, feather-edged labels. When the pruning operation was completed and the prunings removed, all the moss-and-lichen-infested branches were syringed with hot, liquid lime applied to the trees through the garden engine, a calm day being chosen for doing the work. About a peck of new soot was stirred into the hot lime during the mixing in a 60-gallon tank, and the liquid was passed through a fine-meshed sieve into the engine before being applied to the trees. The men engaged in the work of mixing and applying the liquid lime to the trees wore white overalls. This dressing of liquid lime not only effectually rid the trees of the accretions indicated, but it also destroyed any insect larvæ that happened to be in the moss. The trunks of the trees, as well as the main limbs, were smeared over with the limewash, which was applied with an ordinary whitewash brush. In the case of dwarf-growing trees, the liquid lime could be applied through an ordinary garden syringe. The trees thus treated (at intervals of two or three years) always bore crops of fine fruit, free from the attacks of scab and other diseases to which neglected trees are subject. As regards the use of insecticides for destroying green and black aphides on trees in April and May, I used tobacco juice at the rate of 1 quart of nicotine juice to 4 gallons of water, this being applied to affected trees through a syringe late in the afternoon in calm weather. This spray not only destroyed the aphides then on the trees, but it also rendered the trees and foliage distasteful to the insects during the remainder of the year. The "sprays" described above are simple, perfectly safe, and effective in application. *H. W. Ward, Lime House, Raleigh.*



FIG. 29.—FISH-TRAPS ON A THAMES BACKWATER AT HEDSOR, BOURNE END.

(See p. 43.)

perature of from 55° to 60° no other floral object can be more appropriate at this time of the year. This note is not meant for Orchid specialists, but for that larger class of plant-lovers who, having a plant-stove at command, wish to grow a few good Orchids in it. *Yorkshire Gardener*, December 7.

ITALIAN FENNEL OR FINOCHIO.—I was much interested in the note on Italian Fennel that appeared in the *Gardeners' Chronicle*, December 19, p. 433, and hoped that the note might lead others to give their experience on the subject. For two years I have tried, without success, to grow Fenchio. In April, 1907, I sowed two batches of seeds—one sowing being made out-of-doors, the other in 5-inch pots. The seedlings were thinned to one in each pot, and they were planted out as good strong plants by the middle of May, into well-prepared, shallow trenches at distances of 3 feet between the trenches and 18 inches between the plants in the rows. Both sets of plants grew strongly, and had soil drawn up to their stems in September. In November and December when lifted there were no tubers, only fleshy tap-like roots quite useless for culinary purposes. In 1908 I tried again similar

to suffer. It is especially effective if planted on the lawn, whether as a single specimen or in a group. *A. J. Elgar, Killarney House Gardens, Co. Kerry.*

SPRAYING FRUIT-TREES.—For many years a good-sized orchard, situated in a portion of the Home Park, half a mile from a garden in the Avon Valley (Wilts.), was included in my charge. The trees, mostly Apples, were of immense proportions, requiring the aid of long ladders in gathering the fruit in early autumn. The trees had not been pruned for many years prior to my taking charge of them, consequently the branches had become infested with moss, lichen and other undesirable accretions. Therefore, when the trees had shed their leaves in the autumn, I had the branches well thinned out with a pruning saw, cutting out all ill-placed and unpromising growths in order to admit plenty of light and air among the branches retained for bearing fruit, but without in any way reducing the external dimensions of the trees. While the work of thinning-out the branches was being carried out, another staff of men followed on with the cleansing of the trees, removing the moss and lichen from the trunks and main branches with

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 12.—The first meeting in 1909 was held on this date in beautiful weather. It was a small exhibition, but it included several groups of Orchids, a magnificent display of stove and greenhouse plants, groups of Carnations, Alpine flowers, and Ferns.

The FLORAL COMMITTEE granted two Awards of Merit to new plants. The ORCHID COMMITTEE granted one First-class Certificate and three Awards of Merit. A variety of Pear named *Blickling*, which had already received the minor award, was granted a First-class Certificate by the FRUIT AND VEGETABLE COMMITTEE.

It was regrettable that only one stand of Grapes was entered in the new competitive classes for these fruits, probably because the announcement of these fortnightly competitions was not made sufficiently early.

At the afternoon meeting of the Fellows a lecture on "The French System of Intensive Cultivation" was delivered by Mr. C. D. McKay.

Floral Committee.

Present: W. Marshall, Esq. (Chairman), and Messrs. H. B. May, Jno. Green, Jas. Walker, E. A. Bowles, G. Reuthe, R. Hooper Pearson, Walter W. Ware, W. Howe, Jno. Jennings, Jas. Hudson, N. F. Barnes, Arthur Turner, Chas. Dixon, H. J. Jones, J. F. McLeod, Herbert J. Cutbush, F. Page Roberts (Rev.), Chas. E. Pearson, E. H. Jenkins, W. J. James, George Paul, W. A. Bilney, R. C. Reginald Nevill, and C. T. Drury.

A magnificent group of ornamental-leaved and flowering plants was staged by Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea. It was similar to the fine displays that are made by this firm each year at the Temple Flower Show, but larger, as more space was available. The brilliant colouring and general high culture exhibited by the plants were subjects of remark, and the manner of their staging was exceptionally pleasing. A background was formed of *Cocos flexuosa*, and against these plants were arranged tall specimens of *Dracana Veitchii*, *D. Goldieana*, *D. Sanderiana*, *D. Victoria*, *Diefenbachia Fournieri*, *Heliconia illustris*, *Phoenix humilis Roëbelinii*, and other handsome foliage plants. The group also included a superb example of *Anthurium crystallinum* and specimens of *Alpinia Sanderiana*, *Davallia dissecta*, *Tillandsia tessellata*, *Alpinias* in variety, *Aralias*, *Pandanus*, *Selaginellas*, with a host of Ferns and

other graceful foliage plants. Tall stands carrying densely pitched plants of *Nepenthe Chelssonii* excellens, *N. Dicksoniana*, *N. Morganæ*, and other species served to break the continuity of the groundwork, whilst standard plants of *Codiaeums* and *Aralias* also furnished relief. Bright patches of colouring were afforded by groups of Orchids, *Coleus thyrsoideus*, *Crowea latifolia*, *Begonias*, *Primula* \times *kewensis*, *Camelias*, greenhouse species of *Rhododendron*, *Acacia leprosa*, and *Gomphia olivæformis*.

The same firm exhibited as a separate group plants and cut blooms of Carnations of the perpetual-flowering type. (Gold Medal.)

Messrs. H. B. MAY & SONS, The Nurseries, Upper Edmonton, exhibited a collection of Ferns, all of which had some peculiarity of habit or growth, the group being labelled curious Ferns. There were climbing species, others with such dense crests as to be totally different in appearance to the types represented. Many belonged to the so-called flowering species, in which some of the leaves are wholly concerned with spore formation. Some species, such as *Hymenodium crinitum*, a plant known as the Elephant's Ear Fern, were densely covered with hair. *Drymeria quercifolia* has leaves of two forms; the basal fronds resemble large Oak leaves, and are simple, but the fertile fronds are 3 feet in height and pinnate. Many of the species of *Polypodium* and *Drymoglossum* have long trailing rhizomes, which enable the plants to climb. Sometimes the rhizome is short and thick, resembling a hare's foot. *Oleandra articulata* has leaves similar to *Scolopendrium vulgare*, but they arise from long rhizomes. From these latter are given off long hair-like roots, and when these reach the rooting medium they bind the plant to the soil. (Silver-gilt Flora Medal.)

Some very fine Carnations of the perpetual-blooming type were shown by Mr. W. H. PAGE, Tangley Nurseries, Hampton. Most of the popular kinds were included in the group, which also contained large bamboo stands filled with flowers of *Lilium Harrisii*. (Silver-gilt Flora Medal.)

Another pleasing exhibit of these flowers was shown by Messrs. HUGH LOW & Co., Bush Hill Park, Enfield. The same firm displayed a batch of the elegant *Dracæna Victoria*; also *D. Prince Albert*, *Cyclamen* in variety, a variegated-leaved variety of *Cobæa scandens*, *Daphne indica rubra*, &c. (Silver Banksian Medal.)

Carnations of the perpetual-blooming type were shown in variety by Mr. H. BURNETT, Guernsey, who had, amongst others, the beautiful variety named after Mrs. Burnett. (Silver Banksian Medal.)

ARTHUR W. SUTTON, Esq., Bucklebury Place, near Reading, exhibited plants of *Cyclamen* grown from corms collected by himself in Palestine.

Mr. L. R. RUSSELL, Richmond, Surrey, showed varieties of the handsome-leaved *Bertolonias* and a batch of small plants—all excellently berried—of *Ardisia crenulata*. They were highly decorative little specimens, specially suitable for the embellishment of dwelling-rooms. (Silver Flora Medal.)

Hybrid Freesias were displayed by Mr. HERBERT CHAPMAN, High Street, Rye, Sussex. Varieties with a suffusion of citron colour were very pleasing; a few were tinted were shades of rose and lilac.

Messrs. WM. CUTBUSH & SON, Highgate, London, N., arranged a pretty exhibit of Alpine plants in a setting of virgin cork; early-flowering subjects such as *Irish Hystrio*, *I. histrioides*, *Adonis amurensis*, *Cyclamen Coum*, *Colchicum hydrophilum* were planted in "pockets," with berried plants of *Pernettya*, *Aucuba japonica vera* and *Skimmia Fortunei* intermixed. At the back of the group were sprays of *Hamamelis arborea*, and the variety *Zuccariniana* (which has paler coloured petals than the type); *Daphne Mezereum* album. (Silver Banksian Medal.)

Messrs. BARR & SONS, King Street, Covent Garden, London, showed early-blooming species of hardy plants, including Snowdrops of the large-flowered *Elwesii* type, *Crocus etruscus*, *C. imperatii*, *C. Sieberi*, *Cyclamen Coum*, *Tulipa saxatilis*, *Iris unguicularis*, *I. reticulata*, *Helleborus niger* *Scoticus*, *H. n. angustifolium*, *Lachenalia*, and *Freesias*.

The Misses HOPKINS, Mere Gardens, Shepperton-on-Thames, arranged a small rock-garden exhibit.

Messrs. JOHN PEED & SON, West Norwood, London, S.E., showed boxes of Alpine plants, principally species of *Saxifraga*; also a batch of flowering plants of *Primula obconica* of a selected strain. The exhibit had well-berried sprays of *Skimmia japonica* at the back.

AWARDS OF MERIT

were recommended to the two plants mentioned below:—

Begonia \times *Patric*.—This was shown by MM. M. V. LEMOINE ET FILS, Nancy. It is described as being from a cross between *B. socotrana* δ and a variety of *B. Pearcei* σ . The hybrid partakes more of the habit of *B. socotrana* than *B. Pearcei*. The plants shown were about 10 inches high, and compact in habit. The flowers were rather small, the petals being short. In colour they are rich rosy-pink, but by reason of the bright yellow anthers, they appear to have an orange shade. The foliage resembles *B. socotrana*. So far, the plants have not formed proper tubers, but rudimentary ones such as are common to the winter-flowering *Begonias* raised from crosses made between tuberous-rooted varieties and *B. socotrana*.

Chrysanthemum Maud Allan.—This is a pure-white Japanese decorative variety. The florets appear rather narrow, being slightly revolute at the margins. The value of this variety rests upon its late blooming quality and purity in colour. Shown by Mr. N. MOLYNEUX, Wickham.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair), and Messrs. Jas. O'Brien (hon. sec.), Harry J. Veitch, de B. Crawshaw, H. Little, W. Boxall, J. Forster Alcock, J. Wilson Potter, F. J. Hanbury, A. A. McBean, F. M. Ogilvie, C. H. Curtis, W. Cobb, H. G. Alexander, J. Charlesworth, H. J. Chapman, W. H. White, W. P. Bound, A. Dye, H. A. Tracy, H. Ballantine, Gurney Wilson, and C. J. Lucas.

Lt.-Col. G. L. HOLFORD showed a selection of hybrids, together with a grand specimen of the pure white *Vanda Watsonii* with four spikes. *Brasso-Cattleya* Mrs. J. Leemann variety *Rajah* has primrose-yellow and rose-coloured flowers.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate (gr. Mr. Collier), was awarded a Silver Flora Medal for a most interesting group, including Gatton hybrids, rare varieties of species and singular botanical Orchids. The best of the hybrids included *Cymbidium* *Lady Colman*, an elegant and delicately-coloured flower; the fine white *Cœlogyne Colmanii*, and *Spathoglottis Colmanii*, this latter being a very handsome yellow and crimson variety. The showiest plants included a selection of varieties of *Lælia anceps*. The most distinct was *L. a. Gatton Park* variety, with white flowers having the blue tint on the lip peculiar to several other albinos in the Gatton Park collection. Other varieties were *L. a. Hilliana* *Rosefeldensis* and *Cymbidium grandiflorum*.

Sir TREVOR LAWRENCE, Bart., K.C.V.O., Burford (gr. Mr. W. H. White), showed a fine spike of a showy hybrid *Odontoglossum* resembling *O. Wilckeanum*, but of a deep mahogany-red colour with white margins and tips to the petals; also a *Maxillaria* resembling *M. callichroma*.

Messrs. CHARLESWORTH & Co., Haywards Heath, were awarded a Silver-gilt Flora Medal for a group which included a fine batch of white *Lælia anceps*, a number of the pretty *Cattleya Octave Doin*, and a selection of hybrid *Cypripediums*. Other good plants in this collection were the scarlet *Sophro-Cattleya Doris*, the massive *Cymbidium Holfordianum*, *Brasso-Cattleya Queen Alexandra*, the pure-white *Odontoglossum ardentissimum* album, *Saccolabium bellinum*, and a selection of hybrid *Odontoglossums*.

Messrs. HUGH LOW & Co., Bush Hill Park, Enfield, secured a Silver Banksian Medal for a group of *Odontoglossums* and *Cypripediums*. Among these were *C. insigne* *E. J. Seymour*, a very distinct form of good shape; *C. Minos Youngi* variety, *C. Helen II.* and *C. triumphans*.

Messrs. JAS. VEITCH & SONS, Chelsea, in their magnificent group of fine foliage plants, already noticed, had two small groups of hybrid *Cypripediums*. Among the showiest were their varieties of *C. Coum* and *Carnarvon*. A small group of *Odontoglossums* and *Lycastes* was also included in the group.

Messrs. J. & A. A. McBEAN, Cooksbridge, staged an effective group composed principally of *Cypripediums*, the specimens of *C. Memoria Jerninghamia*, *C. aureum excelsum*, and *C. Thompsonii superbum* being very handsome. Other specially fine plants in the group were forms of *Cattleya Trianae*, including one with white flowers having a bright purplish blotch on the lip; a superb form of *Lælia anceps Schröderæ* of rich colour and of the shape of good typical *L. anceps*, and a clear white *Odontoglossum*.

FRANCIS WELLESLEY, Esq., Westfield, Woking (gr. Mr. Hopkins), sent *Sophro-Cattleya* Mrs. Francis Wellesley, the plant being the sole seedling raised from a cross between *Sophrontis grandiflora* and *Cattleya labiata*. The plant is small and bore a flower resembling *Sophro-Cattleya Doris*. It was of good size and shape and of a peculiar shade of carmine-red, with an orange-tinted base to the lip, which has red veining.

NORMAN C. COOKSON, Esq., Oakwood, Wylam (gr. Mr. H. J. Chapman), showed *Cypripedium Actæus* *Oakwood* variety (*Leeanum* *Clinkberry-anum* \times *insigne* *Harefield* Hall), a large and finely-formed flower; and *Odontoglossum ardentissimum* var. *Norman Cookson*. (See Awards.)

Messrs. ARMSTRONG & BROWN, Tunbridge Wells, staged a selection of *Cypripediums* which included *Cypripedium Helen II.* var. *Armstrongia*, *C. aureum Surprise*, *C. Maudia*, and two good seedlings of *C. insigne*.

Mr. A. W. JENSEN, Lindfield, showed a small group of *Odontoglossum crispum*.

H. J. BROMILOW, Esq., Rann Lea, Rainhill, Lancashire (gr. Mr. Morgan), showed *Cypripedium Aeson giganteum* in excellent form; also *C. Charlesworthii Bromilowia*, a charming albino with pale green and pure white flower. It differs in form from *C. Charlesworthii Bromilowianum* which secured a First-class Certificate and was illustrated in the *Gardeners' Chronicle*, October 31, 1908, p. 310.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), showed *Maxillaria Hubschii*, and a very fine specimen of *C. Fulshawense*.

Mons. MERTENS, Ghent, staged a selection of hybrid *Odontoglossums*.

C. J. LUCAS, Esq., Warnham Court (gr. Mr. Duncan), showed *Cypripedium Alciabades* *Chardwar* variety, and the curiously-striped *C. Harlequin*.

WALTER COBB, Esq., Rusper (gr. Mr. C. J. Salter), showed a hybrid *Cypripedium* from *C. insigne* *Sanderæ* \times *C. bellatulum* album.

HENRY LITTLE, Esq., Barons Halt, Twickenham (gr. Mr. Howard), sent the pretty and distinct *Cypripedium insigne Little's* variety.

R. G. THWAITES, Esq., Chessington, Streatham (gr. Mr. Black), showed *Cattleya Leda* *Thwaites' variety* (*Dowiana aurea* \times *Percivaliana*), a very pretty, rosy-lilac flower, with gold veining in the lip.

AWARDS.

FIRST-CLASS CERTIFICATE.

Cattleya Percivaliana Charlesworth's variety.—A charming pure white flower, with a deep reddish-purple blotch on the front of the lip, and a chrome-yellow disc.

AWARD OF MERIT.

Cattleya Maggie Raphael "Westonbirt variety" (*C. Dowiana aurea* \times *C. Trianae Imperator*).—A beautiful and finely-shaped flower, of a delicate rose tint, the petals having a fine silvery-white veining. The front of the lip is of a glowing, deep, rosy-crimson colour, the base being tinged with purple and netted with golden veining. From Lt.-Col. G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. H. G. Alexander).

Vanda Watsonii.—An elegant species, allied to *V. Kimballiana*, but with pure white flowers. The plant bore four spikes. From Lt.-Col. G. L. HOLFORD.

Odontoglossum ardentissimum Norman Cookson, from NORMAN C. COOKSON, Esq., Oakwood, Wylam (gr. Mr. H. J. Chapman).—A compact flower, having equally broad sepals and petals, white, with two-thirds of the flower heavily blotched with violet-purple.

CULTURAL COMMENDATION to Mr. H. Ballantine, gr. to Baron Sir H. SCHRÖDER, The Dell, Egham, for a large plant of *Masdevallia ignea*, bearing upwards of 70 flowers.

Plants in Pots, &c.: Average Wholesale Prices (Contd.).	
s.d. s.d.	s.d. s.d.
Lily of the Valley, per dozen ...	18 0-30 0
Marguerites, white, per dozen ...	6 0-10 0
Poinsettias, per dz. ...	9 0-12 0
Rose Madame Le-vasseur, doz. ...	12 0-18 0

Fruit: Average Wholesale Prices.	
s.d. s.d.	s.d. s.d.
Apples, Foreign	
— California	
— Newtown Pippin, per case, 4 tiers ...	8 0-9 0
— 4 tiers ...	8 6-8 6
— (American), per barrel ...	
— Baldwin ...	23 0-25 0
— Greening ...	25 0-26 0
— Newtown Pippin ...	26 0-35 0
— Oregon Newtown Pippin, per case ...	10 0-12 0
— per case (165-185) ...	10 0-14 0
— (Nova Scotian), per barrel ...	
— Spys ...	18 0-22 0
— Russet ...	23 0-25 0
— Baldwin ...	18 0-23 0
— Ben Davis ...	18 0-21 0
— Fallwachs ...	23 0 25 0
— French Russet, per case ...	9 0-10 0
Bananas, bunch:	
— No. 2 Canary ...	6 6 —
— No. 1 ...	6 6-8 0
— Extra ...	8 0-9 0
— Giants ...	10 0-12 0
— (Clavel) ...	5 0-7 6
— Jamaica ...	5 0-5 6
— Loose, per dz. ...	0 6-1 0
Cranberries, per dozen punnets ...	5 0 —
Custard Apples ...	4 0-12 0
Dates (Tunis), per dozen boxes ...	4 9-5 0
Figs (Eleme), p. dz. ...	4 3 —
— pulled, per dz. ...	5 0 7 6
Grape Fruit, case ...	10 0-13 0
Grapes (English), per lb. ...	0 6-1 6
— Hambros ...	0 6-1 6
— Gros Colmar ...	1 0-2 0
— Alicante ...	1 0-1 6
— Muscat of Alexandria ...	2 0-6 0
— Cannon Hall Muscat ...	2 0-8 0

Vegetables: Average Wholesale Prices.	
s.d. s.d.	s.d. s.d.
Artichokes (Globe), per dozen ...	2 6-3 0
— white, p. bushel ...	1 0 —
Asparagus, per bundle:	
— Sprue ...	0 7-0 8
— Paris Green ...	3 6-4 6
Beans—	
— (French), p. lb. ...	0 6-0 8
— (Guernsey), per lb. ...	0 10-1 3
— (Madeira), per basket ...	2 0-4 0
Beetroot, per bushel ...	1 0-1 6
Brussel Sprouts, ½ bushel ...	2 0-3 0
Cabbages, per tally ...	6 0-8 0
— per mat ...	3 6-4 0
— Greens, per bushel ...	2 0 —
Cardoon (French), per dozen ...	8 0-10 0
Carrots (English), dozen bunches ...	2 0 —
— washed, bag ...	2 3-2 6
— unwashed ...	1 6-1 9
— Dutch, p. bag ...	1 6 —
— (French), p. pad ...	2 6 —
Cauliflowers, per dozen ...	2 0-3 0
— per tally ...	6 0-12 0
— Italian Heads, per basket ...	3 0-3 3
Celery, per roll ...	0 11-1 0
— unwashed, per dozen ...	7 0-10 0
Celeriac, per doz. ...	3 0-4 0
Chicory, per lb. ...	0 3-0 3½
Chow Chow (Seschium edule), p. dozen ...	2 0-4 0

REMARKS.—The demand for American Apples remains good. There is also an improved sale for California Newtown Apples. Oranges generally are arriving in a bad condition: best samples sell freely. English Grapes are a good trade and their prices remain firm. Canary Tomatoes are arriving in a splendid condition. Prices generally for vegetables are lower. English Rhubarb has very little demand. Trade in all departments is very bad. E. H. R., Covent Garden, Wednesday, January 13, 1909.

Potatoes.	
s.d. s.d.	s.d. s.d.
Kents—	
— Snowdrum ...	4 0-4 3
— Sharpe's Express ...	3 6-3 9
— Epicure ...	3 3-3 6
— Up-to-Date ...	3 0-3 6
Lincolns—	
— Lincolns ...	3 0-3 3
— British Queen ...	3 0-3 3
— Up-to-Date ...	3 0-3 6
— Maincrop ...	3 6-3 9
— Sharpe's Express ...	3 0-3 3
— Evergood ...	2 6-3 0

Potatoes (Continued).	
s.d. s.d.	s.d. s.d.
Bedfords—	
— Up-to-Date ...	2 6-2 9
— Epicure ...	2 9-3 0
— Blacklands ...	2 3-2 6
Dunbars—	
— Langworthy ...	4 3 4 6
— Up-to-Date, red soil ...	3 9-4 0
— " grey soil ...	2 9-3 3

REMARKS.—Trade is very steady and there is no alteration in prices. Stocks in London are increasing daily. Edward J. Newborn, Covent Garden and St. Pancras, January 13, 1909.

COVENT GARDEN FLOWER MARKET.

During the past week supplies have not been excessive and, in most instances, prices have advanced. Yet trade has not been very brisk. Many growers will not be marketing produce until their spring plants are ready. Bulbs and Azaleas are the more prominent subjects at the present time. French flowers are numerous; these are not all sold in the new market which was built specially for the purpose, and French flowers are a prominent feature in the ordinary flower market. What may be termed a retail trade is done by some salesmen in the flower market, and at the same prices as are charged to florists for larger quantities. At one time the growers would not sell produce except to persons engaged in the trade.

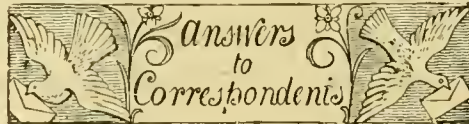
POT PLANTS.

Except in the case of bulbous plants and Azaleas, supplies are limited. Erica melanthera is seen in the market, and there are some fairly good plants of E. gracilis obtainable. Genistas are very good, also Marguerites in plants of various sizes. Another prominent subject is Begonia Gloire de Lorraine. Spiraea are not quite so abundant as they were a few weeks ago. A few Cinerarias are seen, but I have not included them in the price list. Narcissus in pots may be had, the variety being Obvallaris. Hyacinths improve in quality: the early white varieties are the best. Tulips are almost wholly sold in boxes, from which they can be easily transferred to pots or vases. Lily of the Valley can also be transferred to other receptacles from boxes without suffering much check. Lilioms of various kinds, Solanums and Chrysanthemums are seen, but best plants of Poinsettia (Euphorbia) are no longer procurable. Foliage plants, including Aspidistras and Kentias, are well supplied. There is usually a shortage of best plants of small Ferns at this season.

CUT FLOWERS.

During the past week there has been rather a better demand for flowers, and supplies generally have not been so large, except in the case of Carnations. Roses are well supplied; the variety Ulrich Brunner on long stems is worth 8s. per dozen blooms. Chrysanthemums are plentiful. Best quality blooms of Lilium are realising high prices, but ordinary blooms are very cheap. Callas are plentiful and good; fairly good prices are sustained for this flower. Azalea Fiederli, Camellias, Eucharis, and Tuberoses are all plentiful. Gardenias are dearer.

French flowers have been plentiful during the past week. A. H., Covent Garden, Wednesday, January 13, 1909.



BELLADONNA LILY IN POTS: *Bella*. It is not possible to obtain flowers of Amaryllis Belladonna in January unless the bulbs can be retarded, as is done in the case of Lily of the Valley crowns and many Liliums. As you say your bulbs flowered grandly in October last year, they can hardly be expected to flower again now, only three or four months afterwards. The foliage which you say the pot bulbs are now producing in abundance is already showing on those cultivated out-of-doors. If the Belladonna Lily is cultivated in pots in the same way as Hippeastrums, it may be obtained in flower during August and September. The best time to pot the bulbs is in June or July, when the roots become active. We would suggest that you grow a large batch of Hippeastrums (Amaryllis) to flower at the present time. This can be done easily by starting the bulbs early in December in a temperature of 60° to 65° and a bottom heat of 70° Fahr.

BROCCOLI DISEASE: *D.* The disease affecting the leaves of the Broccoli is due to a fungus—*Sphaerella brassicaecola*, a difficult pest to get rid of. Spray the plants either with weak Bordeaux mixture or with potassium sulphide, using the latter in preference to the former if the Broccoli are fairly well advanced in growth.

GRUB ATTACKING CARNATIONS: *Dumas*. The insect that had burrowed in the stem of your Carnation is probably the grub of an Anthomyid fly. But it had become damaged in transit, and correct determination was impossible. Please send another specimen. In the meantime remove all shoots containing grubs and burn them.

HORTICULTURAL INSTRUCTOR: E. H. T. Appointments as instructors in horticulture to school gardens under the Education Department of the various counties are not numerous. They are, as a rule, advertised in the gardening papers. The candidate is expected to have a general knowledge of the theory and practice of horticulture, and evidence of his capacity to teach is usually required. In addition he must have a good general education and possess satisfactory references as to his conduct and abilities.

LANCASHIRE CROWN BOWLING GREENS: *Hortus, New South Wales*. The distinguishing feature of these bowling greens is that the centre, or, as it is termed, the crown of the green, has a rise of from 6 to 12 inches from the outside portions. The players may bowl from any point of the green, except along the immediate edge of it. In the Scotch greens, or rinks, the bowls can only be trundled from given points. In laying out a bowling green, it is absolutely necessary to ensure perfect drainage. The means taken to obtain this will vary slightly, according to the nature of the soil. The following method has been adopted with success in the Liverpool parks and recreation grounds where 22 greens are provided for the game of bowls.—A trench is made 12 feet in width, and in the bottom of this is placed a layer, 4 inches in depth, of clinkers. On the top of this are placed the old turves taken from the top of the next trench. The sods are placed grass-side downwards, and they prevent the clinkers used as drainage material becoming choked with the finer soil. Above this layer of turves is placed soil to the depth of about 12 inches. After careful leveling this is covered with a layer of sea sand about ½ inch deep. Another trench, 12 feet in width, is dug out, and the process repeated until the bowling green is made. When all is well settled down and the surface again levelled, it is covered with the finest turf procurable. Subsequent rolling, top-dressing, and cutting must be given regular attention, in order to induce a growth of close, fine grass.

NAMES OF FRUITS: J. L. 1, Glou Morceau; 2, Hacon's Incomparable; 3, Uvedale's St. Germain.

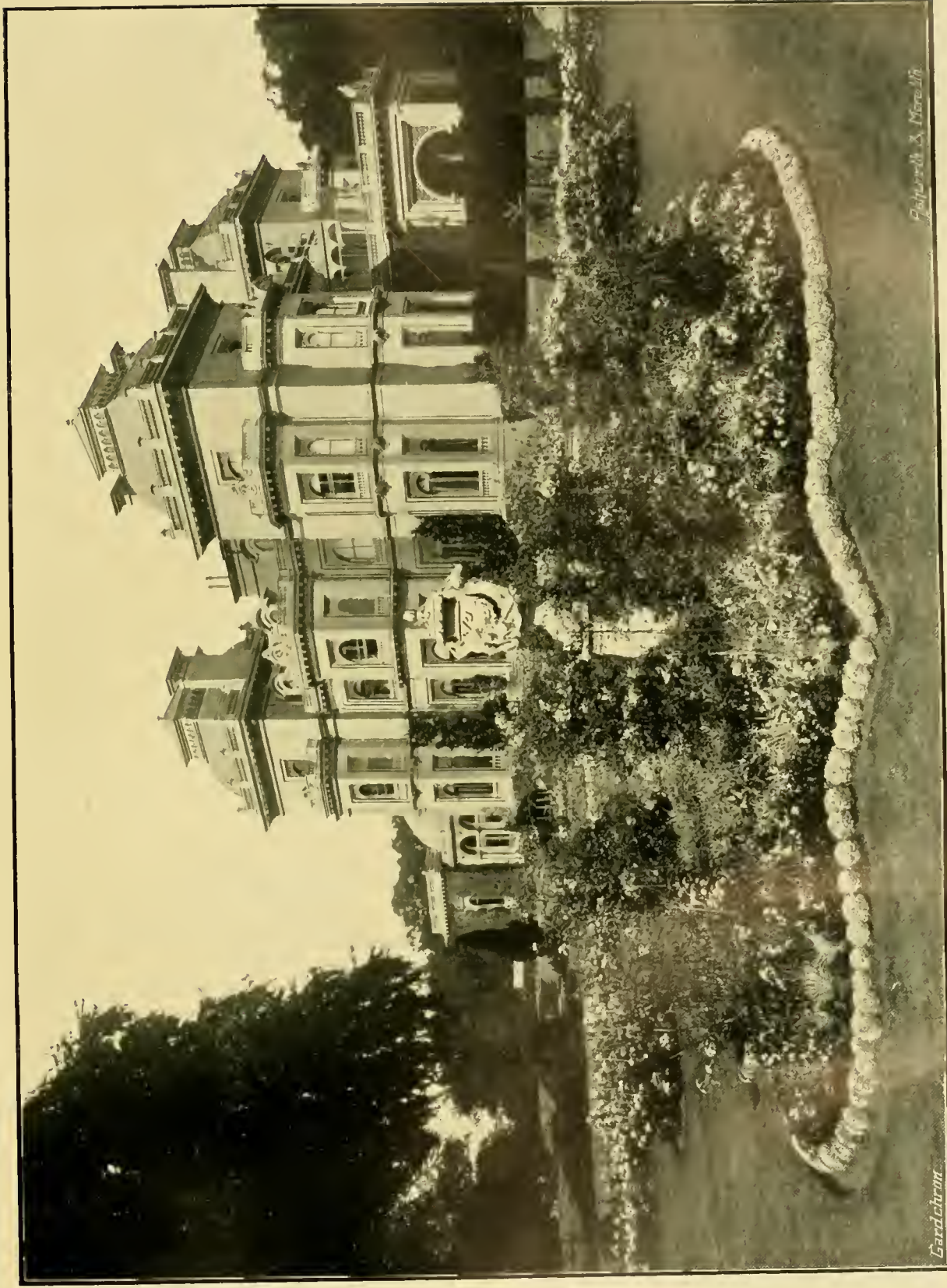
NAMES OF PLANTS: A. W. Ornithogalum lacteum.—*Pine*. The Monterey Pine, Pinus insignis.—J. M. 1, Cypridium Calypso; 2, C. Harrisianum; 3, C. villosum.—H. H. B. 1, Selaginella Wildenovii; 2, Lastrea rigida; 3, Adiantum cuneatum; 4, Pteris longifolia.—*Hillfield*. A species of Tillandsia; send again when in flower.—H. H., Canterbury. 1, Salvia gneseraeflora; 2, Mimulus (Diplacus) glutinosus; 3, Codium (Craton) interruptum; 4, C. angustifolium maculatum.—W. H. B. Plantago Coronopus, a native species common in some districts. It will probably succeed under trees. We do not know where you can obtain seeds.

PEACH ROOTS UNHEALTHY: J. R. P. We find no sign of fungus disease in the roots. It is possible that they were attacked by eel-worm when very young, and that this attack, from which the specimens sent have recovered, has produced the malformations.

PRONUNCIATION: F. B. In this country the pronunciation of Latin specific words usually follows the ordinary English usage. Thus, gîgâs (g is hard), violâcêa (the â as in "date"), to quote your own examples.

VIOLETS DISEASED: W. H. W. The fungus attacking the leaves of the Violet is probably Cercospora violæ. Spray the plants with dilute Bordeaux mixture. It is doubtful whether the flower-buds will develop into good flowers, as the leaves are so badly attacked. Burn all the diseased leaves. Before using the frames again for Violet culture they should be disinfected and furnished with fresh soil.

COMMUNICATIONS RECEIVED.—J. P. R.—R. P.—J. W.—H., Darmstadt—Pennick & Co.—A. Constant Reader—M. B., Java—L. G.—W. B. H.—W. E. G.—J. O'B.—C. J.—C. F. W.—J. G. W.—E. B.—A. C. B.—Reading Gard. Assoc.—A. S.—W. A. C.—A. O.—Rev. D. R. W.—F. M.—T. D.—H. F. M.—Dr. C.—A. G.—J. O. E.—G. W. M.—S. C.—W. I.—W. P.—R. P. B.—C. F.—H. W.—P. A., Amsterdam—J. B. A.—G. B.—C. A. B.—T. H.—J. T.—R. & Sons—G. A. F.—J. W.—J. V.—Capt. R.—R. G.—V. de C. H.



VIEW OF THE SOUTH FRONT AT HEDSOR, BUCKINGHAMSHIRE,
THE RESIDENCE OF LORD BOSTON.

Photograph by H. J. King.



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Gardeners' Chronicle
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THE WHORTLEBERRIES AND CRANBERRIES.

IN the middle years of last century a place given up solely to peat-loving plants was not an uncommon feature in the old-established and more famous gardens of the time. It was sometimes termed an Ericetum, sometimes an American Garden, and in it the Vacciniums and their allies occupied a not unworthy place. No grouping of shrubs could, one would imagine, be more pleasing than this. The usually neat and often dainty habit of the plants, their abundant and brightly-coloured flowers, the fine autumn colouring of many of the deciduous species, and, in the case of the Vacciniums, their handsome fruits, present together a sum of attractions which few other groups can equal. But the Ericetum had its day. Perhaps the formal or "geometric" arrangement that was usually preferred hastened its end. In some of these old gardens a few of the plants still survive on their ancient sites, the bulk of them having disappeared and but little trace of the original design remaining. Even now such places have a singular charm with their informal grouping of old Azaleas, Heaths, Vacciniums, and the like, rising from smooth, verdant lawn, and, pervading all, a sense of

age and dignity. I have a memory of such a spot in the romantic grounds of Dunkeld set amidst glorious trees and where the music of the hurrying Tay is ever in one's ears. At Castle Kennedy, too, there is still a fine collection of Ericaceous plants, many of large size.

The Vacciniums cannot lay claim to the exceptional attractions of Rhododendrons and Azaleas. Their charms are of a more subdued kind, and consist, chiefly in their neat, close habit and handsome fruits, and in their occasional rich autumnal colouring. The genus comprises at least 100 species, which are distributed over the northern parts of Europe, Asia, and North America, and occur also in considerable numbers on the mountains of South America. About a score of species have been introduced that can be grown out-of-doors in England, and three species are native. No race of plants is more characteristic of the lone places of the northern hemisphere. There is scarcely a moor or mountain side they do not help to cover.

The Natural Order to which they belong and to which they give the name—Vacciniaceæ—is represented in gardens by three other genera of hardy plants, viz., Gaylussacia, Oxycoccus, and Chiogenes. They are very frequently merged with the Heath family—Ericaceæ. The chief botanical difference between the Vacciniums and the Heaths is in the relative position of the corolla and ovary. In the Vacciniums and their allies the corolla is superior; in the Heaths it is inferior.

The Cranberries (Oxycoccus) differ from Vaccinium in their prostrate habit, wiry stems, and in the distinct form of the corolla, which has four comparatively long, narrow, reflexed segments. Chiogenes—of which there is but one species—is similar to Oxycoccus in habit, but has small, bell-shaped flowers and white fruits.

The Vacciniums prefer a soil of a peaty and sandy nature, but, provided lime is absent, almost any soil can be adapted to their needs by adding decayed leaves; they also like a naturally moist position. For Oxycoccus and Chiogenes the position may be semi-boggy. The Gaylussacias are not dealt with in the following notes.

VACCINIUM.

V. ARBOREUM (FARKLEBERRY).—This striking species is not often seen in cultivation now, although it exists in the Kew collection, and some years ago I noticed it in Mr. Anthony Waterer's nursery at Knaphill. As its name implies, it is a tree in its native home, which is the South-Eastern United States. According to Targent, it attains its largest size in Eastern Texas near the coast, where it is, occasionally, 30 feet high, with a trunk 8 to 10 inches in diameter. It has never got beyond the dimensions of a shrub in England, although it is recorded by Loudon to have been 10 feet high in the walled garden at White Knights. Probably it is only its most northerly form—the one found in the mountain valleys of North Carolina—that is hardy here. The leaves are evergreen, ovate or oblong, $\frac{3}{4}$ to $1\frac{1}{2}$ inches long, very slightly toothed, smooth and shining above, downy beneath. The flowers are gracefully pendent from slender stalks, and are either produced singly from the leaf axils

or in terminal racemes; the corolla is white, $\frac{1}{2}$ inch wide, bell-shaped, with five angular lobes. The berries are globular, $\frac{1}{4}$ inch in diameter, shiny black, with a dry, rather astringent flesh. The species was originally introduced to Kew by Mr. John Cree in 1765. It flowers freely during July and August, and is one of the prettiest shrubs in blossom at that season. The arborescent and more tender form from Florida would be well worth trying in Cornwall and similar localities.

V. ARCTOSTAPHYLOS.—So nearly allied is this species to V. padifolium that some authorities have made them forms of one. The true padifolium, however, is a native of the mountains of Madeira, whereas arctostaphylos comes from the Caucasus. It has larger leaves (the largest, indeed, of all hardy Vacciniums) and it, apparently, grows more freely than the Madeira plant. This interesting species is deciduous, and grows at least 10 feet high. Its leaves, which have an ovate-lanceolate outline, are sometimes 4 inches long and $1\frac{1}{2}$ inches wide, but their average length is 2 inches; they are finely toothed, dull dark green above, paler beneath and pubescent on the veins. The flowers usually hang from the lower side of short racemes produced in May from the naked wood of the previous year's growth. I have also seen them in September in the leaf axils of the current year's growth, but this was probably exceptional. The fruit is black and very palatable. An interesting theory, based by Sir Joseph Hooker on the geographical distribution of this species and its Madeiran ally (together with some other plants) is referred to in the note on the latter.

V. CANADENSE (CANADIAN WHORTLEBERRY).—Kalm, the Swedish traveller, who journeyed extensively in the Eastern United States in 1748, was the first to bring this species to the notice of botanists. It is a low, much-branched, deciduous shrub, with downy foliage and young wood. The leaves are from $\frac{3}{4}$ to $1\frac{1}{4}$ inches long, lanceolate, and dull green. It flowers in April, and the blossoms appear, four to six together, in a short, subcorymbose raceme, the corolla being short, campanulate, white tinged with red. The fruit is blue-black and very palatable; it is sent in large quantities to the markets of some of the North-East American towns. The species somewhat resembles V. pennsylvanicum, but differs in its much more hairy foliage and young shoots and its quite entire leaves.

V. CÆSPITOSUM (TUFTED WHORTLEBERRY).—So far as I know, this interesting little plant no longer exists in this country. If any reader of the *Gardeners' Chronicle* still possesses it, we should be glad to know of its whereabouts. It is one of the dwarfiest of Whortleberries—sometimes only 2 or 3 inches high—of tufted habit, and quite devoid of pubescence. Its leaves are obovate, toothed, and from $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Loudon records its existence in the Glasgow Botanic Garden 70 years ago, where it is said to have produced numerous "exceedingly delicate and beautiful" flowers, white with a blush tinge. The berries are blue-black. The species has a wide distribution over North America, being found in regions as far apart as Labrador and the Rocky Mountains.

V. CORYMBOSUM (SWAMP BLUEBERRY).—Of all the exotic species, this is the commonest in gardens. It is one of the best growers of

the genus, and its leaves before falling often turn a fine red colour. Widely spread over Eastern North America and extending from Newfoundland as far south as North Carolina, it is one of the most variable of the species; at least a dozen forms or varieties being known. In the most suitable situations it grows 7 or even 10 feet high, and is often found in swampy ground or along the borders of watercourses. The leaves vary much in size according to the variety, or the vigour of the branch on which they occur; occasionally as much as 4 inches long by $1\frac{1}{2}$ inches wide, they may often be seen scarcely 1 inch in length; they are entire, pubescent on the midrib and veins beneath. The flowers are produced on the terminal part of the shoots of the previous year which remain without leaves, the new shoots springing from below the flowering portion. The corolla is narrow, cylindrical, white tinged with rose, and the fruit is black. It is said in North America to have a pleasant acid flavour. Several of the American "blueberries," once regarded as distinct species, have been reduced to varieties of *V. corymbosum*; they include *amoenum*, *fuscatum*, *marianum*, and *virgatum*.

V. CRASSIFOLIUM.—Although this species—a native of the South-Eastern United States—was introduced to England as long ago as 1787, and is now in the Kew collection, it is by no means common. This is due probably to its being rather tender. It is a trailing, evergreen shrub with thick oval leaves, little more than 1 inch in length. The white or rosy-coloured flowers are borne during May and June in short clusters, and are succeeded by black berries. It occurs wild from North Carolina southwards to Georgia.

V. ERYTHROCARPUM.—Besides its attractiveness as a garden shrub, this species is of peculiar interest in forming a connecting link between the Whortleberries (*Vaccinium*) and the Cranberries (*Oxycoccus*). It has the habit, foliage, and fruit of the former, but the flowers of *Oxycoccus*. It covers large areas in the higher Alleghanies, especially in North Carolina, where it grows to a height of 8 or 10 feet. The late Mr. George Nicholson collected it on Roan Mountain in 1893. It is one of the species known as Bearberries in the United States, on account of the fondness of bears for the fruit. First introduced to this country by the firm of Loddiges in 1806, it has never become common, although it was once thought that it might be worth a place in the fruit garden. It is a deciduous shrub, with ovate, pointed leaves 1 to 3 inches long, the margins set with fine, bristly teeth. Whilst young the leaves are tinged with red. The flowers appear singly in the leaf axils, borne each on a slender pendulous stalk. The corolla has the typical *Oxycoccus* form, with its four deep, narrow lobes curled back so as to leave the stamens standing up close together in a sort of erect column. The fruits are first green, then scarlet, finally black. At Kew they have a sweet, acid, and somewhat insipid flavour. Possibly they need the brighter sunlight of the Eastern United States to bring out their best qualities.

V. GLAUCO-ALBUM.—The only private garden I know to contain this species is that which belonged to the late Mr. Thomas Acton at Kilmacurragh, Co. Wicklow. Unfortunately, it is not hardy except in such warm localities as Kilmacurragh. Although Mr. Acton gave it to the Kew collection more than once, it has never succeeded there in the open ground or even

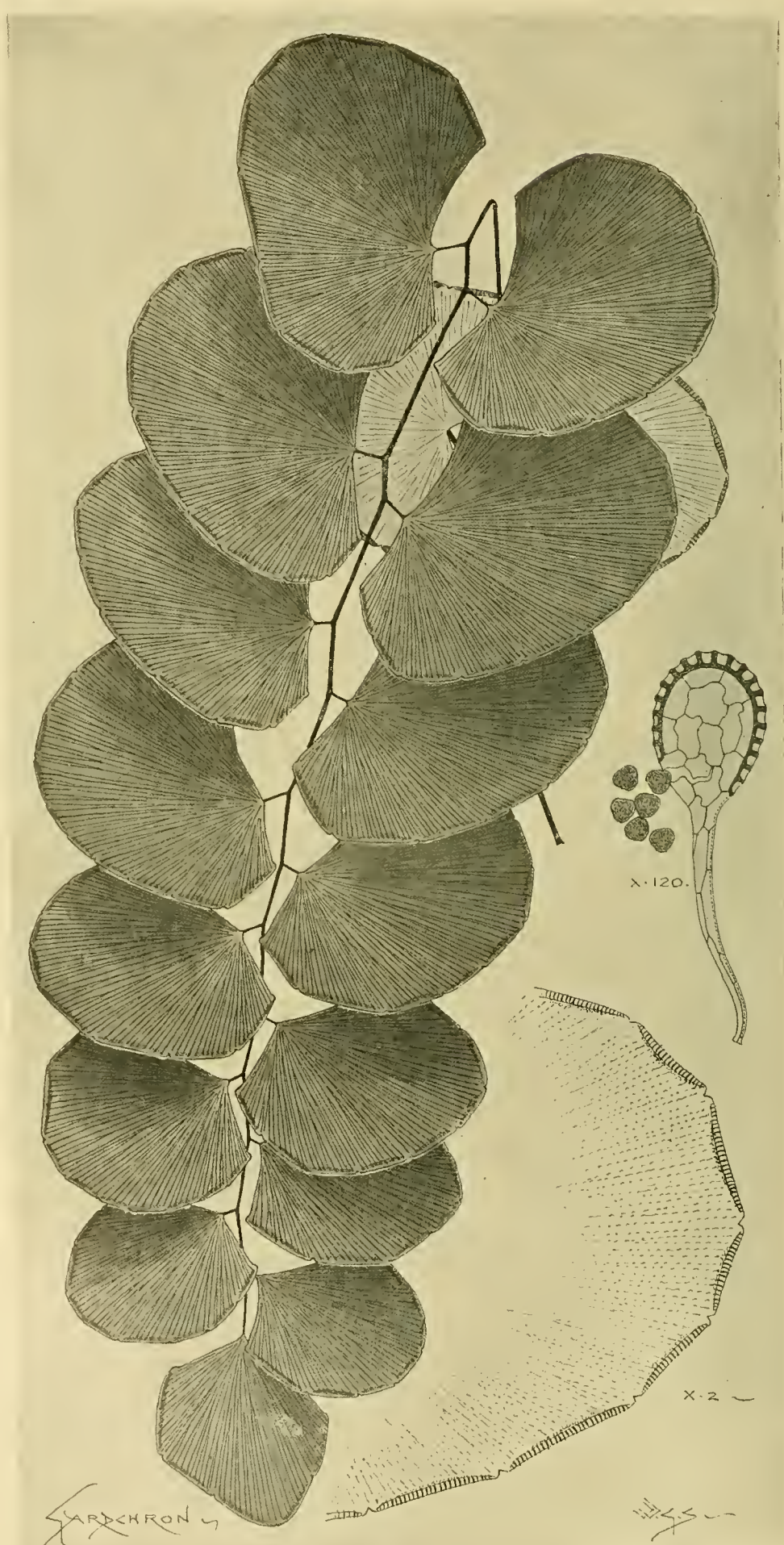


FIG. 30.—FROND OF ADIANTUM GROSSUM AS SKETCHED BY MR. WORTHINGTON SMITH.

Portion of pinnae magn. 2; spore and spores mag. 120.

(See p. 51.)

survived more than a single winter. It is a Himalayan species, being found in Sikkim at 9,000 to 10,000 feet altitude; also in Bhotan. It is a low shrub, remarkable chiefly for the intense glaucous bloom of the under-surface of the leaves, which are ovate-oblong, up to 2½ inches in length; firm or even rather hard in texture. The flower racemes are 2 to 3 inches long, and are rendered conspicuous by large blue-white bracts, which remain until the fruit is ripe. The corolla is white tinged with pink, and the fruits, each ¼ inch in diameter, are covered with the glaucous bloom so characteristic of the plant. *W. J. Bean.*
(To be continued.)

CULTURAL MEMORANDA.

FREESIAS AT CHRISTMAS.

FOR several seasons past we have not failed to produce a batch of *Freesias* at Christmas, and at the present time we have about 100 pots of these plants in bloom. These have been grown entirely without artificial heat, excepting on a few occasions, when the houses were

frames until frost appears, when they are removed to a structure from which frost can be excluded. A light shelf in a Peach house is suitable. Our first batch of plants was in flower at the beginning of December.

When flowering is over, the plants are placed on shelves in an early vinery, and they are given liquid manure and soot water to assist in maturing the bulbs, which I regard as one of the chief factors towards the successful culture of these plants. As the leaves begin to turn yellow, water is gradually withheld, but the plants are allowed to remain on the shelves in the vinery, where they are fully exposed to the sun. The bulbs thus become thoroughly ripened by the time they are required for their annual repotting. *Wilmot H. Yates, Rotherfield Park Gardens, Alton, Hants.*

CULTIVATION OF ACALYPHA HISPIDA (SANDERIANA).

THE cultivation of this plant is in no sense difficult, but at the same time it should not be treated as the Cinderella of gardens. Sometimes it is treated as a semi-aquatic and stood in a saucer of water.

Naturally, the plant, mismanaged after this

in the spring and summer months cuttings should be struck in November, December and January, and for later purposes March, April, and even May are suitable months. As soon as the cuttings have formed small roots, remove the lights from the propagating cases, and, when the roots have permeated the soil, take the plants out of the bed, and shortly afterwards re-pot them into large 60's in pure leaf-mould and the quantity of sand usual for potting purposes. Place them near the glass in a warm house. Unless this last rule is followed there is the danger of the cultivator having plants a yard in height and with few or no flowers. The plants as soon as they are well-rooted should be re-potted, and this should be repeated four or more times before full development; at each re-potting making use of the smallest pot possible. At the last shift it is well to employ a small quantity of artificial manure, or, if this is not done, apply manure water of a mild nature with great caution and for the most part during hot weather, when also the plants may be syringed lightly. If the syringing is done during dull weather the cells of the leaves, becoming distended with sap, rupture, and thus a diseased, rusty appearance is induced. This appearance is by some erroneously considered to be the symptom of a fungal disease. When the leaves are in this state it is advisable to ventilate abundantly, afford water in moderation and syringe sparingly. When the plants are in flower, syringing should be discontinued and the glasshouse kept moist by sprinkling the paths and walls, paying attention to the ventilation, as a warm, close atmosphere is injurious.

Frame cultivation cannot be recommended, the gardener then not having full control over aerial moisture and temperature. *Extract from Die Gartenwelt, No. 2, 1909.*

ADIANTUM GROSSUM.

WE are indebted to Messrs. F. Sander & Sons for the introduction of this handsome Fern from New Granada. Although discovered over 40 years ago by Alexander Lindig, and described and figured in various works since, living examples do not appear to have ever before been sent home. That the species is worth the attention of Fern collectors is evident enough from the drawing prepared by Mr. Worthington G. Smith (see fig. 30), from material supplied by Messrs. Sander, and that it is easily cultivated in a warm house has been proved both at St. Albans and Bruges. *A. grossum* belongs to a section of the genus which is characterised by simply pinnate fronds, and is represented among garden Ferns by *A. lunulatum*, *A. caudatum*, *A. Kaulfussii*, and *A. Balfourii*. In length of frond and size of pinnæ it is by far the largest of them, dried specimens showing a frond 25 inches in length, with 25 pinnæ, the largest 2 inches by 1½ inches, almost leathery in texture, and coloured a rich green. So far as dried specimens and cultivated examples show, the pinnæ on the same frond do not vary much in size, nor is the frond elongated and proliferous at the apex, as in *A. lunulatum* and *A. caudatum*. It is most nearly allied to *A. Balfourii*, the Socotran species, but that has smaller fronds proliferous at the apex, with the pinnæ subcircular, in opposite pairs, and nearly sessile.

A. grossum grows on the Andes of New Granada, at from 3,500 to 7,000 feet, and may therefore thrive in an ordinary greenhouse temperature. It forms a dense tuft of fronds, which are gracefully curved when of full size. There are not many gardens nowadays in which exotic Ferns are collected and cultivated with the connoisseur's spirit, and yet there is, even in the genus *Adiantum* alone, a considerable diversity of form and habit, with, at the same time, much charm of pose and colour—characters which should attract the horticulturist who is one because he has a feeling for plants. *W. W.*



FIG. 31.—PLANT OF ADIANTUM GROSSUM IN MESSRS. SANDER AND SONS' COLLECTION.

warmed only to exclude frost. The plants are, in consequence, very robust, the foliage being about 2 feet in height.

The bulbs are potted during the early part of July. About seven bulbs are inserted in a 5-inch pot, or 10 bulbs may be placed in a pot one size larger. The compost consists of loam, leaf soil, a little cow dung and sufficient sand to keep the whole porous.

The pots are placed in a cold frame, and the soil is not watered till new growths appear, but a mat is spread over them, and this is sprinkled occasionally, and the surroundings kept moist. When shoots appear the mat is removed and the plants exposed to as much fresh air as possible. They are slightly shaded from hot sunshine. The lights are only placed on the frame when the weather is wet.

The plants are supported by a separate stick to each growth. It is important that the plants be staked early, otherwise the growths soon become bent and, consequently, spoil.

As the plants grow, increased room is given in the frame to prevent them becoming drawn. They are accommodated in the cold

fashion, produces small, yellow leaves and miserable blossoms, for aquarium-culture does not suit its needs. In particular, the plants must be kept free of all insect pests, and in the young state, therefore, before they commence to flower, they should be syringed frequently with Tobacco water or other insecticide. Afterwards, when the flowers have opened they need to be fumigated, using for the purpose Tobacco paper or the ribs of the Tobacco leaf which do not injure the flowers. As a means to avert attacks by thrips Tobacco ribs in some quantity should be laid on the hot-water pipes, and moistened frequently with water. Stock plants should be placed in a warm house, in order to get them into growth before the cuttings are taken. Cuttings must be neither too soft nor yet too small in the matter of leaves, or they will be late in rooting and capable of making few roots. When cuttings are taken from "cut backs" the gardener should wait until the shoots have formed their characteristic leaves. The cuttings should be placed singly in small pots in very sandy, turfy loam or leaf-mould, and the cutting pots plunged in a bottom heat of 75° Fahr. If good plants are required

SOME MOISTURE-LOVING PLANTS.

ON many estates there are to be found derelict bog and waste, marshy places, the initial cost necessary to convert which into positions suitable for the planting of moisture loving plants would prove but small. Even in gardens where such natural facilities for these plants do not exist, the difficulty may readily be overcome by the introduction of water basins, pools or ponds.

It is always a bad policy to economise in the use of constructive material. For the exposed parts of large ponds containing 4 to 6 feet of water a thickness of 6 inches of concrete is not too much, while in small basins holding a depth of 2 feet of water, a 3-inch layer of concrete is adequate.

The most suitable compost for filling the basins consists of loam and peat in equal parts, care being taken to avoid using soil containing any appreciable quantity of lime, from which many plants show a decided aversion.

The soil, when settled, should be of sufficient depth to allow a clear foot between the crown of the plants and the water level.

A selection of plants is given below. All will grow freely in wet ground, unless otherwise stated. The *Astilbes* are closely related to the *Spiræas*, and many are known in gardens as *Spiræas* :—

Astilbe chinensis, though an old plant in gardens, is still one of the best dwarf species. It produces a fine effect during July, when the pink plumes of flowers stand up in great sheaves. It somewhat resembles *Spiræa astilboides*, the plant largely employed in gardens for forcing purposes.

A. Davidii is of more vigorous growth, the shoots often attaining a height of 6 feet. The flowers are of a deep purple-red colour. There is a white-flowered form known as "grande" well worthy of extended planting.

Aruncus make stately specimens when well established by the waterside; the gigantic, snow-white inflorescences are freely produced in July. *A. palmata* has deep-crimson flowers borne in flattish heads; a pink-coloured form known as "elegans" and a white form, "alba," are equally good as garden plants.

Spiræa camtschatica (syn. *gigantea*) and its less vigorous pink variety, *rosea*, are tall-growing subjects reaching quite 10 feet in height.

Dimorphanthus mandschuricus gives a fine effect with its large, compound leaves measuring more than a yard in length. There is a variegated silver form and also a golden variety: the former promises to be a plant of great merit. The *Dimorphanthus* succeeds best planted in ordinary garden soil.

Iris aurea and *I. ochroleuca* both have strong, erect, sword-like foliage, and are often 6 feet high when in flower. *I. aurea* has bright, golden-yellow flowers, those of *ochroleuca* being creamy-white with a yellow throat. Both species flower late in July. *I. lævigata* (Japanese Iris) should be planted on a large scale in a bog garden. These Irises embrace many fine combinations of colours: the snow-white variety is a plant of rare beauty. *I. sibirica orientalis* is the best garden-form of this species: it produces more flowers of a richer colour and greater substance than those of the type.

Gunnera manicata, when planted in positions favourable to its development, often produces leaves 7 to 10 feet across. A well-grown clump makes an effective addition to a pond or lake.

Rheum palmatum tanguticum is the best variety of the ornamental Rhubarbs, and will grow in any ordinary soil. The planting of *Musa ensete* by the waterside introduces a distinct form of leaf; unfortunately, the plant is not hardy, but is readily raised from seeds

sown in the spring under glass; plants in their second year furnishing specimens 8 feet in height. This *Musa* succeeds in a deep, well-manured soil. Amongst the best species of *Primula* for this purpose are *Primula rosea*, with bright, rosy-pink flowers; *P. Sieboldii*, white and carmine; *P. japonica*, crimson flowers; and *P. sikkimensis*, a yellow-flowered species. *Primulas* are most effective if planted in bold masses.

Rodgersia podophylla has bronze-coloured foliage similar in shape to that of the Horse Chestnut. The bronze colour is enhanced in sunny positions.

Some species of *Senecios* are valuable plants for water-side planting. *S. japonica* has deeply-cut leaves and orange-yellow flowers, the latter borne in flat heads. *S. clivorum* flowers a fortnight later than *S. japonica*. The colour of its flowers is yellow, and the leaves are unbroken and circular in outline. *S. Wilsonii* has enormous, cordate leaves and yellow flowers in erect, branching spikes. *S. macrophylla* has distinct, glaucous-grey leaves, and produces erect spikes of yellow flowers.

Yucca recurvifolia should be given a prominent position, as the plant is very beautiful when in flower. It thrives in ordinary soil.

WINTER-FLOWERING IRISES.

IN addition to the well-known Algerian Iris (*I. unguicularis*), with its many beautiful varieties, varying in colour from the deep purple-blue variety *speciosa* to the pure white variety *alba*, there are a few species belonging to the bulbous section of the genus which flower during the winter months. These winter-flowering Irises deserve protection against the weather, and, although they may be grown in warm, sheltered nooks outside, where they will develop their beautiful flowers, they are liable to be spoilt by rain and frost. Therefore, a hand-light or piece of glass should be placed over the plants when in flower to preserve them from injury. It is, however, when grown in pots or pans in a cold frame or Alpine house that they are seen to better advantage. With the shelter thus given, they produce a longer succession of flowers and they develop better. For this purpose the bulbs should be potted up in the early autumn, using a mixture of light, sandy loam and leaf-mould. Until the flowers begin to show, the pots may be plunged out-of-doors in ashes, then they may be brought inside to develop. The earliest in flower is *I. Vartanii*.



FIG. 32.—IRIS ALATA FLOWERING OUT-OF-DOORS ON DECEMBER 10, 1908.

Phormium tenax atropurpureum may also be included in this list, as, by reason of its leafage, it provides a welcome addition.

Cortaderia argentea, the Pampas Grass, enjoys a rich soil, and produces its magnificent plumes of flowers during the late summer.

Arundo Donax, the Great Reed, is a native species that grows 8 feet high. The stems arise as a thicket of lances supporting peacock-like leaves. The old canes should never be removed before the spring.

Cyperus vegetus and *Glyceria spectabilis* variegata are two good foliage subjects.

Several dwarf shrubs succeed in wet ground and of these may be instanced *Clethra alnifolia*, which produces white racemes of flowers in autumn. The leaves of *Oxydendron arboreum* furnish beautiful colour-effects in autumn. The double-flowered form of *Spiræa prunifolia* is, in spring, wreathed with its snow-white flowers resembling small buttons; the foliage colours richly in autumn. *S. japonica* (syn. *callosa*) in all its forms succeeds in wet ground; the best varieties are *Anthony Waterer* and *S. j. rubra*. *Thomas Smith, Walmsgate Gardens, Louth.*

I. Vartanii.—This pretty species comes from Palestine, and usually commences to flower in November, continuing through December. It belongs to the *reticulata* section, with four-sided leaves, armed with a horny point, while the flowers are pale azure blue.

I. alata.—The well-known Scorpion Iris is one of the most valuable winter-flowering plants, producing a succession of beautiful flowers of various shades of colour during the winter months. In mild winters it may be grown with advantage outside in warm, sheltered spots, where it makes an effective display. Having a wide distribution over the Mediterranean region, the plants naturally show a considerable range of colour, varying from deep blue to pure white, relieved with a crest of yellow. The illustration at fig. 32 is reproduced from a photograph taken on December 10 in the Royal Gardens, Kew.

I. Bakeriana.—Although this species is not usually in flower till February, the pretty, sweet-scented blooms are fully out in the Alpine house at the beginning of January. It belongs to the *reticulata* section, but the leaves are cylindrical and have eight ribs, instead of being four-sided. The plant comes from Armenia,

and is somewhat rare in gardens. It produces flowers with bluish-lilac standards, while the falls are creamy-white, blotched and spotted with dark violet. Two kinds in flower are both forms of *I. reticulata*.

I. reticulata var. *Histrio*.—A charming variety from Palestine has bright blue flowers blotched with golden yellow.

I. reticulata var. *histrioides*, from Armenia, has flowers larger than those of the type, being often 5 inches in diameter. These appear before the leaves, and vary in colour from purple-blue to light blue, with white spots on the fall and a narrow orange crest.

All the above, with the exception of *I. Vartanii*, are in flower now, and will be followed shortly by such species as *I. Danfordiæ*, *I. stenophylla*, and *I. Tauri*. *W. L., January 14.*

NOTICES OF BOOKS.

* "THE ENCYCLOPÆDIA OF GARDENING."

THIS handbook of 466 pages, crown 8vo., is a condensed "Dictionary of Gardening," of much use as a work of reference to the private gardener, plant cultivator, fruit-grower and, to a lesser extent, to the arboriculturist and forester. It gives the names of all kinds of garden plants cultivated in British gardens, the Natural Order to which they severally belong, common garden names and the botanical names according to the *Index Kewensis*, together with their native country. Much information concerning the best methods of cultivation is conveyed in the briefest possible manner. To take *Marantas* as an example. We are first given the common name, "Arrowroot plant, Ord., Scitaminaceæ, stove: herbaceous perennials. Orn. foliage. First introduced in 1732. Leaves, egg, lance, or heart shaped, roundish or oblong; greyish, purplish, or rose below, upper sides green, blotched or streaked with white, yellow, brown, purple, or rose." Then follow descriptions as to best kind of compost to use, and directions as to culture to be followed throughout the year, with a list of the species in cultivation. It is sufficient recommendation for this book to state that the present revised and amplified issue represents the 13th edition.

† THIRTY-NINE ARTICLES ON GARDENING.

ALTHOUGH this book might form an acceptable gift to many young people interested in plants and in gardening, and although some of the chapters are eminently practical; yet, on the whole, we do not see the object of republishing chatty articles of this kind, which are more suited for the pages of a newspaper than to swell the already crowded shelves of the botanist's or gardener's library.

The author is an enthusiast, and has travelled much. She has been in the Rockies, and has seen *Calochortus* and *Opuntia* growing together in British Columbia. She has visited that earthly paradise, Ceylon, and evidently knows something of the European Alps, as well as of the British Isles. Botanists who have travelled in foreign lands as well as in their own and have seen plants growing in their natural haunts on mountain side or in tropical forests, must necessarily have something to talk about, especially when they seem to be also at home among the wonderful treasures of *Few*.

The first thing, therefore, to notice about the little volume under discussion is its distinct originality and freshness. In these days when so much "literature" is taken out of books of reference, guide books, &c., it is a pleasure to come across journalistic work of this kind which is original and based upon the author's

own observations and experience as a cultivator of plants. Some of the chapters are, therefore, distinctly readable. Others, such as that on weeds, are less interesting, and in that short chapter more might have been said about the fascinating subject of the dispersal of seeds by wind, water, animals, &c., and less, we think, about what plants are regarded as "weeds" in different countries.

The coloured illustration of "Weeds" is not altogether intelligible, comprising *Androsace obtusifolia* (Switzerland) and *Gentiana campestris* (Norfolk). It is misleading to suggest that *Androsace obtusifolia* is often found as a weed in Swiss gardens; nor can we imagine that the widely-spread Field Gentian is a typical weed

as are the still larger plants of the handsome *Primula latifolia*.

In speaking of the drainage of rock-gardens we are very truly told that many Alpine plants, "notably, *Campanula cenisia*, have their long roots running among stones and shale so loosely piled together that you can pull it down easily with your hands and release the entire roots uninjured. Similar planting in this country, of course, would not succeed, unless we could insure an incessant water-supply such as the melting snows provide." Fortunately for this rare little *Campanula*, confined to so small an area in Central Europe, and hardly ever seen below 8,500 feet, it is often so much the colour of the loose stones among which it grows,



FIG. 33.—IRIS BAKERIANA: FLOWER PALE VIOLET SPOTTED WITH BLUE
(See page 52.)

in Norfolk gardens, though it may occur in some.

There is an interesting chapter on *Primulas*, and the remark that *P. auricula* "grows best high up on the banks when placed in cracks between stones" is a better description of the situation proper to this plant than that of a recent writer in this journal (Oct. 17), who said, "The *Auricula* grows naturally on the mountains of Southern Europe and flourishes in the natural loam to be found there; consequently, loam should be the staple of the compost." Those who have seen the beautiful, pale-yellow flowers of the *Auricula* in the Alps in May or June—and they are by no means easily found—know that it almost invariably grows on more or less precipitous, limestone rocks, and that it is as tightly wedged into the narrow crevices of rock

exactly as described by Miss Crocker, as almost to suggest a "protective colouring" in the vegetable as in the animal world.

Some carelessness appears in the use or non-use of capital letters and little points of that kind, e.g., we find "iris," "geranium," "rumex," "White Gentian," "Michaelmas daisies," "a grand White form," "a good Mauve variety," &c. Nor is it well to read, "every atom (of a plant in seed) was closely cropped off with shears." And why is it necessary to place in quotation marks that "*Heaths* or *Ericas* belong to the Natural Order of plants *Ericaceæ*?" These are trifles, and yet their frequent occurrence shows that the articles, if published at all, should have been carefully revised before being put together in book form. *H. S. T.*

* *The Encyclopædia of Gardening*, by T. W. Sanders, F.L.S. London: W. H. & L. Collingridge, 148 and 149, Aldersgate Street, E.C. Price 3s. 6d.

† A series of articles by Miss Emmeline Crocker, F.L.S., reprinted from *The World*. Messrs. Dulau & Co.

The Week's Work.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Evergreen Calanthes.—The following species of the evergreen section of *Calanthes*, namely *C. veratrifolia*, *C. Masuca*, *C. sylvatica*, *C. pleiochroma*, *C. citrina* and *C. japonica* are now actively growing. They will require frequent and liberal supplies of water, with an occasional application of weak, liquid cow-manure. The plants are more or less frequently attacked by brown scale insects, which must be kept under by sponging with some safe insecticide. The flower-spikes, as they push up, must also be kept free from green and yellow aphides, or they will disfigure the flower-bud. These Evergreen *Calanthes* are best cultivated in the intermediate house. They should not be elevated near to the roof glass, but will grow satisfactorily in a shady part of the house.

Vanda Watsonii, *V. Amesiana*, and *V. Kimballiana*.—At the cooler end of the Cattleya house plants of the new *Vanda Watsonii* grow fairly well, and several plants are now in bloom. A specimen with five spikes of pure white flowers is a lovely object. At this season every care is necessary to prevent moisture settling on the flowers, which would cause them to become spotted. When the flower-buds are properly developed and are just on the point of opening it will be necessary to gradually lessen the supply of water at the roots, but do not allow the roots to become so dry as to cause the terete leaves to shrivel. Treated in this manner the blooms keep perfectly fresh and free from spot for a period of several weeks. Plants of the winter-flowering *V. Amesiana* will require similar treatment, but this species needs a more decided rest after the flowers fade. The earlier-flowering plants of *V. Kimballiana* are now beginning to push out new roots from the stem, and the old roots are also commencing to grow. These may now be repotted or resurfaced as may be considered necessary. They succeed either in pots or teak-wood baskets, but whichever the receptacle used, good drainage is necessary. Pot them firmly in a mixture of *Osmunda* and *Polypodium* fibre in equal parts. Cut these materials up moderately fine and mix with them plenty of small crocks. Keep the compost about an inch below the rim of the pot or basket, and surface the remaining space with freshly-gathered *Sphagnum*-moss, making it quite solid in convex fashion. These *Vandas* require a light position in the Cattleya house. Sufficient water should be applied to preserve the surface moss in a growing condition.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Late Peaches and Nectarines.—Any pruning and training still to be done should no longer be delayed. When pruning the trees remove as many of the old branches, as can be spared, in order that plenty of young, fruitful shoots may be trained in, thus improving the general appearance of the trees. The greatest care must be exercised in pruning young trees which have been recently planted, for any neglect or mismanagement now will be followed by unsatisfactory results in later years. Any extra strong shoots made last season should be pruned severely or entirely removed. Do not attempt to get the trellis covered too quickly, as this sometimes leads to a deficiency of fruitful wood at the base of the branches. Keep the centre of the trees fairly well open, and endeavour to have most of the fruiting shoots on the uppermost side of the branches. The glass, woodwork, and trellis should be thoroughly cleansed by washing before commencing to train the trees. If the trellis is at all rusty it should receive a coat of paint, for a rusted trellis frequently causes canker by its rubbing of the branches. The trees may be thoroughly washed with a mixture of soft soap and sulphur in water. Only a soft brush must be used for applying this mixture to the young shoots, or the buds will be liable to receive injury. Be careful to make all the ties so loosely as to allow for the proper swelling of the wood. When the tying is done,

the surface of the borders should be carefully forked over, removing the loose soil in order that a top dressing of loam and lime rubble may be applied. In the case of old trees, some artificial manure or crushed bones will be beneficial. Syringe the trees with clear water on fine mornings.

Tomatos.—Provided that the winter-fruiting plants are still in a clean and vigorous condition, they may be encouraged to set further fruits. Cut away most of the old foliage and select some of the strongest side growths and lay them in, giving them plenty of room to develop. Apply a surface-dressing of loam to the roots, mixing with the compost a little lime rubble or wood ashes, also a little artificial manure. At this time of the year it is prudent to pollinate each flower individually. The plants which were raised from seeds sown in the autumn are nearly ready for their final shift into 10-inch pots. A fairly rich compost is necessary for pot culture. This should consist of loam, old mortar rubble, wood ashes and crushed bones. In potting, the soil should be made firm. Place the pots near to the glass, so that they may not become drawn. White fly is a very persistent enemy of the Tomato, and once this pest obtains a footing it is difficult of destruction. A good preventive is to fumigate occasionally with a nicotine vaporising compound. Let the atmospheric temperature be 60° at night, but during the day, by the sun's influence, it may rise even to 80°, provided there is a free circulation of air. Make another sowing to provide for a successional crop.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. Vicar Gibbs, Aldenham House, Elstree, Hertfordshire.

Jerusalem Artichokes.—This useful vegetable is neither fastidious as to soil, climate, nor situation. It grows very tall, and it frequently serves as a windscreen or is so planted that its growth may hide unsightly places during the summer and autumn. Unlike most other vegetables, Jerusalem Artichokes may be successfully cultivated on the same piece of ground for a number of years together, provided suitable manure is applied and the ground is properly prepared by deep tilt each year. The present is a suitable time to prepare the soil by trenching deeply and working into it a liberal quantity of farm-yard manure. If it is very stiff and retentive in character it will be well to add some burnt garden refuse, road scrapings, or old mortar rubble. Medium-sized tubers should be selected for planting. They should be placed 6 inches deep and 2 feet from each other in the rows. The rows themselves should be divided by spaces of 3 feet. The newer white variety is superior in every way to the old purple-skinned Artichoke. The tubers are more shapely and their flavour superior.

Rhubarb.—The supply of Apples is decreasing, and Rhubarb will, therefore, be in great demand. Larger batches of roots should be taken up at intervals and placed in a gentle heat, but, in addition, some of the roots in the open ground should be forced in the positions they now occupy. This latter practice is preferable to lifting the crowns and forcing them indoors, unless crowns are obtainable that have been specially grown for the purpose. By the indoor forcing system the plants are so weakened that they need two years at least to regain their vigour. Ordinary tubs or barrels with one end removed and its parts bracketed together so that it can be used as a lid are more convenient than the pots specially made for the purpose. A small quantity of long stable manure with some good Oak, Beech, or Spanish Chestnut leaves will be needed to create the necessary warmth, but care should be taken not to employ more than sufficient heat to cause the plants to grow as quickly as they do ordinarily at their proper season. If these details are carried out intelligently, the fermenting materials removed in good time after the forcing is over, the beds forked, and no more stalks pulled during the present season, the roots will be little the worse for the slight forcing.

Seakale.—Introduce batches of Seakale to the forcing house in sufficient quantities to meet the demand. It must be pointed out, however, that Seakale may be forced on the ground much in

the same way as Rhubarb, and although this method gives more trouble, the growths so cultivated are usually much stronger and of better quality. The roots which were taken off when the crowns were lifted for forcing, and tied into small bundles, should now be placed in boxes and put into cold frames, in order that they may be induced to start slowly into growth.

Salads.—Continue to make provision for maintaining regular supplies of Salads by sowing small quantities of seeds at regular intervals of such crops as Onions, Mustard and Cress and Chervil. See to the blanching of Endive and Lettuce. Keep a good quantity of Chicory and Dandelion roots in a warm corner where they will produce growths, that will, of course, need to be blanched.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Trees and shrubs (continued).—In addition to those mentioned last week, the following species are well suited for cultivation in parks:—*Berberis aquifolium* and *B. Darwinii*; *Hypericum calycinum* and *H. elatum*. *Hypericum calycinum* is useful for covering dry and shady spots and for forming a groundwork in the front of shrubbery borders. *Phillyrea angustifolia*, with its stout leaves, withstands smoke very well, as also do all the *Ligustrums* or *Privets*, notably *L. Iboti*, *L. japonicum*, *L. lucidum*, *L. Quihoui*, and *L. sinense*. The bright green leaves of the *Privets* are attractive, independent of their plumes of snowy white flowers. *L. ovalifolium* and its golden variegated sports, though not evergreen, are capable of retaining their foliage until very late in the year, and they start into growth again early in the following season. At midsummer the yellow varieties are amongst the most striking of town shrubs. *Spartium junceum*, when planted on poor soil, produces an abundance of fragrant yellow flowers. I planted several plants of *Choisya ternata* a few years since in a warm border, and so far they have done well, but have flowered only sparingly. *Cydonia japonica* makes a good-sized bush and flowers well. *Fatsia japonica* has also passed safely through three or four winters without protection, as have *Elæagnus pungens* and the varieties *aurea*, *argentea* and *variegata*. *Cotoneaster frigidula* and *Cratægus pyracantha* attract much attention when in berry. All the *Spiræas* do well, *S. Lindleyana* and other tall-growing species forming stately objects when in flower at the end of the summer. The numerous varieties of *Ivy* (*Hedera Helix*) make useful and interesting plants for covering walls, and the more common forms are excellent for planting under large trees or in places where grass will not grow. *Ivies* present much diversity in the form and size of their leaves; the contrast between the varieties *dentata* and *Caenwoodiana*, for instance, is very noticeable. Other useful subjects for shady nooks are the *Vincas*. The hardy forms of *Bamboo*, *Arundinarias* particularly, afford a graceful subtropical appearance if planted in clumps. *Rhododendrons*, though not first-class town plants, can be grown with success. They will thrive in any soils that are not exceptionally heavy or that do not contain a large proportion of lime or chalk; but succeed best in a light, peaty soil or sandy loam. When they are making their new growths copious supplies of water should be applied overhead.

Deciduous species.—Among the deciduous trees and shrubs, the variety of the Plane tree (*Platanus orientalis acerifolia*) attains a very large size and is capable of forming stately avenues. When used for this purpose the trees should not be planted nearer than 35 feet apart, but even a greater distance is better. These trees require plenty of water at their roots during dry seasons. They do not burst into leaf until danger of late frosts is practically over. *Ailanthus glandulosa* flourishes well in smoke-laden districts. It attains large proportions, and its foliage, as well as sometimes its flowers, are interesting and attractive. The various forms of the Ash, Horse Chestnut, Acer, *Cratægus*, Elm, Beech, Birch, Oak, Poplar and Willow succeed well, and all these should be used for variety in accordance with the space at the disposal of the planter.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Raspberries.—If this work has not already been done, the quarter devoted to Raspberries should now be made neat for next season. Assuming that last year's fruiting canes were removed soon after the crop was gathered, all that is necessary in this direction at the present time is to thin out any young canes that are considered superfluous, and tie the remainder neatly to the supports. In most private gardens the system followed is that of tying the canes to wires trained to upright posts. This system has much to recommend it, as by its use light and air can reach every part of the cane and the fruit is well exposed to the sunshine. If it is necessary to renew any of the uprights, the new ones should be made at least a foot higher than the canes are expected to grow. They will then be found convenient when netting the Raspberries for protection against birds, as the uprights will hold up the nets sufficiently high above the canes and allow head room for those who

canes on permanent plantations should now be cut down to the ground level, for the fruit will be borne on the new canes. Care must be taken to thin out the new shoots to a reasonable number early in the season, in order that the remainder may develop into strong, well-ripened canes, capable of bearing satisfactory crops.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Herbaceous plants.—Where there are large borders of herbaceous plants it occasionally happens that one or more of these need to be overhauled entirely. Before such a time arrives, advantage should be taken to obtain a large quantity of manure, leaf-mould, road-scrappings, and similar materials. In the first place it is necessary to mark out the positions in which you wish to place the principal plants, labelling any that it is considered unwise to shift. Some species, notably *Ostrowskia magnifica*, are known not to succeed well for a considerable time after disturb-

large plants which, making their growth late in the season, will allow the bulbs to flower before overshadowing them. The tall-growing species of Lilies should be placed in conspicuous positions to make a bold effect. If Lilies are moved at this date they should be planted again as soon as possible, taking care not to break the freshly-formed roots. If the soil is inclined to be heavy, place some sharp sand about the roots, also a sprinkling of flowers of sulphur. Irises should be planted in the same manner as Lilies. They require a freely porous soil. The best background for such a border is one composed of evergreen and deciduous shrubs. If these are selected with care their effect will add considerably to that afforded by the border. Should the background, however, be a wall, let it be covered with climbing plants rather than with fruit trees. Work in plenty of manure and leaf-mould and a sprinkling of soot as the work of replanting proceeds. On no account let the planting be continued in wet weather. In some cases the natural soil is so thin and stony that it is necessary to add rich loam and perhaps a little clay. On the contrary, very heavy soil may be much improved by the addition of leaf-mould and road-scrappings. When the replanting is finished, see that all the plants are properly and accurately labelled with labels that are likely to last in good condition for some time to come.

Calceolaria.—If the plants are in cold frames remove the lights on every fine day.

Cyclamen Coum.—The deep crimson flowers and dark foliage of this species are now peeping through the soil. We find it a good practice to place a little fine soil, with a small quantity of soot and artificial manure, over the roots. Similar treatment may be afforded *C. ibericum Atkinsii*, which flowers from February to April; and *Anemone blanda*.



FIG. 34.—IRIS RETICULATA VAR. HISTRIO: FLOWERS BRIGHT BLUE BLOTCHED WITH GOLDEN-YELLOW.

(See p. 53.)

gather the fruits. The canes should be tied at about 9 inches apart on the wires. When this has been done, clean thoroughly all weeds from the soil, and afterwards apply a mulching of farmyard manure. Raspberries being surface-rooting plants, the spade must not be used to dig between the rows, but if the surface appears hard it may be carefully picked up by means of a fork. Any planting which may have been postponed on account of the weather should be completed as soon as possible. If any new plantations have been made this season, the canes should be cut down to within 12 inches of the ground directly they commence to grow. The best red-fruited varieties are Superlative, Hornet, and Baumforth's Seedling. The best yellow-fruited varieties are Queen of England, The Guinea, and Yellow Antwerp.

Autumn-fruited Raspberries.—The autumn-fruited varieties are worthy of cultivation, provided this fruit is appreciated for dessert. Two excellent varieties are Belle de Fontenay and the newer one, November Abundance. The

ance. Afterwards take up the rest of the plants at one end and lay them in carefully and promptly. These plants will be needed to complete the planting when the remaining part of the border is done. The next operation is to take out a trench three spits deep and wheel the soil some distance away. The work of trenching may then proceed. Borders differ greatly in width, but a first-class border should be 8 to 12 yards wide and 100 yards in length. Many of the plants which grow outwards from the centre, as, for instance, the perennial Phlox and Michaelmas Daisy, will be found to have their centres in a very weak condition. The centres of such plants should not be planted again. A clump should be formed from crowns or pieces on the outside of the old clumps. It is not wise to plant large batches of any one kind of plant, excepting bulbs, as this would lead to there being large spaces without flowers at certain periods. Dwarf annuals may be planted or sown over ground containing such bulbs as Narcissus, and small bulbs can often be planted near to

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Propagation.—The propagating house should be thoroughly cleansed in readiness for raising and increasing the stocks of various plants. Seeds of such kinds as Begonia, Gloxinia, Streptocarpus and Coleus may now be sown. The cultural details connected with seed-sowing have been so often related in these pages that I will content myself with pointing out the need for observing the following points. Use clean pots and pans, and soil which is sufficiently moist at the time of sowing the seeds that it will not want water immediately afterwards. In handling the finest seeds extra care must be exercised. The present is a suitable time for inserting cuttings of such trailing plants as *Oplismenus Burmannii variegata* (*Panicum variegatum*), *Zebrina* (*Tradescantia*) *pendula*, and *Fittonia*. It will be necessary to insert further batches from time to time as young stocks of such subjects are more decorative than older plants, which, after use in the dwelling-house, are seldom of any further use for decoration. *Cordylines* (*Dracenas*) may either be propagated from cuttings, root-eyes, or by "ringing," according to the size of the plants required. "Ringing" is a good method for propagating *Codiaeums* (*Crotons*), and plants raised thus have generally longer and better leaves at their base than those raised from cuttings. Old plants of *Pandanus Veitchii variegata* usually have some well-coloured shoots at their base, and if these are taken off and inserted in sandy soil they are capable of making very handsome plants.

Euphorbia (Poinsettia) pulcherrima.—As these highly-decorative plants pass from the flowering stage they should be removed to a cooler house and rested by withholding water from the roots.

Mignonette.—A further sowing may now be made in firm soil. Very careful watering will be required when the seedlings appear upon the soil; they must not be subjected to much fire heat. Plants now showing flower need frequent applications of weak manure water.

Lachenalia.—*Lachenalias* may be given liquid manure. They should be kept as close to the roof glass as is possible without the tops being brought into actual contact with it.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY, JANUARY 23—
Ann. Dinner Soc. Franc. d'Hort. de Londres, at Café Royal, Regent Street, W.

TUESDAY, JANUARY 26—
Roy. Hort. Soc. Coms. meet. (Competitive Classes for Seakale, Rhubarb, Asparagus, Forced Vegetables and Salads. Lecture at 3 p.m. by Mr. W. D. Scott-Moncrieff, on "A Method of using Domestic Sewage in Horticulture".)

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—39.4°.

ACTUAL TEMPERATURES:—
LONDON.—Wednesday, January 20 (6 P.M.): Max. 42°; Min. 29°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, January 21 (10 A.M.): Bar. 30.4; Temp. 44°; Weather—Overcast.

PROVINCES.—Wednesday, January 20 (6 P.M.): Max. 47° Mayo; Min. 36° Durham.

SALES FOR THE ENSUING WEEK.

MONDAY AND TUESDAY—
Herbaceous and Border Plants, Lilioms, Bulbs, Azaleas, &c., at 12; Roses and Fruit Trees at 1.30, by Protheroe & Morris, at 67 and 68, Cheapside, E.C.

WEDNESDAY—
Thousands of Gladiolus, Begonias, Tuberoses, &c., at 11.30; Herbaceous Plants, Perennials, Lilies, Bulbs, &c., at 12; 982 cases Japanese Lilioms at 1; Roses and Fruit Trees at 1.30; Azaleas, Palms, Plants, &c., at 5, at 67 and 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY, THURSDAY AND FRIDAY—
Important Sale of Nursery Stock at the Nurseries, South Woodford, by order of Mr. John Fraser, by Protheroe & Morris, at 11.

FRIDAY—
Imported and Established Orchids, in variety, at 12.45, by Protheroe & Morris, at 67 and 68, Cheapside, E.C.

National Afforestation.

The advocates of the systematic afforestation of these islands will be encouraged by the second Report which has just been issued as a Blue Book by the Royal Commission on Coast Erosion and Afforestation. It will be remembered that the Commission has already issued one Report, but, inasmuch as in March last, its terms of reference were extended to include an enquiry as to whether the evil of unemployment might be relieved by the afforestation of suitable areas, the Commission in its present Report deals not only with land which may be reclaimed from the foreshore, but with the available land in all parts of these islands. Under its extended terms of reference the Commission, presided over by Mr. Ivor C. Guest, M.P., has held fifty sittings and has heard evidence from eighty witnesses.

The scheme is a bold one; indeed, it is not too much to say that its proposals for afforestation are the boldest ever put forward by a

properly constituted authority in this country. It is to be hoped that in its comprehensiveness it will not frighten men brought up in the atmosphere of compromise and accustomed to be satisfied with half measures.

Those who have had this experience will, at all events, welcome the scheme, not necessarily accepting it in all its details, but as serving as a basis for discussion. It is more than probable that legislation will not proceed on the exact lines now laid down, nor to the full extent the Commission recommend. At the same time it cannot be recognised too soon that one of the most essential conditions necessary for making British forestry a permanent means of increasing the national resources is that the industry shall be started on so broad a basis, and with such financial security as is only possible under the direct management of the State. It is perfectly conceivable, and the Commission have satisfied themselves on this matter, that, where spasmodic and local attempts have failed to make timber cultivation a remunerative industry, a general scheme, far-reaching and national in character, would succeed. In succeeding it would not merely provide a means of employment for able-bodied men, but would supplement the failing supplies of timber, and yield, in course of time, a substantial profit to the national Exchequer.

The essential Recommendations of the Commission are (1) that afforestation is desirable; (2) that the approximate area of suitable land in the United Kingdom, without material encroachment upon agricultural land, is 9,000,000 acres; (3) that 150,000 acres shall be planted each year; (4) that, to finance the scheme, an approximate sum of £2,000,000 will be required annually.

The expenses of afforesting, at the rate of 150,000 acres a year, are estimated to rise from £90,000 in the first to £3,131,000 in the fortieth year. After forty years it is expected that the forests will begin to be self-supporting. From the fortieth to the sixtieth year this stage would continue; from the sixtieth year the profit would progressively increase, until at the eightieth year the approximate equalised revenue would be about £17,000,000 a year, and the value of the forests would be £562,000,000 or £106,000,000 over and above the entire cost of their creation. A forest of 9,000,000 acres, in which the trees represent the various series of age-classes, may be expected to yield 9,000,000 loads of timber annually in perpetuity. Now, the importation of foreign timber from temperate climates, such as our own, into the United Kingdom in the year 1907, exceeded 8,500,000 loads, which is approximately the quantity which could be expected annually from the proposed scheme of afforestation. At the end of sixty years, when the whole of the 9,000,000 acres have been planted, it is estimated that the industry will keep, at the least, 90,000 men permanently employed. It should be remembered that the work of planting might be carried out with less or more rapidity according to the state of the labour market. Whilst the maintenance of the forests would give employment to a large number of unskilled men, the greater call for labour would be made in the forming of new forests. It is a satisfactory feature of forestry opera-

tions that much of the work can be done in the winter season, when the evil of unemployment is most acutely felt.

Much has been written on the questions of transporting, housing, and feeding the workmen, and the alleged difficulties have been urged as serious obstacles to the scheme, but surely there is no basis for such fears! The railway and water companies, and even private landowners, have occasionally to transport hundreds of men to remote mountain districts, far removed from road and rail, and maintain them whilst work is in progress. It can scarcely be doubted that the State would be able to deal effectively with such problems. The one essential thing to do is to get the men on to the land; means of subsistence would be devised easily enough. By drafting unemployed men into the country, where remunerative work abounds, much good, both in an economic and hygienic sense, would be brought about. Nor can tree-planting by means of unemployed men be considered a new departure, for, on a dreary, exposed hillside in Wales, as well as in various parts of England, the whole of the work, including clearing the ground of surface growth, pitting, and planting, has been carried out by drafts from the unemployed. Afforestation offers the most promising means of dealing in a scientific and permanent manner with the question of unemployment. It is also calculated to increase the value of the land, in some cases sevenfold, and it would provide an ever-increasing revenue for the State.

But this is not all, for, apart from the question of immediate labour, what industries would be opened up in years to come by the planting of waste grounds. At present there would be clearing, draining, fencing, and planting. Thinning would commence at about the tenth year, after which the erection of saw-mills for converting the timber would open a vast industry. A woodpulp industry would be almost certain to follow, and, when a sufficiency of Spruce timber became available, a great paper-manufacturing industry would arise. Spruce is more valuable now than Scotch Fir, because almost all the paper of the world is made from Spruce wood. The produce of about 5,000 acres would be required to keep each pulp-mill going, and the Spruce for this purpose would be felled at the age of thirty years. In the little kingdom of Saxony no fewer than 4,000 factories, employing 60,000 people, have been brought into existence by the development of woodpulp, paper, and other manufacturing industries in connection with her well-managed and highly-profitable forests.

With respect to the most desirable places in which to begin planting operations, we would suggest those counties where not only the greatest area of waste lands exist, but where other advantages are offered, especially in the matter of cheap land purchase and easy removal of the produce. Thus we have—in England—Yorkshire and Northumberland with 1,019,925 acres; in Scotland, Inverness and Argyllshire with 3,087,412 acres; in Wales, Breconshire and Merionethshire with 461,320 acres; and Ireland, Donegal and Kerry with 657,337 acres, exclusive of 172,436 acres of bog land.

It has been urged that tree-planting requires skilled labour, and that, consequently,

the unemployed are unsuited for it. But, as we have already pointed out, the preliminary work, indeed every operation, if we except the process of planting the trees, is such as can be carried out by any ordinary workmen under proper supervision.

Some of our readers may think that the Report of the Commission is of too sweeping a character. It will be remembered that a less ambitious scheme was urged in these pages (*Gard. Chron.*, Dec. 15, 1906, p. 401, and June 22, 1907, p. 409) by Mr. A. D. Webster in a series of articles on afforesting waste lands. He recommended the planting up of 1,000,000 acres, spreading this work over a period of 25 years, at the rate of 40,000 acres each year, and at a cost of £300,000 annually.

But public opinion, though of slow growth, matures quickly, and it may well be that the larger scheme will fire the enthusiasm of the people, and in spite of its ambitious character, or perhaps because of it, get itself adopted. If this proves the case Mr. Webster will be remembered as one of the pioneers of afforestation whose work in paving the way for the larger scheme actively contributed to its adoption.

We are perfectly satisfied that afforestation is needed for meeting the future demand for timber, that it is desirable as a means of keeping a considerable number of men upon the land, and that if it is carried out in a properly devised scheme under Government control it will eventually yield a profit to the Exchequer. For these reasons, and for the further reason that the establishment of a State system of forestry would permanently lessen the misery caused by unemployment in the winter season, we hope the Report will lead to prompt legislation.

OUR SUPPLEMENTARY ILLUSTRATION represents a hybrid flower raised by Mr. C. G. VAN TUBERGEN, Jun., Haarlem, from a cross between *Brunsvigia Josephinæ* and *Amaryllis Belladonna*. Mr. VAN TUBERGEN thus describes the circumstances:—"Principally with a view of ascertaining the parentage of the Kew variety of *Amaryllis Belladonna* (see illustration in the *Garden*, November 19, 1898, also notes in *Gardeners' Chronicle*, February 9, 1901, &c.), in the autumn of 1892 I artificially impregnated *Brunsvigia Josephinæ* with pollen of *Amaryllis Belladonna*. Seeds formed freely, as the two genera, *Brunsvigia* and *Amaryllis*, are very nearly related. As could be foreseen, with the slow-growing *Brunsvigia Josephinæ* as the female parent, a long time had to elapse before the seedling plants would be strong enough to reach flowering size. After 16 years of patient waiting, two of the strongest bulbs produced flower-spikes in September of last year. When the hybrid plants had been growing for a few seasons it became evident that they differed in habit from the Kew variety of *Amaryllis Belladonna*, which produces a leaf-stem of about 4 inches high, whereas my hybrids all bear the character of *Brunsvigia Josephinæ* in the foliage, leaves being formed directly above the neck of the bulbs. The infusion of the *Belladonna* blood is clearly shown in the bulbs, as these resemble those of the *Belladonna* and produce offsets freely, whilst *Brunsvigia* never produces offsets. A comparison of the Supplementary Illustration, which was drawn by Mr. WORTHINGTON SMITH from an inflorescence sent from my garden, with the engraving in the *Garden* above cited, leads to the conclusion that the Kew plant can no

longer be regarded as a hybrid between these species, unless it was a cross effected in the reverse way, taking *Amaryllis Belladonna* as the female parent. In that case the variety *Clanda* must have been used, it being the only variety of *A. Belladonna* known which produces a leaf-stem. The colour of the flowers of my hybrid was a clear, deep rose, suffused with carmine. A single spike produced 22 flowers.

FLOWER SHOWS AT THE ROYAL AGRICULTURAL SOCIETY'S EXHIBITIONS.—The flower shows held in connection with the exhibitions of the Royal Agricultural Society at Lincoln and Newcastle having proved successful, it has been decided to hold a similar horticultural exhibition at Gloucester on the occasion of the Agricultural Show in June next. The Royal Horticultural Society has promised its support, and will probably send a deputation. Mr. PETER BLAIR has been provisionally engaged as manager of the show. It is estimated that the cost will be £300, and should the venture result in a financial loss, half the deficit will be met by a local fund and the other half will be guaranteed by the Royal Agricultural Society.

"KEW BULLETIN."—The current number of the *Kew Bulletin* contains an interesting account of the successful attempt to naturalise *Rhamnus Purshiana*, D.C., the tree the bark of which yields the drug known to pharmacy as *Cascara sagrada*. *R. Purshiana*, now growing in the gardens at Kew, was raised from seed sent by Mr. F. R. S. BALFOUR from Washington. It has proved itself hardy, and, according to the investigations carried on by Dr. JOWETT at the Wellcome Research Laboratories, London, the cascara yielded by the Kew plants is indistinguishable in its action from that made from American bark. Hence, it would seem possible that, as Mr. F. R. S. BALFOUR originally suggested, an industry might be established for the growth of *Rhamnus Purshiana* in this country.

AGRICULTURAL CO-OPERATION.—The *Estate Magazine* for January, 1909, opens with a very optimistic article on co-operation and its beneficial effects on agriculture. According to the writer the Agricultural Organisation Society now numbers some 200 provincial associations, and will show a record of trade done during 1908 of about £850,000. The advance made by the cognate co-operative society, the County Gentleman's Association, has also been considerable, the trading account having grown from £8,000 in 1903 to £60,000 during the past year. Encouraging as these results are they show how much remains to be done before the practice of co-operation among the agriculturists of this country becomes as firmly established as is the case in different parts of the Continent.

ABERDEEN AND NORTH OF SCOTLAND COLLEGE OF AGRICULTURE.—Dr. JAMES W. H. TRAIL, Professor of Botany in Aberdeen University, has inaugurated a course of lectures for young farmers, under the auspices of this college. Hitherto these courses have been remarkably successful, students attending from all parts of the north of Scotland. Up to the present year lectures have been given in agriculture, agricultural chemistry, veterinary hygiene, and agricultural botany. This year a fifth subject—agricultural zoology—has been added. The opening lecture was delivered by Professor TRAIL in the botany classroom, Aberdeen University. There was a satisfactory attendance, students being present from Aberdeenshire, Kincardineshire, Banffshire, Elginshire, Nairnshire, Invernesshire, Ross, and Cromarty and Caithness-shire.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, February 8, at 8 o'clock p.m., when a paper will be read by Colonel Sir DUNCAN ALEXANDER JOHNSTON, K.C.M.G., C.B. (late R.E.), late Director-General of the Ordnance Survey, entitled "The Ordnance Survey." The annual dinner will be held at the Whitehall Rooms, Hotel Métropole, on Tuesday, February 16, at 6.30 p.m. The Council have decided that after the election of members in October, 1913, no examination candidate shall be eligible for election as a professional associate unless he has passed both the intermediate and final examinations of the institution. As a consequence of this change, after the present year, candidates for the intermediate examination will be allowed to sit at the age of 19, and for the final examination on completing their 21st year.

THE RAINFALL IN 1908.—An adequate supply of water is of such great importance to gardeners that, however much other folk may grumble at wet weather, our complaint is when the amount of moisture in the ground falls below an average quantity. Several correspondents have sent us their meteorological records for last year:—Mr. H. WILSON, The Gardens, Cole Orton Hall, Ashby-de-la-Zouch, informs us that the rainfall for 1908 has been less than in 1907, for only 23.38 inches fell in 1908, compared with 28.53 in 1907. Mr. WILSON states that the past season has been an excellent one for all garden crops, with the exception of Gooseberries. Rain fell on 180 days at Cole Orton Hall Gardens. At Leonardslee Gardens, Horsham, Sussex, Mr. COOK, the gardener, informs us that 28.78 inches of rain fell during 1908. Rain fell on 179 days. The first half of the year was the drier, which is unusual. The total rainfall for 1907 in these gardens was 25.94 inches. Mr. JAMES B. ALLAN, writing from Osberton Gardens, Worksop, states that the hottest day in those gardens during 1908 was July 2, when the thermometer registered 86° in the shade; the most severe frost was on the morning of December 29, when there were 24°. The heaviest rainfall was on August 20, when .68 of an inch was recorded in 24 hours. The rainfall in these gardens for the year amounted to 20.19 inches, being .99 of an inch less than in 1907. At Shugborough Gardens, Stafford, the rainfall for the past year was 31.98 inches. August was the wettest month, but the heaviest rainfall occurred on April 28, when .94 inch of rain fell. The year's rainfall at Davenham Gardens, Malvern, has amounted to 23.81 inches. March and April were the wettest months, the fall being 3.15 inches and 3.17 inches respectively. January was very dry at Davenham. In connection with the note by E. M. (page 32), a correspondent states that the rainfall in the extreme north-west corner of Middlesex was .53 inch above the average of the past 20 years. The increase was principally in March, April and July.

BIG GAME AS GARDEN PESTS.—The practice of horticulture in some parts of the Empire is attended with difficulties with which the cultivator at home is happily unfamiliar. Thus, according to a recent number of the *Agricultural Bulletin of the Straits and Federated Malay States*, beside the universal fungal and insect pests, bears are so destructive of the Cocosnut trees as to merit a price of £20 per head. Wild pigs, again, as the reporter regretfully states, do considerable mischief. But by far the most paying animal to destroy in quantity is the white ant. For the wholesale and complete destruction of this pest throughout the peninsula a prize of £5,000 is offered. To consider the ways of the ant has always been recommended as profitable, though surely it can be nowhere quite so remunerative as in the Malay States.

YEAR BOOKS AND ANNUALS FOR 1909.—Almost indispensable to the gardener, nurseryman, seedsman, and, indeed, to all business men in any way connected with horticulture are several of the following well-known publications:—

The Horticultural Directory and Year Book is issued for the 50th time this year. It contains, as heretofore, a list of the principal gardening establishments in the counties, a second list in which the names are arranged alphabetically, and the county and nearest railway station indicated. Then follows a list of head gardeners in the United Kingdom, also arranged alphabetically. There are lists of London and provincial nurserymen, landscape gardeners, horticultural builders, engineers, implement makers and sundriesmen, and of the principal nurserymen, seedsmen and florists on the Continent, in the United States of America, in Canada, and in Australasia. The parks, gardens, and open spaces under the charge of H.M. Office of Works and of the London County Council are indicated, and the date of acquisition is given with enumeration of the acreage. Lists of the principal horticultural societies in the United Kingdom and of the botanic gardens in the British Empire and a list of the principal

farmer. The following are among the subjects dealt with: Breeds of Poultry, Scheduled Insects and Pests, Cleveland Bays and Yorkshire Coach Horses, Clydesdale Horses, Care of the Foal, Flock Management and Lambing Difficulties, Profitable Cattle Farming, Useful Live Stock Medicines for Emergencies, Summary of Live Stock Sales for 1908, Small Holdings Legislation, and the Law of Agricultural Holdings, &c. The authors state in the preface that the legislation of the past few years has made drastic changes in the relationship of landlord and tenant. It gives the tenant greater freedom, but it also entails upon him added responsibilities. In the *Farm and Home Year-Book for 1909* he will find them set forth clearly, in a treatise written by a barrister who has given agricultural questions special attention. Also the Small Holdings Act embodies legislation, with the provisions of which all connected with agriculture should familiarise themselves.

Vinton's Agricultural Almanack and Diary 1909.—Beside the usual information looked for in an almanack we find a great many items of special interest to the farmer, for example, on cattle breeding, standards of feeding oxen, growing and fattening, cows in milk, sheep growing and feeding, horses at work, pigs grow-

us a diary and blotting-pad. There is a calendar for the whole year, which provides a space of nearly 3 inches square for each day in which notes may be entered. These pages are interleaved with blotters.

The Gardening Year-Book and Garden Oracle.—This compendium of gardening information is issued for the 51st year. The editor is Mr. GEORGE GORDON, a sufficient guarantor of its value to the gardener. A calendar serves as a reminder of the principal horticultural events during 1909, and to each day is appended a short note for some seasonable horticultural operation. Under each month are given directions for important work in the various departments of the garden. This is followed by a list of the new garden plants of 1908, several of which are illustrated from photographs. There are chapters on bulbous and tuberous-rooted plants, early-flowering Chrysanthemums, the propagation of plants by seeds, cuttings, and other methods, Roses for garden decoration, plants for conservatory and greenhouse decoration, hints on the culture of useful vegetables, fungoid diseases and insect pests affecting garden plants, and a list of useful garden receipts. Not the least valuable part of the book is the list of horticultural and botanical societies in the United Kingdom, with the names and addresses of their respective secretaries. In this connection it should be noted that the London Dahlia Union has now amalgamated with the National Dahlia Society, and does not exist as a separate organisation. Although the information relating to public parks and gardens is the most complete of its kind, we observe several notable omissions; it is but fair to add that it is stated "there are many towns in the United Kingdom possessing parks of which particulars have not been received." The work contains coloured plates of spring-flowering Crocuses and fancy Pansies.



(Photograph by H. F. Macmillan.)

FIG. 35.—PARA-RUBBER PLANTS IN PREPARATION FOR SHIPMENT FROM CEYLON TO SOUTH AMERICA.

fruit and flower salesmen and commission agents in London are given, together with a number of valuable recipes and tables connected with gardening. The new plants certificated in 1908 are enumerated and short descriptions given.

The Garden Annual and Almanack.—This work contains thousands of names and addresses, alphabetically arranged, of country seats, of the principal parks and gardens in Great Britain and Ireland, and of the names of the head gardeners employed, with corrections up to near the end of 1908. We find also a list of the chief horticultural societies, and a lengthy list of new plants, fruits and vegetables which have been certificated during the past year by the Royal Horticultural and other societies. There are likewise an almanack and a page of reminders of seasonable work for each month; a list of nurserymen, seedsmen and florists at home and abroad, and a mass of other matter in regard to trades having a connection with gardening.

Farm and Home Year-Book.—This annual publication is issued from the office of *Gardening Illustrated*. The book is designed to afford memoranda and hints of service to the

ing and fattening, periods of gestation of domestic animals, and of incubation of poultry, average prices of grain from 1886 to 1907. The tables of composition, manurial and compensation values of feeding stuffs are most useful, and other statistical tables make interesting reading for the agricultural world. The book is provided with a diary for the year, printed on good paper, showing a week at an opening on two pages, with plenty of space for memoranda.

Webster's Foresters' Diary and Pocket Book.—This is an invaluable Annual for all interested in forestry. It contains a list of the principal foresters and assistant foresters, forestry associations, trees suitable for various soils, methods of planting, prices of home-grown timber, a calendar of forestry work for the year, excellent articles on the afforesting of waste lands and the education of foresters, innumerable details connected with the planting of trees, measurement of timber, and other matters of importance. There are a few misprints, but these do not seriously detract from the value of Mr. WEBSTER'S book.

A Diary and Blotter.—MESSRS. JOSEPH BENTLEY, LTD., manufacturing chemists, Hull, send

TRANSPORTING PARA-RUBBER PLANTS.—In connection with the Ceylon rubber industry, which formed the subject of our leader last week, we reproduce a photograph in fig. 35 of a consignment of Para-rubber plants (*Hevea braziliensis*) established in Wardian cases for shipment from Ceylon to tropical South America. The journey by sea and land, via London, covers a distance of 12,000 miles at the least. In 1876 the first plants of this Brazilian tree were introduced into the Eastern tropics, through the agency of the Botanic Gardens of Kew and Ceylon, by means of the same kind of case as is shown in the photograph. In Ceylon the plants grew rapidly, and from these have originated millions of trees, now cultivated throughout Ceylon, Malaya, Mauritius, Africa, etc., for the production of rubber. Tropical America, the native habitat of the tree, is now following this example by cultivating this valuable tree, instead of depending, as hitherto, upon the rubber collected from trees scattered in the native forests. So difficult is it, however, to procure plants, especially reliable plants, to form plantations, that it is found necessary to import them from Ceylon.

NATIONAL AFFORESTATION.—In connection with the Report of the Royal Commission on this question, it is interesting to recall the fact that in an article published in these pages December 15, 1906 (p. 402), Mr. A. D. WEBSTER stated that he had "carefully computed that of the land up to 1,200 feet where timber would grow perfectly well, about 9,000,000 acres are available for afforesting purposes." This is the exact area now stated by the Royal Commission as being suitable for the purposes of afforestation.

JUBILEE FLOWER SHOW AT HAARLEM IN 1910.—The opening date for this show is now definitely fixed for March 23, 1910. Consequently, it will be open before Easter and remain open until after Whitsuntide (May 15). The show will be divided into a permanent exhibition in the open and three temporary shows in buildings. The co-operation has been obtained of Boskoop, Aalsmeer and other important horticultural centres. The show is expected to give a good idea of Dutch commercial horticulture. The first temporary show is to be held at Easter time, the second about mid-April during the flowering season of the bulb fields, and the third in the first days of May. Queen Wilhelmina and the Queen-mother are patrons of the society, which will hold this show to celebrate its half-centenary. The exhibition will be held under the patronage of Prince Henry of the Netherlands.

THE "NEW PHYTOLOGIST."—With the beginning of the present year, the *New Phytologist*, a British Botanical Journal, which, during its seven years of existence, has done valuable service to the cause of British botany, is to be enlarged and the price increased to 15s. per annum. The editor promises that notices of current botanical work shall be a prominent feature of the enlarged periodical. To all interested in the progress of botanical science this will be welcome news. The occasional reviews which have been published from time to time in the pages of the *New Phytologist* have been among the most valuable of its articles. We both think and hope that the greater prominence which is to be given to reviews of botanical work in general will secure for the *New Phytologist* an even larger sphere of influence than that which it has enjoyed hitherto. When we remember the very considerable number of botanical periodicals published in Germany, we cannot feel unduly proud of the fact that this country can only keep going some three or four. We congratulate the Cambridge Botany School on its decision to lend support to the editor of the *New Phytologist* in his enterprise.

A NEW SYSTEM OF MUSHROOM CULTURE.—It was discovered some few years ago that minute pieces of tissue from the centre of a Mushroom, if planted in a suitable bed, were capable of giving rise to mycelium and, therefore, of producing fresh spawn. Messrs. SUTTON & SON, Reading, utilise this method in the production of the virgin spawn, which they offer under the name of "Twentieth Century." We are indebted to Mr. ARTHUR W. SUTTON for the following account of the methods employed in the preparation of spawn:—"The old style of procuring virgin Mushroom spawn may be briefly described as follows: Experienced men searched old manure or compost heaps and pasture lands for the mycelium of the Mushroom, which is produced naturally in such places. This they sold to growers of the commercial spawn, who placed it in beds and allowed it to run through the material forming them. The 'stock' spawn thus obtained was in due course used to impregnate the compost, which, in the form of 'bricks,' is the medium through which the spawn is passed on to the market grower or amateur. This method was more or less unsatisfactory, since the mycelium of species other than the common Mushroom (*Agaricus campestris*) appears to have been occasionally mistaken for it, to the great disappointment of and loss to the grower. In 1897 a process was discovered of producing virgin Mushroom spawn by artificially germinating the spores, and the mycelium thus produced was sold in test-tubes by the manufacturers. The practice of propagation by spores

was, of course, a great step forward, and growers could for the first time be fairly certain that the spawn they purchased would produce the variety of Mushroom they wished for. However, even this system had its drawbacks, and it was hoped that a better one might be discovered. With this idea careful experiments were carried out, but it was not till some years later that the process by which our '20th Century' Mushroom spawn is now manufactured was put into practice. This method is known as 'tissue culture,' and originated in the discovery that mycelium could be produced from a portion of the Mushroom itself. The possibility of this, as the name of the method implies, is the underlying principle of the new culture. The process involves careful work in the laboratory, where all vessels used have to be sterilised, and dust and draught rigorously excluded. The manure employed has to be produced under special conditions and very carefully prepared, cleanliness being of the utmost importance. It is claimed for this process that not only can growers be quite certain that the spawn they purchase is true to name, but also that the improvement of varieties by selection is for the first time made possible, and it is a fact that the yield has already been largely increased. From a practical point of view there can be little doubt that the 'tissue culture' is an advance on propagation by 'spore germination,' which itself is an enormous improvement on the haphazard methods of ten or fifteen years ago."

PUBLICATIONS RECEIVED.—*Annual Report of the Bureau of Industries for the Province of Ontario, 1907.* Part I. Agricultural Statistics. Part II. Chattel Mortgages. (Toronto: Published by the Ontario Department of Agriculture.)—*Crops and Live Stock of Ontario, 1908.* Crop Bulletin No. 99. (Toronto: Ontario Department of Agriculture.)—*The Agricultural Journal of the Cape of Good Hope.* December, 1908. (Cape Town: Cape Times Limited.) Price 6d.—*The Philippine Agricultural Review.* September, 1908, Vol. 1., No. 9. (Manila: Bureau of Agriculture.)—*The Queensland Agricultural Journal.* December, 1908. (Brisbane: Department of Agriculture and Stock.)—*Mitteilungen der Deutschen Dendrologischen Gesellschaft, 1908.* (Bonn-Poppelsdorf: L. Beissner.)—*Reports on the Botanic Station, Agricultural School, and Experiment Plots, St. Lucia, 1907-8.* (Barbados: Imperial Commissioner of Agriculture for the West Indies.) Price 3d.—*Millions and Mosquitos.* (West Indies: Acting Commissioner of Agriculture.) Price 3d.—*Onions and their Culture,* by A. R. Serle. (Leamington: Rogers & Co., Ltd.) Price 3d.—*School Gardening,* by W. Francis Rankine. (London: Sir Isaac Pitman & Sons, Ltd.) Price 1s.—*List of Seeds collected during the year 1908 in the Garden at La Mortala, Ventimiglia, Italy.*—*Santa Barbara Parks.* Report of the Park Superintendent.—*Cornell University Agricultural Experimental Station of the College of Agriculture.* 1, Insect Pests and Plant Diseases; 2, Bovine Tuberculosis; 3, Comparison of Four Methods of Feeding Early-hatched Pullets; 4, The Black-Rot of the Grape, and its Control; 5, Drainage in New York; 6, Bean Anthracnose; 7, Street Trees, their care and preservation; 8, Defects in American Cheddar Cheese; 9, The Moulting of Fowls.—*Kew Bulletin, No. 10, 1908.* Containing Cascara sagrada, Diagnoses Africanæ; XXVI., The Nelson District of New Zealand, Decades Kewensis; LI., and Miscellaneous Notes. (London: Wyman & Sons) Price 5d.—*Raphael's Almanac;* or, The Prophetic Messenger and Weather Guide for 1909. (London: W. Foulsham & Co., 4, Pilgrim Street, Ludgate Hill) Price 6d.—*Bulletin of the Cornell University* (November, 1908), The Pæony. By J. Eliot Coit, (Ithaca, N.Y.: Published by the University.)—*A Critical Revision of the Genus Eucalyptus.* Part X. By J. H. Maiden. (Sydney: William Applegate Gullick, Government Printer.) Price 2s. 6d.—*Common Diseases and Pests of Fruit Trees, etc., and their Remedies.* George Bunyard & Co., Maidstone, Kent.—*The Journal of the Board of Agriculture* (January). (London: R. Clay & Sons, Ltd., 7 and 8, Bread Street Hill, Queen Victoria Street, E.C.) Price 4d.

EXPERIMENTS ON THE VALUE OF NITRO-BACTERINE.

In the spring of this year a culture material known as "Nitro-bacterine," for introducing into the soil those valuable bacteria which form nodules on the roots of leguminous plants was largely advertised. Its value and efficiency, at least with garden crops, have now been scientifically tested in a number of cases with almost uniformly unfavourable results. I would refer to the very complete series of experiments carried out on the inoculation of Peas with "Nitro-bacterine" by Mr. F. J. Chittenden, F.L.S., at the Royal Horticultural Society's gardens at Wisley (*J.R.H.S.*, vol. 34, part II., November, 1908). The following sentences occur in his summary:—"There was under no soil treatment a consistent increase in the crop due to inoculation. The uninoculated seed gave a crop 14 per cent. heavier than the inoculated in the aggregate. It is concluded that the inoculation of leguminous crops with 'Nitro-bacterine' in ordinary garden soil is not likely to prove beneficial." Dr. Voelcker also has given the material a trial at the Royal Agricultural Society's farm at Woburn, with results in no wise favourable to "Nitro-bacterine," and there is a mass of private testimony to the same effect.

In these circumstances, it will perhaps be of interest if I briefly record the results of an experiment on the inoculation of Peas and Beans with "Nitro-bacterine" at the S.-E. Agricultural College, Wye, Kent, which add further confirmation to these conclusions.

The varieties of Peas employed were Carter's "Eight Weeks," "Early Morn," and "Yorkshire Hero." Two sets of trials were carried out (1) on very poor soil just above the chalk, and merely dug over before sowing; (2) on well-manured, trenched ground intended for vegetable culture. Four rows of each variety—each row 21 feet long—were planted, and in each case a row sown with inoculated seed alternated with a row sown with untreated seed. The preparation of the culture material and the inoculation of the seed were performed precisely according to the instructions given and, in all details, inoculated and uninoculated rows were treated in an identical manner.

The following table gives the results, showing the total weight of pods obtained from each pair of rows, expressed in grams.

SOIL MANURED AND TRENCHED,

Variety.	Seed not Inoculated.	Seed Inoculated.
	Grams.	Grams.
Early Morn... ..	9,889	8,010
Yorkshire Hero	14,700	14,295
Broad Beans	13,142	12,091

POOR SOIL UNMANURED,

Variety.	Seed not Inoculated.	Seed Inoculated.
	Grams.	Grams.
Eight Weeks*	6,126	6,490
Early Morn... ..	5,694	5,291
Yorkshire Hero	11,760	11,097
Broad Beans	10,427	9,098

The "Eight Weeks" Peas on the good soil were somewhat damaged by pigeons, and the crop was not weighed. It will be seen that the produce from the inoculated rows in every case but one* weighed less than that from the corresponding uninoculated rows. Throughout the growth of the plants no difference between treated and untreated rows was distinguishable; both lots formed nodules on their roots to about the same extent, and the untreated rows came to maturity quite as soon as the others. There was no evidence of any kind to show that the slightest benefit had been obtained by the use of "Nitro-bacterine" on either type of soil.

The experiment was on a small scale, but so far as it goes, is conclusive, and serves to confirm many results obtained with "Nitrobacterine" this summer. Further trials on a larger scale on a "seeds" mixture are in progress on the College farm. *C. T. Gimmingham, Bacteriologist to the S.-E. Agricultural College, Wye, Kent.*

THE ROSARY.

NOTES ON VARIETIES.

CLOTHILDE SOUPERT (*Souper et Notting, 1890*).—Another very large flower for a Pompon, of the most delicately beautiful colour—the outer petals being pearly-white and the centre an exquisite rosy shade. It is a very full flower with pleasing foliage and succeeds best in a dry season. It is to be strongly recommended for planting.

MOSELLA (*Lambert & Reiter, 1896*).—A strong grower, often classed as a Hybrid-Polyantha Rose. The flowers are quite large and almost Camellia-shaped. The colour is white on a clear yellow ground. Although this Rose is not a favourite of mine, it is very floriferous.

GEORGE PERNET (*Pernet, 1889*).—A bright yellowish-rose, changing to peach colour. A fair-sized bloom for its class, and one that lasts well from start to finish.

MRS. W. H. CUTBUSH (*Cutbush*).—A very pretty, little, pale pink variety with flowers borne in clusters. It is of similar habit to Mme. N. Levavasseur, and is just as free as that variety.

ÄENNCHEN MÜLLER (*G. C. Schmitt, 1907*).—This pretty Rose has cherry-pink flowers with distinct, white centres. The flowers, which last fresh for a very long time, become on ageing exactly like little Cactus Dahlias. Although of very dwarf growth, the blooming is as free as with any of the Pompons. It is to be recommended as a good and pretty novelty.

AMY MÜLLER (*G. C. Schmitt, 1907*).—The large clusters of brilliant rose-coloured flowers are produced in great profusion. I have not yet secured this variety, but it is well spoken of.

ALICE CHARMION (*Dubreuil, 1907*).—Another promising new variety, having small, pale, flesh-coloured flowers pink in the bud state. The blooms are produced in large bunches.

CANARIENVOGEL (*Welter, 1904*).—The flowers are of a golden-yellow and orange colour, spotted with rose. The blooms are full and borne on erect stems. Canarienvogel has not done well with me, so I cannot recommend it.

MADAME E. A. NOLTE (*Welter, 1904*).—The colour of the flowers is a chamois-yellow, opening a lighter shade. I have only grown it this summer, but think very poorly of it.

PETIT CONSTANT (*Souper et Notting, 1904*).—A pretty little flower with rosy-carmine, reflexed, orange petals.

PRIMULA (*Souper et Notting, 1901*).—This variety has bright China rose-coloured flowers, with snow-white centres. It is most effective and pretty, but, with me, not free in flowering.

ROSALIND (*Paul & Son, 1907*).—This has bright pink flowers, but deeper coloured buds. It is said to be particularly good in the autumn, and I think it very promising.

RÖSEL DACH.—A full, bright cherry-rose coloured flower. I have only one plant which has not done well this, its first, season with me. The habit appears to be very dwarf.

AMELIE SUZANNE MORIN.—White, shaded with yellow, flowers. I do not recommend this as it is a poor thing.

ASCHENBRÜDEL (*P. Lambert, 1903*).—A fine variety, with most lovely peach-coloured flowers exceptionally freely produced in clusters of about a dozen. The growth is bushy and strong for a Pompon. The foliage is most beautiful, and the plants are grand bedders. *Leonard Petrie, Gayton, Cheltenham.*

ROYAL COMMISSION ON COAST EROSION AND AFFORESTATION.

(See also pages 56 and 58.)

THE second report of the Commission dealing with the question of afforestation has recently been issued as a Blue Book*.

To the original warrant of July, 1906, a reference, as under, was added in March, 1908:—

"To enquire and report whether, in connection with reclaimed lands or otherwise, it is desirable to make an experiment in afforestation as a means of increasing employment during periods of depression in the labour market, and, if so, by what authority and under what conditions, such experiments should be conducted."

The names of the Commissioners are as follows:—Hon. Ivor C. Guest (chairman), Sir W. H. B. folkes, Bart., Sir Leonard Lyell, Bart., Sir William Matthews, E. Stafford Howard, H. C. Monro, W. P. Beale, G. C. Frederick, John Galvin, H. Rider Haggard, Thomas J. Jehu, Arthur Levy Lever, R. Beattie Nicholson, Patrick O'Brien, William Somerville, Fraser Story, Thomas Summerbell, John Ward, A. Stanley Wilson, C. H. Grimshaw (secretary), and D. R. Daniel (assistant secretary).

The Commissioners were unanimous in their findings with the exception of A. Stanley Wilson, Esq., who is of opinion that the utilisation of unemployed labour will involve a greater cost than is anticipated; also that sporadic planting is inadvisable, and that sufficient allowances have not been made for losses by forest fires, insect pests, snowstorms, and similar troubles.

The following is a synopsis of the principal conclusions contained in the report:—

1. Afforestation is practicable and desirable.
2. Approximate available area in the United Kingdom without material encroachment upon agricultural land is 9,000,000 acres.
3. Best rotation to secure sustained timber yield requires 150,000 acres to be afforested annually.
4. Employment.

(a) *Temporary*.—Temporary employment is afforded annually to 18,000 men during the winter months. Further an almost equal number would indirectly derive employment in the incidental and subsidiary occupations connected with forestry. This figure might be increased in any year to meet exceptional pressure of unemployment.

(b) *Permanent*.—Permanent employment is afforded to one man per 100 acres afforested, rising to 90,000 men when the whole area has been dealt with.

(c) *Ultimate*.—The employment connected with subsidiary industries, i.e., conversion and manipulation, &c., of the timber crop, would afford occupation for a still larger population.

5. Any scheme of national afforestation should be on an economic basis.

6. *Labour*.—There are sufficient unemployed persons willing to submit to, and able to satisfy, ordinary labour tests, who could advantageously be employed without a period of special training.

7. *Finance*.—Afforestation represents a productive investment and should be financed by a loan. The annual sum required for the full scheme is £2,000,000. The interest on the loan should be defrayed out of taxation. The net deficit will be £90,000 in the first year, and will rise progressively to £3,131,250 in the 40th year, after which period the forest becomes more than self-supporting.

8. *Profits*.—After 80 years the net revenue from the forest, at present prices—which

promise to be materially enhanced—should be 17½ millions. This represents 3¼ per cent. on the net cost calculated at accumulated compound interest of 3 per cent. Looked at from another point of view, the State will then be in possession of property worth £562,000,000, or about £107,000,000 in excess of the total cost involved in its creation, calculated at 3 per cent. compound interest.

9. *Administration and control*.—The afforestation scheme to be entrusted to a special Board of Commissioners. In default of purchase by agreement, land to be acquired if necessary under compulsory powers.

10. *Disturbance*.—The acquisition of grazing areas for silviculture might necessitate a modification of the existing agricultural system on certain farms. There is no reason to suppose that the remaining lowland areas on such farms could not either be adapted to other forms of agriculture, or could not, in many cases, be profitably utilised for small holdings. The acquisition of grazing areas, private or common, should present no difficulty which cannot be satisfied by arbitration and reasonable compensation.

11. *Incidental*.—Afforestation creates a new industry; it does not compete with private enterprise. The conversion of comparatively unprofitable lands into forests enhances the productivity of the adjacent areas, and should promote the development of the small holdings movement. More than any other apparent remedy, afforestation will stem the tide of rural depopulation.

BOSAHAN CASTLE, CORNWALL.

BOSAHAN CASTLE, the residence of Sir Arthur P. Vivian, Bart., is situated on a point of land stretching out into the English Channel, from which fine seascapes are obtained. The mansion is a comparatively new building erected on a spot close to the site of an older but much smaller house. The new residence was erected some 24 years ago, when a large number of Conifers and other trees were planted. The situation being high and exposed, the plants suffer greatly from the effects of wind, but species of a tender nature have been disposed in dells, which are screened by tall forest trees. At the main entrance is a hedge of Fuchsia Riccartonii 12 feet in height and another of Escallonia macrantha, whilst on the south side of the castle is a very fine specimen of Cassia corymbosa 30 feet high, and covered, in late summer, with bright yellow flowers. Amongst rare and tender plants which were noticed on a south wall were Libonia floribunda, Bougainvillea, Sollya heterophylla, Tibouchina (Lasiandra) macrantha, Solanum jasminoides (with flowers in large masses), Berberidopsis in fine bloom, and, in a border close by, a fine plant of Rhododendron Nuttallii. Dracæna purpurea was also flourishing in the open, as were Fuchsias of many kinds. In a lake were masses of Richardia africana. I also noticed specimens of Phormium tenax 10 feet high and plants of Clethra arborea as tall, the latter being a mass of bloom. On another wall were noticed some fine plants of Lapageria rosea and the variety alba. I noticed trees of Benthamia fragifera 40 feet high and crowded with fruits. Bamboos flourish in this garden with the greatest freedom. Tree Ferns planted in glades under trees were in a delightful condition and appeared as though they were growing wild. Blue-flowered Hydrangeas were seen in the glades. Chanærops excelsa was growing freely and had seeded, the young plants coming up thickly under the trees. I noticed also some fine specimens of Pinus excelsa and other Conifers, some of them reaching to a great height, although planted less than 25 years ago. Mr. Cranford, the gardener and agent, entered the service of Sir Arthur Vivian when the new castle was built. He came from the extreme north of Scotland, where he was in the service of the Earl of Stair, Lady Jane Vivian's father. Visitors approach Bosahan Castle from the sea, boats being provided for that purpose. *W. A. C.*

* Second Report (on Afforestation) of the Royal Commission Appointed to enquire into and to report on Certain Questions affecting Coast Erosion, the Reclamation of Tidal Lands, and Afforestation in the United Kingdom. Printed for His Majesty's Stationery Office by Wyman & Sons, Limited, 109, Fetter Lane, E.C.

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

CHRYSANTHEMUM FRAMFIELD PINK.—May I inform Mr. R. Richards (see p. 27) respecting the colour of this Chrysanthemum, that my experience is the same as his? But, in addition to the colour being poor, the variety is shy in flowering, which makes it scarcely worth growing. This is regrettable, as the lasting properties of the flower and the stiff stems and ample foliage are good. *T. Down, Basing Park Gardens, Alton.*

FLOWERS AT ROSEHILL, FALMOUTH.—I send herewith a photograph of *Solanum Balbisii* (see fig. 36), taken on November 11 last. The plant

gans, with the exception of one month in 1908, has flowered every day for over two years. *Coleonema alba* (*Diosma ericoides*) has not been without a flower for a single day during the past three years. It is slightly sheltered by a bough of Yew. *Fragaria indica* is in fruit and flower all the year round, and birds carry the seeds everywhere, so that we have thousands of plants flourishing like weeds. *Calceolaria Burbidgii* has magnificent blooms, and is 5 feet high. In the beginning of January, 1908, we had a plant of *Brugmansia sanguinea*, 8 yards in diameter, and 12 feet high, full of flowers. The frost then killed it to the ground, but the stumps shot out again, and now it is 8 feet high and flowering freely. *Brugmansia lutea* grows equally fast. We planted some of its seeds, which came up and developed flowers of sanguinea type, so that insects must have fertilised it with pollen from its

Fuchsias, Roses, Hydrangeas, Salvias, Marguerites, Veronicas in variety are all in flower. *Nicotiana Langsdorffii* still has some flowers. *Primula obconica* flowers all the year round. The same plant of *Kniphofia* has been flowering continuously since March last. My gardener counted 140 odd plants in flower on January 1 inst. *Howard Fox, Rosehill, Falmouth, January 9.*

TRENCHING.—I have read with interest Mr. Beckett's excellent notes each week on the cultivation of the kitchen garden, but I do not agree with his remarks on trenching (p. 22), where he advises the bringing of the bottom layer of soil to the top, whatever its condition or nature may be. I have had a considerable experience in gardens in which the top soil has scarcely exceeded 1 foot in depth, with a subsoil of stiff, heavy clay. There are, doubtless, hundreds of gardens throughout the country of such a nature, and I am certain that if Mr. Beckett's advice was followed too literally, there would be failures among many of the crops, at least during the first season after trenching. The plan I adopt with ground having a very heavy subsoil near the surface is to take out all the soil which is good or fairly good from the first trench, and place it where it is required for finally filling in. I next break up the subsoil with a digging fork or pick, using the former whenever possible. After this has been done, a considerable quantity of road scrapings, or the old soil from the potting shed, which has been laid in a heap for a year or more, is placed in the trench, together with some manure. These materials are mixed with the subsoil, and more loose soil is applied. A layer of manure is placed over this, after which the trench is filled with the best of the soil from the next trench. In trenching at a subsequent season, some of the bottom soil will be suitable for bringing to the surface. *A. Shaker-ton, The Gardens, Forde Abbey, Chard.*



FIG. 36.—*SOLANUM BALBISII* IN BLOOM AT ROSEHILL, FALMOUTH, ON NOVEMBER 11: HEIGHT 6 FEET.

is 6 feet high, and remained in the same luxuriance of bloom until the middle of December. It still shows flowers, and the scarlet berries are very numerous, some of them over an inch in diameter. The plant survived last winter's cold without any protection. The peculiar feature of this *Solanum* is its elegantly-divided leaf and the conspicuous orange-coloured sharp spines, which densely cover the stems, both sides of the leaves, petioles, and sepals. The south-west of Cornwall has escaped the late cold snap, which must have deprived many English gardens of their exceptionally brilliant show of flowers in winter months. At Rosehill, we have a tree of *Acacia longifolia* flowering three to four months before the usual time. *Cytisus proliferus* is doing the same thing. *Cestrum ele-*

neighbouring cousin. The following plants are flowering freely in the open air:—*Abutilon Boule de Neige* and *A. megapotamicum* (the latter has survived about 12 years against a wall), "Crusader" and "Prince of Wales," the latter 10 feet high. *Desfontainia spinosa* is flowering freely, with many berries of good size. *Sparmannia africana* is in flower, with very large leaves. It grows rapidly, but its roots are not strong enough to prevent violent winds blowing it down. *Clianthus puniceus*; *Eupatorium micranthum* (*Weinmannianum*) is 10-11 feet high, full of seed, with a few flowers still in bloom. *Musa japonica* sends up suckers annually. Early in January, 1908, I had five plants in flower, with a few whorls of fruit set at the top of the arched peduncle. *Cyclamens, Ericas,*

THE CLASSIFICATION OF DAFFODILS.—The article by Mr. A. J. Bliss, printed on p. 42, is a timely and valuable contribution to the question raised by the publication of the new classification of Daffodils by the Royal Horticultural Society. Although all may not be able to follow him on certain points, as, for instance, the placing of all *Triandrus* hybrids in one class, yet his proposal for the printing of parentages is a practical one, and it is to be hoped that it may shortly be adopted. At present few raisers when showing their seedlings (with the notable exception of the Rev. G. P. Hlaydon) seem willing to give the information required. I cannot help thinking that they would do it did they realise the intense interest it gives to students and young raisers of the flower. The R.H.S. would be setting a good example by following out the suggestion offered by Mr. Bliss. *Narcissophile.*

PREPARATIONS FOR TRANSPLANTING TREES AND SHRUBS.—If the roots of large shrubs and trees be shortened at this season the plants can be shifted next autumn with every hope of success. Last year I removed a Yew hedge that had been planted 28 years; the length of the hedge was 60 yards. Not a single tree died, and the hedge appears little the worse for its disturbance. I also removed a large Yew weighing 2 to 3 tons, and this also is doing well. A circular trench 2 feet wide should be dug around the plant at a distance from the stem varying according to the size of the tree. If the specimen is from 6 to 10 feet high the distance should be 3 feet from the bole. This will afford a circle having a diameter of 6 feet inside measurement. The depth of the trench should be from 2 to 3 feet. When all the largest roots have been severed, any bruised portions should be trimmed with a sharp knife, as a clean cut heals quickly. During the summer a number of new fibrous roots will form close to the stem of the tree, and these will admit of a good ball of soil being removed with the tree. After pruning the roots fill in the trench again, well ramming the soil, and taking care not to bruise the ends of the roots. If the summer proves hot and dry, the trees must be syringed two or three times each day, and also be given an occasional watering at the roots. *A. Gooding, Earham House Gardens, Chichester.*

THE POTATO IN SCOTLAND.—The note which Mr. McDonald amplifies (see p. 13) was written simply to furnish a fact which hitherto, so far as I know, had never been published regarding the period when Potatoes were first cultivated as a field crop in Scotland. It is now many years since I first pointed out that the Potato had been a garden crop for a long time previous to the dates given by most authorities, but, in books and other literature published since, other authorities than Reid are still accepted as guides. Probably the same treatment will be accorded Donaldson's statement. Part of Mr. McDonald's note shows how facts are misstated. The Thomas Prentice referred to is doubtless Henry Prentice, who was not a common day labourer, but a market gardener of eccentric character, who cultivated ground east of Edinburgh and sold the produce in that city, to which it was transported in the manner described in *Cockburn's Letter* (Scott. Hist. Soc.) in creels, till a nobleman offered him the loan of a pony and cart. These Prentice accepted, but seems to have understood that the loan was without any time limitation. It was characteristic of this individual that he purchased his own coffin and kept it in his house for several years, had his gravestone prepared, and precontracted for his burial in Kestralrig Churchyard, where, after his death at the age of 85 years, he was interred in 1788. At least as early as 1746 Potatoes formed part of Prentice's crops. The Kilsyth Potato-grower was a factor named Grahame, who cultivated half an acre of the esculent in lazy beds. There is an excellent chapter on the field culture of the Potato in Berwickshire in Dickson's *Treatise of Agriculture*, written about 1764, from which it is evident that its cultivation was well understood, and, compared with the methods advocated at the same period in *Museum Rusticum et Commerciale*, it shows that the Scottish farmer was far in advance of his English contemporary. It was at about this time that notice first appears of "curi" in the haum of the Potato. In Somerville's *Agriculture of East Lothian* (1805) it is stated that the first serious attempt at field-culture was made on the farm of Craigilan, near Aberlady, about the year 1760, and that Potatoes were cultivated in fields for sale only in the vicinity of towns, the farmer's usual crop amounting to as much as supplied his family, and one-sixteenth of an acre for each of his farm servants. At this period the Kidney mentioned in my previous note was still esteemed one of the best kinds. This writer also records how it was customary for farmers to sublet part of certain fields to townspeople, who paid from £5 to £10 per acre for the sole purpose of growing Potatoes. I will add that the reason for the prejudice against the Potato was on account of its being considered a plant under the dominion of Aphrodite. As I hinted previously, the belief is not yet extinct. *R. P. Brotherton.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JANUARY 12.—*Present:* E. A. Bowles, Esq., M.A., F.L.S. (in the chair), Dr. M. C. Cooke, Messrs. Hales, Chapman, Güssow, Fawcett, Worsdell, Saunders, Fraser, Holmes, Bennett-Pöe, Rolfe, and Chittenden (secretary)

Richardia discoides.—A large spathe of *R. africana* was exhibited having about half the outer part brown and dead. Similar brown spots had appeared upon the leaves. No fungus was present, and the Committee thought that, in all probability, the trouble was due to overfeeding.

Malformed Orchid.—From Mr. LYNCH, V.M.H., of Cambridge Botanic Garden, came a malformed flower of *Cypripedium Dominicanum*, with a normal flower for comparison. The flower had the sepals fused and a double lip; it was taken by Mr. SAUNDERS for further examination.

Diseased Carnations.—Specimens of diseased Carnations were received from Natal, where a very large number of plants had suffered at all stages. These were referred to Mr. SAUNDERS and other members of the Committee for further investigation.

Nomenclature of multigeneric Orchid hybrids.—The Chairman announced that the sub-committee

appointed to consider this question had arrived at the decision that the best solution of the question lay in coining names for each of the combinations of genera made, consisting of a commemorative name and the termination "ara." The full text of their finding will be laid before the Committee at an early date.

Parasitic Rose canker.—Mr. CHITTENDEN showed specimens of the Rose canker described in the *Journal R.H.S.*, Vol. xxxiv., p. 222. The Roses attacked had been imported from Germany three years since.

GHEENT HORTICULTURAL.

JANUARY 3.—At the monthly meeting held under the auspices of the *Chambre Syndicale des Horticulteurs Belges* and the *Société Royale d'Agriculture et de Botanique de Gand*, which took place on the 3rd inst., Certificates of Merit were granted to the following Orchids exhibited by Mons. F. LAMBEAU:—*Cypripedium insigne* Babette, *C. Leeanum* Laekense, *C. insigne* Lambeauium, and *C. aureum* Cyrus. Also to *Cypripedium* var. (Orphanum × *Boadicea*) shown by Mons. J. VAN SCHOOTE; to *Lælia anceps* alba var. *Stella* and *Cattleya Trianae* superba exhibited by Mons. VERDONCK. A Cultural Commendation was awarded to Mons. A. MAES-BRACKMAN for a fine specimen of *Cypripedium Albertianum*. Certificates of Merit were also given to *Begonia Gloire de Lorraine* var. *multiflora* præcox exhibited by Mons. A. RIGOUTS, and to cut flowers of winter-flowering *Carnation Grande Duchesse Olga* shown by Mons. F. DE BIÈVRE.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JANUARY 7.—*Committee present:* E. Ashworth, Esq. (chairman), and Messrs. Smith, Thorp, Ward, Cowan, Shill, Warburton, Keeling, Holmes, Ashton, Cypher, Parker, Ball, and Weathers (hon. sec.).

Z. A. WARD, Esq., Northenden (gr. Mr. Weatherby), exhibited a miscellaneous group, amongst which *Odontoglossums* were a feature. Two hybrid *Odontoglossums*, the parentage of which was not recorded, received Awards of Merit. These were O. × G. Weatherby, of a fine rich bronze colour, and O. × Martin; the latter resembled O. × *ardentissimum*. (Silver-gilt Medal.)

Messrs. HUGH LOW & Co., Enfield, were awarded a First-class Certificate for *Cattleya* × *Maggie Raphael* var. alba, an albino with a faintly-tinted lip.

Mr. J. ROBSON, Altrincham, received an Award of Merit for *Cypripedium* × *Leeanum* Chardwar variety.

E. ROGERSON, Esq., Didsbury (gr. Mr. Price), exhibited *Odontoglossum crispum* var. *Daphne*, to which an Award of Merit was granted.

A. WARBURTON, Esq., Haslingden (gr. Mr. Dalglish), staged a group of *Cypripediums*, for which a Silver Medal was awarded. C. × *Qeson* var. *giganteum* was awarded a First-class Certificate. Other choice plants in the group were C. × *Archimedes*, C. × *Naudii*, C. *Stepmanii* var. *superba*, and C. × *Harri-Villo*. C. × *Harri-Villo* received an Award of Merit.

Mr. H. ARTHUR, Blackburn, was awarded a Bronze Medal for a small group containing choice *Cypripediums*, of which C. *insigne* Harefield Hall variety was the most noteworthy.

J. MCCARTNEY, Esq., Bolton (gr. Mr. Holmes), gained a Silver Medal for a group of Orchids. *Lælia* × *Cranstonii* received an Award of Merit.

Mr. C. PARKER, Preston, was awarded a Bronze Medal for a group of *Cypripediums*, which included C. *insigne* var. W. M. Dow, C. *insigne* var. *Dorothy*, and C. × *aureum* var. *virginale*.

G. SHORLAND BALL, Esq., Burton, Westmoreland (gr. Mr. Herdman), received a Silver Medal for a choice group of *Cypripediums*. C. × *nitens* "Under Feli variety" and C. × *Leeanum* var. *Hercules* received Awards of Merit.

H. J. BROMLOW, Esq., exhibited a fine group of *Cypripediums*, many of the plants being of well-known species and varieties. C. × *Qeson* var. *giganteum* received a First-class Certificate, and a similar award was voted to C. *Charlesworthii* "variety Bromilowiae," a form quite distinct from the variety *Bromilowianum*. C. ×

Euryades "Heaton variety," C. × *Juno* "Rann Lea variety," C. *bellatulum* var. *Marjorie*, and C. × *Ainsworthii* received Awards of Merit. A Silver-gilt Medal was awarded to the group.

MESSRS. SANDER & SONS, St Albans, exhibited *Cypripedium* × *Lathamianum* Sander's variety, to which an Award of Merit was granted.

MESSRS. KEELING & SONS, Westgate Hill, Bradford, were awarded a Silver Medal for a group, Awards of Merit being granted to those following:—*Calanthe Veitchii* var. alba, *Cypripedium* × *Courtauldianum* var. *magnificum*, C. × *Bruno* "Keeling's variety," and C. × *Mons. de Curte* "Keeling's variety." A splendidly-cultivated plant of *Angraecum sesquipedale* was awarded a First-class Certificate.

R. ASHWORTH, Esq., Newchurch (gr. Mr. Fletcher), staged a good group, to which a Silver Medal was awarded. *Odontoglossum* × *Lambeauium* var. *Triton* and *Cymbidium* × *Holfordianum* received Awards of Merit.

S. GRATRIX, Esq., Whalley Range (gr. Mr. Shill), was given an Award of Merit for *Cypripedium* × *Charlesianum* var. *Queen Maude*. The flower is green in colour and of fine proportions.

Messrs. WM. BULL & SONS, Chelsea, received an Award of Merit for *Odontioda* × *Cheloniensis*.

E. ASHWORTH, Esq., Wilmslow (gr. Mr. Holbrook), staged a group to which a Silver Medal was awarded. *Cattleya chocoensis* alba var. *maxima* received an Award of Merit.

MESSRS. JAMES CYPHER & SONS, Cheltenham, staged a very bright and attractive group of plants. (Silver Medal.)

Mr. W. BOLTON, Warrington, obtained a Silver Medal for a good group.

Other exhibitors were Mr. J. H. CRAVEN, Keighley, and Messrs. WM. OWEN & Co., Northwich. *P. IV.*

SCOTTISH HORTICULTURAL.

JANUARY 12.—The annual business meeting of this association was held at 14, South St. Andrew Street, Edinburgh, on this date. Mr. Whytock, the president, presided over an audience of more than 200 members. The report by the council showed that there was a steady increase in the membership, and that the work of the past year had been of a very satisfactory kind. Reference was made to the death of the late Marquis of Linlithgow, who was for two years honorary president of the Association.

The Chrysanthemum Show held in November was not a financial success. It was decided, on the recommendation of the council, to hold two excursions during 1909, one to Tulliallan and Dunfermline in July, and the other to Hopetoun in August. Lord Elphinstone was re-elected honorary president, Mr. Whytock president, and Mr. A. D. Richardson secretary and treasurer. The two vacancies in the vice-presidencies were filled by the election of Messrs. A. Johnstone and W. Tait, and the seven vacancies in the council by the election of Messrs. W. Brunton, W. Copeland, J. Dobbie, A. R. Henderson, D. T. Johnston, W. Mather, and D. W. Thomson. A series of papers for reading during the current session was submitted. Twenty-seven new members were elected at the meeting.

The next monthly meeting will be held on February 2, when the president will deliver his address, and photographs of flowers, fruits, &c., in their natural colours will be displayed by Mr. E. L. Brown.

HORTICULTURAL CLUB.

JANUARY 12.—The usual monthly meeting of this club took place at the Hotel Windsor on the above date, Mr. C. E. Shea occupying the chair. The Rev. Canon Horsley gave an interesting lantern display of views of the Swiss Alps, with which he has rendered himself thoroughly familiar by repeated tours accompanied by a considerable number of ladies and gentlemen who form private touring parties under his guidance. The lecture was announced to be on the "Flowers of Switzerland," but references to these were mainly confined to the subsequent discussion. Canon Horsley restricted himself, during the lecture proper, to a description of beautiful views of snow-clad Alpine ranges, deep gorges, magnificent cascades and splendidly rugged glaciers. Views

were presented in rapid succession to illustrate the progress of the party. As the Canon on these expeditions avoids the beaten track as far as possible, most of the views were fresh even to such of his audience as had visited Switzerland. The fact was incidentally mentioned that most of the principal glaciers are retreating with comparative rapidity up the valleys they have formed, as much as two miles being observed within recent memory. Another point observed by the lecturer in his explorations was what he termed the "zonality" of plant life, certain Alpine plants being only found between definite extremes of high and low level, so that when his party produced certain plants he could, with comparative certainty, tell the heights they had to climb to obtain them. *Gentiana acaulis* was mentioned as being the only *Gentiana* which varied greatly in colour. This species has tints from Oxford blue to Cambridge blue, pure white, and blue striped with green. A number of views were of the picturesque villages nestling under the Alpine heights, their deep overhanging caves, projecting balconies, curiously carved woodwork and stone-laden roofs, coupled with the quaint costumes of the inhabitants, forming very charming snapshots. A view of Meiringen before and after a devastating fire gave a striking idea of what a conflagration causes in a closely-packed mass of wooden dwellings. Mr. Shea, himself an ardent Alpine climber and explorer, confirmed the lecturer's remarks on the glacial phenomena.

COVENTRY CHRYSANTHEMUM.

JANUARY 14.—The annual meeting and dinner of this society was held under the presidency of the Deputy-Mayor of Coventry—Alderman A. H. Drinkwater—on this date. The annual report showed that there was a loss of about £8 on the annual show, but a balance in hand on the year's working of £11. The Deputy-Mayor and Councillor Batchelor, in proposing and seconding the adoption of the Report and Balance-sheet, said that considering the condition of local trade the society was to be congratulated on its Report. Alderman Armishaw, speaking with regard to the society's proposal to arrange a summer show, advised waiting until there was a boom in trade. The Report was adopted and the committee were re-elected. Mr. G. Griffin was re-appointed secretary and Mr. T. Smith treasurer.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

JANUARY 21.—The annual meeting of this Institution for the Election of Pensioners is being held on Thursday afternoon as these pages are sent to press.

RESULT OF ELECTION.

There were 73 candidates, and the eighteen whose names are given below were successful:—

Name	Age.	Number of Votes.
Emma J. Whitehurst ...	71	4,746
John G. Anstey ...	80	3,028
Matilda Ings ...	65	2,946
Henry Heims ...	68	2,908
Thomas Jones ...	44	2,903
John Burton ...	74	2,883
Henry Cooper ...	72	2,855
William Gardiner ...	73	2,825
Jane Noble ...	69	2,800
Harriett Heiman ...	64	2,681
William Cope ...	64	2,618
Henry Gage ...	74	2,569
Thos. C. Cushion ...	70	2,494
Edward Tibbles ...	64	2,449
George Lawrence ...	73	2,429
Joseph Throp ...	62	2,359
Joseph Talmage ...	64	2,350
William Reynolds ...	74	2,303

After the declaration of the poll and on the proposition of the committee, two additional candidates were elected. These were:

Nancy Wright. James Young.

Mr. Arthur W. Sutton generously offered the sum of £20 in the case of W. J. Williams; Mr. G. Munro will continue the pension to the candidate be selected last year.

CALEDONIAN HORTICULTURAL.

JANUARY 13.—The annual general meeting of the above society was held on this date, the occasion being the centenary of the society. The chair was taken by Mr. J. W. M'Hattie, Superintendent of Parks. The financial statement showed a balance of £177 0s. 5d. in favour of the income account; while, under the capital account, the credit balance of the life members' fund was £569 9s. The Chairman thought the society was carrying out its duties perfectly. The centenary will be celebrated by a show in September next, and everything will be done to make the event a great success. It was very unfortunate that, acting on legal advice, they were compelled to write off some £200 worth of the Metropolitan District Railway debenture stock. It was a peculiar fact that almost every exhibition had met with financial failure in the Waverley Market this year, and he believed that even the carnival was conducted at a loss. The Report was adopted. Lord Balfour of Burleigh was re-elected president; Lord Dunedin, vice-president; and Messrs. William Pirie, The Gardens, Dalhousie Castle, J. D. Adair, Shandwick Place, and A. Malcome, Duns, appointed councillors in place of those retiring.

ROYAL METEOROLOGICAL.

JANUARY 20.—The annual meeting of this society was held on the above date at the Institution of Civil Engineers, Westminster, Dr. H. R. Mill, president, in the chair.

The Council, in their Report, referred with pleasure to the increasing interest in meteorology which is apparent throughout the country, and they believe that this is in some measure due to the scheme of lectures inaugurated by the society. They also reported a further increase in the membership.

Dr. Mill devoted his presidential address to explaining "Some Aims and Efforts of the Society in its Relation to the Public and to Meteorological Science." He pointed out that the society is composed of Fellows whose interest in meteorology varies widely, and there is moderation in dividing the Fellows into no more than three orders—meteorologists, observers, and interested persons.

After Dr. Mill had been thanked for his address and for his services during the past year, Mr. H. Mellish was elected president, and Mr. F. Campbell Bayard and Commander F. W. Caborne, C.B., secretaries for the ensuing year.

CATALOGUES RECEIVED.

SEEDS.

- WM. THOMPSON & Co., LTD., Londonderry.
- WM. SAMSON & Co., 8 & 10, Portland Street, Kilmarnock.
- PENNELL & SONS, Lincoln.
- TILLIE, WHYTE & Co., 12, Melbourne Place, Edinburgh.
- D. G. PURDIE, 6, Waterloo Street, Glasgow.
- HOGG & ROBERTSON, LTD., 22, Mary Street, Dublin.
- PAUL & SON, 6, Wortwood Street, Old Broad Street, London, E.C.
- THOMAS S. WARE, LTD., Ware's Nurseries, Feltham, Middlesex—Also Begonias.
- THOMAS WYLLIE & Co. (late CUNNINGHAM & WYLLIE), 98, Mitchell Street, Glasgow.
- W. SMITH & SON, Exchange Seed Warehouses, Aberdeen.
- ARTHUR ROBINSON, 35, Canomile Street, London, E.C.
- W. P. BOUND, Station Road, Redhill.
- JAMES MURRAY & SONS, Deptford, London, S.E.
- CARTER PAGE & Co., 52 & 53, London Wall, London, E.C.
- FRANK DICKS & Co., 63, Deansgate, Manchester.

MISCELLANEOUS.

- T. CASNON, Millfield, Peterborough—Wooden boxes and trays for dispatching fruits, flowers, &c.
- AMOS PERRY, Enfield, Middlesex—New and rare hardy plants, Montbretias, Japanese Lilies, flower seeds, &c.
- FENNICK & Co., Delgany Nurseries, Co. Wicklow, Ireland—Hardy Trees and Shrubs.

FOREIGN.

- PETER HENDERSON & Co., 35 and 37, Cortlandt Street, New York Seeds.
- F. C. HEINEMANN, Erfurt, Germany Seeds.
- VILMORIN-ANDRIEU & Co., 4, Quai de la Mégisserie, Paris, France—General catalogue of Seeds and Plants.

SCHEDULE RECEIVED.

Cardiff and County Horticultural Society's Coming-of-Age Show, to be held on Wednesday and Thursday, July 21 and 22, in the Sophia Gardens and Field, Cardiff. Secretary, Mr. A. Maurice Bailey, 24, Duke Street, Cardiff.

DEBATING SOCIETIES.

BIRMINGHAM GARDENERS'.—The annual general meeting of this association was held on January 11th, Mr. Walter Jones presiding. Mr. Walter E. Collinge, late of the Birmingham University, has retired from the office of president, owing to his appointment at Berkhamsted. Dr. G. S. West, M.A., F.L.S., lecturer in botany at the University, Birmingham, was elected to fill the vacancy. The resignation of the chairman, Mr. Walter Jones, was also announced. Mr. Jones's resignation was accepted with regret, and a hearty vote of thanks was accorded for his past services. The vice-chairman, Mr. Thos. Humphreys, Curator of the Botanical Gardens, Birmingham, was unanimously elected chairman. Mr. C. H. Herbert was elected vice-chairman. The treasurer, librarian, and secretary were all re-elected.

BRIGHTON AND SUSSEX HORTICULTURAL.—The annual report for 1908 shows a financial loss on the year's working of £64 18s. 3d. Three flower shows were held during the past year, but the committee have decided to hold only two shows in 1909, viz., a Rose show on June 29 and 30, and a Chrysanthemum exhibition on November 2 and 3.

BRISTOL AND DISTRICT GARDENERS'.—The first meeting in 1909 was held on Thursday, January 14, at St. John's Parish Rooms, when the president, Col. Carey-Batten, presided over a good attendance of the members. A paper on "Odontoglossums" was given by Mr. Wakefield, gardener to Mr. Shipley, Elmfields, Westbury-on-Trym. The lecturer recommended September as the best month for potting these plants, because they are then able to recover from the check to the roots before the advent of the dull winter months. Although *Polypodium* and *Osmunda* fibre may be used with success, the lecturer preferred to employ peat of the best quality. Mr. Wakefield gave a list of *Odontoglossums* cultivated at Elmfield.

CHESTER PAXTON.—The opening meeting of the new session was held in the Grosvenor Museum, on Saturday, January 16, under the chairmanship of Mr. A. W. Armstrong. A lecture entitled "Winter Botany," illustrated by lantern slides, was delivered by Mr. J. D. Siddall. The lecturer dealt with various aspects of winter botany, and gave a list of British plants which are to be found in flower during the winter months. Particulars of several of the winter-flowering shrubs and berry-bearing plants were also given. The next meeting will be held on Saturday, January 30, when Mr. G. P. Miln will deliver a lecture upon the "Agriculture and Horticulture of Denmark."

CROYDON & DISTRICT HORTICULTURAL.—The annual report shows a satisfactory year for 1908. In all 22 meetings have been held, at most of which lectures and papers relative to horticulture have been given. There has been a greater number of exhibits at the meetings, the quality of the produce displayed being excellent. The annual dinner, held on January 22, proved successful. The spring show was held at the Horniman Hall, Croydon, on May 6. The number of exhibits was greater than at any previous spring show, although no prizes were offered for any exhibit. About 40 members and friends paid a visit to the Franco-British Exhibition on August 18, the occasion of the annual summer outing. Two meetings held in June and July were well attended, when visits were paid to the nurseries of Mr. C. F. Bause and to the Sydenham Recreation Grounds. The financial statement shows a balance in hand of £7.

ESHER COTTAGE GARDENERS'.—At a meeting of this society held on January 13, Mr. Edwin Beckett, V.M.H., gave a lecture on "Vegetable Culture," illustrated by lantern views. Her Royal Highness the Duchess of Albany was present at the meeting. Mr. S. A. P. Kitcat, the newly elected president, introduced the lecturer, who for some years was a resident in Esher. Mr. Beckett dealt with the culture of many of the more important vegetables, his remarks being illustrated by many specimens of the various kinds of vegetables grown at Aldenham. Many questions, asked at the close of the lecture, were answered by the lecturer.

READING AND DISTRICT GARDENERS'.—The annual general meeting of this society was held on Monday evening, January 11, in the Abbey Hall, Reading. There was a large attendance. The principal business of the meeting was the election of officers for the ensuing year, and the passing of the balance-sheet and report for 1908. Mr. Alderman Parfitt, J.P. (president) occupied the chair. The balance-sheet showed that the association is in a satisfactory financial condition. Mr. Alderman F. B. Parfitt, J.P. was again elected president. The meeting also appointed Mr. A. F. Bailey chairman, and Mr. H. C. Loader vice-chairman, for the ensuing year. The other officers, including the hon. secretary, Mr. Castle, and the committee, were also appointed. Several new members were elected.

REDHILL, REIGATE AND DISTRICT GARDENERS'.—The annual social gathering in connection with this society took place recently in St. Matthew's Parish Room, Redhill. The meeting proved a great success, the large room being well filled by members of the association and their lady friends. A musical programme of much excellence was carried out, and during an interval light refreshments were served. The chair was occupied by Sir Jeremiah Colman, Bart. (president of the association).

—The annual general meeting of this association was held on Monday, January 11, Mr. W. P. Bound presiding. The report and balance-sheet showed that the association closed its session with a balance in the bank of £14 3s. 2d., as against a balance of £22 12s. 5d. for the previous year. The loss was accounted for to some extent by a decrease in the membership, which had dropped from 225 to 190. The committee recommended that honorary members be asked to contribute a maximum subscription of 5s. Last year the honorary subscribers were not called upon to subscribe. The report and balance-sheet were adopted. Sir Jeremiah Colman, Bart., was re-elected president of the association for the ensuing year, Mr. W. P. Bound was re-elected chairman, and the other officers and committee were also appointed. The hon. secretary, Mr. Rose, was presented with an honourarium of £5.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending January 16, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The weather was generally rough and very unsettled. Rain fell frequently in the south and east, alternately with very fine intervals, while in the western and northern districts rain, sleet, or snow occurred nearly every day. In Scotland the snow which was experienced during the latter part of the period was very heavy, many places receiving successive falls yielding, when melted, more than 0.5 inch of water in the gauge; heavy snow was also general in the north of Ireland. All parts of the Kingdom were visited by a thunderstorm some time during the week, and in some localities the disturbances were severe.

The temperature was subject to frequent and violent changes in the north and north-west of the Kingdom. In Scotland and the north of Ireland the mean for the week was below the average, but in England and in Ireland S. it was above it, the excess in the Eastern, Central, and Southern Counties being more than 3°. The highest of the maxima were registered during the early days of the week at most stations, and varied from 54° in the Midland Counties to 49° in Scotland N. and W. Late in the week the maxima at some Scottish stations were very little above 32°. The lowest of the minima, which occurred generally during the latter half of the week, ranged from 18° in Scotland E. (at Balmoral), and 20° in England E. to 30° in Ireland S. and to 39° in the English Channel. The lowest grass temperatures reported were 9° at Crathes, 12° at Balmoral, 16° at West Linton, 19° at Cockle Park (Morpeth), 21° at Clacton-on-Sea, and 22° at Norwich.

The mean temperature of the sea.—The temperature was more than 4° higher than during the corresponding week of last year on the south-west coast of England, but in several other localities it was rather lower. The actual figures ranged from 49.7° at Plymouth and 49.0° at Newquay, to about 40.0° at Margate and Kirkwall, and to 35.5° at Aberdeen.

The rainfall (rain and snow) exceeded the average in all districts except England E. and N.E. The excess was very large in Scotland, the north-west of England, and north of Ireland, and also in the English Channel, but moderate elsewhere.

THE WEATHER IN WEST HERTS.

Week ending January 20.

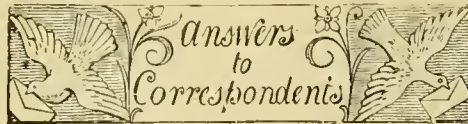
The third mild week in succession.—Since the year began there has been no cold worth mentioning, either during the daytime or at night. On the coldest day during that period the highest temperature in the thermometer screen was only 2° colder than is seasonable, and on the coldest night (last night) the exposed thermometer registered only 10° of frost—or 5° of frost more than the average minimum for January. The ground is now 2° warmer at 2 feet deep, and 1° warmer at 1 foot deep, than is seasonable. During the past week rain has fallen on four days, but to the total depth of only about a quarter of an inch. There has been some percolation through both of the soil gauges on each day, but the amounts have been, as a rule, very small for a winter month. The sun shone on an average for 2 hours 24 minutes a day, which is 60 minutes a day longer than is usual at this period of the year. On one day no sunshine at all was recorded, but on one other day the sun was shining brightly for 6½ hours. The winds have been as a rule high, and in the windiest hour the mean velocity amounted to 20 miles—direction west. The average amount of moisture in the air at 3 o'clock in the afternoon was 8 per cent. less than a seasonable quantity for that hour. The winter Aconite came first into flower in my garden on the 17th, which is 3 days earlier than its average date for the previous 22 years, and also 3 days earlier than last year. E. M., Berkhamsted, January 20, 1909.

Obituary.

GEORGE H. SAGE.—The death of Mr. Sage occurred on the 13th inst. at the age of 50 years. Deceased was gardener to Earl Dysart at Ham House, Richmond, for some years, and later gardener at Bayham Abbey, Kent. Leaving Bayham Abbey, Mr. Sage subsequently commenced business as a horticultural sundriesman. He leaves a widow and seven children. One of the sons is at present engaged at Gunnersbury Park gardens, under Mr. Reynolds.

ENQUIRIES AND REPLIES.

THE PARADISE TREE OF BUENOS AYRES (see p. 402).—This is *Melia Azedarach*, figured in the *Botanical Magazine*, vol. xxvii., tab. 1066. The leaf as there portrayed exactly agrees with that of a seedling plant given to me. From its being called the giant Paradise tree, I concluded that it would not flower until it attained tree stature, instead of which it is said to flower when three years old from seed. Its English name of the common Bead tree, was given to it from its nuts having a curious natural perforation or hole through their centre, enabling them to be strung on thread or wire and used as rosaries, by the constant and assiduous use of which (known as telling their beads) good Spanish Roman Catholics believe they qualify for admission into Paradise. Hence the tree producing them is called the Paradise tree or *Arbor sancta*. G.



ACCIDENT TO GARDENER: Reader. (1) If the accident has permanently incapacitated him he can be dismissed without notice, otherwise he is entitled to the usual notice, or wages in lieu of notice. (2) Under the Workmen's Compensation Act, he is entitled to claim not more than half-wages during disablement. If he is under 21 years and his wages are less than £1 a week, he can be awarded any sum up to 10s. a week. He should give notice of his claim at once.

BLACK SCAB IN APPLES. F. C. We cannot determine from your description what the disease is. Send a specimen for examination.

BOOK WITH COLOURED PLATES. W. D. We do not know of a work such as you require, that can be purchased cheaply. An edition of John's *Flowers of the Field*, published by George Routledge and Sons, might be suitable. This edition contains 92 coloured plates of wild plants. The book can be obtained from our publishing department.

CELERY DISEASED: W. Truster. The plants are affected by a bacterial "rot." The decayed parts are full of a minute bacterium. Remove and destroy by burning all affected plants at once, and do not plant Celery on the same soil until a year or two has elapsed.

CHRISTMAS ROSE FAILING TO FLOWER: J. W. There is no disease present in the plant you send us for examination. The trouble is due to either unsuitable soil or surroundings. Break up the clumps and plant the younger portions in a fresh site.

CYCLAMEN BLOOMS FLAGGING: J. B. These flowers droop very readily in the dry, warm atmosphere of a dwelling-room. Instead of allowing them to remain in the room all through the night, remove them to a dark cupboard or a zinc-lined case where the atmosphere can be kept close. Florists always adopt a similar practice with their stocks of flowers at night time.

EMPLOYMENT IN THE LONDON PARKS.—Forms of application for employment as under-gardener or under-keeper may be obtained from the Chief Officer, Parks Department, No. 11, Regent Street, S.W. The age limits are from 25 to 40 in the case of under-gardeners, &c. Vacancies as gardeners are as far as possible filled by promotion, from the ranks of under-gardeners, of such men as pass the examination in practical horticulture held by the Royal Horticultural Society, and in the other ranks by promotion.

EVERGREEN OAK DYING: J. K. You should have forwarded a shoot for examination. From your letter we suspect the tree has suffered from drought or some other check to the roots. Next summer apply a heavy mulching of manure to the roots in order to retain the moisture in the soil. Soil overlying chalk is apt to become very dry in hot weather.

LAND FOR A FRENCH GARDEN: Plot. We cannot advise you in the matter. Insert an advertisement. Perhaps some firm of horticultural auctioneers and land agents may be able to assist you.

MANGOLD DISEASED: C. S. & Co. The root is attacked by a bacterial disease, probably the same as that described in the *Journal of the Board of Agriculture*, vol. ix., June, 1902. The specimen more resembles a Swede Turnip than a Mangold. There is danger in using the dung of cattle fed on these diseased roots—especially if applied to soil intended for a crop of Turnips. If there is any considerable quantity of diseased roots, cart them on to permanent grass land.

MEALY-BUG ON VINES: J. P. R. Instead of using the mixture you mention, we should advise you to dress the vines with a mixture of coal tar and clay. This is the most effectual and simple remedy. The coal tar and clay remedy consists of one part of the former to nine parts of the latter. The clay

should be dried and powdered, so that it may be passed through a ¼-inch sieve. Then measure the pulverised clay into a large flowerpot having a lump of stiffish clay put into the hole in the bottom; use a 3-inch flowerpot as a measure. When sufficient clay has been measured, add the proper quantity of tar. Mix these well together, and afterwards add sufficient boiling water to give the mixture a consistency similar to that of ordinary paint. Apply it with a stiffish paint brush to every crevice about the spurs and every portion of the affected vines, keeping the mixture well stirred during its application. Take every care to avoid injuring the buds. But before applying this remedy the vines should be pruned, and all the old, and somewhat loose, bark carefully and thoroughly removed, especially from the spurs, using the point of a blunt-edged knife for the purpose. Afterwards collect and burn all the material thus removed. This done, thoroughly wash the woodwork in the house with a solution of soft soap and paraffin, consisting of a ¼-lb. of the former and a port-wine glassful of the latter dissolved in one gallon of boiling water. Wash the glass with clear water, and the brick and plaster work with hot liquid lime, forcing this well into any crevices. Make good any holes by applying mortar. Openings in the putty in which the roof and other glass is embedded should be stopped with good white-lead putty. Then wash the vine rods thoroughly with a mixture of soft soap and petroleum of the strength indicated above, and afterwards apply the coal tar and clay remedy in the manner already described. Suspend the vines when dry in a horizontal position from the wires, over the pipes near the front ventilators, and let them remain in this position until the buds begin to push into growth naturally in March or early in April. Remove 3 or 4 inches deep of the surface soil from the vine border (smearing the brick and plaster work thus exposed with hot liquid lime) and then apply a good compost consisting of fibrous loam five parts, and lime rubble and horse-droppings, one part each. The whole should be well mixed before the compost is placed on the border. We have answered your question rather fully, as there is no use in employing half measures in dealing with such a formidable pest as mealy-bug.

NAMES OF FRUITS: A. L. B. These are beautifully coloured fruits of Cox's Orange Pippin.

NAMES OF PLANTS: Alba. I. *Epidendrum fragrans*; 2, *Trichopilia laxa*; 3, *Gongora maculata*.—*Foreman.* 1, *Pteris hastata*; 2, *P. longifolia*; 3, *Blechnum occidentale*; 4, *Selaginella laevigata*; 5, *Adiantum hispidulum*.—*M. Lamellan.* *Cytisus proliferus*. The *Rhododendron* (*Azalea*) is infested with thrips. Spray the plants with tobacco-water, or fumigate them by means of a nicotine vapouriser.

ROSE SHOOTS DISEASED: J. T. The canker is caused by a fungus—*Coniothyrium Fuckelii*. The disease commences as reddish-brown spots on the young wood, and when the bark becomes broken, frost aids in the formation of the larger wounds. The more badly affected branches should be cut away, as the fungus fruits freely on these, and the spores infest the young wood.

SOIL: R. P. The addition of lime to the soil is beneficial to most plants, but Ericaceous species are exceptions. If you use the turf for Tomatos, you may incorporate a quantity of wood ashes with it. At intervals, during the growth of the Tomatos, apply a top-dressing of some concentrated manure. For Roses, the turf, as you describe it, will be suitable without adding anything beyond the manure you mention.

COMMUNICATIONS RECEIVED.—W. C. P., we think you had better wait for some proof of such an extraordinary achievement.—D.—H. E. K. (the news is too late for insertion).—H. S. B., Shooter's Hill—W. M. W.—W. G. F.—Dr. F.—H. T. S.—W. A. C.—F. J. C.—H. C.—Peter Barr—Chloris—F. J. W.—E. B.—J. R. J.—J. J. W.—C. R. G.—T. L.—H. R.—A. S.—T. S.—M. B.—W. J. V.—L. R.—W. P.—A. D.—H. K.—P. & Co.—A. J.—J. A.—G. B. M.—R.—P. A., Amsterdam—J. D.—H. S. B.—Rev. C. B.—Sir C. D.—J. O'B.—J. A.—W. L.—P.—A. S.—J. R.—W. N.—R. W. I.—F. B.—W. H. C.

For Market Reports see page xvi.



W. R. RICHMOND

1908

A BIGENERIC HYBRID RAISED FROM BRUNSVIGIA JOSEPHINEÆ AND AMARYLLIS BELLADONNA; COLOUR OF FLOWERS, DEEP ROSE.





THE
Gardeners' Chronicle

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A MARKET FRUIT-GROWER'S YEAR.

IN a series of articles, of which this is the first, it is proposed to record the principal proceedings which take place in the market fruit garden during each month.

The most important work in January has been that of pruning Apples, planting having been finished in December under excellent conditions, while the necessity of spraying Gooseberry bushes, to deter birds from picking off the buds, called for in some past seasons in January, has not arisen.

Last winter a plantation of Gooseberries near the homestead was attacked in December, and had to be sprayed then with lime and sulphur wash, to which a little caustic soda, perhaps unnecessarily, was added. Before the end of January nearly every fruit-bud had been picked by birds from trees of Old Greengage, Coe's Golden Drop, and a few other choice Plums in my private orchard, though field crops of cooking Plums were not touched. This season, up to the time of writing, not a bud, so far as I can detect, has been destroyed on a Plum tree or a Gooseberry bush.

The first operation in pruning was that of cutting back two-year-old Apple trees, planted in December. February or March is now recommended for this operation, but it

was carried out just after planting was finished, in order to prevent the wind from swaying the young trees. They will be gone over again in March, in order to repeat the trimming so far as it appears desirable in relation to cutting above the buds promising best for extension growth. The plan of leaving the cutting-back until the second season from planting appears to me to be theoretically unsound.

The Black Currant bushes, two years old, planted among the Apple trees, were cut back to three or four buds from the roots on each branch, on being raised from the nursery bed in which they had been grown from cuttings. It has been stated that the planting was done under excellent conditions. That is to say, under conditions which would be considered excellent by any grower who has not been converted to the new Woburn doctrine in favour of planting when the soil is wet enough to puddle. While prepared, on the basis of the results of trials reported by the Woburn authorities, to believe that ramming may be beneficial when the soil is in a comparatively dry condition, I am far from being convinced that planting in mud is beneficial.

Returning to the subject of pruning; it is desirable to mention that the treatment of Plum trees does not come into the records of January work, because a young plantation of this fruit was pruned in November, while an old plantation has to take its chance of later pruning. Having observed that when Plum trees are pruned in the winter, the fruit-bud below a cut, from which a new shoot is required, often dies off, probably from the action of frost, I have come to the conclusion that Plum pruning should be done in the autumn.

The second field of Apples to be pruned was one of nine acres; half the trees were planted in November and December, 1905, and the rest a year later. The outside row in the first half furnishes a lesson in relation to the extension system so far as it applies to young trees. The variety is Domino, and the trees as maidens were so uncommonly strong that they were planted to complete the piece of land after all the two-year-old trees had been used. They were cut back severely, and made splendid growth in 1906 and 1907. In the summer of 1908 they were remarkably well furnished trees for their age, and so strong that they were allowed to bear fruit on the main branches close to the trunk, and there only. These branches, being strong, had been allowed to grow long. With the check caused by fruiting, fruit-buds have formed along the entire length of the shoots made before last summer, while this season's shoots were so small and weak that they have now been cut back to two or three buds.

The next variety, Early Julyan, made the same good growth as Domino, but, as it did not mature fruit-buds in the summer of 1907, it is in full vigour. These two varieties, it is to be observed, naturally grow in excellent form requiring very little shaping, only Domino needs its inside laterals to be shaved off, as, otherwise, it grows too densely after a few years. There is a peculiarity about Domino not noticed in any other variety in my possession. The fruit-spurs terminate in stumps, or natural snags, with fruit-buds at their bases.

It may here be mentioned that, in the

second season after planting, most of the varieties blossomed on the first year's wood; but the bloom was pinched off, as one of the most expensive lessons learnt in my experience is the folly of allowing trees to fruit too soon. The result was that hardly any of the trees planted in 1905 blossomed to any considerable extent in 1908. They were engaged in free wood growth, as it was desired that they should be, and they showed very much less blossom than the trees in the other half of the field, planted a year later, which also had their blossoms pinched off.

Royal Jubilee is another variety which grows in good shape, the branches being sturdy and bowed outwards. Like the two varieties just named, its branches are nearly even in thickness, whereas some kinds produce a few very gross branches, double the thickness of the rest.

Cox's Orange Pippin is the only variety out of 16 varieties to show scab on the wood. Where it was on this year's shoots, close to the ends, the infected parts have been cut off and burnt. Where it showed lower down on branches needed to furnish the trees, the scabby eruptions were thinly coated with tar, by way of experiment. This variety will not withstand Bordeaux mixture of strength sufficient to kill the fungus. Even a wash containing only 8 lbs. of copper sulphate more than half defoliated the trees in a plantation now eight years old, and entirely ruined the crop for two seasons. The scab showed on trees only two years from planting—not on all, by any means, but perhaps on one-third of them. They will be sprayed with copper sulphate alone, 4 lbs. to 100 gallons, just before the buds burst, but not with Bordeaux mixture after the foliage is out. Probably a small trial upon some of them will be made with the lime and sulphur wash.

In connection with Cox's Orange Pippin, as with two or three other varieties, there is a point of interest to notice. The trees were raised on three stocks, the Crab, the Free (from Apple pips), and the Doucin, and the trees were kept distinct when planted, though in rows side by side. There is no distinct difference in the amount of growth made by the trees on the three stocks in the cases of Cox's Orange Pippin and two other varieties. In the case of Lane's Prince Albert, however, partly on the Crab and partly on the Doucin, there is a small advantage in growth in favour of the former stock. Lane's Prince Albert is the poorest grower among all the varieties, and trees two years from the planting have had to be cut back severely to shape them. Some of the shoots emerging from comparatively sturdy branches are miserably weak, while others are twice as large. There is also a tendency to form fruit-buds where wood-growth is wanted, as well as a tendency in the shoots to grow downwards. A special peculiarity of this variety is the cracking of the bark of wood even only two years old. No mycologist has explained the cause. It is not canker, because in trees planted eight years ago, and similarly affected, no development of that disease has occurred.

Duchess of Oldenburg is a troublesome variety to get into good shape, as its shoots lean towards the centre. Allington Pippin is another awkward grower. The shoots are free enough as to length, but slender, and, in spite of careful pruning, pointing in

all directions. It is a very free bearer, and inside laterals may be shaved off instead of being spurred, without any fear of not getting enough fruit-spurs. Beauty of Bath is growing sturdily, but unevenly, a few of the shoots on a tree being double the thickness of the others. Bramley's Seedling is the sturdiest grower in the plantation, having thick young branches, thinly disposed. Warner's King has more branches, with size enough and plenty of length. Gascoyne's Scarlet Seedling is vigorous and excellently shaped. There is only one row of Golden Spire, and that is one too many. Like Duchess of Oldenburg it is an upright grower, and should be planted much more thickly than most other varieties; but this is impossible in a field set out for horse-cultivation. The trees, of bush-shape on stems about 2 feet 6 inches high, are all 12 feet apart in their rows, and a little more transversely, so that a tree in one row is opposite to a bush in the next tree row. Black Currant bushes are between the trees; they are planted 6 feet from each other and from the trees.

In the case of Lord Grosvenor, there are two experiments to notice. One row was rammed when planted, two years ago, the trees being carefully selected, so as to be as equal as possible in size and vigour to those in the two adjoining rows. The trees in this rammed row have made a little more growth than those on one side of them, and a little less than those on the other side. Another row was not cut back until the second season after planting, the same precautions as are mentioned above being taken to ensure equality with the rows on either side of it. When the cutting-back was done, the young branches, of course, were much more thinly disposed than those on trees cut back in the season of planting. Moreover, they were forming fruit-buds nearly from their bases to their tips, and had to be cut back very severely to get at wood-buds. These trees have now made as much growth as the others, but are not as well shaped, for the simple reason that there was not the same choice in selecting a wood-bud to cut over as in the trees pruned in the first season.

An interesting observation in connection with this plantation of young trees is that less than a dozen spots of American blight (woolly aphid) have been found in the whole of the nine acres, although the nursery piece in which they were raised was infested. Further, it is worth noticing that out of over a thousand trees raised for planting out this season only two showed a speck of American blight on the roots. During the summer my young trees have been treated with methylated spirit about once a week, where the woolly aphid showed. This is by far the best remedy. It has been used without dilution even on the budded portion of stocks, favourite spots for the pest. It has proved harmless to the buds, while it has saved numbers of them from destruction by the enemy. Some of the stocks which had their buds thoroughly wetted with the spirit were labelled, in order to ascertain whether they would be injured by it.

Among the principal employments of labourers since Apple-planting was finished have been that of trenching a piece of grass-land and planting yearling Black Currants which had to be removed from their old quarters. They were cut back to three or four buds from the ground, and will form bushes for planting out in their permanent quarters next season. Other work has been chalking two fruit fields, from one of which some mite-infested Black Currants were taken up. They had been planted eight years, and were being shaded by Apple trees planted at the same time.

Cob Nuts are more densely covered with catkins than I have ever seen them before. *A Southern Grower.*

NEW OR NOTEWORTHY PLANTS.

EUPHORBIA SAPINII.

AMONG the many interesting plants introduced from the Congo and cultivated in the Botanic Gardens, Brussels, is the species of Euphorbia represented in fig. 37, which has been prepared from a photograph kindly forwarded by M. Louis Gentil, the gifted curator of that establishment. In some respects the plant resembles *E. bupleurifolia*, Jacq., native of South Africa, a well-known garden plant, figured in the *Botanical Magazine*, t. 3476 (1836). This has an erect, thick, succulent stem marked all over with the scars

opaque, green colour. According to Dr. E. de Wildeman, who has published a figure and description of *E. Sapinii* in the *Annales du Musée du Congo*, 1906, the flowers and bracts are very small and are produced on very short peduncles from the axils of the leaves. M. Sapin, who collected the plant in the Congo, says that its milk-like sap is irritating to the skin and even dangerous, a property which is common to the genus. Although not possessed of any showy character, yet *E. Sapinii* is just the kind of plant to please and interest those who cultivate succulent plants. An intelligent youth described it as a sort of carrot with a brown crocodile skin and leaves like long strips of soft green leather fixed on with sharp-pointed brown spines. It grows best in a moist tropical house. *W. W.*



FIG. 37.—EUPHORBIA SAPINII, FROM A PLANT IN THE BRUSSELS BOTANIC GARDEN.

occasioned by the falling away of the old leaves, and thus presents a reticulated appearance. The areolæ have the form of quadrangular tubercles which are umbilicated in the centre. The leaves, which are in a terminal cluster, are lanceolate, 4 to 6 inches long, bright green with a white midrib, and the flowers, which are yellow, are enclosed in conspicuous green cup-like bracts on an erect peduncle 2 inches long. In *E. Sapinii* the tubercles are swollen and mamillate, especially on the younger part of the stem; when young, they are green and each has a hard stipular spine which appears to fall off in about the third year, leaving the stem pale brown and rope-like. The Kew plant, kindly presented by the Director of the Botanic Gardens, Brussels, has a stem 4 inches high and 2 inches in diameter, a head of 15 fleshy leaves from 9 to 12 inches long and $\frac{1}{2}$ to $\frac{3}{4}$ inch wide, the upper half broader than the lower, keeled, the apex imperfect, the whole being of a uniform.

WEATHER AT ROTHAMSTED IN 1908.

THE meteorological records of the Rothamsted Experimental Station, Hertfordshire, for 1908 show that the year was characterised by a deficiency of rain, as was that of the previous year, 1907. There were but three months of excessive rainfall, and nine months which recorded a deficiency. The number of rainy days was, however, 184: being 12 days in excess of the average of the past 55 years.

The mean temperature of the year was slightly in excess of the average. The most unseasonably warm months were February, May, October, and November; whereas only April was unseasonably cold. There were six months of temperature above the average record, and six months below.

The bright sunshine showed five months in excess and seven months deficient. The sunniest month of the year was June, when the

record of sunshine exceeded the average by 50 hours.

There were 18 days on which snow fell. The total depth would probably aggregate to 2 feet; the greatest quantity of snow fell during Easter week. About 2 inches fell on Easter Sunday, April 19; about 6 inches on April 23; and about 3 inches on April 25. Such a fall of snow as that experienced during the Easter season has not occurred at Rothamsted since the year 1876. From April 11 to 14 in that year a great quantity of snow fell, which averaged more than a foot in depth, and drifts in the narrow lanes around the Rothamsted estate were from 3 to 4 feet deep.

January of 1908 gave 14 hours more than average sunshine; but both rainfall and temperature were less than the normal.

February, the "double-faced," was quite in accordance with ancient tradition. In its short space it treated us to hail, snow, frost, lightning, rain, and gales, to say nothing of the sudden changes that occurred as regards temperature, which, on the whole, was high compared with the average, while the rainfall and sunshine were deficient.

The comparative genial weather of the first three weeks of February encouraged both farmers and gardeners to proceed briskly with outdoor work. Gardeners who were fortunate enough to secure a good seed-bed, planted Onions, Parsnips, Broad Beans, and Early Peas extensively.

March was a month of "many weathers." On the 1st and 3rd days of the month about 3 inches of snow fell, and the amount of water from the rain and melted snow on these days measured about 22,600 gallons per acre. The total rainfall for the whole of March was nearly 3½ inches, being 1½ inches in excess of the average. The general character of March was cold, sunless, and gloomy.

May and June each gave a deficiency of rain, with a higher than average mean temperature and bright sunshine.

The three English usual harvest months of July, August, and September recorded a deficiency of rain, a lower than average temperature and of bright sunshine.

The three months of October, November, and December gave a small quantity of rain, especially November, which recorded the smallest monthly total of the whole year; less than 1 inch was measured, being 1½ inch below the average of the previous 55 years.

The last three months of the year were warmer than the average, more particularly October, and, to a less degree, November also. October and November recorded 36 hours of bright sunshine in excess of the average, while December was gloomy and gave 14 hours of sunshine deficient.

The following table shows the rainfall of each month for the past year of 1908 at Rothamsted, with the average amount of rain for each month of the previous 55 years, 1853-1907, and the difference of 1908 above or below the average record:—

RAINFALL AT ROTHAMSTED, HERTS.

Months.	Rainfall	Average	1908.
	1908.	Rainfall	Above or
		of	below the
		55 years.	average (I).
	Inches.	Inches.	Inches.
January	1.58	2.37	- 0.79
February	1.34	1.80	- 0.46
March	3.40	1.83	+ 1.57
April	3.28	1.85	+ 1.43
May	1.89	2.19	- 0.30
June	1.67	2.41	- 0.74
July	2.43	2.51	- 0.08
August	3.01	2.63	+ 0.38
September	1.56	2.43	- 0.87
October	2.26	3.17	- 0.91
November	0.82	2.60	- 1.78
December	2.07	2.32	- 0.25
Yearly Total	25.31	28.12	- 2.81

(I) The sign in the last column (+) signifies above the average, and the sign (-) below the average.

The rain gauge, which is one-thousandth part of an acre in dimension, stands 2 feet above the

surface of the ground, and is about 420 feet above sea level.

The above data shows a total rainfall of 25.31 inches, against an average for the previous 55 years of slightly over 28 inches, being 2.81 inches deficient. It is also 2 inches less than the record of 1907.

Calculating these figures up to the acre, we find that, during the whole year, 2,556 tons of water have fallen on each acre of land, which is about 284 tons of water deficient. The total rainfall for the last four months of the year fell short of the average for the same period in the previous 55 years of 3½ inches, which is equivalent to a loss of 76,197 gallons on each acre in the underground water supply of this district. Last year at the same time there was an excess of 60,859 gallons per acre.

The next table shows the mean temperature in the shade for each month of the year 1908 with an excess or deficiency at the Rothamsted station during the past 30 years, 1878-1907; also the number of hours of bright sunshine made by means of a Campbell Stokes recorder for each month, and the number of hours above or below the average record.

MEAN TEMPERATURE AND BRIGHT SUNSHINE AT ROTHAMSTED, HERTS., FOR EACH MONTH OF THE YEAR 1908.

Months.	Mean Temperature.		Bright Sunshine.	
	1908.	Above or below average.	1908.	Above or below Average.
	Degrees.	Degrees.	Hours.	Hours.
January	34.4	- 2.4	67	+ 14
February	40.8	+ 2.6	69	- 2
March	39.3	- 1.7	115	- 5
April	42.6	- 3.0	146	- 22
May	54.7	+ 3.4	198	+ 4
June	58.1	- 0.7	251	+ 50
July	60.5	- 0.3	205	- 20
August	58.3	- 1.6	202	- 2
September	51.7	- 1.2	158	- 5
October	52.4	- 4.3	120	+ 15
November	45.1	+ 2.6	78	+ 21
December	38.1	+ 0.3	30	- 14
For the year	48.2	+ 0.3	1638	+ 35

The mean temperature for the whole year was 48.2°, which is very little in excess of the average, although the three last months of the year recorded an aggregate of 7.2° higher than the normal.

The bright sunshine for the year amounted to 1,638 hours, being 35 hours in excess of the average, whilst last year the total sunshine was 49 hours deficient.

ROTHAMSTED CROPS OF 1908.

Under these climatic conditions the experimental hay crop at Rothamsted was, under all conditions of manuring, less than the average yield, ranging from 5 to 18 cwt. of Hay deficient, and considerably below that of 1907. As a set-off against the bulky crop of 1907, which was badly harvested, the crop of 1908 was cut and carried with very little trouble.

The produce of the experimental Wheat field was somewhat variable, about one-half of the plots under different manures gave above the average yield, while the remaining half produced a slightly lower than average quantity; but the quality as indicated by the weight per bushel was considerably above the average record, and ranged from 63lb. to 65lb. per bushel.

The experimental Barley crop was, under all conditions of manuring, except that of the farmyard manure plot, below the average in yield, and in some instances very considerably below, while the weight per bushel was higher than the average.

The root crops were variable, there being some good areas of Mangolds and Swedes and some very bad. The general character of growth was an excessive amount of leaf, which the lateness of the season failed to ripen in sufficient time for the lifting.

Potatoes on the whole were a large crop, but disease set in very badly after the tubers were harvested. *J. J. Willis, Harpenden.*

KEW NOTES.

THE GREENHOUSE.

This year the late-flowering Chrysanthemums were over a fortnight or three weeks earlier than usual. Flowering trees and shrubs, including *Spiræa prunifolia flore pleno*, *Spiræa arguta*, *Prunus japonica flore albo pleno* (a double white variety with extremely showy flowers), *P. Persica* var. *magnifica*, *P. pseudo-cerasus*, *Pyrus floribunda*, *Rhododendron Rosa Mundi*, and Lilacs, *Marie Legraye* and Charles X. are already in bloom. A few Azaleas (*Rhododendron indicum*), which have been forced gently, are also in flower. The small-flowered varieties obtusum (red), obtusum album, illuminator (magenta), and the popular *Deutsche Perle* (white) are especially worthy of culture.

Senecio grandifolius is a tall-growing plant, with large, dark green leaves, surmounted by a terminal corymb of yellow, Groundsel-like flowers, a foot or more in diameter. *S. Peta-sitis* is also in flower.

Two large specimens of the Chinese Jasmine, *Jasminum primulinum*, are amongst the brightest and most interesting plants in the house. The long, arching shoots are thickly studded with semi-double, Primrose-yellow flowers. The plants should be grown in the open, exposed to full sun in summer-time, and every encouragement be given them to secure well-ripened shoots. When forced, they should be placed in a plant-house having a minimum temperature of 40° till January, as excessive heat in early winter encourages the formation of growth instead of flowers. A beautiful *Acacia* at present in bloom is *A. longifolia* var. *magnifica*. *Richardia Childsiana* flowers perpetually.

A new introduction to gardens is *Erlangea tomentosa*, a Composite. The plants at Kew were raised from seeds collected in British East Africa by Mr. Diespecker. The flowers are pale heliotrope, and resemble those of a *Eupatorium*. The plants are about 3 feet high, and possess silvery-white leaves. On the side stages of the house, in addition to *Cyclamen*, *Begonias*, *Carnations*, &c., the following plants are noteworthy:—*Reinwardtia trigyna*; *Peristrophe speciosa*, one of the best Acanthaceous plants for a cool greenhouse, the carmine-purple flowers being freely produced for fully three months; two species of *Veltheimia*, South African bulbous plants producing numerous flowers on scapes 1 foot or more in height, are attractive. The blooms are tubular, pendulous, and rosy-red in colour, marked with yellow. *Begonia semperflorens* var. *gigantea* is one of the freest winter-flowering *Begonias*; *B. manicata* has branching cymes of pale pink flowers borne well above the handsome foliage. Two good foliage plants are *Bougainvillea glabra variegata* and *Cordyline australis* var. *lentiginosa*. The long, narrow leaves of the latter plant are dark red in colour. The plant is especially suitable for table decoration.

New Holland plants occupy a considerable proportion of the staging in both wings of the house. The *Epacris* are represented by some two dozen varieties, and one or two species. A few of the best species and varieties are *Arden-tissima* (rosy red), *Diadem* (rose), *Kinghornii* (pink), *E. hyacinthiflora* (pale pink), and var. *alba*, rose perfection (rich rose), *E. impressa* (rose), and var. *alba*, and *Lady Panmure* (white flushed pink). *Epacris* are peat-loving plants, but may be cultivated with less trouble than Heaths. The best of the *Ericas* in flower are *E. hymenalis*, *E. gracilis*, and var. *nivalis*, *E. mediterranea* var. *hybrida*, and *E. melanthera*. A plant of *Darwinia* (*Genetyllis*) *Hookeriana* is well furnished with inflorescences, but only a few of the involucre are at present expanded. The genus *Eriostemon* is represented by three species, all with white flowers, namely, *E. affinis*, *E. myoporoides*, and *E. pulchellus*. *D. D.*

BULBOPHYLLUM LEMNISCATOIDES, ROLFE.

This interesting *Bulbophyllum* was first noticed in a group of Showy Orchids staged by Sir Jeremiah Colman, Bart., Gatton Park, Reigate. The species was first collected in Java, and, differing so widely from the more showy Orchids, it attracted much attention. The pendulous raceme bears about 20 flowers, the concave sepals being very dark purple, with scat-

tered white hairs on the outside. Each petal bears a long, slender appendage of whitish colour mottled with rose, the whole inflorescence having a tassel-like appearance. The labellum is dark purple, the small petals and column whitish. The flower is of uncommon structure, but its slight resemblance to *B. lemniscatum*, a Burmese species, figured in *Bot. Mag.*, t. 5961, was sufficient to suggest a name for the species.

EXPERIMENTS ON THE VALUE OF NITRO-BACTERINE.

In the interesting comments in the *Gardeners' Chronicle* of January 9 and 16, upon the experiments carried out at the Royal Horticultural Society's Garden at Wisley, upon the value of nitro-bacterine in garden soil, attention is particularly directed to the remarkable fact that, in many cases, the produce from the plots which had received inoculated seeds was less than that from the plots which had received uninoculated seeds, but which had otherwise been similarly treated.

It should be pointed out that an error has crept into one of the paragraphs in the summary of the report bearing upon this point. The error makes the difference appear materially greater than it actually was. The yield from the whole of the plots receiving inoculated seed was 495 lbs. (not 450 lbs.), while the total from the plots in which uninoculated seed was sown was 515 lbs. The uninoculated seed, therefore, gave a crop 4 per cent. (not 14 per cent.) heavier than the inoculated. The weights are correctly given in the body of the report, but the error appears in the "Summary," from which quotations are made.

Perhaps the most remarkable part of the result, however, lies in the fact that 31 rows out of the 48 which were sown with inoculated seed gave a smaller crop than the corresponding rows sown with uninoculated seed. It is suggested that it would be interesting to see how far and in what direction the average yield of the plants which had been inoculated varied from that of the uninoculated. The details concerning this point are already in the press, and will appear in the *Journal* of the Society shortly to be issued, along with some other details bearing upon the use of nitro-bacterine.

Unfortunately, the figures relating to the numbers of plants in the rows of two of the varieties were accidentally lost; but we have those relating to the other two varieties used in 48 rows, the seed in 24 of which was inoculated, and in 24 not. For details as to the number of plants in the separate rows, reference may be made to the forthcoming report, but the main results may here be noted. In six rows of *Ne Plus Ultra*, in cultivated ground, grown from uninoculated seed, there were 353 plants which bore fruit, yielding, on an average, 98.7 grammes of pods. In the corresponding six rows, which were grown from inoculated seed, there were 384 plants, which yielded an average of 89.2 grammes of pods. Thus the average yield of the inoculated plants was 10 per cent. below that of the uninoculated, and four out of the six rows showed a decrease. In the six, uninoculated rows of the variety *Maincrop*, on the same soil, there were 266 plants, which bore an average of 110.5 grammes, and in the corresponding, inoculated rows, 240 plants, giving an average of 103.9 grammes. Here, again, there is a diminished average yield of 6 per cent. from the inoculated plants, and four out of the six rows showed a decrease. On the fallow ground, six, uninoculated rows of *Ne Plus Ultra* contained 297 plants, giving an average of 82.5 grammes to the plant, and the six corresponding, inoculated rows contained 291 plants, and gave an average of 80.8 grammes. In this case there was a diminished, average yield of 3 per cent. from the inoculated plants, and four out of the six rows showed a lower average than the uninoculated.

The six, uninoculated rows of *Maincrop*, on the same soil, contained 266 plants, which gave an average of 52.5 grammes; while the inoculated rows contained 204 plants, and gave an average of 61.7 grammes to the plant. In this variety, therefore, there was an average increase of 17 per cent. from the inoculated plants, but only three out of the six rows showed an increase.

In all, out of 24 rows of inoculated seed, only seven produced a greater average yield than the



FIG. 38.—*BULBOPHYLLUM LEMNISCATOIDES*.

corresponding uninoculated rows, and there was one giving an equal yield.

Like many other experiments of this nature, this has suggested the desirability of further investigation. The results obtained are far from showing that the decreased yield in these many cases is actually due to the inoculation with nitro-bacterine; but the results given in the report certainly suggest the question whether certain races of *Pseudomonas radicola* may not induce a smaller yield than that obtained when the races of *Pseudomonas* native to a particular soil are present therein, and the results outlined above emphasise this question, and, at the same time, give a very interesting corroboration of the results, upon which the conclusion that "the inoculation of leguminous crops with nitro-bacterine in ordinary garden soil is not likely to prove beneficial" was primarily based.

Finally, it should be emphasised that the experiment and the conclusion refer only to ordinary garden soil, and do not in any way show what may or may not be the result of using nitro-bacterine on newly-reclaimed land when such is brought under cultivation by means of leguminous crops. *Fred. J. Chittenden, F.L.S., Director R.H.S. Laboratory, Wisley.*

PINUS PINASTER.

I HAVE recently seen this remarkable tree in the Medoc country, where it is extensively planted for the purpose of holding in position the enormous sand dunes. By means of its long tap root it gets an effective hold upon the ground, and it is of value from the seedling stage until it is cut down for timber. The tree is of very rapid growth, but, in consequence of the soft character and coarse grain, its timber is of little value for carpentry, although it is used largely for rough beams and supports. It is exported from Bordeaux to Britain for use in mines and tunnels. The wood is used for fuel, sometimes for paving, and petrol and vinegar are extracted from it.

The most valuable product is resin. The young trees are allowed to attain a height of 18 or 20 feet before being tapped. In this operation a portion of the bark is planed from the ground upwards, leaving a thickness of about a $\frac{1}{4}$ inch on the wood; a hollow is then made at the base by cutting into the wood, and in the hollow space thus carved out an earthenware pot placed to receive the resin. The pot is supported on a nail, and is held in position above by a strip of zinc fixed in a carved cut. The zinc strip serves the further purpose of guiding the resin into the pot. The flow of resin lasts for about eight days, when the hollow is extended upwards by a further cutting in the form of a groove, and more resin is obtained. When the groove has been cut for about 3 feet up the tree the pot is moved and fixed again at that height, and every eight days the cutting is continued further up until a height of 10 or 15 feet is reached; the pot is afterwards moved upwards 3 feet at a time. When the first groove has been exhausted another is commenced at the base of the tree, beside the old one, and so the process is repeated until there are grooves all round the trunk, to the number of from 6 to 16. The wood that overgrows the wounds thus made is, in course of time, treated in a similar manner. The operation of tapping is performed by men who use a large chopper, similar in shape to the hammer used in nailing fruit trees, except that a sharp edge takes the place of the claw used for drawing nails. The collection of the resin is always done by women. By means of a large two-edged knife, they scrape out the resin from the pots into wooden buckets, which are emptied into large tubs sunk in the ground. When these are full, carts are sent with barrels to receive the resin, and it is sent to Bordeaux to be clarified.

Another industry connected with the tree is the collection of its seeds. In former times the seeds may have been extracted by putting the cones in hot water, but now they are obtained by placing the cones in the sun. They are arranged upright in immense beds, and when the scales open they are brought to a framework of hurdle-like construction, upon which a man rakes them backwards and forwards, when the seeds fall on a sheet beneath. They are collected in sacks, and a sackful is said to be worth 100 francs. As soon as the young trees have attained a few feet in height they are thinned out and, of the thinnings, those that are large enough are made into broom handles or used for fuel by the bakers. The branches are used for the support of Peas, Beans, and for similar purposes.

On the coast the trees are always more or less bent, and isolated trees, owing to the deficiency of lateral roots, are inclined at an angle of about 30° to the ground. *Pinus pinaster* is a handsome tree with rugged bark and fine, dark-green foliage. In spring its beauty is greatly en-



[Photograph by R. Stewart Lynch.]

FIG. 39.—TAPPING PINUS PINASTER FOR RESIN.

hanced by the contrasting golden flowers produced by a *Genista* and *Gorse* which grow on the open spaces. The French call this tree *Pin de Bordeaux* or *Pin maritime*. The English name, *Cluster Pine*, and the botanical name, *Pinaster*, are both justified by the fine development of cones. They are of yellowish-brown or fawn colour, and grow in large dense clusters around the base of the current year's growth, spreading like the rays of a star, hence *Pinaster*.

In England, *Pinus pinaster* makes a fine ornamental tree of pyramidal shape, 80 to 90 feet high, and should be planted wherever it is likely to succeed. It thrives well as a rule, though it is said not to flourish much above sea level. In exposed positions its top may sometimes be broken. The seeds must be sown on the site in which the trees are to grow, or seedlings must be prepared for moving by transplanting them when one year old. The young trees in England often require a

stake to keep them upright for the same reason as that which causes the trees on the coast of France to be so conspicuously inclined. Loudon records a tree at Croome 70 years old and 90 feet high. In the Cambridge Botanic Garden the growth of a young tree is about 2 feet per annum. No other Pine has become so widely distributed over the world. It is thriving at the Cape, and is spreading spontaneously in the neighbourhood of Cape Town. It is common in parts of Australia and New Zealand, and is found in China, Japan and Northern India, being reintroduced to Europe under other names. It is native of south-west Europe and the Mediterranean region. *R. Stewart Lynch, Paris.*

NOTICES OF BOOKS.

* SWEET PEAS AND HOW TO GROW THEM.

THE Sweet Pea has been grown as a garden plant in this country for generations, but, generally, until comparatively recent times in a half-hearted manner, as if not worth any particular attention on the part of the gardener. As a consequence, the flower remained pretty much as Father Cupani found it in the island of Sicily 200 years ago. Our author traces its history in this country from 1713. Page mentions in his *Prodromus*, published in 1817, only six varieties, one of them being *Painted Lady*, which the present writer remembers to have seen in 1849. In 1842 James Carter, a seedsman, named but six; and in 1860 this seedsman offered nine varieties.

In 1872 there were 12 in commerce, and some of these were given distinctive names. Greater advances were made in 1877 by Mr. H. Eckford, then gardener at Boreatton Park, who brought out several varieties of much promise. In 1885 Eckford introduced *Princess of Wales* and *Indigo King*; in the next year *Orange Prince*, and in the following years many lovely varieties were raised. Mr. Atlee Burpee, an American florist, has been very successful as a Sweet Pea breeder. Towards the end of the '90's he raised some famous varieties, viz., *Golden Gate*, *Maid of Honour*, *Aurora*, and others. Mr. Silas Cole has since introduced the fine *Countess of Spencer*, a flower with a wavy outline to the standard, whose coming has profoundly influenced the Sweet Pea world, for it has proved to be the forerunner of a new and popular section.

The chapters on cultivation out-of-doors afford useful information, and the illustrations given are helpful. Stopping and thinning the plants are properly insisted upon. The reader is shown how he should proceed in transplanting Sweet Peas from pots to the open ground; how to sow the seed in drills, and to earth-up the young plants. In the directions for gathering the blooms it is recommended that the stalks should be pulled out at their junction with the stem, and not broken off or cut with scissors or knife. Among the wavy varieties, many "rogues" arise for no apparent reason; whilst among plain standard varieties "rogues" are few.

Fortunately, Sweet Pea cultivators have not many diseases to contend with, but some are sure to come in time if too liberal treatment is afforded. We have already the so-called "streak disease," also a fungus that carries off the young plants, viz., *Brachysporium pisi*, and a mildew (*Erysiphe polygoni*), which is developed by damp weather following bright days. Then there lurks danger in *Penicillium trifoliarum*, which makes yellow blotches on the leaves; and the "Spot" fungus (*Ascochyta pisi*), which attacks the pods, and occasionally the leaves and stems. The reader will find a description of the methods of combating these foes in the last chapter of the book.

* *Sweet Peas and How to Grow Them*, by H. H. Thomas. Published by Messrs. Cassell & Co., Ltd.

The Week's Work.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Figs.—The earliest Fig trees in pots will soon require more liberal treatment. Liquid manure may be given at every alternate watering, and an occasional sprinkling of some approved fertiliser may be made. Be careful not to overheat the water pipes at night. Forcing must only be done during the day-time, taking full advantage of the sunshine and closing the house early in the afternoons. Syringe the trees twice a day and damp the paths and other available spaces as often as necessary. Fig trees are very subject to attacks from red spider, and if this pest is not detected and checked it is capable of doing irreparable damage to both foliage and fruit in a very short time. The best way to treat it is to sponge the leaves with a weak solution of soft soap and sulphur. Stop the shoots at the third or fourth leaf, removing any weak and unfruitful shoots whose retention would merely tend to crowd the tree. The atmospheric temperature at night should not exceed 60° unless the weather is very mild, but during the day the temperature may be allowed to rise to 85° provided the top ventilators are partly open. Permanent trees which will fruit in succession to those grown in pots should be started into growth earlier or later according to the season at which it is desirable the crops should ripen. Nevertheless, it is advisable to start pretty early that the forcing may be done gradually. Assuming the trees are planted in well-drained inside borders, they will need frequent waterings. Trees that are well established will require manure water applied in a tepid state. Let the trees be given a thorough syringing morning and afternoon in fine weather, and the paths and other surfaces frequently damped. Admit plenty of air in the forenoon when the weather is favourable. Stop the shoots at the fourth or fifth leaf and remove any weakly growths or suckers. If any Fig trees have yet to be planted the work should be pushed forward. It is essential that ample drainage should be provided for new borders, and the drainage material should be placed on a concrete floor in order that the roots may be prevented from penetrating into the subsoil. The borders should be restricted to a moderate width and be given a depth of 2 feet 6 inches or 3 feet, which will include 6 inches of drainage material. Select some good loam and mix with it plenty of old broken brickbats, lime rubble, or wood ashes. Make up the borders in layers and see that each layer is made firm.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Brazilian Miltonias.—Examine such Miltonias as *M. spectabilis*, *M. Moreliana*, *M. Peetersiana*, *M. Virginalis*, *M. Bluntii*, and *M. B. Lubbersiana*. If any of the plants are in need of more root room, it should be given at once. It is important that the new roots shall not be injured, therefore the plants should be repotted before they commence to push out, so that, immediately on starting, they may penetrate into the fresh compost. The plants extend themselves rapidly in every direction, and, therefore, they require considerable space for rooting purposes. They succeed best in well-drained shallow pans, in a compost consisting of *Osmunda* and *Polypodium* fibres in equal parts. These should be chopped up moderately fine, mixing them together, and adding plenty of very small crocks. Make the compost quite firm, as the roots appear to delight in having a hard substance to cling to. Old plants having their leading growths well out on the edge of the pan having become bare in the centre, should be divided. Cut out all the diseased and useless pseudo-bulbs and dead roots. The best pieces, which need consist only of two pseudo-bulbs behind each new growth, may then be made up afresh into neat and compact specimens. Those pieces which have but few roots to hold them steady must be fixed down with small wooden pegs to the compost, as they seldom succeed if not made quite firm. The stronger-growing Miltonias, as *M. Clowesii*, *M. Pagnelli*, *M. Binotii*, *M. stellata*, *M. Lamarckii*,

M. Veitchii, *M. Clasiana*, *M. flavescens*, and *M. Cogniauxe* are best grown in pots, using similar soil. The pots should be made at least two-thirds full of broken crocks. *Miltonia candida* and the rare variety *grandiflora* may be treated in exactly the same way as *M. Clowesii*, but repotting should be delayed until growth commences. The scarce, white-lipped *M. cuneata* will soon be in flower, and must not be disturbed by repotting now. All these Miltonias grow very well in a cool, shady part of the intermediate house. During the active season, the plants should be kept moderately moist at the root, but when the flower-spikes appear afford water more freely. After repotting, it is advisable to damp between the pots at least once a day, or if the position be very dry, twice a day, increasing the number of times as the season advances. A strict watch must be kept on the small roots as they push forth, or woodlice may eat at them. These insects should be trapped with small pieces of Potato, Carrot, or Apple laid on the plants, taking care to examine the baits during the evening, last thing at night, and again early in the morning. After each watering of the plants some of these insects may appear on the surface of the compost; they may then be caught easily.

Epidendrum.—The rare *E. erubescens* is now in flower at Burford. It is a plant of scandent habit, and it is useless to try and make it conform to pot treatment. The grower must adopt some plan so that the roots from each new pseudo-bulb will have something to root into. A teak-wood raft with the rods about $\frac{3}{4}$ of an inch apart answers the purpose admirably. This should be made considerably longer than the length of the plant. First lay some peat and living Sphagnum-moss upon the raft, place the plant on the compost, and by means of small copper wire fasten it firmly to the woodwork. Suspend the raft perpendicularly in the lightest position available in the intermediate house, and spray it frequently to induce the moss to grow. The pseudo-bulbs delight to have the moss growing luxuriantly around their base. The dwarf-growing *E. polybulbon* is also in bloom. It is only conspicuous when bearing 50 or 60 flowers open at the same time. There are two distinct and good varieties of this species. One has sepals and petals of a brownish-yellow colour and the other is greenish-yellow, but both have pure white labellums. These *Epidendrums* are intermediate-house plants and grow freely in well-drained pans with a mixture of fibrous peat, Sphagnum-moss and small crocks.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. Ford, Pencarrow, Cornwall.

Pelargoniums.—Varieties of the "show" section of *Pelargoniums* will now make faster growth, therefore train the shoots so as to allow room for development. This may be done by fixing a ring of wire just below the rim of the pot and gently drawing the shoots towards the wire with raffia ties; or by placing a few neat, stout stakes in the pots at angles of 45°, and securing the shoots to them as they grow. The shoots should now be pinched on all but the late-flowering plants. Keep the plants in a light and airy position, and fumigate them once a fortnight. The cuttings of Zonal varieties intended for flowering in summer and autumn which were inserted a month ago are now sufficiently rooted to be potted singly into 3-inch pots. A sandy loam with a little leaf-soil added may be used for these. Pot them firmly, and place them in an intermediate house. When the plant has become established, pinch out the leading shoot.

Climbing plants.—As a general rule, it is only the deciduous, climbing plants that require severe pruning, most stove and greenhouse climbers being better when the pruning is merely restricted to thinning-out weakly shoots and shortening the longer growths. Plants growing in borders should have the surface soil removed, after which a top-dressing of suitable soil to which a fair quantity of bonemeal has been added, should be applied. Natural manure should not be used, but small quantities of artificial manure may be applied when watering the borders. *Boussingaultia baselloides* is a capital pillar and roof plant for a cold house. If it is planted in a rich, loamy soil and given copious

waterings during the season of growth, it quickly makes luxuriant shoots 20 feet in length. Individually the flowers are small; but they are produced in pendant clusters and are very fragrant.

Fuchsias.—The old plants may now be pruned and cleaned, but do not repot them until they have started into growth. For the purpose of encouraging them to grow, place the plants in a warm house and syringe them each day. Plants that were rooted last autumn should be kept steadily growing, repotting them as often as necessary. If the side growths are duly pinched, these plants will quickly make pyramids and flower during the coming summer. *Fuchsias* grown as pillar or roof plants that have filled their allotted space should be severely pruned, treating them further as advised for pot plants until they break into growth.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. Vicary Gibbs, Aldenham House, Elstree, Hertfordshire.

Value of trenches.—One of the most satisfactory methods of cultivating pod-bearing vegetables on light land is to prepare good trenches for them such as are used for Celery, Leeks and Cardoons. For Runner and Broad Beans or Peas the trenches should be taken out 18 inches to 2 feet in depth and 15 to 18 inches in width. The soil at the bottom of the trenches should be well forked up and the trenches afterwards filled three-parts as follow:—A liberal layer of good farmyard manure should first be placed in the bottom of the trench, and the remaining space may be made up with manure from an old hot-bed. Of all the various materials used in the kitchen garden none is more serviceable for most vegetables than a compost which has done service for 12 months or two years in portable frames. Such a compost should be made into a good heap out-of-doors and allowed to remain for a few weeks before it is used, adding to it a little soot, lime rubble, burnt garden refuse, and a small quantity of bonemeal. When these have been mixed together they will be found to promote the growth of almost every kind of vegetable. The soil taken from the trenches may be left in an unbroken condition, for the weather will break it up much more perfectly than can be done by the hand. The distance at which the trenches should be placed from each other will depend upon the average height of the crops, but in this connection it may be urged that in most gardens Beans and Peas are not given the amount of space they require. Rather than place rows of such tall-growing plants closely together, I prefer to grow another crop between each pair of rows. Such a crop may consist of three or four rows of Cauliflower or Broccoli. The sunlight will then reach the Peas and Beans quite easily, birds will be less troublesome, and heavier crops may be expected.

Digging and treading.—Complete this work as quickly as possible, it being essential that the soil, especially if it is of a heavy nature, should be exposed to the action of the weather during March.

Vegetables in frames.—Plants which were raised last autumn and have been wintered in frames, though requiring protection from severe frost, must not be coddled. On the contrary, take the opportunities afforded by fine days to remove the lights entirely. It is necessary that the plants shall become thoroughly hardened. On nights when there appears no fear of frosts, mats may be thrown over the glass, but the lights need not be perfectly closed. These remarks apply to autumn-sown Cauliflowers, Lettuces, Parsley, and suckers of Artichokes.

Cabbages.—Cabbages, like many other green winter vegetables, have suffered in some localities because the extremely mild weather in autumn caused the plants to make soft growth. If there appears a likelihood that there may be a scarcity, a small quantity of seed of early-maturing varieties had better be sown now, raising them in a gentle heat. Such plants may be expected to produce heads fit for use early in the spring.

Parsley.—Seeds should be sown very thinly in boxes, raising them in a gentle heat. If Parsley seeds are sown too thickly they are almost certain to damp off at the collar.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Winter spraying.—Assuming that all the fruit trees and bushes have now been pruned, advantage should be taken of a calm day to spray them with an alkali wash. A concentrated wash of this description is sold by nurserymen and sundriesmen, and I strongly recommend it as being convenient in its application and effective in its result. Not only does an annual spraying of this nature keep the trees perfectly free from lichen and fungal diseases, but it also destroys a great number of insect pests. A knapsack sprayer is a suitable means for applying a spray in a small garden or in the case of isolated trees, but if a large number of wall or other fruit trees have to be sprayed, then one of the larger machines now on the market will be more economical. Care must be taken to see that the spray reaches every part of the tree and also any vacant spaces on the walls, for on such walls there may be crevices containing insect pests. In cases where the trees have been neglected in this matter in past years a second application may be necessary, and it should be carried out just before the flower-buds expand. In the mixing and application of such caustic spray-fluids it is necessary for the operator to wear rubber gloves as a protection to the hands.

American blight.—If American blight or woolly aphis is prevalent more severe measures will have to be undertaken. I have cleared this pest from badly-attacked trees by the application of undiluted paraffin, which was worked into the infested parts by means of a painter's small brush. This treatment must be applied now, whilst the trees are perfectly dormant. The stems and main branches may be treated with a strong solution of Gishurst's compound, applied by means of a scrubbing brush.

Protection of fruit trees.—In districts where past experience has proved the usefulness of protection against spring frosts it will be wise to see that everything is in readiness that the protection may be applied at any time at short notice. Apricots are the first to need such protection. Already the flower-buds are beginning to assume an appearance of plumpness. Tiffany or canvas fitted on roller blinds provide the best means of shading, as the cultivator can easily remove them up and down as circumstances require. Permanent coverings of thick material usually cause more harm than good.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Bulbs.—Many bulbs are already commencing to show their shoots through the soil, and these may require to be protected from mice and birds. These remarks apply also to Primroses and Polyanthus. The charming varieties Miss Massey and Sparkler attract sparrows very early in the season.

Rhododendrons (Azaleas).—Azaleas may be planted at the present time. The soil needs deep digging, not so much for the purpose of allowing the roots to descend to that depth as to permit of moisture coming from below. Therefore the soil should be dug two spits deep and the top spit kept at the surface. In some cases it may be necessary to add sand, peat, and leaf-mould, but where the staple is sandy loam very little else is needed, though it may be advantageous to put a little leaf-mould around the roots. Shake a considerable portion of the soil away from the roots of the plants and plant them somewhat shallowly but firmly. In large beds of deciduous Azaleas the plants should be interspersed with evergreen shrubs such as Rhododendron, Kalmia, and Skimmia. The appearance will then be less dreary in winter. There are numerous varieties of Azalea sinensis (mollis), and the best of them should be selected. In addition, A. amoena makes a fine display and A. hedifolia is one of the best for flowering late in spring. A. Vaseyi has flowers varying from white to flesh pink and makes very fine specimen shrubs.

Bedding plants.—Zonal and other Pelargoniums that have been wintered in boxes or store pots should now be potted up singly and placed in a light, warm position. Store plants

of Lobelia in moderate heat will soon produce growths suitable for cuttings. These should be taken off when 2 inches long and put into pans filled with light soil, covered with half an inch deep of fine sand. As soon as the cuttings have rooted they should be moved into a house or frame somewhat cooler. A little later they may be put into boxes or potted up singly. The double-flowering variety Kathleen Mallard succeeds well out-of-doors.

Seed-sowing.—Prepare some fine soil as advised in a previous Calendar and sow seeds of the Hollyhock in pots or pans. This grand border plant can be grown as an annual if the seed is sown sufficiently early. Under such cultivation the plants are not so liable to become attacked by the fungus, Puccinia malvacearum. Petunias and Verbenas should be sown during the next week or two and the trays or seed-pans placed in a temperature of about 60°. Seeds of tuberous-rooted Begonias, if sown now, will produce plants large enough to flower well late in autumn. Begonia seed is very small, and the packets should not be opened until the pots have been filled with soil. It is necessary to use a lens in order to see that the seed is evenly distributed over the soil. Place a piece of glass over the seeds and keep them moist and shaded, but not dark. The temperature should be about 65°. It is a good plan to soak Canna seeds in water for 24 hours before sowing them. Seeds of Marguerite Carnations may be sown at the present time and again towards the end of February. The plants will generally flower when they are six months old.

Lawns.—Prepare some fine soil and add to it a mixture of soot and bonemeal or a special lawn-grass manure. When an opportunity offers give the tennis court and any other part of the lawn a good sprinkling with this compost. When the mixture has become overgrown by the Grasses the lawns must be swept and rolled at frequent intervals.

THE APIARY.

By CHLORIS.

Hive making (continued).—In continuation of my note on this subject (see p. 23), I will now deal with the upper portion or hive proper. In fig. 40 is represented a sectional plan of a hive. A is the body box or brood chamber, which, with its porch (F), is placed on the floor (B).

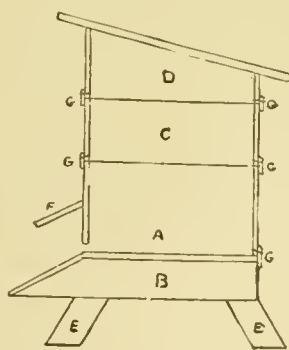


FIG. 40.—SECTIONAL PLAN OF A STANDARD BAR-FRAME HIVE.

A, the body-box or brood chamber; B, floor; C, detachable chamber or lift; D, upper lift with roof; E E, legs; F, porch over entrance; G G G G, draught-excluding strips of wood.

The hive is raised on four legs, well splayed apart, to furnish extra rigidity, for if the legs are perpendicular to the floor the hive will most likely be blown over during boisterous weather. The floor and the alighting-board have already been described. The 1st floor is the lift (C). This is the same length and breadth as the brood chamber, but only 5 or 6 inches deep. Two, at least, of these lifts will be necessary when the bees are busy storing honey. D is the roof, which must be made perfectly water-tight, and to secure this it is necessary to cover it with sheet tin, or to paint it thickly. Should paint be used, a piece of calico should be stretched on and tacked down securely while the paint is wet. The calico itself should also receive a coating of paint. The parts lettered G represent strips of wood nailed over the joints to make the hive water-tight and to keep out draughts.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Deciduous flowering trees and shrubs.—These include a good selection for park planting. Of the Magnolias several useful species may be employed, including M. acuminata, M. conspicua, M.c. var. Lennei and the hybrid M. Soulangiana. The Tulip-tree Liriodendron tulipifera grows to a large size, and is attractive when in bloom. Laburnums in variety flower well, as do also the Robinias. Rhns glabra and R. typhina are objects of interest, not the least by reason of their beautiful autumn-tinted foliage. Amelanchier alnifolia and A. canadensis are amongst the most beautiful of early-flowering trees, and these are followed by the numerous species of Prunus and Pyrus. Catalpa bignonioides does well as a park tree and freely produces both its flowers and fruit. The Sea-Buckthorn (Rhamnus) is interesting, because of its sexes being on separate plants; the tree is a beautiful object, especially when in berry. The Mulberry thrives and fruits in the London parks. The many varieties of Hibiscus syriacus are also attractive: they form bushy plants that flower freely each autumn. The various kinds of Philadelphus are all good town trees and flower well; the Forsythias are pleasing objects in the early spring, when they are covered with their bright yellow blossoms. In addition to those mentioned, several species and varieties of Viburnum, Colutea, Cornus, Diervilla and Ribes impart further variety. The many beautiful varieties of Lilac (Syringa) are especially valuable for park planting, and several of the Elders are showy in flower and foliage.

Lawns and Grass-lands.—In public parks and gardens the area of Grass-land is considerable, and its proper maintenance is a matter of importance. Attention should now be directed to the turf, and the bush-harrow brought into requisition. In the case of playing fields any necessary renovation should have been made after the summer games had ceased, and the ground levelled, the surface afterwards dressed with well-rotted manure or soil of a rich nature. The dressing of soil is especially valuable if the land is of a light, sandy character, because it will provide a more durable surface. These materials should now be broken up and dispersed as finely as possible, and one of the best means of doing this is to cross and recross the plots with a bush-harrow. This implement is readily made by interlacing long, freshly-cut thorn bushes into a frame not unlike a large open hurdle. The brushing will break and scatter the particles evenly over the surface of the turf and freshen the Grass. After the brush a heavy roller should follow to consolidate the surface. It is only by a constant and judicious use of the roller, combined with proper mowing, that a good sward can be obtained. Should the ground be soft, the horses to the roller or mower should be provided with boots. Rolling should be done during dry weather. It is a struggle between wear and repair on all Grass plots that are much frequented by the public, especially on land that cannot be conveniently closed for a time. Such turf can only be renovated by pricking up the worn surface with a fork and sowing seeds afresh. In such cases the sowing should be done as early in the season as possible. Sometimes after turf has been used for a whole season for football the Grass is past repair and must be renewed. The ground should be dug deeply and a suitable seed-bed prepared by rolling and harrowing. A slight variation may be made in the variety of Grasses used, according to circumstances, but the following may be regarded as making a good and useful mixture: Poa pratensis, P. nemoralis, P. trivialis, Festuca ovina tenuifolia, F. rubra, F. durinacula and Cynosurus cristatus. The perennial Rye-grass may also be included, but it is not so much used as formerly. The Grasses named will form turf of a finer nature without the Rye-grass. Poa nemoralis is the best Grass for sowing in the shade and under trees. A little Clover, about 1lb. to each bushel of Grass seed, may be employed, but in some parks objection is taken to the use of Clover. The suckling Clover, Trifolium miasm, is to be preferred, especially on a light soil. Sow the seeds thickly in order to obtain a close turf as early as possible.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

Appointments for February.

MONDAY, FEBRUARY 1.—Nat. Chrysanthemum Soc. Annual meet. at Essex Hall, Strand, at 7 p.m.

THURSDAY, FEBRUARY 4.—Linnean Soc. meet.

SATURDAY, FEBRUARY 6.—Soc. Franç. d'Hort. de Londres meet.

MONDAY, FEBRUARY 8.—United Hort. Ben. & Prov. Soc. Com. meet.

TUESDAY, FEBRUARY 9.—Ann. meet. Roy. Hort. Soc. (Competitive Classes for late dessert Pears). Hort. Club Ann. meet. and Dinner. British Gard. Assoc. Ex. Council meet.

WEDNESDAY, FEBRUARY 10.—Perpetual-flowering Carnation Soc. Annual meet. at Hotel Windsor, 4 p.m. Croydon & District Hort. Soc. Annual Dinner.

THURSDAY, FEBRUARY 11.—London Branch B.G.A. lecture on Kew Gardens.

FRIDAY, FEBRUARY 12.—Roy. Gard. Orphan Fund Ann. meet. and Election of Orphans.

WEDNESDAY, FEBRUARY 17.—Roy. Meteorological Soc. meet.

THURSDAY, FEBRUARY 18.—Linnean Soc. meet.

TUESDAY, FEBRUARY 23.—Roy. Hort. Soc. Coms. meet. (Competitive Classes for late dessert Apples. Lecture at 3 p.m. by Mr. Arthur W. Sutton, on "A Camping Tour through Syria to Petra in Arabia.") Surveyors' Institution Annual Dinner at Hotel Métropole.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—39.4°.

ACTUAL TEMPERATURES:—LONDON.—Wednesday, January 27 (6 P.M.): Max. 32°; Min. 27°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, January 28 (10 A.M.): Bar. 30.3; Temp. 34°; Weather—Dense fog.

PROVINCES.—Wednesday, January 27 (6 P.M.): Max. 48° Co. Cork; Min. 27° Durham.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY.—Perennials, Lilies, Border Bulbs, Azaleas, Ferns, &c., at 12; 1,000 Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY.—Hardy Border and Herbaceous Plants, Lilies, Bulbs and Tubers, at 12; Roses and Fruit Trees, at 1.30; Azaleas, Palms, and Plants, at 5 o'clock; by Protheroe & Morris, at 67 & 68, Cheapside, E.C.

FRIDAY.—Burmese Dendrobies, Pleonies, and other Orchids, at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

Munificent Bequest to Horticultural Science.

The need for research in horticulture has been urged again and again in these columns. Horticultural practice in this country leads the world; horticultural research lags behind.

We are glad therefore to be able to announce that, by the munificence of the late Mr. John Innes, an opportunity occurs for the foundation of a station for horticultural instruction and research of which this country may be proud.

Under the terms of the Innes bequest a

Trust will administer a sum which may not be far short of £10,000 a year, in the interests of horticulture. The full details of this bequest, which we have just received from the Charity Commission, are as follow:—

In the first place, a yearly sum of £350 out of the income of the charities will be applied by the trustees to various charitable objects.

An educational foundation is established, by means of which certain sums of money will be available for the maintenance of scholarships at the Rutlish Science School. These sums will be: In the first year, commencing from the date of the scheme, £64; in the second year, £114; in the third and every subsequent year, £154. This educational endowment will be administered as a separate foundation under the title of the Innes Scholarships.

The Merton Boys' Club, in which the late Mr. Innes was deeply interested, is to be maintained by means of a yearly sum of £200 paid to Mr. Edward William Pillinger, of the School House, Merton.

A portion of the grounds held with the house at Merton, formerly known as Manor Farm, is to be maintained as a park, which is to serve for the recreation of the inhabitants of Merton and Morden.

Subject to the provisions already mentioned, the charity and its endowments are to be administered for the purposes of an institution, which is to be called the "John Innes Horticultural Institution," the object of which is to be "the promotion of horticultural instruction, experiment, and research in accordance with the scheme."

The house above referred to, together with the outbuildings and appurtenances, and a portion not exceeding two acres of the land held therewith, is to be appropriated for the purposes of the institution.

The charity is to be administered by a body of trustees, who, for the purpose of advice, particularly on technical management, may delegate to a council such functions as they may determine.

The first trustees will be the trustees of the will, viz.:—Charles Clare Scott, Middle Temple, London, Barrister-at-law; Frederick George Courthope, of Southover, Lewes; William Ernest Reid Innes, of Roffey Park, Horsham.

Among their other functions the trustees are to provide land in the neighbourhood of Merton of sufficient extent, with the two acres attached to the Manor Farm already referred to, to establish a horticultural station, and to equip it efficiently, including the provision of buildings and lecture rooms. Further to establish and equip, or assist in such work, similar stations in other parts of the country.

The council will consist of twelve persons—three ex-officio members and nine representative members. The ex-officio members will be the three trustees of the charity.

The scheme provides that the representative members shall be appointed as follow:

Two by the Board of Agriculture and Fisheries, one each by the Royal Horticultural Society, Fruiterers' Company, National Fruit Growers' Federation, Hebdomadal Council of the University of Oxford, Council of the Senate of the University of Cambridge, Senate of the University of London, and the

Governing Body of the Imperial College of Science and Technology.

The functions of the council (subject to the sanction of the trustees) will be:—

1. To establish and maintain the institution for the purpose of affording practical and scientific training in horticulture.

2. To carry out investigation and research, particularly with fruit trees, shrubs, fruit, vegetables and flowers.

3. To endeavour to improve existing varieties, and to create or introduce new ones.

4. To further, generally, the interests of horticulturists.

With the consent of the trustees, the council may enter into arrangements with other institutions or bodies for establishing subsidiary stations and for carrying on similar work in different parts of the country.

The lands and monies available for carrying out these projects are:—

1. The house and grounds (11 acres) of Manor Farm, Merton.

2. Premises at Merton known as the Manor Club and Institute.

3. Ordinary shares of £1 each, fully paid, to the value of £24,350 in the Merton Park Estate Company.

4. Cumulative preference shares of £1 each, fully paid, to the value of £62,650 in the same company.

5. 16,800 ordinary shares of £2 10s. each fully paid in the City of London Real Property Company, Limited, amounting to £42,000.

6. 5,600 cumulative preference shares of £5 each in the same Company, amounting to £28,000.

7. Consols to the value of £65,200 set apart to provide for annuities bequeathed by the founder of the charity.

8. Accumulated funds on deposit with Messrs. Barclay and Company, Limited, North Street, Brighton, 4,000.

The gross yearly income from the bequest amounts, according to the report of the Charity Commission, to £10,000.

In view of this provision, there can be no doubt that the John Innes Horticultural Institution is the most munificent private provision ever made in this country for the furtherance of the interests of horticulture.

The need for such an institution is pressing; the money is now available. From this noble foundation there should arise a horticultural university in which research occupies the first place and the dissemination of the results of research—that is, advanced teaching—the second place. If the institution were to become primarily, or mainly, a school of elementary instruction, it would fail inevitably as a school of research, and thus a great opportunity would be lost. To guard against such a contingency must be the first and constant aim of the council.

As we were able to state in our last issue, there were 21 pensioners elected at the annual meeting from the list of 73 applicants. It may be pointed out that the two candidates placed on the funds at the suggestion of the committee had sought election on several previous occasions, and

The Gardeners' Benevolent.

their hopes of success were poor. The candidate who benefits by the generosity of Mr. Arthur W. Sutton is totally incapacitated for work, although but 40 years of age. Mr. George Munro, as last year, contributes a sum necessary to support one pensioner, but as this pensioner's name did not appear on the original list it need not be deducted therefrom. After our pages went to press, however, it was announced by Mr. N. N. Sherwood in a speech which he made during the proceedings which followed the friendly supper, that he would contribute a sum necessary to support two additional pensioners. It was understood that they would be two of three candidates to whom Mr. Veitch had previously referred as suffering from paralysis. This year, therefore, there remain 50 disappointed candidates; but it must be remembered that there were 20 more applicants than on any previous occasion.

It may be noted with satisfaction that the widow of a gardener who had subscribed to the institution for 45 years, headed the poll. By the beneficent rule which secures to a subscriber 100 votes for every year's subscription he has paid, this candidate started with 4,500 votes to her credit, or nearly 1,500 in excess of the number of votes obtained by the second candidate on the list of successful applicants. Reference to this matter is apposite, because a correspondent complains (see p. 76) that, whilst many candidates who had subscribed to the institution were unsuccessful at the election, several were elected who had never contributed to the funds. The present system certainly gives subscribers an advantage over non-subscribers. If the majority of those who support the institution desire to make the conditions yet more favourable to subscribers, they must do so by changing the character of the charity. If non-subscribing candidates were to be entirely excluded it would become a benefit society rather than a benevolent institution. It must be borne in mind that only a very small portion of the fund is contributed by those who are ever likely to receive allowances: the main part of the income is derived from gifts that are purely charitable. In a benefit society this is not the case. At the annual meetings frequent references have been made to this aspect of the institution, and there appears to be a general desire to maintain the benevolent character, which has been a marked characteristic during the 70 years of its existence. In that period a sum of £125,000 has been distributed, and the current disbursements amount to something like £4,000 a year. There are 240 pensioners at present receiving allowances. Then there is the Victoria Era Fund from which candidates for election, who have subscribed to the institution, are given assistance, which, in some cases, amounts to as much as £12 a year during the time they have to wait. The Samaritan Fund is available for assisting non-subscribing candidates previous to election, and for making temporary grants to meet urgent cases for relief.

Notwithstanding the success that has characterised the operations of this institution, the present position is one which must cause considerable anxiety. It has already been shown that the number of disappointed candidates is greater than ever, and some means must be sought by which a larger number

of deserving cases may be relieved. It was stated by Mr. Harry J. Veitch, whose efforts on behalf of this institution are as indefatigable as ever, that the 73 candidates were selected by the committee as being most deserving of help, but that the actual number that applied was approximately 100, which certainly increases the gravity of the situation.

There appeared to be considerable interest at the meeting as to the effects of the Old Age Pensions Act upon the policy of the institution. The addition to Rule III. 6, proposed by Mr. White on behalf of Mr. W. A. Bilney, the honorary solicitor, was accepted by the meeting after considerable discussion. This addition to the rules merely gives to the committee power to adjust the allowances to pensioners in such a manner that they will not prevent the pensioner from claiming a Government Old Age Pension. It is obvious that the Government scheme will not affect in the least a large number of those who apply to this institution for relief. The age limit in itself invalidates a large number of the pensioners, and in this connection it may be stated that 41 out of the 73 applicants this year are disqualified for this reason. In some few cases the private means of the applicant would be sufficient to render him ineligible for the State pension. But there are many cases receiving allowances in which modifications may have to be made in order that pensioners may take full advantage of the £13 per year obtainable from the State. We will suppose a pensioner is over 70 years of age, thus conforming with the age requirement of the Old Age Pensions Act. Provided that such a candidate or pensioner has no private means, this institution would be able, as heretofore, to make an allowance of £20 per year without standing in the way of the Government pension. Indeed, the annual income of any pensioner might be made up to, say, £25 per year by this institution granting £5, £10, £15, or £20, varying according to the private means. There are instances in which considerable sums would be saved the institution by thus placing every pensioner in a position to claim a State pension. The institution is hardly likely to continue to grant an allowance that would have the effect of making the income of the pensioner more than £25 per year. There is a feeling amongst subscribers that when this matter is perfectly adjusted and the most has been made of the State pensions, it will be possible to assist a much larger number of cases than is possible at present. This appears more than probable. As a subscriber said at the meeting, the adjustment is necessary, in order to ensure the greatest good for the greatest number. It was subsequently announced that the committee would consider this matter and after determining a course of action would communicate the result to the Press. In the meantime, there is not the slightest reason to doubt but that the committee will see to it that private charity does not operate to prevent the acceptance of State aid. It is to the interest of all concerned that there should be no overlapping, and we have every confidence there will be none.

In connection with the fact that Mr. Lionel de Rothschild will preside at the annual

festival in June next, it is interesting to state that already five other members of the Rothschild family have presided at similar festival dinners in support of the Gardeners' Royal Benevolent Institution.

OUR SUPPLEMENTARY ILLUSTRATION represents a hybrid *Sinningia* named after the late Dr. Maxwell T. Masters by Mr. Ernest Benary, of Erfurt. Mr. Benary, who exhibited plants at the meeting of the Royal Horticultural Society on July 21, 1908, states that this *Sinningia* was raised from a cross between the garden *Gloxinia* (*Sinningia*) and a species of *Gesneria*. The flowers are rose-coloured, drooping, and very freely produced, whilst their construction shows some trace at least of the influence of *Gesneria*. The leaf petioles are longer than in most *Gloxinias* and the roundish ovate leaf-blades are of a soft, silky nature. The Floral Committee recommended the plant an Award of Merit.

NATIONAL CHRYSANTHEMUM SOCIETY.—The annual general meeting of this Society will be held at Essex Hall, Essex Street, Strand, W.C., on Monday, February 1, at 7 p.m. The chair will be taken by the President, Sir Albert Rollit, D.C.L., LL.D.

PERPETUAL - FLOWERING CARNATION SOCIETY.—The annual general meeting will be held in the Hotel Windsor, Victoria Street, London, S.W., on Wednesday, February 10, at 4 p.m. The spring show of the society will be held on March 24 in the Horticultural Hall, Vincent Square, Westminster. Particulars may be obtained from the Hon. Secretary, Hayward Mathias, Lucerne, Stubbington, Fareham, Hants.

HORTICULTURAL CLUB.—The annual dinner of this club will take place on Tuesday, February 9, at 6 p.m., at the Hotel Windsor, Westminster. Ladies are specially invited. The annual meeting will be held at 5.30 p.m.

AGRICULTURAL SCIENCE.—Two lectures will be delivered by Mr. A. D. Hall, M.A., Director of the Rothamsted Experimental Station, at the Royal Institution of Great Britain, Albemarle Street, Piccadilly, W. The first lecture will be on Thursday, March 11, and the second on Thursday, March 18, at 3 p.m. The subject of the first lecture is "The Fixation of Nitrogen by Bacteria in the Soil," and the following is the syllabus:—The fixation of nitrogen by the bacteria associated with leguminous plants.—History and description.—Attempts made to utilise these bacteria in practice; inoculation of soil and seed.—Preparation of pure cultures.—Reasons for the partial success obtained.—Fixation of nitrogen by bacteria living free in the soil.—What part do they play in nature?—The origin of the virgin soils rich in accumulated nitrogen. The subject of the second lecture is "The Effect of Fertilisers upon the Texture and Reaction of the Soil." Acid soils found in nature, their characteristics.—Acid soils of artificial origin, due to the continual use of ammonium salts as fertilisers.—Nature and cause of the acidity.—How the acidity brings about infertility.—The part played by micro-fungi in the soil.—The injury caused by nitrate of soda to the texture of the soil.—Deflocculation of clay caused by soluble alkalis.—Formation of sodium carbonate from sodium nitrate by the growth of plants.—Evidence for the existence of sodium carbonate in the Rothamsted soil receiving sodium nitrate, and its injurious effect upon the soil.

THE SURVEYORS' INSTITUTION.—The secretary informs us that the ordinary meeting, previously announced for February 8, was held on January 25. The annual dinner will take place on February 23.

"THE SWEET PEA ANNUAL AND SCHEDULE FOR 1909" is now ready. It may be obtained by non-members for 2s. post free, not 1s. 3d. as hitherto. The London exhibition will be held on July 23, and the provincial show at Saltaire on July 13. A new catalogue of Sweet Pea names and descriptions will be ready about the end of February; it will be sold at 6d. per copy. New members joining the society for 1909 will receive a copy gratis.

A NEW "PLANT LABEL."—Mr. C. E. WEST sends us samples of a new plant label known as the "Alu." The label material is aluminium, and it is claimed to be indestructible. By means of a narrow strip of the metal, known as the shank, the labels can be quickly attached to the stem of a plant without tying. The shank also admits of the label being inserted in the ground.

BOUGAINVILLEA CYPHERI.—As a general rule coloured illustrations of plants leave much to desire on the score both of beauty and of accuracy. An exception to this general rule is the excellent plate of Bougainvillea Cypheri and B. glabra Sanderiana issued in the *Revue Horticole*, No. 1, January 1, 1909. The bracts of the former variety are larger and of a somewhat less magenta colour than those of the older, better-known B. glabra Sanderiana. The text accompanying the plate does ample justice to the sensation which this latter variety created when introduced in 1806. Unfortunately, the newer variety, unlike B. g. Sanderiana, is difficult of propagation. On this account it has not yet become so widely known or grown as it deserves.

PUBLIC PARKS IN THE GERMAN EMPIRE.—The spending of money in the formation, extension, and improvement of public parks and recreation grounds appears to go hand in hand with the increase of wealth in Germany. One can scarcely scan German gardening journals or ordinary newspapers without becoming aware of the intention of this or that town to lay out an area for a park or public garden. We note in a recent number of *Die Gartenwelt* that the municipality of Stettin has decided to apportion 10 millions of marks for the acquirement of land for such purposes, and for the establishment of the so-called "Laubencolonien"—summer-house gardens. Of course it is solely in summer time in that country that a garden can be enjoyed at all, as in the winter months snow is the rule rather than, as in southern England, the exception. Tübingen is to have woods laid out in good landscape style, in combination with certain areas planted with trees, and the existing wood is to be brought nearer to the town. The town of Rixdorf will benefit to the extent of 55 hectares, i.e., nearly 140 acres.

FORCING LILACS IN DRESDEN.—Our readers are familiar with the discoveries of JOHANNSEN of the effects of etherisation on plants (*Gard. Chron.*, February 28, 1903, p. 142). It is interesting to learn from an article translated by Mr. F. LEDIEN from *Möller's Deutsche Gärtner-Zeitung*, and published in *Le Moniteur du Jardinier* (ix. 1, Jan., 1909), that these discoveries are now being applied commercially and that a considerable industry in the etherisation of Lilacs for winter forcing has grown up in Germany during recent years. The plants are raised in Dresden, etherised there, and then

distributed to such distant regions as Austria and Hungary, where they are forced. Beside etherisation, the hot-water method is also practised, but it has the disadvantage, in comparison with the ether method, that the plants generally are useless for forcing a second year. The varieties of Lilac used in the ether treatment are, beside Marie Légraye, Charles X., and the double varieties Léon Simon, Mme. Lemoine, and Mme. Casimir-Perier. The Lilacs for etherisation are grafted on stocks of *Syringa vulgaris*, grown for two years in the open, and then potted in June. A proper root development is induced by frequent transplantations during the early stages. Batches of plants are etherised weekly from the beginning of November, in order to provide cut-flowers. Towards the end of November larger numbers are treated to meet the Christmas demand for pot-plants. The process of etherisation lasts 24 hours, the plants are then put in a dark cellar or pit at a temperature of 25° C. (= 77° F.) for a fortnight. Then, the inflorescences being about 6 inches long, the plants are exposed to the light in order that the flowers may develop their delicate tints.

OLD GARDENS OF ITALY.—At a recent meeting of the Italian Circle of the Lyceum Club Mr. JOSEPH CHEAL, Crawley, delivered a lecture on the "Old Gardens of Italy." Mr. CHEAL said that Roman generals, no doubt, brought home marvellous tales of the gardens of Assyria, Babylonia, and Egypt, and that it was probably these accounts which fired the imagination of LUCULLUS, whose magnificent garden at Naples is described by POMPEY. The Emperor HADRIAN early in the second century seemed to have stimulated the taste for horticulture, and PLINY the younger, about the same time, not only designed gardens, but has left descriptions of some of the gardens of the period. For several centuries during the decline of the Roman power the love of gardening also declined. There was a great revival about the close of the 14th century. A great impetus to gardening seemed to have been given by LORENZO DE MEDICI, a friend of MICHAEL ANGELO. The MEDICI family had much to do with the creation of the beautiful villas and gardens around Rome and Florence.

PUBLICATIONS RECEIVED.—*The Journal of Agricultural Science*. Volume III., Part I. (December 1908.) (Cambridge: University Press.) Price 5s. *Health in the Orchard*. By H. Benjafeld, M.B. (Tasmania: *The Mercury* Office, Hobart.)—*Bullettino della Società Botanica Italiana*. (N. ri 7-8-9.) (Firenze: Angiolo Pucci, via Palazzuolo, 65.)—*The Agricultural Gazette of New South Wales*. (December 1908.) (Sydney: W. A. Gullick, Government Printer.) Price 6d.—*Beautiful Flowers and How to Grow Them*. Edited by Horace J. & Walter P. Wright. Part VII. (London: T. C. & E. C. Jack) Price 1s. net.—*Missouri Botanical Garden, Sixteenth Announcement Concerning Garden Pupils*. January 1909.—*U.S. Department of Agriculture's Bureau of Plant Industry*: Circular No. 17, containing index to papers relating to plant industry subjects in the year-books of the United States Department of Agriculture. Prepared by J. E. Rockwell, Editor *Bureau of Plant Industry*. Circular No. 19, "The Decay of Florida Oranges while in Transit and on the Market." By Lloyd S. Tenny, assisted by G. W. Hosford and H. M. White. Circular No. 20, "An Electrical Resistance Method for the Rapid Determination of the Moisture Content of Grain." By Lyman J. Briggs. Circular No. 21, "Farmers' Co-operative Demonstration Work in its Relation to Rural Improvement." By S. A. Knapp. Bulletin No. 132. Seeds and Plants imported during the period from July 1906, to December 31, 1907. Inventory No. 13; Nos. 19,058 to 21,730. (Washington: Government Printing Office).—*Is Seed Inoculation Useless*. From the *Review of Reviews*.

WHORTLEBERRIES AND CRANBERRIES.

(Continued from page 51.)

VACCINIUM HIRSUTUM.—An interesting history belongs to this rare species. It inhabits little-frequented spots in the mountains of North Carolina, where it was first discovered some 70 years ago by Mr. B. S. Buckley. It was not introduced to cultivation at the time, and was lost sight of until 1886. In that year, Professor Sargent, whilst journeying through its native region, made enquiries amongst the inhabitants if any of them knew of a "hairy Huckleberry." He found at last a man who "had heard tell" of such a plant, and, before leaving, offered a reward of five dollars (a considerable sum of money, as he observes, in those parts) to anyone who would find and send it to him. The following summer Professor Sargent received a box of fruits of the true *V. hirsutum*, and afterwards young plants were sent to the Arnold Arboretum. In this way the species became established in cultivation. It was introduced to Kew in 1889, and has flowered and fruited many times since. It is a low shrub, rarely more than 2 feet high. In its native home it is said to grow in light, stony soil, in the shade of large trees. The leaves are ovate-oblong, entire, and 1 to 2 inches long. The flowers, which are produced in short racemes towards the end of May or the beginning of June, have a cylindrical corolla, $\frac{3}{8}$ inch long, with five small lobes, white, tinged with pink. The fruit is blue-black, globose, and hairy; it is juicy, and has an agreeable, although not very pronounced, flavour. The distinctive feature of this species is, of course, its hairiness, the young wood, the lower surface of the leaves, the flowers and the fruit being all densely covered with short hairs.

V. INTERMEDIUM.—The credit of the original discovery of this hybrid Whortleberry in England appears to belong to Mr. Robt. Garner, who found it in Maer Woods, Staffordshire, in 1870. But its existence in the British flora does not appear to have been recorded until 1886, when it was collected on Cannock Chase in the same county by Professor Bonney. It was then made the subject of an article in the 24th volume of the *Journal of the Linnean Society*. The late Mr. G. Nicholson also found it in the same locality in 1888. Its parents are *V. Vitis-Idæa* and *V. Myrtillus*, and its characters are fairly intermediate between the two species. On the whole, it is more suggestive of *V. Myrtillus* in habit, but its stems are not angular as in that species. It shows the influence of *V. Vitis-Idæa* in being nearly or quite evergreen. In shape, also, the leaves approximate those of the latter species, but they are not dotted on the under surface. The fruit is dark violet colour.

V. MORTINIA.—Growing on the slopes of Mount Pichincha, in Ecuador, this *Vaccinium* affords one of the few instances of a shrub, which, whilst hardy enough to thrive out-of-doors in several parts of England, occurs wild almost exactly on the equator. It has flowered occasionally in the open at Kew, but can only be regarded as half-hardy there. In Sir Edmund Loder's garden at Leonardlee, near Horsham, it appears to thrive to perfection. It is a small evergreen bush, 2 to 3 feet high, the finely-pubescent branches being thickly set with small, leathery leaves (seven or eight to the inch). The leaves are uniform in size and shape, being ovate, pointed, about $\frac{1}{2}$ inch long; they are toothed at the margin and speckled with minute black dots beneath. The blossoms are borne in numerous, small, drooping racemes in the leaf-axils. The corolla is rosy pink, cylindrical, and about $\frac{1}{2}$ inch long. The specific name is derived from "Mortina," a native name for the fruits, and one under which they are sold in the market of Quito. The species was originally introduced to this country by the Royal Horticultural Society through their collector, Hartweg.

V. MYRTILLUS (BILBERRY OR WHORTLEBERRY).—Except the Heather (*Calluna vulgaris*), there is no shrub more characteristic of British moors and mountains than the common Bilberry. On some of the loftiest summits of the English and Scotch mountains one may find this plant dwarfed almost out of recognition, but maintaining a sturdy existence where little else can survive. In ordinary situations it grows from 6 inches to 2 feet high, with very well-marked, acutely-angled stems. The leaves are from $\frac{1}{2}$ to 1 inch long, ovate, regularly-toothed, and green both above and below. The flowers are produced singly on the growth of the current season; they are pinkish in colour and wax-like in texture. The berries are about the size of Red Currants, but are purplish-black. As edible fruits they are the most valuable of British Whortleberries, being made into jellies, tarts, and puddings. A favourite way of eating them in some parts is with new milk or clotted cream. Winged game feed upon them freely. The Bilberry is found plentifully in every county in the three kingdoms, except, perhaps, the flat coun-

at its best, it is an ornamental and striking shrub. Its young wood is purplish and clothed with a short, dense pubescence. The leaves are evergreen, thickly set on the branches, of an almost uniformly ovate shape, finely toothed, and of a firm, leathery texture; they average about 1 inch in length. The flowers are round, bell-shaped, white, and produced from the leaf axils, four to six together, in a short raceme. The Bearwood specimen produces small, black fruits, and these, according to Douglas, have an agreeable flavour. V. LANCEOLATUM is simply a narrow-leaved form of this species. W. J. Bean.

(To be continued.)

ILEX PERNYI.

AMONGST the magnificent group of ornamental trees and shrubs shown at the Royal Horticultural Hall, Westminster, on December 22nd last, by Messrs. Jas. Veitch & Sons, of Chelsea, this remarkable looking Holly did not fail to attract



FIG. 41.—ILEX PERNYI A CHINESE SPECIES.

ties of East Anglia. It reaches over the greater part of Europe, and is found also in North Asia and Eastern North America.

V. MYRTILLUS VAR. MICROPHYLLA.—A variety of V. Myrtillus occurs in Western North America in the Sierra Nevada, at elevations of 7,000 feet, and thence northward. It is called var. microphylla, and is about half the size of the European plant in all its parts.

V. OVATUM—Douglas first introduced this shrub to England in 1826, during his famous journeys on behalf of the Horticultural Society in Western North America. It had, however, been discovered more than 30 years before by Archibald Menzies, whilst he was attached to Vancouver's great voyage of survey (1791-5). The species grows abundantly in Oregon and California, in association with the Redwood (*Sequoia sempervirens*). The finest plant, I believe, in this country, is at Bearwood, Surrey, being 10 to 12 feet high. It is hardy enough to survive the severest winter experienced at Kew, but gives one the impression that it would be happier in a milder locality. Seen

attention. It had been shown on a previous occasion—September 1, 1908—when a First-class Certificate was awarded to it by the Floral Committee.

Although new as a garden plant, Ilex Pernyi has been known to science for over 20 years, and specimens have been in the Kew Herbarium since February, 1887. It is a native of Central China, where it forms a tree 20 feet to 30 feet high. It was discovered in the neighbourhood of Kinchu by the Abbé Perny, after whom it was named by Franchet in *Plante Davidiana*, p. 69. The Abbé David (whose name is commemorated in the work mentioned) also discovered this Holly at Shensi and Patung, and Dr. Henry, I believe, records that the wood is valuable as timber.

The plants in Messrs. Veitch's collection are only 2 feet high, forming dense, compact growing evergreen bushes. They are remarkable for the peculiar rhomboidal or squarely-ovate leaves, which measure 1½ inches to 2 inches in length, the apical half being triangular and ending in a sharp cartilaginous spine. The lower

half is almost square, but is a little narrower at the base, and the margins are furnished with two or three spiny teeth.

One peculiarity noticeable in the illustration in fig. 41 is the sceming overlapping of some of the leaves, which spread out flatly from the wiry stems. This peculiarity can scarcely be regarded as characteristic, as the leaves on all branches do not overlap in this way. Looking at them from the front, they appear to be sessile, but each leaf has a very short stalk, scarcely one-tenth of an inch long.

Taken altogether, this Holly may be regarded as a decided acquisition to the evergreen trees and shrubs. John Weathers.

NOTES FROM A "FRENCH" GARDEN.

OWING to the favourable weather, the making of the hot-beds is considerably advanced, and in some gardens these beds are almost completed. In private gardens, or where the produce is sold locally, however, it is advantageous to spread the making of the hot-beds over four weeks in order to obtain a succession of Radishes and Lettuces. If this rule is followed two or three of the last-made beds may be sown with the Carrot "Bellot."

If it is intended to force Turnips in March we merely sow Radishes, and plant 42 Lettuces per light. The Lettuces will be ready at that period, and the beds can then be turned over to give a mild heat sufficient for the germination of Turnip seeds.

We are now planting the "Passion" Lettuce in the open, on ground previously well prepared and on which a layer of thoroughly decayed manure has been spread. Before planting these we usually sow a few seeds of Radish "Early French Breakfast," setting the Lettuces at 10 inches apart each way. In very rich soil and where there is a good supply of water they may be planted closer.

The salads supplied to the Paris market are of superb quality. English salesmen prefer the white strain, but in Germany, where many Lettuces are imported from France, the favourite is the brown-leaf Passion. In the first week of February we shall sow another batch of Cos-Lettuces (White Cos of Paris) and Cabbage Lettuce "La Perichonne" in a cold frame, as a succession to those sown on the hot-beds a fortnight ago. This latter batch will be pricked off in a few days in a cold frame, 150 to 160 plants per light.

We shall also sow the first lot of Cauliflowers "Driancourt and Lenormand" on a hot-bed 12 inches thick, putting 500 seeds in each light. They will be planted as an intercrop in the place of the first lot of Cos Lettuces grown under the cloches.

The Radish seeds planted in the first hot-beds made about the 15th January are now well up, and it will be necessary to place fresh manure round the frames so as to keep an even temperature.

Until recently it has not been necessary to cover the lights with mats at night, but now that the weather has become colder they are needed. P. Aquatias.

BEGONIA × PATRIE.

THE hybrid Begonia illustrated in fig. 42 was raised by Messrs. M. V. Lemoine & Sons, Nancy, and was exhibited by them at the meeting of the Royal Horticultural Society on January 12, when the Floral Committee granted it an Award of Merit (see *Gardeners' Chronicle*, January 16, p. 46). The parents are B. socotrana and a variety of B. Pearcei. The plant is of compact habit and the many inflorescences are borne in rather stiff bunches: the colour of the flowers is a rich shade of rose-pink.

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The 50 unsuccessful candidates for the pension of the Gardeners' Royal Benevolent Institution at the recent election claim deepest sympathy, and one would have liked to see all of them elected. As matters stand, however, financial considerations do not allow of this, and many deserving cases have to be passed over. As the majority of the rejected candidates have been contributors to the funds of the society, I, in common with many others, consider that the time has come when subscribers should have an even greater advantage than they now enjoy over the non-subscribers. There are, possibly, good reasons why outsiders cannot be excluded altogether, but when a life member or a subscriber of several years' standing is ousted by a candidate who has never contributed one penny to the funds one is apt to think that there is considerable room for improvement. When trying to induce other gardeners to subscribe, I often meet with the objection that, even if the subscription is paid for years, a non-subscriber may, in the long run, be elected and the subscriber be passed over. This objection is certainly borne out by facts, for while subscribers up to 21 years' standing were rejected at the last election, and numerous life members shared the same fate, at least three non-subscribers were elected. This is the reason that gardeners do not largely join the society. W.

CHRYSANTHEMUM FRAMFIELD PINK.—If Messrs. R. Richards and T. Down will plant this variety in a bed or border of rich soil and stop the shoots once only they will have no cause for complaint either in regard to flowering or poverty of colour. I lifted six large plants in September, having cut around their roots with a spade about a fortnight before lifting, and they have furnished hundreds of large well-coloured blooms, the supply lasting well into the new year. Chas. Lawton, Welton House Gardens, East Yorkshire.

—My experience with this variety differs from your correspondent's, inasmuch as I get not only good plants, but plenty of richly-coloured flowers. Each leading shoot furnishes a good spray of from three to seven blooms, and I have only just finished cutting (January 22): most season's blooms can be had up to March. The system of cultivation I adopt with all single and decorative varieties is to strike the cuttings about the middle of February, and as soon as they are well rooted pot them singly into large 3-inch pots, transferring them into their flowering pots (10 inch) early in May. From the time they are first rooted the plants are given as hardy a treatment as possible, and in many seasons they are placed in the open at the end of March. The shoots are not pinched or stopped in any way, and it is to this that I attribute my success. The plants form good bushes, from 2 to 3 feet through, and with 24 to 30 shoots. They range from 2 to 4 feet in height. The quality and colour of the bloom, as well as the strength and hardiness of the stem, are infinitely better than in the case of any plant that has been stopped. No manure is given in the early stages of growth except a little bonemeal, but after the flower-buds are formed they are fed in no unstinted measure. Thomas Stevenson, Woburn Place Gardens, Addlestone, Surrey.

TRENCHING.—In reply to Mr. A. Shakelton (p. 61), I am not surprised to know that he has some hesitation in following my advice as to placing the bottom layer of soil at the surface. I know there are many other good cultivators who disagree with me on this subject. But, having practised this plan of trenching for more than a quarter of a century, I can recommend it as the quickest and most beneficial method of improving soil, and specially soil devoted to the culture of kitchen-garden crops. I, too, have had a considerable experience in different parts of the country and with a variety of soils. The gardens at Aldenham House have a subsoil known as London clay, and this clay ranks amongst the most unkindly of soils. The land which forms our kitchen garden has probably been cultivated for a century and a half. The

depth of the garden loam when I was first charged with the care of these gardens averaged from 9 to 10 inches, and it rested on a subsoil of pure clay. The whole has now been trenched to the depth of 3 feet, and I have always insisted on bringing the subsoil to the top. We now have a sufficient depth of good soil to cultivate all kinds of vegetables, and I shall be pleased at any time to show Mr. A. Shakelton what has been accomplished here. Ground devoted to the culture of vegetables is generally intended to serve this purpose for a great number of years; and without deep cultivation to provide a deep root-run, satisfactory results can hardly be expected. E. Beckett.

GRAPE MILL HILL HAMBURGH.—I think few persons will agree with F. B. S. that this Grape possesses all the good qualities of the Black Hamburg variety. In flavour it is distinctly inferior; the flesh also is hard, and much more resembles that of Gros Maroc than Black Hamburg. Mill Hill Hamburg does not colour nearly so regularly as Gros Maroc, and too often it is seen with a "foxy" tint. It is owing to its lack of good flavour and fault in colouring that it is not more often cultivated. E. M.

ERYNGIUM PANDANIFOLIUM.—In respect to Mr. Elgar's note (p. 45) on this interesting but uncommon plant, may I state that I became acquainted with it while at Bessborough, Co. Kilkenny, about seven years ago, where it was planted as an isolated specimen on Grass, in a fairly sheltered position under a wall. The specimen did remarkably well, although given no protection whatever. Later, when residing in East Kent, I procured a plant of the species, and though it was given a sheltered position, it suffered damage by cold during the winter of 1906-07. The following winter it was afforded light protection, and as a result it developed tall, candelabra-like flower-spikes, surrounded by a mass of handsome glaucous foliage. J. G. W., Eastwell Park Gardens, Kent.

ITALIAN FENNEL OR FINOCCHIO (see p. 45).—Last year I made an unsuccessful attempt to cultivate this plant. I purchased a packet of seed under the name of *Feniculum dulce* from each of two well-known English seed firms, and the result was two distinct varieties of plants. Not knowing which variety was the true Finocchio, I grew both side by side and under precisely the same conditions. Neither variety formed the desired enlargement at the base of the petiole. Except that I did not pinch or remove the flower-heads, my method of culture was similar to that adopted by R. D. In the *Journal of the Royal Horticultural Society*, June, 1907, p. 280, Florence Fennel is said to be "easily grown and deserving of being better known in England, and the heads were sold at 6d. each in the Paris markets in the winter of 1906." I have elsewhere read of them being sold at 9d. each in these markets. William Wingfield, Dodington, Nantwich.

NITRO-BACTERINE.—I have been interested in the results of the Reading experiments on inoculated Peas, as reported in the *Gardeners' Chronicle*. I would like to ask who has claimed that inoculated Peas bear heavier crops than uninoculated? I understood—but I have no papers at hand just at present—that the idea of inoculating Peas was to effect earlier maturity, not a greater yield of crop. I have always been led to believe that, in the case of Peas, phosphates, lime and potash will give weightier crops, but not increase of supplies of nitrogen. Market gardeners have been led to believe that they can get their crops ready for market a week, or perhaps 10 days, before those who do not utilise the assistance of these co-operating bacteria, and this, of course, means profitable returns, as they obtain the higher prices due to the supplies being few. Last year I found my inoculated Peas just over a week earlier than those uninoculated—same variety, of course, and identical treatment and soil. Are not, therefore, these experimenters wasting their time and perhaps public money in attempting the impossible—the production of heavier Pea crops from increase of nitrogenous supplies? (Rev.) J. Bernard Hall, Corbridge. [On p. 10 of Professor Bottomley's

pamphlet, entitled *Seed and Soil Inoculation for Leguminous Crops*, 1907, increased yield of leguminous crop is given as the first of the four advantages claimed for inoculation. Our correspondent should also note with respect to "earliness," that Professor Bottomley (*Loc. cit.*, p. 11) only claims that "in many cases inoculation hastened maturing of plants, thus allowing of an earlier marketing of produce with enhanced value," and that both the Reading experiments and those at Wisley and Wye do not constitute such cases; Nitro-bacterine having produced no effect whatever on "earliness" in those trials.—Ed.]

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 26.—The exhibition on Tuesday last represented most sections of horticulture. Groups of Orchids, Ferns, greenhouse flowering plants, Carnations, Alpine flowers, with a fine exhibit of Apples and another of vegetables constituted the principal features.

The FLORAL COMMITTEE granted an Award of Merit to a variety of Chrysanthemum.

The ORCHID COMMITTEE awarded two First-Class Certificates and three Awards of Merit to novelties.

The FRUIT AND VEGETABLE COMMITTEE did not make any award to a novelty.

The competitive classes for forced vegetables and salads were almost a failure.

At the afternoon meeting of the Fellows 51 names were added to the roll of members, and a lecture on "A Method of Using Domestic Sewage in Horticulture" was delivered by Mr. W. D. Scott-Moncrieff.

Floral Committee.

Present: H. B. May, Esq. (in the Chair), and Messrs. John Green, G. Reuthe, Chas. Dixon, H. J. Jones, W. Bain, Chas. T. Drury, T. W. Turner, Chas. E. Pearson, R. C. Notcutt, Herbert J. Cutbush, E. H. Jenkins, E. A. Bowles, W. Howe, C. Blick, Walter T. Ware, C. R. Fielder, John Jennings, and R. Hooper Pearson.

One of the brightest exhibits in the hall was a group staged by Mr. W. H. PAGE, Tangley Nursery, Hampton. It was composed mainly of bold vases of perpetual-flowering Carnations of the best kinds in commerce. At the back were tall stands filled with beautiful Lilliums, the species *L. speciosum* being shown in the red and the white varieties; there was also a large epergne of *L. longiflorum*. At either end of the group were numerous vases of Narcissus Golden Spur. The colours of the various subjects contrasted pleasingly. (Silver-gilt Flora Medal.)

Mr. H. BURNETT, Guernsey, staged varieties of the perpetual-flowering Carnation, all the blooms being finely coloured, and pleasingly arranged in a setting of suitable greenery. (Silver Flora Medal.)

Messrs. HUGH LOW & CO., Bush Hill Park, Enfield, also showed a choice exhibit of these popular flowers; adjoining the Carnations was a batch of Cyclamen, many of the plants being of the Salmon King variety. (Silver Banksian Medal.)

Messrs. WM. CUTBUSH & SON, Highgate, London, showed vases of Carnations of the winter-blooming type, the exhibit being charmingly arranged with small Palms and other graceful foliage plants. The selection of varieties represented the more popular kinds; the scarlet Robert Craig was exceptionally good. Messrs. CUTBUSH also showed an assortment of forced shrubs and other plants and a collection of Alpine plants. (Silver Flora Medal.)

Messrs. H. B. MAY & SONS, The Nurseries, Edmonton, showed an extensive exhibit of Davallias, comprising in all 55 species and varieties. The plants were bright and fresh in appearance. They were mainly decorative varieties, for which purpose the Davallias are especially useful. Several were climbing species. Some were large specimens, *D. brasiliensis* (with large elegant fronds), *D. effusa*, *D. fijiensis* magnifica, and *D. decora* being prominent. One of the most elegant of all the plants was *D. fijiensis plumosus*. (Silver-gilt Flora Medal.)

Messrs. JAMES VETCH & SONS, LTD., King's Road, Chelsea, exhibited greenhouse flowering

plants. At one corner of the group was a well-flowered batch of *Coleus thyrsoideus*. In front of this were small flowering plants of *Aphelandra aurantiaca* Roezlii, the blooms being of a rich orange-red tone. A pot-plant of *Acacia dealbata*, although only 2 feet in height, was flowering freely. The group also contained *Primula* × *kewensis*, *Crowea latifolia*, *Jacobinia coccinea*, *Lopezia miniata*, *Camellia Chandleri elegans*, and *Begonias*. Amongst the *Begonias* was the variety *Winter Gem*. This is the latest in flowering of Messrs. VEITCH's strain of winter-blooming *Begonias*: the flowers are deep rose with a scarlet sheen. In habit and foliage the hybrid resembles *B. socrotana*, one of the parents. (Silver Flora Medal.)

Two semi-circular groups of flowering plants were exhibited by the Marquis of SALISBURY, Hatfield House, Hertts. (gr. Mr. Prime). One was of *Euphorbia jacquiniæflora*, the racemes of intensely-coloured flowers being highly attractive. The other group was composed of *Begonia Gloire de Sceaux*, the plants being large, well-bloomed specimens. The plants in both groups exhibited skilful culture. (Silver-gilt Flora Medal.)

Messrs. SUTTON & SONS, Reading, displayed an exhibit of *Cyclamen*. There were batches of

Messrs. JOHN PEED & SON, West Norwood, London, arranged a long rockery with real stones. In the "pockets" were planted species of Alpines in flower, with dwarf shrubs and Bamboos at the back. Messrs. PEED also showed a large assortment of *Saxifragas* in small pots and pans. (Silver Banksian Medal.)

Messrs. BARR & SONS, King Street, Covent Garden, London, exhibited seasonable hardy flowers, having such early-blooming plants as *Anemone fulgens*, *Crocuses* in variety, *Freesia refracta*, *Snowdrops*, *Tulipa saxatilis*, *Lachenalias* in variety, *Cyclamen Coum* of the rose-coloured variety, and *Rosmarinus officinalis prostrata*. An adult specimen of *Juniperus hibernica compressa* was not more than 6 inches in height.

Messrs. JOSEPH CHEAL & SONS, Crawley, Sussex, showed boxes filled with Alpine plants, dwarf Conifers, hardy Ferns, species of *Primula*, *Tulip*, *Crocus*, *Cyclamen Coum*, &c.

The Misses HOPKINS, Mere Gardens, Shepperton-on-Thames, exhibited a small rock-garden exhibit, also tubers of *Tropæolum speciosum*.

Mr. HERBERT CHAPMAN, Rye, Sussex, again displayed blooms of hybrid *Freesias* as at the last meeting.

A number of photographs of floral subjects

Brasso-Cattleya Cliftonii, illustrated in the *Gardeners' Chronicle*, January 16, p. 34; the new *Odontoglossum Venilia* (*cirrhosum* × *Pescatorei*), white, spotted with dark red; *Cymbidium Woodhamsianum*, *Odontoglossum ardentissimum album*, *Xylobium leontoglossum*, with dense spikes of cream-coloured flowers spotted with pale red; *Odontoglossum Uro-Skinneri superbum*, with the labellum almost covered with bright red spots, and others.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate (gr. Mr. Collier), showed a very interesting group, in which were *Cælogyne Colmanii*, *Phaio-Calanthe Colmanii* (white, with yellow disc), *Spathoglottis Colmanii aurea* (bright yellow), *Dendrobium Kingianum album*, the singular *D. tetragonum*, with many of its large spider-like flowers, and others.

Messrs. HUGH LOW & Co., Bush Hill Park, were awarded a Silver Banksian Medal for a group of *Cypripediums*, including varieties of *C. aureum*, *C. salteri*, &c. Also, the bright orange-red *Lælio-Cattleya Charlesworthii*, *Rodriguezia secunda*, with one-sided racemes of rose-coloured flowers, and *Bulbophyllum Blepharistes*.

Mr. A. W. JENSEN, Lindfield, Haywards Heath, was awarded a Silver Banksian Medal for a small group of his very fine type of *Odontoglossum crispum*, all the flowers being large and of fine form. They included rose-tinted and fringed-petalled varieties, and two or three spotted forms.

Messrs. J. CYPHER & SONS, Cheltenham, secured a Silver Banksian Medal for a group in the centre of which was a specimen of *Cypripedium Mrs. William Mostyn* in fine condition, the large white dorsal sepal having very large deep chocolate-purple blotches. Others noted were *C. aureum Lambianum*, *C. Thompsonii*, *C. Mrs. G. F. Moore*, &c.

Col. G. L. HOLFORD, C.I.E., C.V.O., Westonbirt (gr. Mr. H. G. Alexander), showed a handsome form of *Lælio-Cattleya Golden Oriole*, with large bright chrome-yellow flowers having a rose-purple base to the lip veined with gold; *Sophro-Lælio-Cattleya Danæ* Holford's variety with several pretty reddish-rose flowers with deep yellow base to the lip; *Cypripedium Alabaster* (*Alcibiades superbum* × *Godseffianum*), and *C. Earl of Tankerville*. (See Awards.)

FRANCIS WELLESLEY, Esq., Westfield, Woking (gr. Mr. Hopkins), showed *Cattleya Trianae* "The Premier," which has been pronounced the finest-coloured *Trianae*. Its silvery-white, rose-tinted flowers have the petals and lip of extraordinary breadth and crimped at the margins. The front of the lip is ruby-crimson with nearly white margin, the disc is chrome-yellow, and the base, purple with white veining.

J. FORSIER ALCOCK, Esq., Exhims, Northchurch, showed *Cypripedium Beryl*, a very broad-petalled dark hybrid showing its two parents *C. Mrs. W. Mostyn* and *C. Beckmannii* plainly; also another *Cypripedium*. (See Awards.)

Mr. F. HANSON, Somerleyton Gardens, Lowestoft, sent cut spikes of two hybrid *Calanthes* which travelled badly and were not presentable.

Mr. F. McBEAN, Plumpton, staged a small group of very pretty varieties of *Cattleya Trianae*, one having white sepals and petals and a deep purple lip. Also various *Odontoglossums*, including a fine form of *O. Hunne-wellianum*.

J. B. H. GOODDEN, Esq., The Manor House, Yeovil, sent cut examples of two good light-coloured forms of *Lycaste Skinneri*.

AWARDS.

FIRST-CLASS CERTIFICATE.

Sophro-Lælio-Cattleya Marathon var. Vesuvius (*Sophro-Lælia Psyche* × *Cattleya Empress Frederick*), from Messrs. CHARLESWORTH & Co., Haywards Heath. A brilliant hybrid with flowers of good size and form, the sepals and petals being red with a yellowish glow, the petals also having a tinge of violet colour. The front of the lip is ruby-red, the base, yellow. The pretty dark scarlet *Sophro-Lælia Psyche*, obtained from a cross between *Sophronitis grandiflora* and *Lælia cinnabarina*, for some reason has never been a favourite, but combined with *Cattleya Empress Frederick* (*Mossia* × *Dowiana aurea*) it has produced, in its best varieties, some bright new colours.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair), and Messrs. Jas. O'Brien (hon. sec.), Harry J. Veitch, de B. Crawshay, H. Little, J. F. Alcock, J. Wilson Potter, F. J. Thorne, A. Dye, J. Charlesworth, W. Cobb, H. G. Alexander, W. Bolton, Stuart Low, W. Boxall, J. Cypher, Gurney Wilson, A. A. McBean, and F. Sander.

Messrs. CHARLESWORTH & Co., Haywards Heath, were awarded a Silver Flora Medal for an excellent group, which included two finely-coloured new hybrids which secured the only First-class Certificates of the day. (See Awards.) Also remarkable in the group were the pretty

white, salmon, and crimson varieties, and a large assortment of mixed colours. All the varieties had been selected for their large flowers; the white blooms were of remarkable purity and possessed great substance of petal. The crimson, salmon, and white varieties had been selected for colour blending, especially when seen by artificial light. The plants possessed stout foliage, and gave evidence of good cultivation. (Silver Flora Medal.)

Sir TREVOR LAWRENCE, Bart., Burford, Dorking (gr. Mr. Bain), showed spathes of *Anthurium Andreanum* with a wide range of colours. One spike was fasciated, presenting a double spathe on the one stalk.

Mr. L. R. RUSSELL, Richmond, Surrey, showed hardy evergreen shrubs of an ornamental character. The plants were small, compact specimens, and would be prized for decorative purposes in the conservatory or dwelling-room. (Silver Banksian Medal.)

Mr. G. REUTHE, hardy-plant specialist, Keston, Kent, showed a number of early-blooming, garden plants such as *Irises*, *Crocuses*, *Cyclamen Coum*, *Snowdrops*, *Daphne japonica*, and *Helleborus foetidus*.

taken by colour process was shown by Mr. H. MAUDE, Wisley. (Silver Banksian Medal.)

AWARD OF MERIT.

Chrysanthemum Golden Sunset.—This is a very attractive decorative variety, with smooth florets of rich yellow colour. It is stated to be a sport from the variety *Princess Victoria*. Shown by Messrs. ROBINSON & HEADEY, Dunstable.



FIG. 42.—BEGONIA × PATRIE: FLOWERS ROSE-PINK.

(See page 75.)

Lalio-Cattleya Felicia (*L.-C. Haroldiana* × *C. Trianae*), from Messrs. CHARLESWORTH & Co. A very fine flower, equal in size to *L.-C. calistoglossa*, and of a pale rose tint, the front of the lip being a dark purplish-claret shade.

AWARD OF MERIT.

Cypripedium Earl of Tankerville (*exul* × *nitens Sander's variety*), from Col. G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. H. G. Alexander). A very handsome *Cypripedium* in form and substance very remarkable, the almost circular white dorsal sepal bearing large chocolate-purple blotches, changing outward to rose-purple; the petals and lip being yellow tinged with red-brown.

Cypripedium Euryades, *New Hall Hey variety* (*Lecanum superbum* × *Boxallii*), from J. FORSTER ALCOCK, Esq., Exhms, Northchurch. A famous variety which originated in the collection of the late G. W. Law-Schofield. The dorsal sepal is white, heavily tinged with rose-purple on the reverse side, the colour showing through between the dark purple spots on the surface. The petals and lip are yellowish, tinged with purple.

Cypripedium "Our Queen" (*Lecanum dark variety* × *Stevensii*), from W. THOMPSON, Esq., Walton Grange, Stone, Stafford (gr. Mr. W. Stevens). A very pretty hybrid of good shape and resembling a good *C. Lecanum*, but rounder in form and with a shining, smooth surface to the whole flower. Dorsal sepal white, densely spotted with dark claret-purple, darkest where the spots unite to form the central band. Petals broad, undulated, yellowish, tinged with purple, excepting the margins. Lip pale green. *C. Stevensii* was obtained by crossing *C. Calypso* Oakwood variety and *C. Lathamianum* Albert Hye, both of which, as well as *C. Lecanum*, has *C. Spicerianum* as one of the parents. *C. Spicerianum* shows strongly in *C. "Our Queen,"* and the best features of the other species are reproduced.

Fruit and Vegetable Committee.

Present: George Bunyard, Esq. (Chairman), and Messrs. W. Bates, E. Beckett, A. Dean, H. Parr, W. Pope, A. R. Allan, J. Davis, O. Thomas, G. Wythes, J. Vert, C. Foster, J. Hooper, G. Reynolds, W. J. Jeffries, J. Harrison, H. Markham, and J. Jaques.

UNIVERSITY COLLEGE, Reading (superintendent Mr. Chas. Foster), showed forced vegetables, including Lettuce, Chicory and Seakale, also Tomatos and Rhubarb. The Chicory was a good sample and had been grown without artificial heat: the blanching had been done by placing 8 or 9 inches of soil over the crowns. There were examples of Seakale cuttings ready for inserting and some very strong crowns of this vegetable raised from cuttings struck during April, 1908, and lifted in November last. (Silver Banksian Medal.)

An exhibit of vegetables was shown by Mrs. DENNISON, Little Gaddesden, Berkhamsted (gr. Mr. A. G. Gentle). They were principally Onions and Potatos, but in the centre of the group were Maltese Parsnips, Red Elephant, Intermediate and Summer Favourite Carrots, and Beets of the Crimson Ball and Long Perfection varieties. The Onions were of the large Ailsa Craig, Coconut and Record varieties. The Potatos were a remarkably fine sample, well matched in size and with clear skins. The varieties included a large selection. (Silver-Gilt Banksian Medal.)

MESSRS. JOSEPH CHEAL & SONS, Crawley, Sussex, staged 60 varieties of Apples, all well-coloured and plump, although shown so late in the season. Among the finer fruits were Bramley's Seedling, Annie Elizabeth, Gascoyne's Scarlet Seedling, Chelmsford Wonder, Sandringham, Jubilee, Sturmer Pippin, Crawley Reinette (an Apple of very attractive appearance), Paroquet, Lane's Prince Albert (one of the finest varieties in the collection), Bismarck, and Vicar of Beighton. (Silver Knightian Medal.)

COMPETITIVE CLASSES.

There were competitive classes for Seakale, Phubarb, Asparagus, Salads, and forced vegetables. Only one exhibit of Salads was staged: this was from Aldenham House Gardens, Elstree (gr. Mr. EDWIN BECKETT). The varieties included Mustard and Cress, Chicory, Blood

Red Beet, and Batavian Endive. They were all of the high quality for which produce from this garden is noted, and the display was awarded the 1st prize.

In the class for two dishes of Seakale there were two entries, the 1st prize being won by Mrs. TROTTER, Dyrham Park, Barnet (gr. Mr. H. Juniper); 2nd, Lady FOLEY, Ruxley Lodge, Claygate, Surrey (gr. Mr. H. C. Gardner).

Mrs. TROTTER was the only exhibitor in the class for Rhubarb, and was awarded the 1st prize, the variety being Royal Albert.

There was no entry in the class for Asparagus.

CHESTERFIELD AND DISTRICT CHRYSANTHEMUM.

JANUARY 19.—The annual meeting of the above society was held at the Hotel Portland, Chesterfield, on this date. Mr. W. Parks, Whittington Hall Gardens, occupied the chair.

The annual report showed that the spring flower show, held at Wingerworth Hall Gardens, was a record both in regard to the attendance and the amount of money taken, but the autumn show was not so numerously attended as was last year's exhibition. The income for 1908 amounted to £200, and the sum of £63 2s. had been disbursed during the year, including £30 to the Royal Gardeners' Orphan Fund, £21 to the Gardeners' Royal Benevolent Institution, £10 to Chesterfield Hospital, and £2 2s. to the Clayton Challenge Shield Competition. For 17 years the committee have adopted the practice of not retaining a greater balance than £50, the surplus being devoted to assisting deserving institutions. The president for 1909 is W. B. M. Jackson, Esq., and the spring show will be held at this gentleman's residence, Ringwood Hall, Chesterfield, on Whit Monday, May 31. No prize money will be offered at this show. The Chrysanthemum show is fixed for November 9 and 10. At the conclusion of the general business an essay on "Begonia Gloire de Lorraine" was read by Mr. Boulton, Brimington Hall Gardens.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

(ANNUAL MEETING.)

(The result of the election was recorded in our last issue.)

JANUARY 21.—The sixty-ninth annual general meeting of the supporters of this institution was held on the above date at "Simpson's," Strand. Mr. Harry J. Veitch, chairman of committee and treasurer, presided, and there was a good attendance.

Mr. George J. Ingram, secretary, read the minutes of the last meeting, and afterwards the annual report and balance-sheet for 1908. These latter were as follow:—

REPORT OF THE COMMITTEE.

The charity has been in existence 70 years; it has distributed in permanent and temporary help upwards of £125,000, and at no other period of its history has it done so much in the way of assisting the necessitous and suffering as in the year now under review.

At the commencement of 1908 231 persons—133 men and 98 widows—were receiving yearly allowances amounting in the aggregate to over £4,000. During the year 16—11 men and 5 widows—have passed away; of the men, four left widows, who, being necessitous and in every way deserving, were at once placed on the funds without election under Rule III., 10, to receive the widow's allowance of £16 a year. In addition to those who died, one widow has gone to Australia to reside with her son, and another widow has been removed to an infirmary by medical orders. There were, therefore, at the close of the year 217 persons on the funds, and the committee recommend for election this day 18 candidates from an approved list of 73 applicants. Although the number of beneficiaries will thus be increased to 235, or four more than at the corresponding period of last year, the committee deeply regret their inability to recommend a larger number, the more so as the claims for help are more numerous than ever before, the list of applicants this year showing an increase of 20 on that at any previous election.

The two special funds, the "Victorian Era Fund" and the "Good Samaritan Fund," still prove of the utmost value and usefulness by the timely help they afford. The former fund temporarily assists, whilst awaiting election, those unsuccessful candidates who have been subscribers to the institution, and the latter fund enables the committee to afford immediate assistance to applicants whether they have been subscribers or not in pressing cases of misfortune and distress, to whom otherwise they would have to turn a deaf ear, and the thankful letters from the recipients show how useful was the help given and with what gratitude it was received. It may be mentioned that the interest only from these funds is available, and any

special donations to either or both of them would be gratefully welcomed.

The annual festival dinner, which took place at the Hotel Metropole in June last under the presidency of the Right Hon. Lord Aldenham, was most successful, and the committee take this opportunity of tendering their grateful thanks to his lordship for his warm and sympathetic advocacy of the objects and aims of the charity as well as its needs. They also desire to offer their sincere thanks to those gentlemen who acted as stewards or collectors, to the horticultural Press for their continued gratuitous and invaluable help, to the donors of flowers, to those who so kindly decorated the tables, and to all other friends who helped to secure the success of the festival.

The committee have further to express their gratitude to those noblemen, ladies and gentlemen who have so kindly allowed their beautiful gardens to be opened to the public for the benefit of the funds of the institution, amongst whom may be mentioned the Right Hon. Earl Beauchamp (Madresfield), Lord Northbourne (Betteshanger), Mary Countess of Ilchester (Holland House), The Lady Battersea (Overstrand), Sir Frank Crisp (Friar Park), and E. J. Wythes, Esq. (Epping); thanks are also due to Messrs. Fisher, Son & Sibbery, Ltd., for opening the Royal Nurseries at Handsworth for the same purpose; the committee are also indebted to the Messrs. Geo. Munro Concert Committee for again most kindly allocating a portion of the proceeds derived from their well-known and successful annual concert. The committee venture to express the hope that other friends will assist the charity in similar ways.

With much gratification the committee refer to the generous kindness of N. N. Sherwood, Esq., for his gift of £25 for unsuccessful and needy applicants; to Arthur W. Sutton, Esq., for kindly giving a year's allowance of £50 for an applicant suffering from incurable paralysis, and to Geo. Munro, Esq., for his kind contribution of £16 towards the maintenance of an aged widow. The recipients were truly grateful for these unexpected bounties.

The services of the honorary treasurers and honorary secretaries of the several auxiliaries are keenly appreciated, and the committee gladly place on record their indebtedness for the kind and valued efforts of the following gentlemen on behalf of the work, viz:—

BRISTOL AND BATH.

<i>Presidents.</i>	<i>Hon. Treasurers.</i>	<i>Hon. Secretaries.</i>
Col. H. Cary Batten.	W. A. Garaway, Esq.	Mr. Geo. Harris.

WORCESTER.

Rt. Hon. Earl Beauchamp, K.C.M.G.	Mr. John White.	Mr. Percy G. White.
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DEVON AND EXETER.

C. R. Collins, Esq.	Mr. W. Mackay.	Mr. W. Mackay.
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WOLVERHAMPTON.

C. T. Mander, Esq., J.P.	Mr. Bradley.	Mr. Tom B. Dobbs.
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BERKSHIRE, READING AND DISTRICT.

Mrs. Rowland Spurling.	Arthur W. Sutton, Esq., J.P., V.M.H.	Mr. L. Castle.
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LIVERPOOL AUXILIARY.

The Rt. Hon. The Earl of Derby.	A. J. Crippin, Esq.	R. G. Waterman, Esq.
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It is with much pleasure that the committee announce that Lionel de Rothschild, Esq., has kindly consented to preside at the 70th anniversary festival dinner in aid of the funds at the Hotel Metropole on Wednesday, June 23 next. They trust he will be well and liberally supported on the occasion by all friends of the institution and by all lovers of horticulture, so that the festival may again prove instrumental in obtaining the necessary means for carrying on the work. They have also to report that George W. F. Macnaughten, Esq., M.D., M.R.C.P., has kindly consented to accept the office of honorary physician to the institution.

Unhappily, each year the committee have to record the deaths of many subscribers and supporters. Amongst those who have passed away in the preceding year may be mentioned the Lord Hotham, H. L. Bischoffsheim, Esq., E. Bird Foster, Esq., Martin R. Smith, Esq., Henry Balderson, Esq., Geo. Bethell, Esq., Mr. W. Whalley, formerly of Addington Park, Mr. Geo. Ambrose, formerly chairman of the Wolverhampton Auxiliary, Mrs. Nettlefold, and Mrs. Rylands, the last-named lady very generously remembering the institution in her will by bequeathing it a substantial legacy. The loss of these good friends is keenly felt.

With regard to the Government Old Age Pension Act, it will be seen that the honorary solicitor has given notice of motion to be submitted to the subscribers at the meeting this day. Its intention—if the subscribers see fit to adopt it—is to enable the committee to act under Rule III., 6, should circumstances render it necessary and desirable to do so, without, however, causing any pecuniary loss to the beneficiary or applicant for help, and the committee would point out that, of those now applying through incapacity and distress, there are 41 whose ages alone render them ineligible for the benefit of State aid; the importance, therefore, of continued support to the institution is thus manifest.

In conclusion, the committee most earnestly appeal for increased means for this National Horticultural Society, which for 70 years has carried on its beneficent work with such comfort and help to the recipients of its benefits as cannot be overstated. As before mentioned, there are 73 applicants for aid, and if only 18 are elected there will be 55 unsuccessful candidates still on the list who will have to wait a whole year. Of those now appealing for aid—to whom in some cases the committee have already afforded a much-needed, temporary help—there are several who are nearly blind, whilst four aged 59, 56, 44, and 40 are

incurably and hopelessly paralysed. To enable assistance to be given to these and other pathetically sad cases the committee plead most earnestly for increased support, and they feel confident that, for such genuine and invaluable work, they will not plead in vain.

The Chairman made but few observations in moving the adoption of the report and balance-sheet, remarking that the report in itself explained the circumstances of the year very fully. The institution was still making progress, but even more help was needed than was at present forthcoming. Mr. W. Roupell, in seconding the resolution of adoption, stated that he had been connected with the institution since 1857. The resolution was adopted unanimously.

Mr. Arthur W. Sutton then proposed the reelection of Mr. Harry J. Veitch as treasurer, and, when Mr. Alex. Dean had seconded the motion, it was passed with acclamation.

Mr. G. J. Ingram was re-elected secretary on the proposition of Mr. George Monro, seconded by Mr. Wheeler. The retiring members of the committee were afterwards re-elected, with the exception of Mr. R. Milligan Hogg, whose retirement led to the appointment of Mr. Frederick Cooper as a member of committee.

Following the appointment of auditors and arbitrators, Mr. White, in the absence of Mr. W. A. Bilney (honorary solicitor) through indisposition, moved the following resolution:—

"That every person having attained the age of 70 years who is in receipt of an annuity from the institution and is eligible for a Government Old Age Pension of less than the maximum allowance of 5s. per week, or whose total income does not exceed £31 10s. per annum, may have such charitable annuity reduced as the committee may determine under Rule III. 6, so as to render him or her eligible to apply for a pension on the Government scale, provided always that such reduction does not involve the beneficiary in any pecuniary loss."

Mr. White observed that the adoption of this resolution would not commit the committee to anything, but, on the contrary, it would loosen their hands. The resolution was seconded by Mr. Denning. Considerable discussion followed, but it appeared to be generally recognised that whilst so many candidates had to wait several years for election to the funds, it was necessary that, in as many cases as possible, advantage should be taken of the State Old Age Pension.

Mr. J. Hudson said some arrangement of the kind was necessary in order to obtain "the greatest good for the greatest number." The resolution was adopted unanimously.

Scrutineers of the ballot were then appointed, and the result of the poll was declared at 5.30. (Details were published in our last issue.)

THE FRIENDLY SUPPER.

MR. SHERWOOD PROVIDES FOR TWO MORE PENSIONERS.

The committee and friends met at the friendly supper at 6 p.m., also at Simpson's. Mr. W. J. Jefferies presided, and proposed the toast of "The Gardeners' Royal Benevolent Institution." Mr. Harry J. Veitch responded. He said that he had already replied to this toast on 40 occasions at the annual festivals and suppers. He expressed the pleasure of those present at seeing Mr. N. N. Sherwood amongst them again. Respecting the institution, it was commenced by the election of two pensioners, now there were 240. They had disbursed £175,000 to needy gardeners or their widows, and the present distribution was approximately £4,000 each year. Amongst the disappointed candidates this year were three very bad cases of paralysis. It was distressing to the committee that they could not put more on the funds, and he (Mr. Veitch) pleaded for increased support to enable them to do so. Lionel de Rothschild, Esq., had kindly consented to preside at the next festival, and he would make the sixth member of that house who had presided at these functions.

Mr. N. N. Sherwood, who was given a very enthusiastic welcome, said he had been connected with the institution for 41 years, and his interest and sympathy were as great as ever. Mr. Veitch had referred to three cases of paralysis, and he (Mr. Sherwood) would be pleased to provide a year's pension for two of these to be selected by the committee.

Mr. W. Atkinson proposed the toast of "The Chairman," and Mr. George Bunyard that of "The Committee and Auxiliaries." Mr. George Monro replied for the committee, and Mr. R. S. Waterman (Liverpool) for the auxiliaries. Mr. Waterman remarked that although the Liverpool Auxiliary was now seven years old, none had been formed since!

On the proposition of Mr. Harry J. Veitch, the toast of "The Secretary" was received with great cordiality, and Mr. Ingram replied in an excellent speech.

SOCIÉTÉ FRANÇAISE D'HORTICULTURE DE LONDRES. (ANNUAL DINNER).

JANUARY 23.—The twentieth anniversary of this Society was celebrated at the Café Royal, Regent Street, on the above date. Sir Albert K. Rollit, D.C.L., LL.D., occupied the chair. The company included M. Huguenet, Editor of *La Chronique*, M. Lageat, M. Guilloud, Mr. George Schneider (President), and Messrs. T. Bevan, E. F. Hawes, Harman Payne, J. H. Witty, H. J. Jones, J. Mc Kerchar, D. Ingamells, Eric Such, C. H. Curtis, T. W. Sanders, Arthur Turner, Whitpain Nutting, J. Weathers, Hiehle, and G. J. Ingram.

After the toasts of the President of the French Republic and the King had been duly honoured, Sir Albert Rollit proposed the toast of the evening, that of "La Société Française d'Horticulture de Londres." He expressed his satisfaction at the useful work that had been done by the Society in the past, and congratulated the members on the admirable report for the past year. He referred to the commercial importance of horticulture, and stated that the trade in gardening produce between England and France was of very considerable extent. The Society is the means of many young men of both nationalities gaining an insight into nursery and other horticultural work in the two countries. The speaker referred to some of the aspects of French horticulture that Englishmen might imitate. The Society promoted a knowledge of the English and French languages amongst its members, and this was commendable, because nations that understood each other's languages are better able to understand each other's temperaments and feelings.

Mr. George Schneider, in reply, thanked Sir Albert Rollit for his appreciation of the work done by the Society. He regretted that death had thinned their ranks, but the Society has enrolled many new members during 1908. Apart from placing young Frenchmen in positions in England, the Society had been the means of finding situations for several young Englishmen in France.

Mr. Schneider referred to the death of their late Honorary President, M. Ouvrard, and

STATEMENT OF RECEIPTS AND EXPENDITURE FOR THE YEAR ENDING DECEMBER 31, 1908.

RECEIPTS.		EXPENDITURE.	
£	s. d.	£	s. d.
To Balance	1,129 9 6	By Pensions and gratuities, including special gifts from Messrs. Sherwood, Sutton, and Monro	4,639 12 0
" Amount on deposit	3,880 0 0	" Expenses of annual meeting and election	10 3 4
" Annual subscriptions ... 1,434 0 6		" Rent, firing, lighting, &c., including salaries of Secretary and Clerk	566 9 7
" Donations at and in consequence of festival dinner, including special gifts ... 1,954 17 10		" Printing, including Annual Reports, Polling Papers, Appeals, &c., &c.	129 7 2
" Legacies:		Less advertisements in Annual List	48 15 6
Mrs. A. H. Lewis-Hill, with interest	1,007 4 5	" Expenses of festival dinner ... 228 13 0	
Mr. B. Greaves	50 0 0	Less dinner charges	174 0 0
" Return of Income Tax	42 18 6	" Postages, including Annual Reports, Polling Papers, Appeals, &c.	51 2 8
" Dividends and interest	880 0 10	" Advertisement in Fry's Charities	3 3 0
	5,369 2 1	" Collecting boxes	2 5 0
		" Carriage, telegrams, repairs, and incidental expenses	21 13 6
		" Bank charges	5 4
			780 3 9
		" Placed on deposit	3,530 0 0
		Ditto (Mrs. A. H. Lewis-Hill's Legacy)	1,007 4 5
		" Balance with Treasurer	888 8 4
		" Secretary	11 19 9
			1,011 8 1
	£10,378 11 7		£10,378 11 7

We certify that all our requirements as Auditors have been complied with, and we have compared the books with the bankers' certificate of securities deposited with them, and the balance-sheet is a true and correct account of same. The books are well kept.

THOMAS MANNING,
THOMAS SWIFT.

January 19, 1909. * Required to meet the quarterly payments January 1, 1909.

VICTORIAN ERA FUND.—BALANCE SHEET, 1908.

RECEIPTS.		EXPENDITURE.	
£	s. d.	£	s. d.
To Balance, January 1, 1908	184 11 5	By gratuities	177 8 0
" Dividends	153 0 6	" Balance in hand, December 31, 1908	170 7 1
" Return of Income Tax	8 3 2		
	163 3 8		347 15 1
	£347 15 1		£347 15 1

GOOD SAMARITAN FUND.—BALANCE SHEET, 1908.

RECEIPTS.		EXPENDITURE.	
£	s. d.	£	s. d.
To Balance, January 1, 1908	267 7 5	By gratuities	101 10 0
" Donations	64 19 6	" Balance in hand, December 31, 1908	306 16 7
" Dividends	72 13 6		
" Return of Income Tax	3 6 2		
	140 19 2		408 6 7
	£468 6 7		£468 6 7

Audited and found correct { THOMAS MANNING,
JANUARY 19, 1909. THOMAS SWIFT.

stated that M. Ph. de Vilmorin, from whom a telegram was read, had consented to accept the post.

Mr. D. Ingarells proposed the toast of past presidents, to which Mr. Thomas Bevan replied.

At this stage of the proceedings a presentation was made to Mr. Harman Payne by the President, Sir Albert Rollit, of a silver plaque d'honneur. Sir Albert spoke in appreciation of Mr. Payne's international work in horticulture, and the plaque was awarded for his co-operation at the Retrospective Exhibition in Paris last November. The gift was from the National Horticultural Society of France.

The toast of the Chairman was proposed by Mr. G. J. Ingram and duly replied to.

Mr. Harman Payne made an amusing speech in French proposing the toast of the officers of the Society and offering the thanks of the meeting to M. Ripard for the floral decorations at the dinner. M. Ripard replied and proposed the toast of "The Press."

During the evening a telegram was dispatched to President Fallières sending the friendly greetings of the Society. The two caskets presented to President Fallières by the Corporation of the City of London and by the English members of the Legion of Honour and other French orders on the occasion of his visit to London in May last were on view.

A presentation of a silver bowl was made to Mr. George Schneider on behalf of the young members of the Society.

Instrumental and vocal music and recitations were rendered at intervals.

DEBATING SOCIETIES.

GARDIFF GARDENERS.—A meeting of this association was held on the 19th inst. Mr. H. R. Farmer presided. A lecture was given by Mr. F. Woods, gardener at Llanfrechfa Grange, Newport, on the Madresfield Court Grape. The lecturer stated that this variety can be as successfully cultivated as the Black Hamburg or any other ordinary kind. The formation of vine borders, their proper depth and composition, also ventilation, pruning and mulching, were explained in detail.

GROYDON & DISTRICT HORTICULTURAL.—At a recent meeting of this association Mr. Mark Webster, Kelsey Park Gardens, Beckenham, delivered a lecture on Nitro-Bacterine. In the practical tests he had given it during twelve months, success was not obtained. During his observations he alluded to the soils he had tried it in, and the poor subsoil he considered to be the best medium for inoculation. The lecturer stated that in many instances no benefit was observed from the use of this substance; the best results were obtained with a free use of lime. When used in conjunction with certain chemical manures it had deleterious effects. The seeds used for experiment were Peas. By the application of this culture the nodules containing the nitrifying bacteria were increased. The lecturer was of the opinion that the soil containing the roots of the Peas would be of benefit to successional crops.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending January 27.

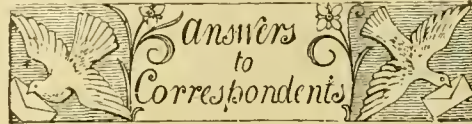
A very cold week.—The last eight days and nights have been all more or less cold, but on only four of those days was the cold exceptional, and on no night did the exposed thermometer show more than 14° of frost. The ground, for the first time this month, is cold for the time of year. At 2 feet deep the temperature is 1° colder, and at 1 foot deep 2° colder, than is seasonable. No rain or snow has fallen for eight days, but on the first day of the week there was a rather heavy deposit of hoar frost on the funnel of the rain gauge. There has been no measurable percolation through either of the soil gauges for four days. The sun shone on an average for 2 hours 27 minutes a day, or for three-quarters of an hour a day longer than is usual at this period of January. On two days no sunshine at all was recorded, whereas on one other day the sun was shining brightly for over five hours. Calms and light airs have alone prevailed during the week, and for the last 96 hours the direction of the air currents has been constantly from the north-east. There was about a seasonable amount of moisture in the air at three p.m. E. M., Berkhamstead, January 27, 1909.

SCHEDULE RECEIVED:

Southampton Royal Horticultural Society's Summer, Carnation, and Autumn Exhibitions to be held on June 20, 21; July 23; and November 9 and 10, respectively. Secretary, Mr. C. S. Fudge, 7, Silverdale Road, Archer's Road, Southampton.

ENQUIRY.

TIMBER FOR FORCING HOUSES.—I shall be glad if any readers can give me their experience as to the best timber and the best mode of preserving it from decay, for the sills of forcing houses, which are constantly kept warm and moist. Seventeen years ago I tried pitch pine, and find that it does not last much, if any, longer than best red deal, which is now a very expensive wood. What is the average life of sills and wallplates, under such conditions, when treated with creosote or carbolineum? Has anyone tried the wood of Louisiana Cypress *Taxodium distichum*, which is said, in the subtropical climate of New Orleans, to last in contact with the soil for an indefinite period, and which is now on the market in England at a reasonable price? H. J. Elwes, Colesborne.



BERLIN INTERNATIONAL EXHIBITION: L. R. The exhibition, as announced in our issue for May 23, p. 325, will be held in the New Exhibition Hall of the Zoological Society, Berlin, from April 2-13. The address of the general secretary is Siegfried Braun, Berlin, N. 4, Invalidenstrasse 42.

CARNATION MAGGOT: W. E. As we suspected, your later specimens prove that the grubs are the larvæ of an *Anthomyia* fly. Plants already attacked must be thrown away. Protection from the fly may be afforded by of tarred one side of the stem of (or layer) the ground. collar pre-mother fly her eggs the stem, and if these are deposited a short distance from the plant the larvæ, which are not able to move easily, fail to reach the Carnation. The larvæ now being actually inside the plant spraying is useless. You might try fumigating with a nicotine preparation. The larvæ (grubs) do not crawl from plant to plant, but the pest is spread by means of the eggs laid by the mature insect (fly).

LANDSCAPE GARDENER: C. R. G., Massachusetts. You will find a short account of the career of Edward Kemp in the *Gardeners' Chronicle*, March 7, 1891, p. 311. He died on March 2, 1891. As, doubtless, you have the English gardening papers of that period in your library, you may gain from them further information.

LOBELIA COMPACTA: J. R. The plants are attacked by a fungus—*Botrytis cinerea*. This pest grows on every kind of plant refuse, and becomes parasitic only in the presence of considerable moisture and heat. The fungus is best kept in check by admitting as much fresh air as is possible in the plant-houses or frames.

NAMES OF FLOWERS, FRUITS AND PLANTS.—We are anxious to oblige correspondents as far as we consistently can, but they must bear in mind that it is no part of our duty to our subscribers to name either flowers or fruits. Such work entails considerable outlay, both of time and money, and cannot be allowed to disorganise the preparations for the weekly issue, or to encroach upon time required for the conduct of the paper. Correspondents should never send more than six plants or fruits at one time; they should be very careful to pack and label them properly, to give every information as to the county the fruits are grown in, and to send ripe, or nearly ripe, specimens which show the character of the variety. By neglecting these precautions correspondents add greatly to our labour, and run the risk of delay and incorrect determinations. Correspondents not answered in one issue are requested to be so good as to consult the following numbers.

PLANTS: Africa. *Ornithogalum niveum*.—W. H. C. 1, *Selenipedium Schröderæ*; 2, *S. longifolium*; 3, *S. cardinale*; 4, *S. Sedenii*. These are called *Cypripedium* in gardens, but

they have botanical differences.—F. B. 1, *Schinus Molle* (Pepper Tree); 2, *Epidendrum coehleatum*; 3, *Rodriguezia* (*Burlingtonia*) *decora*.—T. T. 1, *Pellionia pulchra*; 2, *Dracæna rubra*; 3, *Cyperus alternifolius*; 4, *Carex japonica variegata*; 5, *Begonia discolor*; 6, *Selaginella involvens*.—B. S. 1, *Dracæna pulcherrima*; 2, *Chlorophytum elatum variegatum*; 3, *Cupressus funebris*; 4, send better specimen with flowers; 5, *Carex riparia*; 6, *Curculigo recurvata*.—E. W. *Veltheimia viridifolia*, a native of South Africa.—Foreman. 1, *Brassia Keiliana*; 2, *Restrepia trichoglossa*; 3, *Epidendrum polybulbon*; 4, *Calanthe rosea*; 5, *Lycaste plana*; 6, *Xylobium squalens*.—A. S. *Cedrus atlantica* var. *glauca*; this will grow with a single trunk.—G. H. B. 1, *Berberis Wallichiana*; 2, *Juniperus chinensis albo variegata*; 3, *Cupressus Lawsoniana*; 4, *C. L. erecta viridis*; 5, *C. L. aurea*; 6, *C. L. aureo-variegata*.

PEACH BUDS KILLED: Anxious. There is no disease present in the shoots. The buds have probably been killed by the paint you refer to. Hot-water pipes should not be painted, but coated with lamp-black and oil. We do not think the small amount of paraffin, with which the woodwork of the house was painted, was the cause of the trouble.

PELARGONIUM: J. H. B. The trouble is not caused by disease, but has resulted from some cultural defect or physical injury. It may have been due to an excess of moisture in the soil or to excessive doses of strong fertilisers. The *Phoenix* has been injured by some check, such as might be produced by cold or drought.

PRESERVING ORNAMENTAL GOURDS: H. C. The varieties of *Lagenaria* or bottle-gourds should have the thin outer skin removed, and after the Gourd has been thoroughly dried, it should be coated with thin oak-varnish. The green and white Malabar gourds should be gathered when quite ripe and dried in a greenhouse. Without any further trouble these gourds will retain their colours for about two years. Ordinary gourds, both smooth and warty, should be thoroughly dried on a shelf in a greenhouse, and be varnished afterwards with thin oak-varnish.

PRONUNCIATION OF PLANT NAMES: G. Prickett. The list that recently appeared in these columns will be re-issued in book form. The work is already in the press, and its publication may be looked for at an early date.

STEPHANOTIS LEAF: Puzzled. The discoloration is due to a fungus, a species of *Capnodium*. It is not usually parasitic, but follows injury by aphids, which must be kept down by the use of nicotine insecticides.

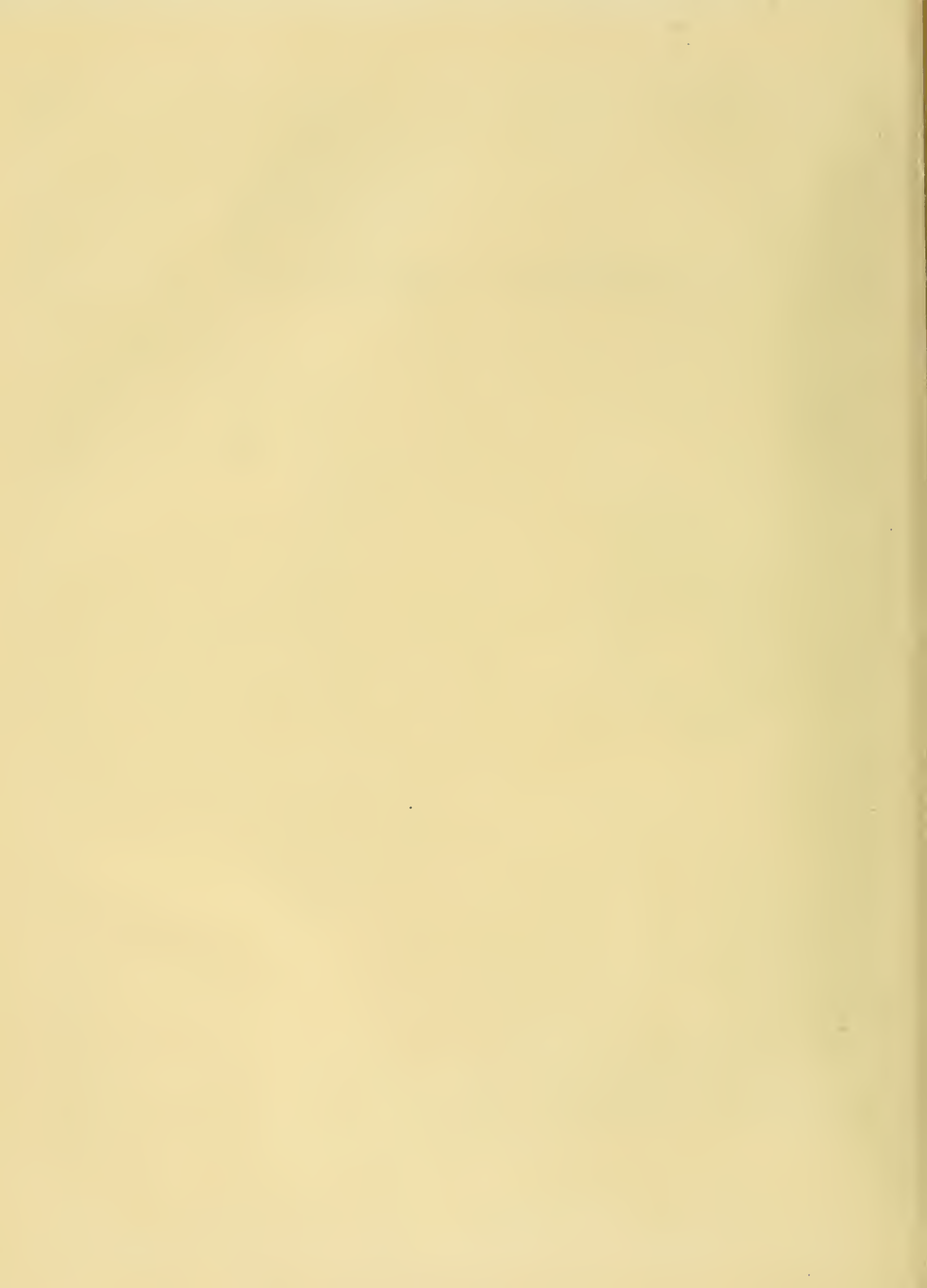
VANDA CŒRULEA: J. A. *Vanda cœrulea* is capable of adapting itself to tolerably wide limits in point of temperature. Its most essential requirement is the pure air of a well-ventilated house. If it is kept in a close, hot atmosphere, it generally fails to grow or flower well, after the first year or so. If the plants are now on the stage at some considerable distance from the glass of the roof, they would possibly become more satisfactory if suspended close to the ridge. If the *Orchid* house in which you have them is what is called the hot-house, remove the plants to the cool end of the *Cattleya* house and suspend them there. They require a good, bright light at all seasons. An atmospheric temperature of 55° to 65° Fahr. in winter is sufficient. In summer, keep the plants as cool as possible. *Vanda cœrulea* requires plenty of rain-water when making its growth. You can obtain the book mentioned from the publishing department of this journal.

WILLOW SHOOTS INJURED: R. W. J. The damage is not due to disease. The punctures have been caused by some insect, but we fail to find any of the creatures in the specimens received. Send further examples containing insects.

COMMUNICATIONS RECEIVED.—R. H. H. (Thanks for 2s. sent for R.G.C.F. box)—J. J.—Constant Subscriber—H. & W. E.—W. E. B.—W. W. P.—H. J. V.—G. W.—W. R.—C. H.—A. T.—A. S.—Mehlem—F. M.—A. D.—T. L.—H. J. E.—W. W.—C. R. G., Mass.—W. K.—Rev. C. B.—W. A. C.—J. G.—H. I. J.—F. J.—A. J. H.—J. R.—P. J. C.—F. J. C.—Linnean Soc.—Reading Gard. Soc.—H. L. F.—A. E. B. H.—J. F.—T. H.—H. R. C. (Thanks for 1s. which has been placed in the R.G.O.F. box)—V. C. S.—J. C. E.—T. A.—P. D. R.—C. F.—F. C.—W. G. B.



SINNINGIA HYBRIDA (HORT.) "DR. MAXWELL T. MASTERS," AS SHOWN BY
MR. ERNEST BENARY, ERFURT; FLOWERS, ROSE COLOURED AND WHITE.





THE
Gardeners' Chronicle

No. 1,154.—SATURDAY, February 6, 1909.

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INHERITANCE OF ALBINISM IN ORCHIDS.

IN consequence of the important results recently obtained at Cambridge by Professor Bateson, Mr. Punnett and Miss Saunders in their Mendelian experiments with Sweet Peas and Stocks, the question of the inheritance of albinism has become one of great biological interest.

In Orchids, the raising of albino forms from seed is also of much practical interest. It may be useful therefore to collect in a brief note what has already been done by Orchid breeders in this direction.

Albino Orchids may be provisionally divided into two classes:—(1) True albinos with no trace of purple sap. (2) Tinged "albinos" with some purple sap.

The following list gives the results so far obtained in mating (a) true albinos with true albinos, (b) tinged "albinos" with tinged "albinos," (c) tinged "albinos" with true albinos. The records have been taken partly from the reports of the meetings of the R.H.S. published in this journal, partly from Mr. Rolfe's notes in the *Orchid Review*, and partly from personal notes and correspondence with Orchid breeders. The nomenclature adopted is that of the *Orchid Stud Book*, now being issued from the press.

I trust that the list is fairly complete, and I hope that any omissions will be at once supplied by Orchid breeders.

(A) TRUE ALBINOS × TRUE ALBINOS.

Paphiopedilum callosum Sanderæ, selfed by Mr. Norman Cookson, produced true albinos. Another batch, raised by Mr. T. Statter, also produced true albinos.

P. Lawrenceanum Hyeaum, selfed by Mr. Norman Cookson, produced nine plants, eight of which reproduced the true albino, while one plant is said to have reverted to an ordinary coloured form of *P. Lawrenceanum*. This apparent exception is remarkable, and a repetition of this experiment with larger numbers would be useful.

P. Lawrenceanum Hyeaum × *P. callosum Sanderæ*, raised by Messrs. Charlesworth, in 1900, produced the albino hybrid *P. × Maudia*, all the plants of which have so far proved to be true albinos. Another batch raised by Baron Schröder in 1907 also produced true albinos.

P. × Maudia × *P. insigne Sanderianum*, raised by Colonel Holford in 1908, produced the albino hybrid *P. × Rosettii*, 16 plants of which have so far flowered, all apparently true albinos. It may be noted here that while *P. insigne Sanderianum* so far appears to behave as a true albino, yet the presence of some dark-coloured hairs at the base of the petals suggests that this variety may possibly be a tinged albino like *P. insigne Sanderæ*. It would be interesting to know if the hybrid *P. × Rosettii* also has those dark-coloured hairs.

P. callosum Sanderæ × *P. bellatulum album*, raised by Mr. Cookson in 1907, produced the coloured hybrid *P. × Wottonii*, 25 plants of which have flowered, all apparently sap-coloured like the typical hybrid between *P. callosum* and *P. bellatulum*.

P. Lawrenceanum Hyeaum × *P. bellatulum album*, raised by Mr. Cookson, produced the coloured hybrid *P. × Lawrebel* resembling the typical hybrid between *P. Lawrenceanum* and *P. bellatulum*.

Cattleya Mossiæ Wageneri, selfed by Messrs. Charlesworth in 1907, produced a true albino with no trace of sap colour.

C. Mossiæ Wageneri × *C. Gaskelliana alba*, raised by M. Jules Hye, produced three true albinos, viz., *C. × Hycæ*, *C. × H. Suzanne*, and *C. × H. jungfrau*.

C. Mossiæ Wageneri × *C. intermedia alba*, raised by Colonel Holford, in 1906 produced the albino hybrid *C. × Mackayi Undine*, 14 plants of which flowered true albinos. In 1908 three true albinos of the same parentage were exhibited by Mr. R. G. Thwaites, also one by Sir Trevor Lawrence and one by Messrs. Veitch.

C. Schröderæ alba × *C. intermedia alba*, raised by Mr. Cookson, produced in 1907 the coloured hybrid *C. × Thayeriana*, similar to the hybrid raised by Mr. Orpet between the typical *C. intermedia* and *C. Schröderæ alba*.

C. Gaskelliana alba × *C. Harrisoniana alba*, exhibited by Mr. Thwaites in 1908, produced the coloured hybrid *C. × Williamsiæ*, four plants of which had coloured flowers like

the typical hybrid between *C. Gaskelliana* and *C. Harrisoniana*.

C. Gaskelliana alba × *C. Warneri alba*, raised by M. Peeters in 1904, produced the hybrid *C. × Peetersiæ*, five of which were true albinos with pure white flowers and green leaves, and two were coloured, having lilac-purple flowers with purple margins to the leaves.

C. Eldorado alba × *Lælia Perrinii alba*, according to a record in *Rev. Hort.* 1907, p. 31, produced coloured offspring bearing pink flowers.

Odontoglossum crispum xanthotes × *O. nobile album*, raised by Messrs. Charlesworth, produced in 1908 the hybrid *O. × armainvillierense xanthotes*, all of which have so far flowered true albinos.

Dendrobium nobile virginale, selfed by Mr. Thwaites, came true from seed. Another batch, consisting of several hundred plants raised from one capsule by Messrs. Armstrong and Brown, flowered in 1907 and 1908, and all were true albinos.

(B) TINGED "ALBINOS" × TINGED "ALBINOS."

Paphiopedilum insigne Sanderæ, selfed by Mr. Cookson, apparently came true from seed. Other batches raised by Mr. R. J. Measures, Messrs. Veitch, Mr. W. Bolton, and Colonel Holford all apparently came true from seed. It is not recorded, however, whether all these seedlings were tinged "albinos" like the parent, and it may be that some were true albinos.

P. insigne Sanderæ × *P. insigne Dorothy*, raised by Mr. Appleton, apparently all reverted to the ordinary type of *P. insigne*, with smaller, and in some cases less numerous, spots. This case is particularly interesting, because both parents have a yellow ground colour, which breeds true selfed in the case of *P. insigne Sanderæ*, but which, when crossed, reverts to the typical green ground colour of *P. insigne*.

P. insigne Sanderæ × *P. aureum Surprise*, raised by M. Peeters, in 1908 produced a typical green-coloured, spotted *P. insigne*, while soon afterwards Mr. J. H. Craven exhibited a plant of the same parentage bearing a yellow flower. In this connection it may be noted that in 1908 Colonel Holford raised eight plants from *P. insigne Chantini* Lindenii × *P. insigne montanum aureum*, both with yellow ground colour, and all the seedlings reverted to the green ground colour of the ordinary *P. insigne*.

Cattleya labiata Measuresii × *C. labiata Amesiana*, raised by Mr. Thwaites, in 1908 produced a considerable number of plants, all of which bore coloured flowers like the ordinary *C. labiata*.

C. Mossiæ Reineckiana × *Lælia purpurata alba*, raised by M. Peeters, produced both the tinged "albino" *Lælia-Cattleya* × *Canhamiana alba* and the ordinary coloured *L.-C. × Canhamiana* from the same capsule in the proportion of about two coloured to one tinged albino.

Dendrobium nobile Ballianum × *D. nobile Murrhiniacum*, raised by Mr. Gurney Wilson, produced 150 plants, all of which reverted to the typical colouring of *D. nobile*.

(c) TINGED "ALBINOS" × TRUE ALBINOS.

Paphiopedilum insigne Sanderæ × *P. callosum* Sanderæ, raised by Mr. Cookson, produced more than 100 plants, all of which were coloured like the typical hybrid *P. × Leonæ* (*insigne* × *callosum*).

P. insigne Sanderæ × *bellatulum album*, raised by Messrs. Armstrong and Brown, produced *P. × Helena* Armstrongiæ, a coloured hybrid less spotted than the typical hybrid *P. × Helena* (*insigne* × *bellatulum*).

P. insigne Sanderæ × *P. Lawrenceanum Hyeenum*, raised by Mr. M. Isaac, in 1908 produced a coloured hybrid like the typical *P. × Eucharis* (*insigne* × *Lawrenceanum*).

P. insigne Sanderæ × *P. × Maudia*, raised by Colonel Holford, in 1901 produced none but coloured forms. A coloured form of the same parentage was flowered in 1908 by Mr. Isaac, which resembled light forms of *P. × Eucharis* and *P. × Leonæ*.

Lælia anceps alba × *Cattleya Trianae alba*, raised by M. Peeters, in 1903 produced the tinged "albino" *Lælio-cattleya* × *Boylei* Kerchovæ. Another plant of the same parentage, raised by Mr. Mead, also produced a tinged "albino."

Dendrobium × Ellisii album × *D. nobile virginale*, raised by Mr. Thwaites, in 1907 produced 22 plants, all of which were tinged "albinos," but with more colour than the tinged parent.

GENERAL CONCLUSIONS.

The above facts show that when true albino Orchids are mated together the result may be all albinos, all coloured reversions, or both albino and coloured forms from the same capsule. These results are very similar to those obtained in the Mendelian experiments with Sweet Peas and Stocks at Cambridge. It seems probable, therefore, that the appearance of sap-colour in Orchids, as in Sweet Peas and Stocks, depends on the simultaneous presence of two complementary colour factors. If both the colour factors are present the sap is coloured; if either (or both) is absent the sap is colourless. Thus, the typical coloured forms of *Paphiopedilum callosum*, *P. Lawrenceanum*, *P. insigne* and *P. bellatulum* may be represented as carrying the two complementary colour factors C and R. The albinos of these species, on the contrary, will be carrying only one of these factors, consequently their sap is colourless. If *P. bellatulum album* be represented as carrying the factor C alone, and *P. callosum* Sanderæ, *P. Lawrenceanum Hyeenum*, and *P. insigne* Sanderianum (if a true albino) be represented as carrying the factor R alone, all the results in *Paphiopedilum* are so far clear. On this interpretation *P. insigne* Sanderianum (if a true albino) may be expected to give albinos when crossed with *P. callosum* Sanderæ or *P. Lawrenceanum Hyeenum* and coloured reversions when mated with *P. bellatulum album*. According to the Mendelian scheme in Sweet Peas there are five different kinds of albinos, and the possible matings between any two of them may give any one of four different results, viz.:— (1) All albinos; (2) all coloured reversions; (3) equal numbers of albinos and coloured forms; (4) three albinos to one coloured form.

The coloured reversions when selfed should give, on the average, nine coloured to seven albinos. It seems likely that similar results may be found in Orchids, and the appearance of five albinos and two coloured forms from the same capsule in the cross between *Cattleya Gaskelliana alba* and *C. Warneri alba* is certainly suggestive. From this it will be seen that individual albinos apparently identical may differ in their germinal constitution and, consequently, give different results in breeding. In view of this, it would seem desirable for Orchid breeders to adopt

some method of ear-marking individual albinos, whether imported or raised from seed. A distinct name would hardly be convenient for individuals which, to the eye, appear alike, but identification might be assured by putting the name of the importer or raiser in brackets after the name of the albino, together with a number showing the order of its appearance. For instance, the original *Paphiopedilum callosum* Sanderæ was first flowered from an importation by Messrs. Sander in 1894, and might, therefore, be called (Sander 1); another individual appeared in an importation by Messrs. Low in 1904, and might be called (Low 1), and so on. The hand-raised seed-

owing to the absence of a complementary pattern factor. The fact that the ghost form *P. insigne* Sanderæ breeds true when selfed, but gives the reversionary, dense form when crossed with other kinds of ghost forms like *P. insigne* Dorothy and *P. × aurem* Surprise, tends to confirm this view, though the evidence is yet hardly conclusive. The fact also of the yellow ground-colour of the flower of *P. insigne* Sanderæ breeding true when selfed and giving rise to the reversionary, green ground when crossed with other yellow ground varieties may also have a similar explanation. Further evidence in regard to these cases is necessary and may soon be forthcoming.



FIG. 43.—FRUITING SPRAY OF CORNUS CAPITATA (BENTHAMIA FRAGIFERA) FROM SPECIMENS SUPPLIED BY COLONEL TOTTENHAM.

(See page 83.)

lings of *P. callosum* Sanderæ might be distinguished in the same way, thus (Cookson 1), (Statter 1), and so on. In this way all the individuals of any particular albino could be distinguished for breeding purposes. The same principle might be applied to the tinged "albinos," which are equally interesting in their inheritance. The tinged "albino" *P. insigne* Sanderæ will presumably be carrying both C and R, the dense sap colouring of the ordinary *P. insigne* being reduced to a dilute or ghost form, probably

It is interesting to note that two such apparently similar forms as *P. insigne* Sanderæ and *P. insigne* Sanderianum have such a different germinal constitution and give such opposite results in breeding. No doubt albino breeders in future will take care to use *P. insigne* Sanderianum as a parent instead of *P. insigne* Sanderæ. At the same time, from the biological point of view, it is important to test all the yellow varieties, whether they be true albinos, tinged "albinos" or coloured forms. C. C. Hurst.

NEW OR NOTEWORTHY PLANTS.

SOBRALIA ELISABETHÆ.

ON two occasions previously Mr. Thomas Humphreys, the Curator of the Botanical Gardens, Edgbaston, Birmingham, has forwarded to us flowers of a singular white *Sobralia*, which, being imperfectly developed and withered were not identified. Again, a complete growth and inflorescence is sent, and, although the only expanded bloom is slightly abnormal in structure, it is evident that it is *Sobralia Elisabethæ* of R. Schomb, in *Verh. Beförder. Gartenb. Preuss. XV.* (1841), 137 tt. 1, 2, the plant described and figured being "dedicated to H.R.H. Princess Elisabeth of Prussia."

This species appears not to have been recorded as flowering previously in Great Britain. It belongs to the racemose section, its flowers being borne in terminal, flexuose racemes furnished with lanceolate bracts, the lower of which is leafy and over 2 inches in length, the upper not so long. The stem is 3 feet in height, and furnished with distant lanceolate leaves, 5 or 6 inches in length. The inflorescence in the figure cited shows that nine flowers may be produced in succession. In Mr. Humphrey's specimen four would be likely to develop. The expanded flower has ovate, acute petals and lanceolate sepals, both 2 inches long and white. The lip forms a tube over the columns, the front being expanded, emarginate, and crisped, white, with a chrome-yellow disc, and faint traces of rose lines from the base. The column, which is slender for the genus, has on each side an acute horn, which, in the specimen sent, is abnormally elongated and coloured yellow on the under-side. In point of beauty, it cannot compare with *Sobralia macrantha* and some other species, but it is highly interesting, among other points, in that it appears to be a white-flowered species, whereas the white *Sobralia macrantha* and most other white *Sobralias* are albinos of coloured species. In the original description the species is stated to be a native of Guiana.

CORNUS CAPITATA (SYN. BENTHAMIA FRAGIFERA).

THIS handsome tree is the subject of many notes and several figures in the *Gardeners' Chronicle*, from 1848 onwards. It is a native of the mountains of Northern India, from Kashmir to Khasia, and it extends into Burma and Western China, where it has been collected recently by Dr. A. Henry and Mr. E. H. Wilson. Lindley described and figured it in the *Botanical Register*, vol. xix., 1835, t. 1579, as a new genus, though Wallich had previously published it (*Kovb. Fl. Ind.*, vol. i., p. 431, and *Pl. Asiat. Rur.*, vol. iii., p. 10, t. 214) as a *Cornus*, and most botanists now agree in regarding it and two or three other species as constituting a section of that genus. Mr. W. B. Booth (gardener to Sir C. Lemon, of Carlow, Cornwall), furnished Dr. Lindley with the drawing and history of the plant, which was reproduced in the place cited above. Sir Anthony Buller sent seeds to Mr. J. H. Tremayne, of Heligan, Cornwall, in whose garden plants were raised in 1825. Booth described it as a very handsome evergreen, flowering in great profusion during summer and producing an abundance of large, globular, reddish fruits in autumn. Now it is a conspicuous fea-

ture in many gardens of Cornwall and Devon, is also hardy in Ireland, Western Wales and Western Scotland, and will bear ordinary winters in other parts of the British Islands. But it is really hardy only in the western counties, where it attains dimensions rarely equalled, I believe, in a wild state. In this journal for July 25, 1885, is an illustration of a group of trees in the garden of Mr. R. G. Lakes, Trevarrick, St. Austell, supposed to be the largest in this country. At that date they exceeded 35 feet in height, and the trunk of one was 5 feet in circumference at 3 feet from the ground. *Cornus capitata* is very striking, both in flower and in fruit. It may be explained that what is usually called the flower of this tree is a collection of small flowers, consolidated in a globose head, surrounded by an involucre of white or



FIG. 44.—FLOWER OF *CORNUS CAPITATA* (*BENTHAMIA FRAGIFERA*): WHITE.

cream-coloured bracts an inch to an inch and a half long; the whole having the appearance of a small *Clematis*. The fruit is yellow, with more or less red in it, and resembles a Strawberry, hence the specific name, *fragifera*. In structure, however, it is more like the Mulberry. I am not aware that the fruit is eaten in this country, but Collett, *Flora Simlensis*, p. 220, describes it as 1 to 2 inches in diameter, yellow, or, when ripe, tinged with red, and states that it is edible. Dr. Henry's Chinese collector described it to him as sweet and edible.

Cornus Kousa (*Benthamia japonica*), a closely allied species, recorded as having been introduced into this country in 1847, is apparently a much hardier species; yet it is very rarely seen in gardens. A figure of a flowering branch is given in this journal, vol. xix., 1896, p. 783, f. 135; and there is an illustration in the *Journal of the Royal Horticultural Society*, n.s. vol. xviii., p. 862, f. 194, representing a flowering specimen 13 feet high. From the description there given, this species should be grown where *C. capitata* will not succeed. A third species, *C. Hoangkongensis*, described by the writer in the *Journal of the Linnean Society*, vol. xxiii., p. 345, is not in cultivation. *W. Botting Hemsley*. [The specimen figured on p. 82 is from Colonel Tottenham's garden at Ballycurry, co. Wicklow. This garden is celebrated for its collection of tender trees and shrubs. The flower illustrated in fig. 44 is interesting in that it shows a departure from the normal four-bracteatate state characteristic of the Order.—EDS.]

WHORTLEBERRIES AND CRANBERRIES.

(Continued from page 75.)

V. PADIFOLIUM (*V. MADERENSE*).—Just inside the main entrance to Kew Gardens, on the outskirts of a shrubbery, there has been growing for at least 65 years a specimen of this *Vaccinium*. Sir Joseph Hooker saw it there in 1843. The species was first introduced from Madeira to this country by Francis Masson, in 1777, on his return from his collecting expedition to the Cape of Good Hope. (Masson, it may be remembered, was the first—and one of the most successful—of the long line of plant collectors sent out from Kew.) This veteran plant is now 6 to 7 feet high. It is one of the very few woody plants from Madeira that can be termed hardy in this country; at the moment I can only recall *Genista virgata* as another. The species is particularly interesting in a geographical sense. Its closest ally is *V. Arctostaphylos*, which is found in the Caucasus. So closely allied are they, indeed, that some authorities have made them forms of one species. This curious instance of geographical distribution, together with the fact that several Indian forms of the *Laurus* family are also found in the Canary Islands, has led Sir Joseph Hooker to observe that they point to "Spain and the Atlantic islands being the isolated western homes of the fragments of a flora that once extended over Europe and North Africa, but now, through climatic changes, elsewhere expelled from those great continents." The theory is also supported by the existence of *Rhododendron ponticum* in Spain and Asia Minor, and in a wild state in none of the intervening countries.

V. padifolium is a deciduous shrub in this country, but in Madeira it is a small tree, growing at altitudes of 3,000 to 5,000 feet. Its leaves are 1 to 2 inches long, ovate-oblong, pointed, and minutely-toothed at the margin. The flowers are borne in leafy racemes, springing from the nodes of the previous year's growth, each flower pendant on a short stalk. The corolla is open bell-shaped, with five well-marked angular lobes, large for a *Vaccinium*, and yellow, tinged with rose. The berry is blue, and is said to make an excellent preserve. The species grows very well in the Abbotsbury gardens, Dorsetshire.

V. PARVIFOLIUM.—It is doubtful if this species is now in cultivation, but, coming from Western North America, where it extends from North California to Alaska and the Aleutian Islands, it ought to be quite hardy in Great Britain. It is a shrub varying in height from 1 foot to 6 feet, with branches sharply angled, after the fashion of our native *V. Myrtillus*. Its leaves are like those of the Box, only smaller and thinner, being usually from $\frac{1}{4}$ to $\frac{1}{2}$ inch long and oval. The corolla is globular and pinkish-white, the berry pale red and of an insipid flavour.

V. PENNSYLVANICUM.—One of the dwarfest of the East American species, *V. pennsylvanicum* is also one of the most useful there as a fruit-bearer. It is a densely-branched shrub, and never appears to much exceed 1 foot in height, and is often only 6 inches or 9 inches high. In foliage and habit it resembles *V. canadense*, but is distinguished by its minutely-toothed and more acuminate leaves, and less pubescent twigs and leaves. The latter are quite narrow—from $\frac{1}{4}$ to $\frac{3}{8}$ inch wide—and from $\frac{3}{4}$ to $1\frac{1}{2}$ inches long. The flowers, which come in short, dense clusters, are white, tinged with red, and are followed by berries covered with a blue bloom. In the United States this is the earliest of the "Blueberries" to ripen its fruits, which are sweet and very palatable. It is often found as a dense carpet on rocky ground, where there is but a bare covering of soil. According to Mr. Dawson, of the Arnold Arboretum, it will grow under the shade and drip of trees—a useful quality if it retains it in this country. The species has some botanical affinity with *V. corymbosum*, but is readily distinguished by its dwarf habit, its

more open corolla, and by the more dense arrangement of the flowers.

V. PENNSYLVANICUM VAR. ANGUSTIFOLIUM.—A variety with even narrower leaves than the type—*angustifolium*—is found on the summits of the White Mountains of New Hampshire, and on the Adirondacks.

V. STAMINEUM.—Although but little grown in English gardens, this species is quite ornamental. It is a native of Eastern North America, from Maine south to Florida. Mr. J. Dawson, commenting on its behaviour in the Arnold Arboretum, says that few hardy shrubs of its tribe are more beautiful, and that it is worth growing for cut flowers. It is deciduous, 2 to 4 feet high, of neat habit, with dark, dull-green leaves, glaucous below, 1 to 2½ inches long, elliptical in outline, pointed, and thinner in texture than those of most *Vacciniums*. The racemes are distinguished by the leaf-like character of their bracts, in the axils of which many of the flowers are produced. The flowers are very abundant, and are rendered conspicuous by the bright yellow stamens standing out beyond the white corolla. The berry varies in colour from green to yellowish-white. The species blooms at Kew about the end of May; it was introduced to England in 1772.

V. ULIGINOSUM.—This is the second deciduous British species, not so common as *V. Myrtillus*, but still widely spread over the North of England, Scotland, North and Central Europe, North Asia, and North America. It may be readily distinguished from *V. Myrtillus* by its obovate, entire leaves, and smooth, round stems; and from *V. Vitis-idæa* by its deciduous leaves and black fruit. Like them, it has a creeping rootstock, and grows from 1 to 2 feet high, with smooth, dull-green leaves from ½ to 1 inch long. As in some foreign species, the flowers are produced at the leafless termination of the previous year's shoots, above the point whence issue the shoots of the current year; they occur singly or in clusters of two or three, and are pale red or white. The berries are as large as Black Currants, black, covered with a glaucous bloom, and, although edible, produce headache and giddiness if eaten in large quantities. They constitute a valuable food for mountain game.

V. VACILLANS.—A species from the Eastern United States, extending from New England to North Carolina. It is a shrub of stiff habit, sometimes less than 1 foot high, sometimes more than 4 feet. The leaves are of firm texture, entire, or very minutely-toothed towards the apex, and glabrous, except when young; they are ovate or oblong, 1 to 2 inches long, with a mucronate apex. The flowers are produced in close clusters on leafless branches, the pink corolla being ¼ inch long. The fruits are globular, black, covered with a blue bloom, and very sweet.

V. VITIS-IDÆA (THE COWBERRY).—The Cowberry, as this evergreen species is often called, is well known on moors and mountains in the northern half of England, and in Scotland as far north and west as Sutherlandshire and the Hebrides. It is a low, evergreen shrub, almost always under 1 foot high, with a creeping rootstock. The stems are wiry, round, but little branched, and covered, when young, with a short, dark down. The Box-like leaves are obovate, dark shining green, and freely speckled with black dots beneath. It is the only evergreen British species. The flowers are crowded 5 to 12 together, on short terminal racemes, and appear in May and June. The corolla is open bell-shaped, rather deeply four-cleft, and either white or pink. The berries, which ripen between August and October, according to climate, are red, and about the size of Red Currants. They are eaten cooked in some parts of England, and in Northern Europe are used for making a jelly, and in various other ways. The species does not thrive in the hot Thames valley like it does in the cool north. Besides inhabit-

ing North Europe and Asia, it is also found on the mountains of the Eastern United States.

V. VITIS-IDÆA VAR. MAJOR is a striking form, with larger leaves and berries; whilst var. *minor* has smaller leaves than the type. *IV. J. Bean.*

(To be continued.)

POINTS OF INTEREST IN THE AFFORESTATION REPORT.

It being important that the facts and considerations on which the Royal Commission bases its report (see *Gardeners' Chronicle*, January 23) should be widely known, we now give a short account of the chief conclusions reached by the Commission and of the evidence on which these conclusions are based.

The original terms of Reference to the Royal Commission on Coast Erosion, July, 1906, were to inquire and report as to the encroachment of the sea on the coast, the damage caused, and preventive measures to be adopted; whether further powers are necessary for local authorities or owners of property to enable them to give effect to schemes for protection of coasts and banks of tidal rivers; whether any alteration of law as regards management and control of the foreshore is desirable, and whether further facilities should be given for the reclamation of tidal lands.

Additional reference, March, 1908.—Whether it is desirable to make an experiment in afforestation as a means of increasing employment during periods of depression of the labour market, and, if so, by what authority and under what conditions such experiment should be conducted.

The report under review deals with the last only of the subjects just enumerated, and hence may be termed the Afforestation Report.

The principal conclusions (already published in these pages) may be summarised thus:—

Afforestation is practicable and desirable. Nine million acres are available for the purposes of afforestation.

By planting at the rate of 150,000 acres per annum, temporary employment would be found during the winter months for 18,000 men, and as many would derive employment in incidental and subsidiary occupations connected with forestry. When the whole area had been planted permanent employment would be afforded to 90,000 men.

The scheme should be on an economic basis: labour is available. The State should finance the scheme by means of a loan, and should entrust its control to a Board of Commissioners.

Afforestation will help to stem the tide of rural depopulation: being a new industry, it will not compete with private enterprise.

Afforestation in the long run will prove an investment of profit to the State.

PART I.—BRITISH FORESTRY GENERALLY CONSIDERED.

Percentage of forest land in various countries:

Austria	...	...	...	32.6
Hungary	...	...	...	27.5
Germany	...	...	...	25.9
Belgium	...	...	...	17.3
France	...	...	...	17
Holland	...	...	...	7.9
Denmark	...	...	...	7.2
England	...	...	...	5.3
Scotland	...	...	...	4.6
Wales	...	...	...	3.9
Ireland	...	...	...	1.5

Value of imported timber and timber-products, such as wood-pulp, was, in 1907, £32,326,117. Of this sum, £20,127,943 was paid for timber (8,513,937 loads) imported from countries with climates like our own: Russia, Scandinavia, Germany, France, Canada, &c.

The 9,000,000 acres of the Commissioners' scheme would, with our present forests, produce the amount now imported from countries with a temperate climate.

QUALITY OF HOME-GROWN TIMBER.

The reasons why home-grown timber is not, generally, of the highest quality, are many; but they all may be summed up in "the lack of

facility (in this country) for Forestry Education." Lack of proper education has led to improper methods of forest management. The too-open condition of our woodlands reduces their value for timber in two ways, viz., in yield and in quality.

Open cultivation, though suitable enough for certain purposes, viz., ornamental effect, game preservation, and wind screens, and though not harmful in the case of certain trees, viz., Oak, Ash, and Larch, lowers the quality of the timber in most cases, e.g., Beech, Common Spruce, and Silver Fir.

The defects due to too-open cultivation are excessive branching and hence, unduly knotted timber; too rapid growth and, hence, abnormally broad-ringed wood; short boles with excessive taper. Well-shaded wood is, moreover, of better quality than that from the insufficiently shaded trees grown on our open woodlands.

THE CLIMATE OF THIS COUNTRY IS FAVOURABLE.

The variety of soil, together with the equable nature of our climate, admit of the cultivation in this country of many trees which cannot be grown in Central Europe. Moreover, apart from theoretical considerations, there are many instances of successful results of British forestry; results showing returns, 60 years from planting, of £43 per acre, representing a net profit of £15 per acre (Scots Pine): in the case of Larch, a profit of £36 per acre 65 years after planting; mixed wood, 75 to 80 years old, realised £157 per acre net, representing a profit sufficient to give a rent of over £1 per acre per annum as contrasted with 7s. 6d., the value of adjoining land. The general conclusion come to by the Commission is that timber growing has proved profitable in the past, and that with modern methods it may be made profitable in the future.

In Germany, where systematic forestry has been practised for a century, the industry is profitable, the net return being £1 12s. per acre.

THE INCREASED PRICES OF TIMBER WILL BE MAINTAINED.

Timber is increasing in price, and during the past decade the cost of wood has risen from 20 to 50 per cent. This increase has been a steady one and will continue. Felling has exceeded planting, and the world's consumption of timber is increasing. The virgin forests of North America have been exploited, in many cases recklessly; a "timber famine," that is, a shortage of timber, is a possible contingency.

Even Canada is now importing certain classes of timber, e.g., Oak, Walnut, Hickory, &c. The quality of timber has deteriorated.

PART II.—UNEMPLOYED LABOUR IN RELATION TO AFFORESTATION.

The reader of this summary should observe that the Commission, having concluded on general grounds in Part I. that afforestation is economically sound, passes on to survey the problem from another aspect altogether. We might put the point of view thus:—Afforestation is good: if it can serve to reduce unemployment then it is still better.

SUITABILITY OF AFFORESTATION FOR UNEMPLOYED LABOUR.

Unemployment is of three kinds: chronic, seasonal, sporadic. Unemployment increases during the winter months, which is precisely the period when forest development demands most labour.

The work of forestry varies from heavy digging to lighter operations. Though the weaker members of the urban unemployed would be scarcely suitable even for the lighter work, selected men from the ranks of townsmen out of work might be employed.

Afforestation will find extra employment for the rural population during the winter months when the work on farms or holdings is slack. This actually occurs in France and Germany, where the permanent staffs of foresters are relatively small and they are augmented from rural workers when more labour is required. Thus, though not suited to the physique of certain sections of the urban unemployed, afforestation, by taking a certain number of suitable men, will relieve, in a definite measure, the stress of unemployment.

It is possible, in addition, to adjust the routine of an afforestation scheme without

detriment to that scheme in such a way that a larger acreage can be taken in hand during those periods of trade depression when unemployment is considerable.

Beside making a real contribution to the unemployed problem, afforestation will help to fix men on the land, and thus to check the exodus from the country to the towns. Estimating that much of the land which would be brought under tree cultivation now provides employment at the rate of one man per 1,000 to 2,000 acres, and that under forest it would provide employment at the rate of one man per 100 acres of forest, it follows that if the land were under forest it would maintain ten times the population now supported.

Indirectly, in industries arising from the regular and large supplies of timber available, work would be provided for a yet greater number.

PART III.—NATURE AND EXTENT OF SUITABLE LAND.

The kind of land which seems most suitable for afforestation is that classed as "Rough Mountain Land used for Grazing." Of such there are in Great Britain 13,000,000 acres. In Scotland over 3,500,000 are devoted to deer forests; in Ireland "barren mountain land," together with "bog and marsh," amounts to 4,343,284 acres. But, of these lands, much lies too high for afforestation purposes. On the other hand, there are areas not included in the above which would support forests, viz., poor tillage land which has gone down to grass, and the dunes along the coasts.

After considering all the evidence at their disposal, the Commission concludes that 9,000,000 acres are available in the British Isles, viz. :—

England	...	...	2,500,000 acres.
Scotland	...	...	6,000,000 acres.
Ireland	...	...	500,000 acres.

PART IV.—ADMINISTRATION: AFFORESTATION A TASK FOR THE STATE.

Not only are there fewer forests in Britain than in any European countries, but also there are fewer owned by the State.

The evidence in favour of State ownership is overwhelming: the capital requirements, the long period over which no returns are to be expected are deterrent to private enterprise. A beginning should be made forthwith, and compulsory powers of purchase should be obtained. Co-operation of land owners should not be excluded. The scheme should be administered by special commissioners, the area to be devoted to afforestation being divided into districts. The authority should be central, and its powers should not be delegated to local authorities. In Ireland the Land Purchase Act provides an opportunity for the acquisition of suitable land.

PART V.—FINANCE.

Assuming that 150,000 acres are afforested annually for 60 years, and that one-third of the area is worked on a 40 years' and two-thirds on an 80 years' rotation: that cost of freehold and expenses of afforestation equal £13 6s. 8d. per acre: that administrative charges equal 4s. per acre: that re-afforestation equal £6 10s. per acre and rate of interest is 3 per cent., and allowing that thinnings begin to be of value after 20 years, the 40 years' rotation area yields £60 per acre at the end of 40 years, and the 80 years' rotation area £175 at the end of 80 years, then the annual deficit rises from £90,000 in the first to £3,131,250 in the 40th year. From the 41st to the 60th year the forests become self-supporting. The revenue increases from the 61st year up to the 81st year, when an approximate equalised revenue of £17,411,000 per annum will be realised.

Further, the value of the property would then be £562,075,000, or £106,993,000 above cost. The equalised annual revenue of £17,411,000 represents a yield of £3 16s. 6d. per cent. profit. So much for the gist of the scheme. We hope those of our readers who are interested in this important subject will procure the Blue Book giving the full report. It may be obtained through any bookseller for sixpence, and provides more interesting reading than most current literature.

NOTICES OF BOOKS.

* "WAX CRAFT."

THE apiary is such a general accessory to gardens, both large and small, that no apology will be needed for introducing to the notice of our readers a book of some 170 pages bearing the above title. That the author is an authority on his subject may be inferred from the fact of his official position as chairman of the British Beekeepers' Association. He is, in addition, editor of the *British Bee Journal* and the author of several works on bee-keeping. The opening chapter deals with the history of beeswax and its early uses, and though the account is necessarily brief, it affords much interesting and informative reading. The second chapter shows how the wax is produced in the body of the working bee, and gives the composition of beeswax as compared with vegetable waxes. Other chapters treat of the methods of wax rendering, refining, bleaching, &c. Though it is generally known that beeswax is imported into this country from various parts of the world, it is interesting to learn the principal sources whence the supplies are derived. These are as follow:—Abyssinia, Australia, Brazil, Chili, East Indies, France, Gambia, Hayti, Jamaica, Madagascar, Mauritius, Mombasa, Niger, Senegal, Turkey, and U.S. America. Waxes from these different sources vary considerably in colour and quality, and consequently in price. Some are nearly white, while others range in colour to almost black. The price varies from £6 to £8 per cwt. wholesale.

Vegetable waxes are much used for the purpose of adulteration: for this the paraffins with a high melting point are mostly chosen. Japan wax, derived from the small fruits of *Rhus succedanea*, which comes into commerce in large, white or yellowish, hard cakes, when mixed with beeswax diminishes its malleability, rendering it more brittle and lowering its melting point. Carnauba wax, which is a deposit secreted on the leaves of *Copernicia cerifera*, known as the Brazilian wax Palm, is collected by shaking the substance from the leaves and then melting it so as to form moulds or cakes. Much of this wax is, in its imported condition, of a dull greenish-yellow colour, but it becomes lighter in the process of refining. When added to beeswax, this substitute hardens and raises its melting point. Carnauba wax is imported into this country in increasing quantities, not only for candle making but for making phonograph and gramophone records. Another Palm-tree wax which is included under beeswax adulterants is that from *Ceroxylon andicum*, from the Andes of Colombia. This is found not on the leaves, but as a flaky deposit on the trunks, from which it is easily scraped off. Its composition is similar to Carnauba wax, and it is used for making candles, for which purpose it is also used by the people of Colombia. Amongst other vegetable waxes classified by Mr. Cowan as adulterants of beeswax are those from the small berry-like fruits of several species of *Myrica*, chiefly *M. cerifera* and *M. cordifolia*, natives of North America and South Africa respectively.

Sapium sebiferum, better known as *Stillingia sebifera*, also yields a soft white wax or tallow, which covers the seeds and is easily removed by steaming. In China it is much used for candle making, but owing to its soft nature it is mostly mixed with the insect wax of China, which is secreted by the insect *Coccus Pe-la* on the leaves and stems of *Ligustrum lucidum* and *Fraxinus chinensis*. This is extensively used by the Chinese, not only for candle-making but for other purposes.

Common resin and mineral substances of an inflammatory nature, are also used for adulterating beeswax. It will therefore be seen that beeswax is one of the most extensively adulterated articles of commerce.

The concluding chapters of the book are devoted to the various uses of beeswax, such as the making of candles, wax flowers, models, artificial fruits, &c. A list is also given of more than 100 preparations containing beeswax in some form. The book is illustrated by 17 full-page plates.

* *Wax Craft: All about Beeswax: Its History, Production, Adulteration, and Commercial Value*, by T. W. Cowan. (Sampson, Low, Marston & Co.)

The Week's Work.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park London.

Bowling greens.—The game of bowls is now played with such science that the greens themselves are required to be as perfect as possible. The turf must be of the finest texture and perfectly elastic. The game is most popular in Scotland and in the North of England, where it is given every encouragement by most of the city and town corporations. In recent years the London County Council has constructed greens in nearly all the public parks under its control. In London the greens are made level, but in Yorkshire and Lancashire, I believe, they are made to fall several inches from the centre, or crown, to the sides or ditch. In some cases the fall is as much as 18 inches. The lawn I am going to speak about is one with a level surface. Such lawns vary in size, but one that measures 112 feet square can be recommended as most useful. It allows six rinks being played upon at one time, thus accommodating 48 players. A green of this size, being square, has an advantage over others, in the fact that it allows the game being played from any quarter of the green. When, by hard wear, the turf becomes worn near to the edges from which the players deliver their bowls, the play can be diverted to courses or rinks formed in a cross direction. It is primarily necessary that such lawns should be perfectly drained. If the subsoil is heavy clay, it must be drained with a pipe and rubble drain, or drains; but, on the contrary, if the subsoil is of a sandy or gravelly nature, the ashes to be recommended presently will provide sufficient drainage to allow the surface water to pass away. A few years ago, I constructed a green on a gravelly subsoil. The method of procedure was as follows:—After the size of the ground had been properly marked out, the soil was removed to a depth of 9 inches. The soil thus removed was utilised to form a bank round the green 6 inches high, or even more. The inner edge of the raised bank had a slope of about 6 inches to enable the Grass to clothe its surface and retain its angular position from the pressure of the players' tread. After the removal of this soil, the greatest care was taken to see that there were no hollows or places where the ground was likely to sink more than in others. The whole area was consolidated as much as possible. When this had been done, rough ashes were spread over the ground to a depth of 8 inches, and the ashes were afterwards compressed by rolling and beating into a space of 6 inches deep. The surface of the ashes was made perfectly level. Around the outside of the green, a ditch 1 foot in width was left, and lined next to the turf with boards 5 inches deep by 1½ inches thick. These were secured by wooden pegs placed at suitable intervals. Over and resting on the living boards was a narrow lattice frame, which served to carry away any superfluous surface water, and to keep the bowls clean while play was in progress. This lattice frame was fixed slightly under the surface of the turf, so that there would be nothing to prevent the bowls from running into the ditch. Over the level surface of pressed ashes was spread an inch deep of good loamy soil. On this soil was laid turves, each turf cut 1 foot square and 2 inches in thickness. In this case, we made use of local turf, and, unfortunately, it contained some suckling Clover, which occasioned considerable trouble for some time afterwards. Eventually the Clover was eradicated, and the green is now as good as might be wished for, although it was made at a low cost. For expensive greens, turf is sometimes conveyed hundreds of miles at great cost. But if ordinary turf is used, and proper attention afterwards given to rolling, mowing, and the supply of surface dressings, such Grass improves beyond expectations.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LOOER, Bart., Leonardlee, Sussex.

Rhododendron.—The planting of *Rhododendrons* should be pushed forward in dry weather. Spread some peat, manure and leaf-soil evenly over the soil. Set out the plants over the ground

in the positions they are to occupy. In many cases special soil will have to be prepared, and it is better, therefore, to plant the bushes more thickly than is usually done. It is more economical; the plants have the benefit of each other's shade over the roots, and when thinning is necessary owing to the growth of the bushes, transplanting can be effected easily. Rhododendrons are all the better for being repeatedly shifted whilst young. They should be planted shallow and the soil should be well rammed. Where Rhododendrons are planted on sloping ground, provision must be made for watering them. This can be best done by making a sort of basin around the stems of the plants. Among some of the best garden varieties and hybrids are Concessum (rose-pink), Edward S. Rand (scarlet), Francis B. Hayes (white, with dark spots), Ascot Brilliant (blood-red), Countess of Clancarty (rose-crimson), Mrs. Tom Agnew (white, with yellow centre), Sappho (white, with maroon spots), Purity (white, with a faint yellow eye), Scipio (rose, with red spots), Mrs. W. Agnew (pale rose), George Hardy (white), Helen Waterer (white, with crimson margin), J. M. Brooks (scarlet, with brown spots), James Nasmyth (rosy-lilac, with maroon blotch), Kate Waterer (rosy-crimson, with yellow markings), Lady Eleanor Cathcart (rose, with chocolate spots), Marchioness of Lausdowne (pale rose, with black spots), Gomer Waterer, Marie van Houtte (white, spotted with light red), Cynthia, Michael Waterer (bright scarlet), Minnie (blush white, with chocolate spots), Mrs. Holford (salmon-pink), Pink Pearl, and Lady C. Walsh (red, edged with pink). The following varieties flower in April and May:—Broughtonianum (rose-red), caucasicum album, limbatum (white and crimson), Auguste van Gee't (chocolate-coloured), nobleanum (scarlet), Vesuvius (crimson-scarlet), and Prince Camille de Rohan (white and rose). Some of the best garden Rhododendrons are those which have been obtained from Himalayan species, such as R. \times kewense, Luscombe's Scarlet, and Fosteri.

Seed raising.—It is inadvisable to sow any seeds at present, unless it is absolutely necessary. Dahlia seeds may be sown in pots or pans or in seed trays. Dianthus, Lobelia, Polyanthus and Primroses may be sown in a warm greenhouse or frame.

Climbing plants.—Examine the climbing plants, whether deciduous or evergreen, carefully pruning and training any that require attention in these matters. If any climbing plants have to be planted, the work should be done at once.

Summer-flowering Chrysanthemums.—These may be propagated now, as there are plenty of growths on the old stools that may be used for cuttings. If a large number of plants is required, the cuttings should be rooted in seed trays, and 50 cuttings can then be placed in one tray. When the cuttings have rooted they should be potted up singly into small pots and placed in a cool frame for a time.

Lawns and paths.—Keep the lawns and paths neat in appearance by sweeping and rolling them frequently. Prepare soil for use in top-dressing tennis-courts, croquet ground and similar places. A suitable mixture is one consisting of leaf-soil, loam, soot, lime and bonemeal. These should be well mixed together and turned several times. The compost should be kept dry and a top-dressing may be applied about the first week in March, covering the ground about one-eighth of an inch thick.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

The fruit room.—Examine the Apples at frequent intervals and remove any fruits which show signs of decay, laying the remainder out thinly over the shelves and benches. Keep the room cool, not too dry, and allow sufficient ventilation to sweeten the air. There have been many complaints this winter that fruit has not kept well. Each season proves afresh the necessity of planting plenty of late varieties of both dessert and cooking Apples. Late Apples are always valuable, and for this reason the season should be lengthened as much as possible. Some of the best cooking Apples

in use from this date onwards include Newton Wonder, Lane's Prince Albert, Alfriston, Chelmsford Wonder, Annie Elizabeth, Dumelew's Seedling (Wellington), Norfolk Beefing, and the newer variety, Royal Late Cooking. Dessert varieties include Allen's Everlasting, Sturmer Pippin, Court-Pendú-plat, Brownlee's Russet, Cockle's Pippin, Lord Hindlip, and Claygate Pearmain. These varieties, if stored in a suitable place, will afford a supply of dessert fruits until very late in spring.

The Loganberry (see fig. 45).—The Loganberry is gaining popular appreciation, and it is being extensively planted in this country for market purposes. The plant is not at all par-

makes extraordinary growth, and this circumstance should be borne in mind when a site is being selected for its cultivation. In this garden the canes are trained on wire forming an arch over a pathway, the top of the arch being 10 feet high from the ground. The canes are planted on both sides of the arch, and they fill all the space on the wires. The foliage is ornamental in appearance and under this method of cultivation the fruit is fully exposed to the sun and air. It may not be possible to adopt this system in every case, but, whether or not, provision should be made for the whole length of the canes, for they usually fruit from top to base.



FIG. 45.—THE LOGANBERRY.

ticular as regards character of soil, and it is capable of growing well in positions where Raspberry canes will not succeed. In gardens where the Loganberry has not hitherto been planted, I would recommend that the plant be given a trial. It is not too late even now to make a plantation. Though not amongst the choicest dessert fruits, the Loganberry makes an excellent addition to culinary fruits. It is also suitable for bottling or for preserving with sugar in the ordinary way. When the Loganberry has become well established it

Blackberries.—There are several varieties of the Blackberry which are not only valuable for their fruits, but possess growths and foliage which are distinctly ornamental. Such varieties may very suitably be planted to run over old tree stumps, or to cover fences or low walls. The Parsley-leaved Bramble (*Rubus laciniatus*) is one of the best for this purpose. Wilson Junior is another variety bearing large fruits, but these only attain their best condition in favourable seasons, or in specially warm localities.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Heating the houses.—At the time of writing frosts prevail, and, in all probability, for the next two months frosts will occur at intervals. During such weather every effort should be made to maintain proper temperatures in the houses by carefully regulating the heating apparatus. In some gardens, through an inefficient heating apparatus and an insufficient supply of piping, it is impossible to keep the houses at the proper degree of heat during the night-time without continuous hard firing. At such times, the pipes being extremely hot, the atmosphere of the house becomes more than ordinarily arid, and if such conditions are allowed to continue for long together, they will cause great deterioration in the health of the plants. On occasions when the pipes are already unduly heated, and the boiler power is insufficient to maintain a proper temperature till the morning, the grower may be led to damp the houses heavily with the view of reducing the temperature of the hot air. In such conditions, if a sudden fall in the temperature occurred before daylight, it would cause loss of foliage to some species, although no such harm would be likely to accrue if the temperature were low and the atmosphere comparatively dry. Everything should be done as far as possible to avoid overheating the pipes, even in the hottest houses, and a means to that end is to cover at least the lower part of the roofing with some thick, dry material. For this purpose Archangel mats, which can be rolled on at dusk and taken off in the morning at daylight, are suitable. In addition to these mats, I find the lath roller blinds very useful to roll down over them. These when securely tied not only greatly assist to preserve an equable temperature inside, but will keep the mats from being blown off by wind. If at this time of the year, when the warmth from the sun is gradually increasing, the temperatures at early morning are too low, the heat of the houses should be increased by small, sharp fires, so that, by the time the sun shines, the fires will have ceased to give much heat. If, unfortunately, there is a big fire when the sun shines on the house, then draw out a portion of the fire and cover the remainder with a thin coating of damp ashes. Should the weather be likely to become cold again after mid-day, the fires should be thoroughly cleaned and revived before the heat in the houses becomes low. It is advisable to see that the flues and ashpits are kept clean, and that the pipes are kept full of water at all times, so that the boilers may do their work properly. Every air tap in the pipes should be opened several times each day, especially last thing at night, and again at early morning. The temperature of each division by night, as maintained by fire heat, should be as follows:—The *East Indian* or warmest house, 60° to 65°; the *Cattleya* house, about 60°; *Mexican* and *Intermediate* houses, 55° to 60°; and the *Odontoglossum* or *Cool* house, about 50°. On very cold nights the temperature may be allowed to fall a few degrees below those given, and in mild weather it may be a trifle higher. Whenever the thermometer shows that the temperatures of the houses are below the figures indicated, the atmosphere should be considerably drier than at any other time.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Herbaceous Calceolarias.—These plants may now be given their final potting. A suitable compost is one consisting of sandy loam with the addition of a little decayed cow manure. Do not give the plants too large a shift and, in potting, press the soil moderately firm. When the plants have been potted, place them on an ash, or gravel base in a cool house, where they will be exposed to the light but not to direct sunshine.

Insect pests.—Every effort should be directed towards the completion of the plant-cleansing operations before milder weather occurs. In the warmer houses mealy bug may put in an appearance at any time, and in the intermediate and cooler houses the insects will be apt to leave their hiding places as the days lengthen.

In all cases endeavour to destroy them before their numbers increase.

Yellow-spathed Richardias.—*Richardia africana* has its white spathes already expanded, but *R. Elliottiana* and *R. Pentlandii* will not flower until a later date. The tubers having had a long resting period, may now be potted. The plants root very freely and therefore require large pots. A suitable potting soil is one consisting of loam two parts and leaf-mould one part, with plenty of coarse sand or grit added to keep it porous. The use of fine gravel is also advantageous. The tubers should be planted rather low in the pots and the soil must not be rammed hard. These yellow species require more heat than *R. africana*. They should be given a position in full sunlight. No water will be required until the plants have started into growth, but afterwards copious supplies will be necessary.

Anthurium.—The species and varieties which produce decorative spathes may now be overhauled. Those which were repotted last year will probably merely require a little fresh surface soil. In cases where repotting is necessary the old soil should be washed from the roots in a pail of tepid water. Cut off any decayed roots and repot the plants into clean pots or pans which should be furnished with drainage material to one-third their depth. Let the potting compost consist of fibrous peat and loam, broken somewhat roughly, pieces of charcoal and plenty of silver sand. Keep the crown of the plant well above the rim of the flower-pot, and arrange the compost around the roots with the hand. A potting stick should not be used. A few pieces of fresh, living Sphagnum-moss should be inserted with the top layer of soil. Leggy plants may be shortened with advantage by cutting off a portion of the base, but taking care to retain a few fibrous roots. Anthuriums which have ornamental foliage are so susceptible to draughts and changes of temperature when forming new leaves, that it is better not to excite them into growth for some time longer. When, however, they commence to grow naturally they will need treatment similar to that recommended for those having ornamental spathes.

FRUITS UNDER GLASS.

By E. HARRIS, Fruit Foreman, Royal Gardens, Frogmore.

Queen Pineapples.—Prepare a pit for the suckers which were rooted last season. These young plants must now be potted and started into growth in order that they may have sufficient time to make strong fruiting plants for next year. They will need to be plunged into a bed of Oak leaves about 4 feet in depth having a temperature of 80° or 85°. If the leaves have been lying in a heap for some time already there will be a little warmth in them and this will be an advantage. Build up the bed in layers and tread each layer well, making the bed of a uniform firmness throughout. The bed should be made of such a height that when the plants have been plunged they will be as near to the glass as is possible without risk of injury. The compost used in potting should be a rich, friable loam from which the fine soil has been shaken. Add one 8-inch potful of ½-inch bones and a 6-inch potful of soot to each barrowload of loam. If the soil is inclined to be heavy a little charcoal may also be added with advantage. The compost must be thoroughly warmed before potting is commenced. The plants should be put into 10-inch or 12-inch pots according to the strength of the individual plants. Each pot must be well drained and the soil must be made firm. Any other plants requiring to be repotted should be given attention. They will need a hot-bed as in the case of the *Queen Pines*, and they must be potted in a similar manner. No water need be applied until fresh roots have been made. The atmosphere of the house, however, must be kept moist by frequently damping the walls and other surfaces. The plants themselves may be syringed frequently. Excepting on very cold nights, the temperature may be kept at 70°. Make full use of any sunshine that occurs during the day, but admit air only on very favourable occasions.

Charlotte Rothschild and Smooth Cayenne Pines.—Although these varieties may be grown suc-

cessfully in pots they succeed better and give less trouble if planted out in a bed. The system practised here for many years was to plant two batches of plants each year, one in March and the other in September. This method produced a supply of fruits almost all the year round. Preparations for putting out the spring plants should commence at once, so that the hot-bed and soil may become warmed before planting is commenced. The hot-bed should not be less than 5 feet in depth. The compost may consist of roughly-chopped loam, crushed bones and soot in the same proportions as I have mentioned for the *Queen* variety. Make the soil quite firm by treading. It should be about 1 foot in depth when finished. Plant the suckers about 2 feet apart each way. Shade them from the sun until they have become established in the new soil; syringe them two or three times a day during bright weather. Keep the atmosphere of the house constantly moist by damping the floor and other surfaces.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Onions.—Young plants raised from seed sown early last month will now require to be pricked off into other boxes of medium depth. Plenty of drainage material should be placed in them, and this drainage should be protected by placing the coarser parts of the compost over it to prevent fine soil from washing down. The compost should consist of two parts of light fibrous loam (well pulled to pieces with the hands), one part of well-decayed leaf-mould, and one part horse-droppings, obtained from an old Mushroom bed. The leaf-mould and horse-droppings should be passed through a sieve with a ¼-inch mesh. Add sufficient road grit or river sand, according to the nature of the loam, to render it porous. All these ingredients should be thoroughly mixed, and care should be taken to see that it is in a sufficiently dry state to prevent caking when pressed firmly together. Carefully lift the young plants with a pointed stick, preserving the roots intact as far as possible, and plant them with a small dibber, putting them 3 inches apart every way. Make the soil very firm. Prevent the seedlings receiving a check from chill. It is best to perform this work in a structure where the heat is similar to that in which the plants are growing. After applying a thorough watering with tepid water, place the plants as near the glass as possible. They may be syringed very lightly two or three times during the day. The temperature should never be allowed to exceed 60°; 55° is sufficient.

Autumn-sown Onions.—These succeed best when raised in a seed bed and transplanted to well-prepared ground. The transplantation should be accomplished as soon as the weather is favourable. Being perfectly hardy plants, their roots will commence to grow provided the ground is not frosty. Thanks to the severe frosts, ground which has been heavily manured and thoroughly trenched will now be in splendid condition for breaking down. A few days before the planting is done the surface should be pointed over with a fork, adding a good dusting of lime and soot, after which the surface should be raked finely. Place the plants at distances of 12 inches from each other, leaving 15 inches between the rows. *White Emperor* and *White Leviathan*, both excellent and distinct white-skinned varieties, are desirable sorts for early use, and *Giant Red* and *Lemon Rocca* are excellent varieties for affording late supplies.

Parsnip.—This vegetable requires a long season of growth, therefore, wherever possible, the seed should be sown some time during the present month. If the weather is unfavourable, it may only be advisable to sow yet on light soils. Unless the soil is a very suitable one, exhibition specimens can only be cultivated by boring holes at least 2 feet 6 inches deep with an iron bar, and filling these holes with finely-sifted material, such as the soil obtainable from beneath the potting bench. The rows should be planted 18 inches to 2 feet apart. There are several excellent varieties of Parsnips, but the best is *Tender* and *True*.

Celery.—Make a very small sowing of an early and quick maturing variety of Celery. The seeds should be sown in pans and placed in a gentle heat.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, FEBRUARY 8—

United Hort. Ben. & Prov. Soc. Com. meet.

TUESDAY, FEBRUARY 9—

Ann. meet. Roy. Hort. Soc. (Competitive Classes for late dessert Pears). Hort. Club Ann. meet. and Dinner. British Gard. Assoc. Ex. Council meet.

WEDNESDAY, FEBRUARY 10—

Perpetual-flowering Carnation Soc. Annual meet. at Hotel Windsor, 4 p.m. Croydon & District Hort. Soc. Annual Dinner.

THURSDAY, FEBRUARY 11—

London Branch B.G.A. Lecture on Kew Gardens.

FRIDAY, FEBRUARY 12—

Roy. Gard. Orphan Fund Ann. meet. and Election of Orphans, at Simpson's, Strand.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—39°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, February 3 (6 P.M.): Max. 54°; Min. 43°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, February 4 (10 A.M.): Bar. 29.8; Temp. 59°; Weather—Fine.

PROVINCES.—Wednesday, February 3 (6 P.M.): Max. 53° Cambridge; Min. 49° Lincolnshire.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—

Herbaceous and Border Plants, Hardy Bulbs, Lilioms, Azaleas, &c., at 12; Roses and Fruit Trees, at 1.30, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY—

Perennials and Border Plants, Lilioms, Bulbs, &c., at 12; Roses and Fruit Trees at 1.30; thousands of Bulbs, Plants, &c., at 11.30; 784 cases Japanese Lilioms, &c., at 1, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

Even before the nitrogen in the farmyard manure and other organic substances becomes available for the nutrition of crops, it is changed into nitrates by the activity of special soil bacteria.

Unfortunately, from all cultivated land there goes on a constant drain of this element, and not more than 75 per cent. of it added in manures is ever recovered in the crops, even under the most favourable conditions. On account of the soluble nature of nitrates they are rapidly washed out of the soil into the drainage-water, especially in winter, when no plants are present to absorb them, and a certain amount is decomposed with the formation of free nitrogen gas, which escapes into the air and is lost. Large amounts are removed in the crops, and as these or the products derived from them are transported into towns and other areas away from the land which produces them, it will be readily understood that soils which have been cultivated for centuries have been undergoing a process of gradual exhaustion of one of their most important constituents. The demand for supplies of nitrates, which has increased to an enormous extent both in the Old and New Worlds during the last 30 or 40 years, becomes intelligible after consideration of the points just mentioned, and the spread of intensive methods of cultivating the land is destined to increase the demand. About 1830 nitrate of soda was introduced from Chili and Peru, and since that date it has tended to stave off the nitrogen famine and keep up the crop returns. In 1860 it was assumed that the deposits would last for more than 1,500 years at the rate at which the fertiliser was then being used, but an increase of population and a great extension of cultivated areas along with increased intensive management of the soil have falsified the prediction. The world's markets are now consuming 1½ millions of tons of nitrate of soda per annum, and the exhaustion of the present source of supply is well within sight; a few decades will see an end of it. Temporary checks to the development of a nitrogen famine have been made by the addition of sulphate of ammonia to the list of fertilisers supplying this all-important ingredient, but no permanent alteration in the growing need for it could be expected from either of these materials.

That the food supply of the increasing population is bound up with the discovery of some new source of nitrogenous plant-food has become more and more evident, and the existence of a practically unlimited amount of nitrogen in the atmosphere has fired the imagination of scientific men and stimulated persistent research into the question of the conversion of the free nitrogen of the air from its inert gaseous condition to a combined state suited to the needs of all crops.

The efforts to utilise this constituent of the atmosphere for the production of a nitrogenous plant-food on an economical scale have been crowned with success during the last three or four years, and at the present moment two new fertilisers are being placed on the market. One of them, calcium cyanamide, introduced under the trade name of "Nitrolin" is obtained by heating the pure nitrogen of the air with calcium carbide (the well-known material used in bicycle lamps) in an electric furnace; the nitrogen is ab-

sorbed by the carbide, and calcium cyanamide is produced. It is a fine powder, somewhat like basic slag, containing 20 per cent. of combined nitrogen, an amount equal to that in the best samples of sulphate of ammonia. It contains also a certain amount of lime, which is of benefit upon soils deficient in that material. In comparative trials with sulphate of ammonia and nitrate of soda upon Potatoes, Cabbages, Wheat, Mangels, as well as many garden crops, it has proved itself an excellent substitute for these manures. Since it is liable to check germination and damage seedling plants, it is best applied to the land 10 to 14 days before sowing seeds. The application may be made at the rate of 10 wt. to 20 wt. per acre, and when intended for use as a top-dressing it should be mixed 10 to 14 days before application with one to four times its weight of finely-divided soil. Like sulphate of ammonia, it does not act immediately upon crops, but must first be nitrified or changed into a nitrate in the soil. It is adapted for use in all kinds of land, with the exception of those of an acid character or on light sands where the nitrifying bacteria are not abundant.

The other product whose nitrogen is obtained from the air is calcium nitrate, a compound which is certain to become a formidable rival of all nitrogenous fertilisers, and, with "Nitrolin," is destined to have a far-reaching effect on the production of the world's crops. As far back as 1786 Cavendish discovered that the combination of the nitrogen and oxygen of the air can be brought about by the passage through it of an electric spark. This fact has never been lost sight of by chemists and engineers, but its practical and economic application have not been attained until recently. Several methods of bringing about this chemical combination on a large scale are now known, but the process which is apparently giving the best results is that devised by Birkerland and Eyde in Norway. The union of the gases occurs in a specially-constructed electric furnace, the oxides of nitrogen being afterwards passed into water, and the nitric acid formed subsequently combined with limestone. The nitrate of lime produced is sent into commerce 75-77 per cent. pure and containing 13 per cent. of nitrogen—about 2 per cent. less than in nitrate of soda. It is a brownish substance without smell, very soluble in water and as active as nitrate of soda upon plant growth. Experiments both in this country and abroad have shown that its nitrogen is quite as efficient, unit for unit, as that in the latter manure, and on soils deficient in lime it is likely to be more effective.

The prophetic statement by Sir William Crookes that starvation may be averted through the laboratory, and his suggestion, that the production of electricity at a cost sufficiently low to make the manufacture of nitrates from the air a commercial success may be attained through the utilisation of water power, are now being realised. The danger of a nitrogen famine and its consequent bearing upon the growth of human food cereals has been removed by these new achievements of the chemist and engineer.

The first factory for the manufacture of calcium cyanamide was erected at Piano d'Orte in Italy, but others have been established in Austria, Germany and France. The

Since the investigations of Liebig, Boussingault, Lawes and Gilbert, during the first half of last century, into the nature and sources of the elements necessary for the nutrition of plants, the great importance of an adequate supply of nitrogen has become fully recognised by all who are concerned with the cultivation of the land. Among plant-food constituents nitrogen may be said to take first place, being at once the most costly, and, under the ordinary conditions which prevail in the garden or on the farm, the most effective element for increasing the yield of all kinds of crops. Without the constant addition of an abundant supply, either in the form of organic material such as dung, or as nitrate of soda or other chemical fertiliser, the cultivation of field and garden produce rapidly becomes unprofitable.

All kinds of plants, with the exception of those belonging to the leguminous class, take up the nitrogen which they require from the soil in a combined state, almost entirely as a nitrate of lime, soda, or some other base.

New Sources of Nitrogen.

North-Western Cyanamide Co.'s works are situated at Odda, near the southern end of the Hardanger Fjord in Norway, and from this centre the new fertiliser will be supplied to the United Kingdom and its colonies and the greater part of north-western Europe.

Nitrate of lime is manufactured by the Norwegian Hydro-Electric Co. at Notodden, in Telemarken, the energy for the electrical power being obtained from a neighbouring waterfall. The output of the factory is at present about 20,000 tons per annum, but in less than two years, when a new factory will be in working order, with power derived from the Rjukan Falls—the largest in the country—the production will be increased to 100,000 tons per annum.

The question of cost will largely determine the use to which the new fertilisers will be put. The unit of nitrogen in each is practically the same as in nitrate of soda and sulphate of ammonia, but the new products have a valuable asset in them in the form of lime, and with new improvements in the process of manufacture and a reduction in the cost of production a substantial lowering of price may reasonably be expected. In the meantime we can confidently recommend both of these products for trial in the garden during the coming season.

OUR SUPPLEMENTARY ILLUSTRATION represents *Angraecum Augustum*, Rolfe. This remarkable new species was shown by Sir TREVOR LAWRENCE, Bart, K.C.V.O. (gr. Mr. W. H. White), at a meeting of the Royal Horticultural Society on July 21, 1908, when the Orchid Committee gave it an Award of Merit. Botanically, it stands nearest to *A. Kotschyi*, although in habit it is not like that species. *A. Augustum* has thick, fleshy leaves which are light-green and slightly glaucous. The flowers are pure white, with pale greenish spurs tinged with brown at the tips. The species is a native of North-east Rhodesia, and plants were sent to Sir TREVOR LAWRENCE by Mr. AUGUSTUS OLD.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees of this Society will be held on Tuesday the 9th inst. The annual general meeting of Fellows will take place at 3 o'clock p.m.

BRITISH GARDENERS' ASSOCIATION.—The next meeting of the London Branch of this Association will be held at Carr's Restaurant, Strand, on Thursday, February 11, at 7.30 p.m. Mr. C. H. CURTIS will deliver a lecture on "Kew Gardens"; the lecturer's remarks will be illustrated by lantern views. All professional gardeners are invited to attend the meeting.

ROYAL HORTICULTURAL SOCIETY OF ABERDEEN.—The annual exhibition will be held on August 19, 20, and 21, in the Duthie Public Park, Aberdeen, the exclusive use of which for the three days has again been generously granted by the Town Council. Among the prizes offered are two challenge cups and nearly a score of medals. Mr. J. B. RENNETT, 231a, Union Street, Aberdeen, is the secretary, and he will be pleased to furnish further particulars to intending exhibitors.

ABERDEEN UNIVERSITY.—The Dickie prize in botany at the Aberdeen University—the income of £100 granted by Professor TRAIL in 1902—has been awarded Miss A. M. RUSSELL for a collection of 300 specimens gathered within 10 miles of St. Cyrus.

"THE BOTANICAL MAGAZINE."—The February number of this magazine contains descriptions and illustrations of the following plants:—

ALPINIA BRACTEATA, tab. 8237.—This Zingiberaceous plant most resembles *A. nutans*, which is readily distinguished by its more compound inflorescence, and *A. Henryi*, which has the indumentum on the rachis more silky in texture. The species was introduced to European cultivation in 1820, and a plant flowered at Kew in 1864. The plant now figured was raised at Kew from seeds received from the Royal Botanic Gardens, Calcutta, in 1882. It flowered for the first time in a tropical house

genus *Oligobotrya* is intermediate between *Smilacina*, of which it has the habit and the terminal inflorescence, and *Polygonatum*, with which it agrees in having a gamophyllous perianth. This Liliaceous plant from China should be cultivated in a shady and moist border consisting of leaf-mould and peat. The plants grow about 3 feet high, and at Messrs. VEITCH'S Coombe Wood Nursery they succeed when treated in a similar manner to hardy *Cyripediums*.

ERANTHEMUM WATTII, tab. 8239.—This Acanthaceae plant (see fig. 46) was included in the *Kew Handlist of tender Dicotyledons*, 1899, page 225, as *Dædalacanthus parvus* (C. B.



FIG. 46.—ERANTHEMUM WATTII (DÆDALACANTHUS PARVUS).

in May, 1908. The plant grows as high as 7 feet and produces terminal racemes of white or pinkish flowers having a reddish-purple blotch in the interior of the labellum. The tip of the labellum is shaded with yellow. Like all *Alpinias*, the plant requires to be cultivated in a tropical aquatic house, where the soil about the roots can be kept in a mud-like condition while the stems are exposed to abundant sunshine.

OLIGOBOTRYA HENRYI, tab. 8238.—Mr. C. H. WRIGHT describes two varieties of this species. The typical variety has yellowish flowers, and the variety *violacea* is violet coloured. The

CLARKE, and in our own pages October 25, 1902, page 311, the species was illustrated under the same name. In the *Gardeners' Magazine*, 1901, page 644, Colonel R. H. BEDDOME described the plant as *Dædalacanthus Wattii*, this being the first description published. Dr. STAFF has now found it necessary to place this species and *Justicia nervosa* in the genus *Eranthemum*. *E. Wattii* grows from 8 to 10 inches high: it has ovate leaves and paniculate spikes of purple or violet-coloured flowers, both purple and violet-coloured flowers being produced on the same spike. It is a warm-house plant and should be raised

from spring-struck cuttings each year. If the tops are pinched back during the growing season the plants will quickly form shapely little pot-shrubs and flower freely. This species is at its best in July and August.

PINUS BUNGEANA, tab. 8240 (see *Gard. Chron.*, 1882, vol. 18, page 8, figs. 1 and 2).—This species is most nearly allied to *P. Gerardiana*. These two species and *P. chihuahuana* and *P. Lumholtzii* form a small group which the late Dr. MASTERS looked upon as distinct from the other species of the genus, owing to the deciduous leaf-scales and the leaves being in bundles of three with minutely-serrulate margins.

SORBUS VILMORINII, tab. 8241.—This species is said to be very distinct from the other species of the genus now in cultivation. It is a native of Szechuan and Yunnan in South-western China. SCHNEIDER, in *Bull. Herb. Boiss.*, 1906, ser. 2, vol. vi., p. 317, recognises two varieties of *S. Vilmorinii*, the typical variety which is now figured in the *Botanical Magazine*, and a variety called *setschwanensis*. This latter variety has smaller and more numerous leaflets than the type which approaches so closely to *S. microphylla*, a native of Sikkim, that it might readily be regarded as a geographical form of that species. *S. Vilmorinii* is a shrub 10 to 20 feet high. It has slender, unequally-pinnate leaves. The inflorescence is few flowered; the flowers are about one quarter inch across, and the fruit is globose-red and about one-third of an inch in diameter.

THE MASTERS' LECTURES.—Fellows will remember the intimate connection with the Society of the late Dr. MASTERS, F.R.S., who did much for horticulture by drawing constant attention to the various ways in which scientific discovery and research might be made serviceable to gardening; and it will also be remembered that a fund was established by subscription to perpetuate his memory in connection with the Society, and to carry on in some degree his work of science in relation to gardening. "The Masters' Lectures" have accordingly been founded, and the first two are to be given during 1909 by Professor HUGO DE VRIES, of Amsterdam, on (a) "MASTERS' 'Vegetable Teratology'" (June 22), and (b) "The Production of Horticultural Varieties" (September 28). *Extract from Report of Royal Horticultural Society for 1908.*

COUNTY LECTURERS IN IRELAND.—Mr. WILFRED MARK WEBB, F.L.S., has recently been acting as external examiner in agricultural botany to the Royal College of Science, Dublin, for the Department of Agriculture and Technical Instruction for Ireland. Most of these third year students will become county lecturers.

"GEO. MONRO LTD." CONCERT COMMITTEE.—The thirteenth annual concert will be held on Thursday, February 25, at the large Queen's Hall, Langham Place. Mr. GEO. MONRO will preside. This annual concert is held for charitable objects. We have before us the statement of accounts for the last event, which took place on February 20, 1908. The total receipts, including a balance of £46 14s. 5d., amounted to £279 17s. 8d. Donations were given to the following charitable institutions:—Gardeners' Royal Benevolent Institution, 15 guineas; Wholesale Fruit and Potato Trade Benevolent Society, 10 guineas; Surgical Aid Society, 6 guineas; Charing Cross Hospital, 5 guineas; Royal Ophthalmic Hospital, Covent Garden Lifeboat Fund, and GEORGE MONRO LTD., Outing Fund, 3 guineas each; and to GEORGE MONRO LTD., Pension Fund, 4 guineas. The remaining

sum was expended on the arrangements for the concert, except for cash in hand amounting to £61 10s. 9d. We are informed that the forthcoming event will be equal to any of its predecessors, and we hope that many of our readers will attend the function.

THE LEEDS PARKS.—The staff of the Leeds parks dined together on the 24th ult., their guests including Mr. S. F. WITHAM (chairman), Alderman CARTER, Councillors HINCHLIFFE, OWEN, and WADSWORTH. In submitting various toasts the visitors congratulated Mr. A. J. ALLSOPP and his staff on the condition of the parks and recreation grounds of the city, and also spoke in praise of the floral decorations carried out from time to time at the Town Hall.

LINCOLNSHIRE POTATOS FOR AMERICA.—It is reported in the *Times* that in the Holbeach district of Lincolnshire, which is one of the largest Potato-growing areas in England, heavy consignments of Potatos are being loaded for despatch to America. At Holbeach railway station alone the average weekly tonnage despatched is about 1,000 tons, and sometimes as many as 350 to 400 tons are sent away in one day. The Potatos are principally brought from the Holbeach Marsh district. The price the farmers are securing for the consignments sent to America works out at about 35s. per ton, and the duty payable is 37s. 6d. per ton. A very large quantity of Potatos from the district are also being sent to the London and provincial markets.

A PRUNING COMPETITION.—The Madresfield Annual Pruning Competition took place on the 30th ult. in the Home Farm Orchards, near Malvern. There were 20 competitors in two classes. Class A was arranged for pupils who have just taken one week's course of instruction given by a qualified instructor upon various kinds of fruit trees growing in the widely different districts covered by the club's area, which embraces a large portion of the western or fruit-growing districts of the county of Worcester. Twelve pupils, including several farmers' sons, entered the competition. Considering that it is impossible to learn the art of correct pruning in a week, the work was fairly well done. The Technical Instruction Committee allow 3s. per day to each satisfactory pupil, and a good "Saynor" pruning knife is given them in addition to the club's prizes of 20s., 10s., and 5s. respectively. Class B was open to men who had taken previous instruction and others who were nominated by members as capable men at the work. Each man was allotted three trees, previously selected as uniform as possible, and numbered beforehand by the appointed stewards. A ballot took place and the men drew numbers from a hat to correspond with the trees. Three hours were allowed to complete the work. The stewards had power to suspend any competitor who showed incapacity or unfairness. The judge based his awards from a fruit-grower's standpoint. He commended the work that was done, and said if there were more organisations of a similar kind in fruit-growing districts the quality of the fruit supply would be improved.

BENEFICIAL PARASITES.—Among the most interesting of the methods of experimenting in the destruction of insect pests is that which has been practised in various parts of the world, notably in America, and which consists in the introduction into the region suffering from a given pest of some parasitic enemy of that pest. This is, in effect, a bold effort to upset the balance of Nature, and one which, though it

may be fraught with a certain measure of risk, seems the only course likely to prove effectual where a pest is well established and widespread. Experiments of this kind are being conducted on a large scale by the entomological staff of the territory of Hawaii (*Fourth Report, Board of Commissioners of Agriculture and Forestry, 1907*). Thus there have been introduced into Hawaii colonies of parasitised (diseased) Orange aphid from California. From the diseased aphides large numbers of the parasite (*Trioxys*!) have been bred; but it has not yet been determined whether the parasite attacks the species of aphid common in the country. Similarly, ladybirds from Mexico have been introduced in the hope—not at the time of writing demonstrably fulfilled—that they would attack the Avocado mealy-bug (*Pseudococcus nipæ*). In other cases, as, for instance, in that of the Arizona dung-fly parasite, breeding operations have been undertaken on the parasite, and it has been demonstrated that it—the natural enemy of the dung-fly—has established itself in the home of its enforced adoption. The parasites, bred and set at liberty, were discovered subsequently in distant parts of the country, and where they were observed to be present the cattle appeared to suffer less than elsewhere from the attacks of the dung-fly, thereby supplying ground for the belief that the parasite of the fly was making its presence felt in the desired way, viz., by attacking the fly, its natural prey. There is certainly scope in our own country for cautious experiments along these lines, and we venture to hope that, at all events, some of our imported pests may ultimately be exterminated by imported parasites.

THE CARE AND PRESERVATION OF STREET TREES.—Anyone travelling in this country must be impressed by the marked difference with respect to trees and avenues which different towns present. Though it is a matter for congratulation that during recent years much has been done to beautify our towns by tree-planting; yet the fact remains that much more might be done, both in this direction and also in the care of town trees. Where, for example, shall we find in England a sight to rival that presented by the trees of the Champs Elysées in May? How many of our towns can compare as regards trees with the German provincial towns? We could wish that the *Bulletin* (No. 256) issued by the College of Agriculture of Cornell University might get into the hands and the contents into the heads of those municipal authorities who have failed to appreciate the importance of tree-planting as a means of concealing the stark ugliness or dreary monotony of much modern architecture, and, as we venture to think, of increasing the healthiness of towns. The *Bulletin* deals in simple fashion with such matters as the dangers to which town trees are liable; the proper mode of planting, protecting, and pruning, and the modes of "renovating" old trees. A similar pamphlet should be drawn up by some competent authority and distributed broadcast throughout this country. This is a subject to which the local horticultural colleges might well devote some attention.

ST. GALLEN.—The Naturalists' Society of the canton St. Gallen have resolved to form an Alpine garden. They have selected the Alp Oberkamor, at Hohen Kaslen, at an altitude of 1,650 to 1,750 metres. At present it is covered with a Conifer plantation, and presents interesting groups of rocks, well adapted for the purpose. The garden will not only afford a picture of the entire Alpine flora of the country, but it will form a preserve for those rare Alpine species which are becoming scarce even on the Alps.

VEITCH MEMORIAL MEDALLISTS.—At a recent meeting of the VEITCH Memorial Trustees, it was decided to offer Gold Medals to the Rev. W. WILKS, M.A., Secretary, and Mr. W. MARSHALL, V.M.H., Chairman of the Floral Committee of the Royal Horticultural Society, for valuable services rendered to horticulture. The following prizes of a medal and £5 each were also offered:—To the ROYAL HORTICULTURAL SOCIETY for the best group of Orchids at the Temple Flower Show, not exceeding 75 feet, and staged by an amateur who has never taken a medal at either the Temple or Holland House Flower Shows; to the CARDIFF AND COUNTY HORTICULTURAL SOCIETY for the best exhibit by an amateur, of 12 distinct varieties of cut sprays of hardy flowering shrubs (cut); and to the NATIONAL ROSE SOCIETY for competition at their exhibition in July next. At the same meeting, Mr. J. DOUGLAS, of Great Bookham, was elected a trustee in the place of the late Mr. G. NICHOLSON.

THE USE OF SULPHATE OF AMMONIA.—The following facts and figures relate to the manufacture and consumption of sulphate of ammonia during the past year (1908). According to MESSRS. BRADBURY & HIRSCH'S *Review of the Market for Sulphate of Ammonia during 1908*, the amount manufactured in the United Kingdom was 314,000 tons, of which slightly more than one half (161,000 tons) was produced in gas-works. Of this total it is estimated that no less than 235,000 tons were exported (roughly, two-thirds of the total manufacture), and that only 83,000 tons were retained in this country. The countries which take the largest quantities of sulphate of ammonia from us are, in 1908:—Spain and Portugal, 51,000 tons; Japan, 38,000 tons; France and Germany, about 24,000 tons each. When it is remembered that large quantities of nitrate of soda are also used both in this country and abroad, some idea is obtained of the greatness of the effort which the modern world is making to satisfy the "nitrogen-hunger" of the soil.

FUNGUS PESTS.—We have received from Cornell University several new bulletins issued by the Agricultural Experiment Station of the College of Agriculture. These bulletins form valuable additions to the series of publications issued by this University. *Bulletin No. 253* deals with the black-rot of Grapes and its control; *No. 255* with Bean anthracnose.

The loss caused by the black-rot fungus (*Guignardia bidwellii*) appears to have increased considerably in recent years in the State of New York. From comprehensive experiments made under the direction of the Professor of Horticulture, Mr. JOHN CRAIG, it is concluded that no better remedy exists than Bordeaux mixture. In one series of experiments thorough spraying reduced the loss by 80 per cent. Several sprayings are recommended, the first when the third or fourth leaf is showing; second with the same mixture when the blossoms are showing; third soon after the flowers have fallen. If further sprayings are required when the berries are swelling, ammoniacal copper carbonate should be used instead of Bordeaux, since the former fungicide does not discolour the Grapes.

BEAN ANTHRACNOSE or pod spot is due to the fungus *Colletotrichum lendemuthianum*, which affects the whole plant except the roots, and at the time of fruit formation appears as canker-like spots in the pod and also on the Bean-seeds themselves. Infected seeds give rise to infected plants; the first sign of disease being small black cankers on the seed-leaves. Since the fungus causing the disease occurs within the tissues of the seed, no external application of fungicides to the seed is effective. It is, of course, easy to kill the fungus by poison, but the seed is also killed. Similarly and for the same reason spraying the young plants is useless. The remedy, or rather the prevention, of the disease appears to rest with the seed-

raiser. It is shown that if, in seed-saving, he will reject all pods showing sign of anthracnose, he will save only clean seed, and such clean seed will give clean plants. We cannot speak too highly of the excellence of these bulletins. They are lucid, admirably illustrated, and eminently practical.

PUBLICATIONS RECEIVED.—*The Sweet Pea Annual, 1909.* (The National Sweet Pea Society).—*Grape Culture.* By Alexander Kirk. (London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd.) Price 7s. 6d. net.—*The Tropical Agriculturist and Magazine of the Ceylon Agricultural Society* (December, 1908). (Colombo: A. M. and J. Ferguson).—*The Amateur's French Garden.* Second Edition. By C. D. McKay. (London: Watkins & Simpson). Price 3d.—*Reports on the Botanic Station, Economic Experiments and Agricultural Instruction, St. Kitt's-Nevis, 1907-8.* (Barbados: Imperial Commissioner of Agriculture for the West Indies). Price 6d.—*Travel and Exploration* (February). (London: Witherby & Co.) 1s. net.—*Tenth Report of the Woburn Experimental Fruit Farm.* By The Duke of Bedford, K.G., F.R.S., and Spencer U. Pickering, M.A., F.R.S. (London: The Amalgamated Press, Ltd.) Price 1s.—*U.S. Department of Agriculture, Bureau of Plant Industry.* Circular No. 18. Reappearance of a Primitive Character in Cotton Hybrids. By O. F. Cook, Bionomist, Bureau of Plant Industry. (Washington: Government Printing Office).—*Rosen-Zeitung.* (December, 1908). (Trier: Jacob Lintz).—*Agricultural Bulletin of the Straits and Federated Malay States* (January). Containing the Treatment of Acid Soils for Rubber and other Cultivations, the Copra Industry, Virus Remedies against Rats, Singapore Market Report, &c. (Singapore: The Methodist Publishing House).—*Lancaster County Council Education Committee. Report of Experiments with Seed Potatoes, 1905-8.*

EXPERIMENTS WITH NITRO-BACTERINE.

In view of the interest aroused by the articles on "Experiments on the Value of Nitro-Bacterine," which have recently appeared in the *Gardeners' Chronicle*, it may be well to point out that, to many people, the results of the Wisley experiments do not appear to justify the sweeping conclusion that "the inoculation of leguminous crops with Nitro-Bacterine in ordinary garden soil is not likely to prove beneficial." On the contrary, they prove just the reverse, and are a complete vindication of all that has been claimed for seed and soil inoculation.

The experiments at both Wisley and Reading were conducted with great care, and are to be welcomed as the most extensive series of experiments on soil inoculation yet attempted in this country under scientific supervision. It has never been claimed that cultures of nitrogen-fixing bacteria will *always* increase the yield of a leguminous crop. The varying conditions of soil, culture, and climate have to be taken into account. It must never be forgotten that we are dealing with organisms which are alive, and are very susceptible to soil conditions.

As yet, our knowledge of soil conditions as affecting inoculation is very limited; but extensive experiments in America have clearly demonstrated some of them, and the Wisley and Reading experiments give further proof of the importance of providing the nitrogen-fixing bacteria with conditions suitable for their growth.

On p. 10 of *Seed and Soil Inoculation* it is stated that "Inoculation will be a failure when the soil is acid and in need of lime." Naturally, the application of superphosphate of lime and sulphate of potash to the plots would tend to increase the acidity of the soil. In addition to this, these acid fertilisers appear to have a directly injurious effect upon the introduced bacteria themselves, for in the U.S.A. *Farmers' Bulletin*, 240, it is specifically stated that the action of these concentrated fertilisers on inoculated seed is injurious. This injurious action

is fully confirmed at Reading and Wisley. The yield from inoculated seed on every plot treated with superphosphate shows a decrease.

The effect of lime on inoculation is well shown by the results on the following soil at Wisley. The plots dressed with lime at the rate of 40 bushels to the acre show:

Inoculated seed ...	4,702 grains weight of Peas.
Non-inoculated seed ...	4,182 " " "
Increase	520 grains or 12.4 per cent.

It should be noted that in each case where comparisons have been made between inoculated and non-inoculated plots, where there is a difference in the number of plants the number in the inoculated plot has been taken as the standard number and the non-inoculated averaged and brought to this standard. That this does not unduly favour inoculation is seen by the fact that in the limed plots if the number of non-inoculated plants had been taken as the standard the figures would be

Inoculated seed ...	4,139 grains weight of Peas.
Non-inoculated seed ...	3,624 " " "
Increase	515 grains or 14.2 per cent.

The effect of liming on inoculation was, according to the figures given in Table L, to give an increase in weight of Peas of 29 per cent., or taking the figures corrected for variation in number of plants, an increase of 12.4 per cent.

Yet Mr. Chittenden definitely states in his report (p. 250): "It is obvious that the addition of lime does not yield better results with the inoculating material in our soil." This surprising conclusion is arrived at because of the results on plots XXI. and XXII., where the plots were treated with lime, potash and superphosphate. But surely Mr. Chittenden would not seriously contend that a mixture of lime, potash and superphosphate is identical with lime alone in its effect upon soil bacteria. To demonstrate the fixation of nitrogen in laboratory cultures by the nitrogen assimilating organisms the presence of carbonate of lime in the culture solution is absolutely necessary. The usual amount added is .1 per cent. The same proportion of lime added as a mixture of lime, potash and superphosphate would be fatal to the organisms. Would it not be more accurate for Mr. Chittenden to state, "It is obvious that the addition of lime, potash and superphosphate does not yield better results with inoculating material on our soil"?

No one who knows anything of the action of the nitrogen-fixing bacteria in the soil would advocate the use of nitrogenous manures along with inoculated seed. Yet this is what was done at Wisley on eight of the 24 plots.

As long ago as 1897 Prof. Vines demonstrated that the presence of nitrates in the soil has an unfavourable effect upon the nitrogen-fixing bacteria. He says "the development of tubercles is much less when nitrate is present in the soil than when it is absent. As the amount of nitrate diminishes, the development of tubercles becomes more marked."

Even leguminous plants appear to prefer to absorb their nitrogen directly from the soil when they can, rather than admit the nitrogen-fixing bacteria into their tissues. They have to provide the bacteria with sugar in return for the nitrogen supplied, whereas when there is nitrogen in an available form in the soil they pay nothing for it. To attempt to decide the value of Nitro-Bacterine by inoculating plots to which nitrogenous manures have already been added is as absurd as to imagine that the value of nitrate of soda as a manure can be proved or disproved by adding it to soil already treated with sulphate of ammonia or calcium cyanamide.

In experiments on the value of a nitrogenous manure it is usual to compare the yield given by the manure with the yield from an equal plot untreated, which is taken as the control plot, and also with the yields from similar plots treated with other manures alone. Can one imagine anyone with a scientific knowledge of manures seriously stating that the way to test the value of nitrate of soda, for instance, is to

apply it to soil already treated with sulphate of ammonia, or to mix it with a substance, such as acid phosphate, which is known to largely neutralise any effect it may have? Yet in effect this is what Mr. Chittenden has done on eight of the Wisley plots. The yield from the inoculated seed on the fallowed ground at Wisley compared with the yields from the other manures alone is shown by the following table from Mr. Chittenden's figures:—

	Weight of pods. Grains.	Weight of Peas. Grains.
*Soil and seed untreated ...	18,077	7,093
Seed inoculated ...	19,604	7,963
Manure, 10 tons per acre ...	19,545	7,686
Limed 40 bushels per acre ...	9,733	3,624
Superphosphate and potash ...	13,249	5,216
Calcium cyanamide ...	8,290	3,157

* Number of plants brought up to number in inoculated plot.

Hence seed inoculation on the fallowed land gave a greater yield than any of the manures applied.

In Reading experiments we have a similar result.

	lbs.	ozs.
Soil and seed untreated ...	5	7½
Inoculated seed ...	6	3
Nitrate of soda ...	5	11
Superphosphate and potash ...	4	5½

Here again the inoculated seed, as stated by the authors, gave the largest yield, showing an increase of 7.6 per cent. over the control plot.

If, therefore, the Wisley and Reading experiments do prove that seed inoculation is useless on ordinary garden soil, how much more do they demonstrate the uselessness of adding nitrates, superphosphates and calcium cyanamide to ordinary garden soils! *W. B. Bottomley, King's College, London.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

THE KEW BELLADONNA.—The hybrid figured and described in the *Gardeners' Chronicle*, January 23, is interesting, as it is another proof that *Brunsvigia* and *Amaryllis* readily hybridise. A comparison between the figure of Mr. Van Tubergen's plant and the Kew Belladonna, as represented by the figure published in *Gardeners' Chronicle* on October 29, 1898, p. 315, leads to the conclusion that both plants are very closely related. Bulbs of the Kew Belladonna have been distributed, during the last ten years or so, among a few people who are specially interested in bulbous plants. I have not yet seen either the plant or flowers of Mr. Van Tubergen's hybrid, but I believe he has the Kew Belladonna, and is, therefore, in a position to compare the two. With regard to the origin of this plant, which I still think is the loveliest of all bulbous plants capable of cultivation in the open air in this country, it was presented to Kew in 1889, by Mrs. Arbuckle, of Stawell House, Richmond. She had obtained it from Sir Henry Parker, who formerly resided at Stawell House, and whose gardener, Mr. W. Bovell, showed a plant of it in flower at a meeting of the R.H.S. in August, 1875. A note in the *Chronicle* of that year, p. 302, states that this plant was "a seedling raised by Lady Parker in Australia from a cross between *Amaryllis* Belladonna and *Brunsvigia* Josephinæ. This cross was first effected by the late Mr. Bidwill, and has since been several times repeated by Lady Parker." The Kew plants did not flower until we had them seven years. Mr. Baker then examined them, and could find no trace of the character of the *Brunsvigia* in the flowers. To settle the question, we crossed *Brunsvigia* ♀ and the Belladonna at Kew, and we have now bulbs from this cross, none of which, however, has yet flowered. I see no reason now to doubt that the Kew Belladonna was obtained as stated, and I think it would be only right that this plant should be known botanically as *Amaryllis* Parkeri. Mr. J. C. Bidwill was superintendent of the Botanical Garden, Sydney, New South Wales, when he died in 1853. In *Gardeners' Chronicle* for July 27, 1850, p. 470, there is an interesting note by him on the crossing of *Amaryllids*, from which I quote the following: "In Herbert's *Amaryllidaceæ*, p. 278, mention is made of some seedlings raised from *Amaryllis* blanda and *A. Josephinæ*

(*Brunsvigia*). In 1843, Mr. Herbert had the kindness to give me one of these bulbs, which was then, he told me, 20 years old, and was not so big as a goose's egg. It would not, in all probability, have flowered in England in 20 years more; in a more suitable climate, such as that of my present residence, it would probably have flowered in four years, but it was destroyed by accident. I never saw *A. blanda* in flower, and now possess only two seedling bulbs, given to me by Mr. Herbert, which are expected to flower this season. . . . If it should flower I will repeat Mr. Herbert's experiment. . . . I raised, in February, 1841, a vast number of seedlings from *Belladonna* by *Josephinæ*. . . . These seedlings flowered for the first time in 1847, and are extremely beautiful. The colour of the flowers is generally like that of *Passiflora Kermesina*, but varies in different specimens, and many are blotched with white: there are from 20 to 30 flowers on a scape. I could never keep the seedlings alive which I raised from *Josephinæ* crossed with *Belladonna*." This goes to support the suggestion that *Amaryllis* blanda was fertilised from the *Brunsvigia* to produce the Kew Belladonna, and as Mr. Van Tubergen's cross was the reverse way, that would account for the difference in habit he describes. It is quite possible that the plants brought by Sir Henry Parker from Australia were some of those raised in the Sydney Botanical Garden by Mr. Bidwill, Sir Henry having been Governor of New South Wales. I have seen 26 perfect flowers of the Kew Belladonna all open together on a single scape, which was about 3 feet high. *W. W.*

—Having seen the above note from *W. W.*, I should like to add a few words. First, as to the difference between *Amaryllis* blanda, Gawl. (*Botanical Magazine*, t. 1450), and *A. Belladonna*, L.; Herbert, who knew both these plants well and whose botanical and cultural knowledge of the *Amaryllids* were probably greater than that of any living man, stated, on pages 277 and 278 of his *Amaryllidaceæ*, that he considered the former a distinct species from *Belladonna*, and that *Brunsvigia Josephinæ*, Redouté, was so nearly allied to it that he included it in the genus *Amaryllis*. He said that *A. blanda* has a strong midrib to the leaves which sheath above the ground. Now this sheath, which is strongly marked in my plants of *A. blanda*, which I procured many years ago from Van Houttes' nursery, is also a pronounced feature of the Kew hybrid, for which I accept Mr. Watson's name of *A. Parkeri*. The sheath, however, is absent from all the other forms of *Belladonna* known to me, including the pale form sometimes sold as *A. blanda*, which was confounded with the latter in Herbert's time. Baker, however, in his handbook of *Amaryllidaceæ* (p. 96), treats blanda as a variety of *A. Belladonna*, and maintains *Brunsvigia* as a separate genus. In 1901, desiring to verify the alleged parentage of *Parkeri*, I raised a hybrid between *Amaryllis* blanda ♀ and *Brunsvigia Josephinæ* ♂, and these seedlings show the sheath more or less distinctly, whereas the plant raised by Mr. Hoog, and figured in your last number, has the leaves like those of *Brunsvigia Josephinæ*. It seems probable, therefore, that the influence of the female parent on the hybrids is much more marked than that of the male, and the sheath, which is so conspicuous a feature in *Amaryllis Parkeri*, proves, to my mind, that one of its parents was *A. blanda* and not *A. Belladonna*. Herbert states, what I find to be correct, that both *A. blanda* and *Josephinæ* are more tender than *A. Belladonna*, and that their leaves, when cut by frost or drought at the points, will not continue to grow like those of *A. Belladonna*. He says that whatever may be the growth of the leaves of *A. blanda*, it will not flower if it is left in a cold situation whilst dry, and that he lost both of his bulbs, which were of the original importation, by planting them in front of the stove. *A. Parkeri*, however, seems to thrive well in front of the stove at Kew, though in my colder soil and climate I have to treat it as a greenhouse plant exactly as I do *Brunsvigia*. *H. J. Elwes, Coleshorn.*

FREESIAS.—I have this season had an inflorescence with ten, and another with nine blooms. I should like to know if this is uncommon. As far as my experience goes, the stem usually develops fewer than eight flowers. *W. R. H.*

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—I was not surprised to read *W.*'s note on p. 76, as it is a most distressing fact that there were 50 unsuccessful candidates at the election. But *W.* should read the excellent leader on p. 72, which clearly explains the difficulties of the case. I am thankful it has been so clearly pointed out that if the non-subscribing candidates were to be entirely excluded the Institution would cease to be a benevolent institution. In such circumstances a much greater amount of support would be needed from benefit subscribers. It is desirable to repeat the words printed on p. 72: "only a very small portion of the fund is contributed to by those who are likely to benefit," for the main part of the income is derived from donations that are purely charitable. The votes at present allotted to subscribers are generous. If a gardener supports the fund in his early days he has a powerful lever in the shape of votes, and in a great measure can ensure election when he needs help. Mr. Waterman clearly expressed my view of our needs when he stated at the meeting that we required more auxiliaries or branches in order to make it a national horticultural charity. *G. Wythes.*

AFFORESTATION.—Much interest is being manifested in Scottish arboricultural circles in the report of the Commission appointed to enquire into this subject. This is not to be wondered at, seeing that Scotland is credited with having 6,000,000 acres of land suitable for afforestation. All who have studied the subject are thoroughly convinced that, as an investment, forestry is sound. Indeed, the returns from forestry are extraordinary, especially when compared with the profits from agricultural land. Forestry, under a proper system of management, is capable of giving a net profit of anything up to 15s. or 20s. per acre. The average rent of Scottish hill land is 1s. per acre. The commissioners, in their report, give the area of land suitable for afforestation in Scotland as 6,000,000 acres, but let us assume that only 5,000,000 acres were suitable. This area, which now only supports a mere handful of men, has in it the possibility of employing at least 35,000 workmen. Add to this the area at present under wood, and the number should not prove far short of 40,000 men; allowing each to have five dependents, this means a population of nearly a quarter of a million. It is to be seen what effect extensive tree-planting will have on the climate, which is already sufficiently damp. One cannot conceive of a return nowadays to the condition of things when ague from the marshes and consumption bred in damp houses thinned the population. What a gale in Scotland means to trees every Scotsman knows. As to what fires can do was proved pretty conclusively several years ago in the magnificent Rothiemurchus Forest owned by the Dowager Countess of Seafield. *K.*

NITRO-BACTERINE.—Will Mr. Chittenden tell us why it is thought useful to inoculate the seeds (Peas and Beans) before sowing? The microbes infest the roots; but the seed skin is soon thrown off. Would not the experiment be more satisfactory if the soil were inoculated as soon as the secondary roots begin to appear? I give the following experience for what it is worth. I had a narrow trench dug on a gravel path against a south wall; a man was employed to dig it and make a border for Scarlet Runners. Unknown to me, he half-filled it with cinders, and put very little earth upon them. I planted the Beans. They came up dwarfed, with more yellow and white in the leaves than green. I then watered them with Nitro-Bacterine in the "cloudy state." The Beans soon began to grow with green leaves, and bore a capital crop. The roots had, as a rule, plenty of nodules. *George Henslow.*

CYCLAMEN FLOWERS (see p. 64).—To prevent cut Cyclamen flowers from flagging, slit each stem for about three-quarters of an inch in an upward direction when arranging them in vases for room and dinner-table decorations. The result well repays for the extra trouble, as the blooms will last quite fresh for fully a week, sometimes more, if the rooms are not overheated. Before adopting this method, I always found the flowers would flag within a couple of hours after being cut. *A. Jefferies, Moor Hall Gardens, Essex.*

FADING OF CYCLAMEN FLOWERS (see p. 64).—It is necessary to cut half an inch off the ends of the flower stems and then split the stem up about an inch. The blooms will then last for weeks in a living-room without flagging. I have kept blooms fresh in a warm living-room for three weeks, and in a cool room for six weeks. *A. Simeson, The Goldings Gardens, Great Warley.* [Some specimens treated in this manner and kindly sent by our correspondent are now fresh, seven days after receipt.—Eds.]

SWEET PEA.—We shall be glad if you will publish the following:—The name "Mrs. J. Wilcot" given to the Spencer American Pea mentioned on p. 86 of the *Sweet Pea Annual* for 1909, should be "Mrs. Wilcox," and the variety there named "Grace Wilson" has been renamed "Mrs. B. Gilbert." *Gilbert & Son.*

WINTER-FLOWERING IRISES (see p. 52)—In his interesting note on these plants, your contributor, *W. L.*, fails to mention another species that would come under this heading, and which, though less showy than those he has mentioned, is still sufficiently interesting to be cultivated. I refer to *Iris palæstina*, an *Iris* with close affinities to *I. alata*, but of dwarfer habit and different colour. The colour is of a greenish-yellow, seen in some forms of *I. orchoides*. In mild seasons, freshly-imported bulbs will flower in November and through December, the usual time for flowering being in January. There is in existence a hybrid between *I. alata* and this species, raised by the late Sir Michael Foster, which is intermediate in character between the two, but it generally flowers later than either of its parents. The difficulty with these winter-flowering *Irises* is to keep them under ordinary cultivation beyond a year or two. Especially is this so with *Iris Vartanii*, and pot cultivation seems to be almost essential to give them the rest they need. *Juno.*

FOREIGN CORRESPONDENCE.

GARDENS OF HYÈRES.

THE increasing popularity of Hyères among British visitors to the Riviera should lead to the famous gardens of the neighbourhood becoming more widely known. At the chief of them, M. Nardy, the death of whose father was noted not long ago, continues to make improvements. He is now engaged on a new bank of "plantes grasses," which already contains young specimens of every *Aloe*, *Agave*, *Cactus*, and *Mesembryanthemum* known to Hyères as cultivated in the open air. The Berbers left some species of *Cactus* at Grimaud—for two centuries their capital in the Mountains of the Moors. These, despite its boast of "unique examples"—(meaning only the finest plants)—Hyères cannot yet match. The next best garden to that over which M. Nardy presides as an official is in the middle of the town, and belongs to Madame Clerc. Visitors are welcomed by the head gardener, M. Rossi, a citizen whose politeness and whose charm negative the suggestion contained in the ancient nickname "les Iroquois," applied to natives of Hyères by jealous rivals. *D.*

SOCIETIES.

ROYAL HORTICULTURAL.

THE following extracts are taken from the Report of the Council to be presented at the annual meeting of Fellows on Tuesday next, February 9th:—

THE ONE HUNDRED AND FIFTH YEAR.

The past year, though unmarked by any very important horticultural events, has been a year of quiet, steady progress for our Society.

WISLEY GARDENS.

The Wisley Gardens continue to increase in favour with the Fellows of the Society. All branches of work are showing good results, and improvements are being made as time and opportunity allow. The new laboratory is proving of great assistance to the educational work of the Society, and the result of the first year's work by the students is highly satisfactory, and

well repays the Council, the laboratory director, the superintendent of the Gardens, and the other officers for the time and labour they have devoted to it.

Then follows a report received from his Majesty's inspector.

It was also very gratifying to the Council to find that in general examination in horticulture open to the whole of Great Britain, the scholarship of £25 a year for two years offered by the Worshipful Company of Gardeners, was won by Mr. Perry, one of the students at Wisley.

In the local examination confined to the students at Wisley, Mr. H. E. Seaton took the first place, and has been appointed assistant demonstrator in the laboratory.

Experiments have been set on foot to illustrate (1) the effect of various methods of planting fruit trees; (2) the influence of pruning and not pruning in the first winter after planting; (3) of summer pruning; (4) the importance of planting trees at a correct depth; and (5) the effect of Grass over the roots of fruit trees.

GRAPE EXHIBIT.

At the fortnightly meeting on September 29, an exceedingly fine collection of Grapes grown in the vineries at Wisley, and comprising 30 varieties, was shown. The Grapes were magnificent, and, at the Council meeting, Mr. S. T. Wright, the superintendent of the gardens, and Mr. A. C. Smith, the assistant-superintendent, were complimented by the president on the excellent results they had obtained.

VISITORS.

The number of visitors to the gardens, admitted by Fellows' tickets during the year 1908, amounted to nearly 11,000 as compared with 8,818 in 1907. This is exclusive of horticultural parties which were admitted by special arrangement, and would increase the total to more than 11,500.

WISLEY TRIALS.

In order to protect the members of the various standing committees from the possibility of reproach, and to secure absolute freedom from bias, the Council have arranged that in future, when trials are being made at the gardens, the growing plants, flowers, or fruits, shall be inspected by a sub-committee composed of five members of the committee interested, and that everything so grown for trial shall be kept under a number only, and that the names, both of the varieties and of their senders shall not be disclosed until a decision has been arrived at, and samples are submitted to the whole committee at Vincent Square, together with the report and recommendations of the sub-committee. Thus, the judgments of all sub-committees at Wisley will be given under number only. Specimens of the produce for which a sub-committee shall have recommended any award, will be brought to Vincent Square at the next ensuing meeting, and the whole committee will then have an opportunity of considering the report and recommendations made by the sub-committee at Wisley. The committee having inspected the samples brought up, and adopted (or otherwise) the recommendations of their sub-committee, will send them up to the Council for its approval in the usual way.

WISLEY TITHE.

In 1907 the land tax at Wisley was redeemed; this year the tithe rent charge has been similarly treated, so that the land is now free from both these outgoings.

A VISIT TO WINDSOR.

On June 10, by the gracious permission of his Majesty the King, the Council and committees visited Windsor and the Royal Gardens at Frogmore. As guests of his Worship, the Mayor of Windsor (G. Bampfylde, Esq.), an excellent luncheon was enjoyed at the Guildhall, and after visiting St. George's Chapel, the Albert Memorial Chapel, and the State Apartments, an inspection of the Royal Gardens at Frogmore followed. The Council were much impressed by the admirable cultivation and order displayed in all departments of the garden, and desire to express their great thanks to Sir Dighton Probyn, V.C., G.C.B., and to Mr. Mackellar, his Majesty's head gardener, for the kind way they received the visitors.

DEPUTATIONS.

In response to invitations received, deputations from the Society attended the flower shows

of Truro, York, and Newcastle, and were in each city most cordially and hospitably received by the gentlemen responsible for the arrangements. The Council have, with much pleasure, accepted invitations to send deputations in 1909 to Birmingham and to Cardiff, and negotiations are in progress relating to another important horticultural meeting.

DEPUTATION FROM THE FRENCH HORTICULTURAL SOCIETY.

On June 23, 100 members of the Société Nationale d'Horticulture de France, with their president, M. Viger, and their secretary, M. Chatenay, were received by president and Council, and, after visiting the day's flower show, they were entertained at a luncheon in the lecture room.

SPRING BULB SHOW.

In the coming year, March 9 has been fixed for a show of forced spring bulbs, with a view to specially demonstrating which varieties of *Daf-fodils*, *Hyacinths*, *Tulips*, &c., are best suited for forcing. Exhibits of large or small collections are invited from amateurs and the trade. Medals will be awarded according to merit.

FRUIT SHOWS.

In consideration of the facts (1) that the annual autumn show of British-grown fruit is every year practically a repetition of the previous year's show; and (2) that many British-grown fruits cannot possibly be shown (or shown in perfection) at any one show of fixed date; and (3) that vegetables have been somewhat neglected in the past; the Council have decided to omit the great autumn show for one year, and in 1909 to substitute in its place a series of somewhat similar prizes for British-grown fruit and vegetables, but spread over the whole 12 months, so that everything may be seen at its best. Prizes will therefore be offered at every "fortnightly" show at Vincent Square during 1909, the schedule of which will be published on February 25 in the Society's *Book of Schedules*, price 6d.

AFFILIATED SOCIETIES' CHALLENGE CUP.

In connection with these fortnightly prizes the Council offer a challenge cup to be competed for by affiliated societies, hoping thereby both to stimulate the interest of the societies concerned, and also to bring them into somewhat more intimate touch with the parent society. The cup will be held for one year, and a Silver-gilt Medal awarded to the society winning the challenge, and also to the society obtaining the second place in the contest.

NEW LIFE FELLOW.

Sir Daniel Morris, K.C.M.G., V.M.H., the treasurer of the Society during the financially difficult years 1888 to 1891, has been appointed an Honorary Life Fellow of the Society in recognition of the great assistance he has rendered to horticulture in various parts of the world.

THE "JOURNAL."

Mr. Geo. S. Saunders, F.L.S., having resigned the editorship of the *Journal*, owing to ill-health, Mr. F. J. Chittenden, F.L.S., the director of the laboratory at Wisley, has been appointed his successor.

Four parts of the *Journal* have been issued to the Fellows during the year. To secure a more frequent circulation of the proceedings of the Society and of other information, the new editor has been requested to publish the *Journal* in quarterly, or four-monthly, parts. The smaller and more frequent issues will undoubtedly prove more acceptable to the Fellows for general use.

BEQUEST.

The Council very much appreciate and acknowledge with warmest thanks an intimation they have received from Lady Macleay of her intention to bequeath to the Society the very valuable gift of a complete copy of Curtis's *Botanical Magazine*. They venture to express a hope that it may be several years yet before it comes into their possession.

THE NICHOLSON MEMORIAL.

The Council have been requested to raise a fund for the establishment of a permanent memorial of the late Mr. George Nicholson, V.M.H., F.L.S. With this they most cordially agree. There are few, if any men, to whom the

present generation of gardeners owes a deeper obligation than to the author of *The Dictionary of Gardening*, a work which "has done more towards the standardisation of plant names and developing an interest in horticulture than anything published since London," in 1829.

Mr. Nicholson was for many years a most valued member of the Scientific Committee of our Society. He also took a very active part and keen interest in the re-establishment of examinations by the Society, and himself acted as one of the examiners. It is in view of this last point and after carefully estimating the amount likely to be subscribed, that the Council propose to establish a "Nicholson Prize," to be awarded annually, after examination, to the students at Wisley.

Subscriptions should be sent addressed "The Nicholson Prize Fund, R.H.S. Office, Vincent Square, London," and cheques and postal orders made payable to "The Royal Horticultural Society," crossed "London and County Bank."

THE DARWIN CENTENARY.

The centenary celebration of the birth year of Charles Darwin is to be held at Cambridge on June 22, the date curiously coinciding with the 50th anniversary of the publication of his *Origin of Species*. Representatives of Universities and other learned bodies, together with distinguished individuals, have been invited by the University of Cambridge to take part in the festival, and the Rev. Prof. George Henslow, M.A., V.M.H., has been appointed to represent the Royal Horticultural Society.

CLASSIFICATION OF DAFFODILS.

At the request of the Daffodil Committee the Council appointed a committee to consider the best way of avoiding the confusion, and consequent disputes, likely to arise from the recent multitudinous crossing, recrossing, and intercrossing of the old divisions of Magni-Medio and Parvi-Coronati. The committee have delivered their report instituting an entirely new system of classification, which the Council have accepted, and ordered to be used at the Society's shows. The report contains a list of every Daffodil known to the committee, together with the name of the raiser as far as it could be discovered, each flower known being allotted to its appropriate class. The report has been printed in a handy book form, and can be obtained from the Society's office, Vincent Square, at a cost of 1s. Experience may probably suggest some further modification of the new classification, which, for the present, has been experimentally adopted.

THE 1909 CODE OF RULES FOR JUDGING.

The Society's code of *Rules for Judging* has again been carefully revised and many alterations and additions suggested by the last few years' experience have been adopted. The Council cannot too strongly recommend a careful perusal of the code (price 1s. 6d.) to the secretaries of all local shows and their exhibitors.

CONFERENCE ON SPRAYING.

A useful and important conference on the spraying of fruit trees was held on October 16, when papers were read by Mr. Geo. Masseur, V.M.H., Mr. H. F. Getting, Mr. F. V. Theobald, M.A., and Mr. Geo. Hammond, to whom the Council are greatly indebted. They also desire to acknowledge with thanks the chairmanship of Colonel Warde, M.P., and Colonel Long, M.P., at the morning and afternoon sessions. Discussions followed the various papers; and the full text of the conference will be found in the Society's *Journal*, Volume xxxiv., Part iii.

RETIRING MEMBERS OF THE COUNCIL.

Sir Trevor Lawrence, Bart, K.C.V.O., V.M.H., Mr. George Bunyard, V.M.H., and Mr. A. H. Pearson retire from office. The two former have allowed themselves to be renominated. It is with great regret to the Council that Mr. A. H. Pearson, who has occupied a seat at the Council table for 10 years, finds himself unable to continue in office any longer. He has, during those years, done excellent work for the Society, and deserves the warmest thanks of the Fellows.

VICTORIA MEDAL OF HONOUR.

During the past year two vacancies in the roll of the Victoria Medal of Honour have occurred (through the loss of Mr. R. Martin Smith and Mr. George Nicholson), and Sir Jeremiah Col-

man, Bart. and Mr. Chas. Ross have been appointed by the Council to this distinction.

NEW CERTIFICATE

Of late years the want has been increasingly felt of some way of recognising skillful scientific work amongst plants. Even if such work does not immediately result in any great horticultural advance, it may either disclose the steps by which existing results have been attained, or it may lay the foundation and prepare the way for future development; and is, in either case, deserving of the Society's recognition. To meet this want the Council have created a new certificate, to be called "The Certificate of Appreciation."

ANNUAL PROGRESS

The following table will show the Society's progress in regard to numerical strength during the past year:

LOSS BY DEATH IN 1908.			
		£	s. d.
Life Fellows	13	0	0 0
4 Guineas	2	8	8 0
2 "	40	84	0 0
1 "	75	78	15 0
	190	4171	3 0

LOSS BY RESIGNATION, &c.			
		£	s. d.
4 Guineas	1	4	4 0
2 "	107	224	14 0
1 "	489	513	9 0
Associates	22	11	11 0
Affiliated Societies	27	28	7 0
	646	4782	5 0
Total Loss	776	4953	8 0

FELLOWS ELECTED IN 1908.			
		£	s. d.
Hon. Members	5	0	0 0
4 Guineas	6	25	4 0
2 "	601	1,262	2 0
1 "	589	618	9 0
Associates	42	22	1 0
Affiliated Societies	32	33	12 0
Commutations	8		
		1,283	8 0
		953	8 0
		1,283	8 0
		953	8 0
		1,008	0 0

		1,283	
		776	
		507	
		10,000	
		10,507	

The Council are pleased to record that the total number of Fellows, Honorary or Corresponding Members, Associates and Affiliated Societies is now 10,507, which is believed to be the highest number belonging to any British Royal Society.

LETTING OF THE HALL.

The annual revenue and expenditure account indicates the continued success of the hall as a financial asset. No fewer than 52 engagements (excluding the Society's own shows), covering a total of 160 days, have been accommodated, and the amount received (about £2,067) compares favourably with the year 1907, especially when it is remembered that this former year had two lettings of a value of £700, which have not recurred. The awning over the main entrance, and the kitchen constructed in the basement during the past twelve months, still further improve the comfort of the lessees. Bronze standard lamps are also to be erected at the main entrance. There are but few vacant dates left in the year 1909, and a good financial return is again anticipated.

COMMITTEES, &c.

The hearty thanks of the Society are again due to the members of the committees, the judges, the writers of papers for the *Journal*, the compilers of abstracts, the reviewers, the several examiners, and to the many others who, during the past twelve months, have done so much to contribute to the success of the Society's work, and to help maintain the high reputation it holds among the practical and scientific societies of the world.

By order of the Council,

W. WILKS, Secretary.

Royal Horticultural Society,
Vincent Square, Westminster, S.W.,
December 31st, 1908.

Scientific Committee.

JANUARY 26.—Present: Mr. E. A. Bowles, M.A., F.L.S. (in the Chair); Dr. A. Voelcker; and Messrs. S. Pickering, A. Worsley, E. M. Holmes, G. Gordon, W. Hales, J. W. Odell, and F. J. Chittenden (secretary).

Diseased Carnations.—Mr. SAUNDERS and Mr. DOUGLAS reported upon the diseased Carnations shown at the last meeting that, in all probability, they had died through attacks of stem eelworm. The soil used for potting was too light, and the plants were too old to yield the best results. Plants of two years of age were sometimes liable to sudden collapse, and those of a greater age even more liable to fail in this manner.

Grease bands.—Mr. VOSS reported that no moths had been caught upon grease bands on fruit trees at Enfield since November.

Alga, &c., on sewage sludge.—Dr. VOELCKER remarked that mosses, hepatics, and alga had developed upon certain samples of sewage sludge which had been kept at Woburn, but not upon others, which were kept under precisely the same conditions. The samples which contained the greatest amount of lime bore the largest amount and greatest diversity of growth, and it was thought that possibly the difference was as much due to the physical condition of the sludge as to its chemical constitution.

Scilla, &c.—Mr. WORSLEY showed an inflorescence of *Scilla hæmorrhoidalis*, a plant with rather inconspicuous flowers followed by larger, fleshy fruits. He also remarked upon the inconstancy of the arrangement of the spines in certain of the Cacti in various stages and at different ages, and stated that, in his opinion, the arrangement of the spines constituted an insecure basis for the classification of this family.

Fasciation.—From Sir TREVOR LAWRENCE, Bart., came a fasciated specimen of Anthurium bearing two spathe and spadices. Mr. E. H. JENKINS sent a fasciated specimen of *Daphne japonicum*.

Odontoglossum malformed.—A flower of an *Odontoglossum* having three stamens and a much reduced perianth was received from Mr. GURNEY WILSON, and referred to Mr. SAUNDERS for further examination.

Variation in foliage of Cyclamen.—Mr. BOWLES showed a large number of leaves of *Cyclamen hederæfolium* from his garden, exhibiting great and wide variation in the arrangement of the markings upon the foliage, especially in the extent of the whitish margin and median blotch which is usually present. He found the variations to be characteristic of, and retained by, the individual plants.

NATIONAL CHRYSANTHEMUM.

(ANNUAL MEETING.)

FEBRUARY 1.—The annual general meeting of the above Society was held in the Essex Hall, Strand, on this date. The President, Sir Albert K. Rollit, D.C.L., LL.D., occupied the chair.

The Report of the Executive Committee was presented, and from this we extract the following:—

EXTRACT FROM THE ANNUAL REPORT.

The dates of the shows for the current year have been provisionally fixed for October 6 and 7, November 3, 4, and 5, and December 1 and 2, but unfortunately it has not yet been possible for your committee to approach the Crystal Palace Company with regard to a renewal of the contract for reasons which are set forth in this report under the heading of finance.

The Floral Committee have awarded 47 First-class Certificates.

The Society's foreign corresponding secretary, Mr. C. Harman Payne, attended the Congress of the Société Française des Chrysanthémistes held at Tours in November and thence proceeded to the exhibition of the Société Nationale d'Horticulture de France at Paris.

One hundred and seventy members of the Society and friends visited the Royal Gardens at Frogmore on the occasion of the annual Outing on Monday, July 27. This was the largest muster at any outing for several years.

Arrangements have already been made for the 1909 Outing to be held on August 9 next, when a visit will be paid to the gardens of Sir Frank Crisp at Friar Park, Henley-on-Thames.

The annual dinner was held on November 26 at the Holborn Restaurant, the chair being occupied by the President. About 100 members and guests, including ladies, sat down to dinner.

It is with great regret that your committee have to report that they have not yet received the consideration money due from the Crystal Palace Company under the terms of the contract for any of the 1908 shows. They are still hoping, however, that the money will shortly be paid without extreme measures being resorted to. For this reason the ordinary prizes have not yet been distributed, but as soon as such

money is received from the Crystal Palace Company the prizes will be issued without a day's delay. Subject to the receipt of that money it will be observed from the statement of assets and liabilities that the Society's finances show a considerable improvement when compared with the previous year. The surplus of assets over liabilities has been increased during the year under review from £3 15s. 4d., to £102 18s. 9d., which will more than enable the committee to carry out the policy set forth in the last report, of re-transferring £25 to reserve account from the year's income.

On moving the adoption of the report and balance-sheet, the President congratulated the Society on its work during the past year. He said the exhibitions were all good, and particularly the great November show. A large number of new varieties had been brought before the Floral Committee, and many novelties had received the Society's Certificate of Merit. Sir Albert Rollit also stated the annual dinner was a success, the membership had considerably improved, and all special prizes had been paid. He hoped the finances of the Society, which, during the year, had been the subject of careful attention on the part of the committee, were now placed on a sound footing. The exhibitions at the Crystal Palace again cause some little difficulty in regard to finances, but in the past the accounts have always been settled in a satisfactory manner, and it is hoped all, or the greater part of the money, will soon be received.

Mr. T. Bevan seconded the motion for the adoption of the report, which was carried unanimously. A vote of thanks to the auditors, Messrs. Joseph Lake and R. F. Scammell, for their services, was duly accorded. The re-election of Sir Albert Rollit as President was proposed by Mr. J. T. Simpson, and carried with acclamation. Other officers were re-elected as follows:—Mr. John Green, Treasurer; Mr. Thomas Bevan, Chairman of the Executive Committee; Mr. E. F. Hawes, Vice-Chairman; Mr. C. Harman Payne, Foreign Corresponding Secretary; and Mr. R. A. Witty, General Secretary. Messrs. J. Lake and W. H. M. Dean were elected auditors.

The General Committee was next elected as follows:—Messrs. J. Emberson, R. F. Felton, A. Hemsley, D. Ingamels, E. Jones, F. G. Oliver, R. E. Reeve, G. Springthorpe, W. Wells, J. B. Riding, H. Runchman, and C. Noyce.

A vote of thanks to the chairman concluded the business.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending February 3.

A cold, dry, and dull week.—The day temperatures have been variable, but on the whole rather low for the time of year. The nights, however, remained cold until last night, when a change to a much higher reading took place. On the coldest night the exposed thermometer showed 18° of frost, whereas last night the same thermometer did not fall lower than 42°. The ground is at the present time 2° colder than is seasonable at 2 feet deep, but at about an average temperature at 1 foot deep. Rain fell on two days, but to the total depth of only about one tenth of an inch. There was a light fall of snow on the first of those days. No measurable quantity of rainwater has come through either percolation gauge for 11 days. The sun shone on an average for 1 hour 21 minutes a day, which is 35 minutes a day short of the usual duration at the end of January. On January 27 there was no record of sunshine here—about 80 feet above the Berkhamsted valley—owing to fog, whereas at 200 feet above the valley the sun was shining brightly all day long. Light airs have, as a rule, prevailed until yesterday, when the mean velocity for the windiest hour reached 18 miles—direction W. The average amount of moisture in the air at 3 o'clock in the afternoon fell short of a seasonable quantity for that hour by 5 per cent.

JANUARY.

A mild, dry, calm and sunny month.—Taken as a whole this was a moderately warm January. For the first 3 weeks the weather continued warm, but the temperatures remained low during the remainder of the month. The days were, as a rule, more unseasonably warm than the nights. On the warmest day the temperature in the thermometer screen rose to 51°—which is about an average extreme maximum for the month. On the coldest night the exposed thermometer registered 16° of frost—a high extreme minimum for what is usually the coldest month in the year. Rain, hail, or snow fell on but 11 days, and to the total depth of only one inch—which is 1 1/2 inches below the January average for the previous 53 years—during which period there have been only 6 Januaries as dry. Snow fell on 2 days, but at no time to a sufficient depth to cover the ground. The sun shone on an average for 2 hours a day, or nearly half an hour a day longer than is usual in this mid-winter month. This was the calmest January for 11 years, and in the windiest hour the mean velocity only reached 20 miles—direction west. The average amount of moisture in the air at 3 p.m. was 4 per cent. less than a seasonable quantity for that hour.

OUR UNDERGROUND WATER SUPPLY.

Since the winter half of the drainage year began in October last, the total rainfall has fallen short of the average for those four months by 4 1/2 inches, which is equivalent to a loss of 109,490 gallons per acre in this district. At the same time last year there was an excess of 46,370 gallons per acre. E. M., Berkhamsted, February 3, 1909.

MARKETS.

COVENT GARDEN, February 3.

[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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

Table of cut flowers and plants in pots with prices per dozen. Includes items like Acacia (Mimos), Anemone fulgens, Azalea, Bouvardia, Calla aethiopia, Camellias, Carnations, Cattleyas, Chrysanthemums, Cyrtopediums, Daffodils, Eucariss grandiflora, Freesias, Gardenias, Hyacinths (Roman), Lilac, Lilia auratum, Lilium longiflorum, Lilium lancifolium, Lily of the Valley, Marguerites, Mignonette, Myosotis, Narcissus, Odontoglossum, Pancratium, Pelargoniums, Ranunculus, Roses, Spirea, Stocks, Tuberoses, Tulips, Violets, and Ferns.

Cut Foliage, &c.: Average Wholesale Prices.

Table of cut foliage and plants in pots with prices per dozen. Includes items like Adiantum cuneatum, Agrostis, Asparagus plumosus, Berberis, Croton leaves, Cycas leaves, Daffodil foliage, Ferns, and various plants in pots like Ampelopsis, Aralia Sieboldii, and Begonia.

Plants in Pots, &c.: Average Wholesale Prices.

Table of plants in pots with prices per dozen. Includes items like Cyperus latus, Daffodils, Dracaenas, Erica byemalis, Genista fragrans, and various other potted plants.

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

Table of plants in pots (continued) with prices per dozen. Includes items like Liliom longiflorum, Solanum, and Tulips.

Fruit: Average Wholesale Prices.

Table of fruit prices with prices per bushel or per dozen. Includes items like Apples (Foreign), Bananas, Cape fruit (Peaches, Apricots, Plums, Nectarines, Cranberries, Custard Apples, Dates), Grapes, and various other fruits.

Vegetables: Average Wholesale Prices.

Table of vegetable prices with prices per dozen or per bushel. Includes items like Artichokes, Asparagus, Beans, Beetroot, Brussel Sprouts, Cabbages, Cardoon, Carrots, Cauliflowers, Celery, Celeriac, Chicory, Cucumbers, and Endive.

REMARKS.—The Grape trade continues fair, the demand from the provinces being moderately good. Trade in Apples is very quiet. A fair consignment of Palermo Blood Oranges arrived during the past week and met with a good demand. Cape Plums are selling freely. Pineapples are selling well; there being a good demand for the smaller fruits of best quality. A large consignment of Apples from Washington have sold at fair prices, 7s. 6d. to 9s. 6d. being an average price per case. Rhubarb is arriving from Essex, also from Leeds, but the quality is not good, and the stalks are much lighter in colour than usual. There has been a reaction in the Lemon trade, and prices have fallen considerably. Oranges also are cheaper, but this is principally owing to many of the fruits being unsound. Trade generally is fair. E. H. R., Covent Garden, Wednesday, February 3, 1909.



THE
Gardeners' Chronicle

No. 1,155.—SATURDAY, February 13, 1909.

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WOBURN FRUIT FARM EXPERIMENTS.

TWO reports on the Woburn Fruit Farm, by the Duke of Bedford and Mr. Spencer U. Pickering (Amalgamated Press, London), have come out almost simultaneously. The first is the *Ninth Report, relating to methods of planting fruit trees, with an appendix on studies in germination and plant growth, and on the action of heat and antiseptics on soils. The Tenth Report relates the results of experiments in the treatment of Nursery trees by fumigation and other methods for the destruction of woolly aphid (American blight), and for killing the Apple sucker, the aphid, and various caterpillars on trees in foliage.

It will be remembered that the Fifth Report gave the results of experiments in methods of planting fruit trees entirely at variance with those in general use and recommended as the best in all text-books bearing upon the subject. In the Ninth Report the results of repeated and new experiments of the same class are described. The result in the earlier experiments which attracted most attention, and called forth much sceptical criticism, was the benefit declared to have been derived

* Ninth and Tenth Reports of the Woburn Experimental Fruit Farm. (The Amalgamated Press, Ltd.) Prices, 2s. 6d. and 1s.

from placing trees with untrimmed roots into holes too small for the roots, making the roots point downwards and stamping the soil over them violently. A further announcement appears to have been made after the issue of the report to the effect that the violent stamping had been developed into ramming the soil over the roots until it was puddled. The Ninth Report gives the results of further trials in this direction, carried out at several places away from Woburn by skilled growers whose names are given, as well as on the Woburn farm itself. No fewer than 1,372 trees were used in these experiments. After deducting those planted in certain places where various circumstances spoil the experiments, average results are given in relation to the growth of 814 trees. The plan pursued in planting is thus described:—"A few forkfuls of earth were removed, so as to make a shallow hole: into this the tree was put, with the roots just as they happened to come, the earth was shovelled over them, and rammed with a heavy rammer till the whole was thoroughly puddled and shook like a jelly at each stroke." Finally a shovelful of loose earth was thrown over the rammed ground to facilitate hoeing.

On the Woburn farm and at Harpenden, where the trials were most extensive, a great majority of the rammed trees made more growth, even in the first season, than unrammed trees, while at some other stations the failures were nearly as numerous as the successes. The summary of results states that in the first season 59 per cent. of the trees made an excess of growth, 27 per cent. gave no definite results, and 14 per cent. showed a deficiency; while in the second season the percentages in the same order were 72, 17, and 11. The writer of the report attributes the benefit of ramming to the extra close contact of the soil with the roots produced by the process, and this appears to be a reasonable explanation. It is admitted that the rammed soil is not propitious to the growth of the roots in it; but it is pointed out that, before the end of the first season, the roots have penetrated into the loose soil beyond the small extent of the rammed earth. What experienced fruit growers will find it difficult to accept is the obvious implication that the puddling of the soil is beneficial to the trees. So long as the ground is not too dry, it is stated, its condition will be immaterial, and the failure of ramming in certain cases is attributed to the comparative lightness of the soil, which would prevent puddling.

As to the probable injury to some of the roots from ramming, it is argued that this is beneficial. "The continued life of the tree," it is added, "depends entirely on the formation of adventitious roots, and it is well known that the formation of these is fostered by a certain amount of injury to the old roots." Independent experiments to test this point were conducted on a small scale. The roots of some trees were notched all along their length, and these are reported to have made more growth than trees with uninjured roots. Similarly, trees with roots bruised and frayed by careless raising made more growth than others which had the injured parts trimmed off.

Seeing that in a separate set of experiments the moderate trimming of the roots of

trees, raised properly, proved beneficial, the inference is that it is advantageous to cut off sound portions of roots, but disadvantageous to remove bruised and frayed portions. In trials of root pruning under ordinary circumstances the removal of one-fourth to one-third of the roots of trees is represented to have given favourable results, while more drastic pruning did harm. Similarly, the pruning-off of all fibrous roots of not more than one-twenty-fifth of an inch in diameter is said to have produced a slight benefit in the case of young trees, but injury in that of trees eight to nine years old.

Not the least astounding result is that of an experiment in tying the roots of a tree together, and bending them in the form of a ball under the tree. This operation, it is reported, reduced the growth in the first season, but resulted in practically normal growth in the second year. Trees on trenched ground in a considerable majority of instances did better than those on untrenched ground; but an attempt is made to explain this by the statement that the soil where trenching proved advantageous was exceptionally favourable to deep rooting.

It must not be supposed that the favourable results of what are commonly regarded as bad practices in planting are reported to have been uniform. On the contrary, the evidence is more or less conflicting in many instances, the deductions being from the majority of the results. Fruit growers generally, it may be surmised, will require a great deal more evidence than has been obtained at present to convince them that planting in wet soil and puddling it by ramming, planting trees with bruised and frayed roots untrimmed, or bunching the roots and ramming them into small holes can be otherwise than disadvantageous. As already stated, the theory as to the benefit of trimming off a larger proportion of the roots than is usual and of notching them is that the formation of new roots near the surface of the soil is thereby promoted. But it cannot be supposed that this process would be favoured by leaving bruised and frayed roots untrimmed, a neglect not recommended in the report, in spite of its apparently favourable results; and as to bunching the roots, instead of spreading them out, it is contrary to all reason to suppose that this can be otherwise than a hindrance to the extension of new roots over the greatest area of nourishment. For the results of other experiments readers are referred to the report.

The Tenth Report is well worth careful attention. The fumigation with hydrocyanic acid gas of nursery trees and stocks raised for transplanting proved ineffectual for the destruction of the woolly aphid, and crude paraffin of various grades was fatal to some of the trees. The most advantageous treatment was immersion for ten minutes in water at the temperature of 115° F. Similarly, the treatment of growing trees for the same pest with crude paraffin or naphtha injured the foliage badly, and killed some of the trees. Lime and salt wash, tried for the destruction of the eggs of the Apple sucker (*Psylla mali*) on dormant trees, was not a success. This mixture also failed to kill the insects themselves on trees just coming into foliage. The Woburn winter wash destroyed only 5 per cent., and badly scorched the

foliage, while solutions of common salt and carbolic acid both failed. Thoroughly successful, however, was Voss's solution of nicotine, which, unfortunately, is expensive. It killed up to 95 per cent. of the insects, and did not scorch the foliage at all. For the destruction of several varieties of caterpillars paraffin emulsion proved most successful, particularly that made with Bordeaux mixture as the emulsifier. Nicotine also gave good results, but needed the addition of lead arsenate, at the rate of 12oz. to 10 gallons, to render the wash destructive to the caterpillar of the winter moth. In the destruction of the Plum or the Apple aphid, nicotine, because harmless to the foliage, appears to be by far the best remedy, although paraffin emulsion proved also effective.

In reading these Woburn Reports, no one can fail to appreciate the munificence of the Duke of Bedford in making provision for these important and costly investigations, or with the painstaking energy shown by Mr. Pickering in arranging and conducting the experiments.

POLYSTICHUM ACULEATUM GRACILLIMUM DRUERYI.

THE subject of our illustration is one of the most remarkable examples on record of what has been termed saltatory variation. The extent of this variation can be judged by comparing the parental form indicated in the lower right-hand corner with the typical frond of its offspring. The graceful habit of the plant is shown in the left-hand corner. A First-class Certificate was recently awarded to this Fern by the Royal Horticultural Society. The "sport" is of further interest, as being one of about a score of similar plants, with, however, individual variations of a minor character, which originated in a batch of about a hundred seedlings of *P. ac. pulcherrimum* found many years ago in Dorset by a farm labourer, and which, until a few years back, was believed to be barren. Isolated sporangia were then noted upon a plant in the possession of Mr. C. B. Green, of Acton, this plant having been raised from an offset of the original plant which I gave to Mr. Green. We both made sowings and obtained similar results. The majority of the plants so raised were mainly of the true parental type, but several reverted to an extremely near approach, not to *P. aculeatum*, but to *P. angulare*, a closely-allied but softer species, devoid of the glossy surface of *P. aculeatum*. Another, of similar type to the one depicted, *P. aculeatum pulcherrimum Drueryi*, was also certificated at an earlier date. In this the terminal pinnules of the frond are deeply serrate, forming a sort of fringe. A third plant in Mr. Green's possession remains to be exhibited, in which the fronds are far more decomposite and dense, on similar plumose lines to the divisilobe section of *P. angulare* raised by Col. Jones and Dr. Fox. *Chas. T. Druery, V.M.H., F.L.S.*

LÆLIO-CATTLEYA FELICIA.

THIS beautiful hybrid (see fig. 48, p. 100), raised by Messrs. Charlesworth & Co., Haywards Heath, Sussex, between *L.-C. Haroldiana* (*L. tenebrosa* × *C. Hardyana*) and *C. Trianae*, was awarded a First-class Certificate at the Royal Horticultural Society's meeting on January 26. The hybrid retains the fine proportions of *C. Hardyana*, with a remarkable introduction of deep purplish-claret colour on the front and edges of the side lobes of the lip. This extra deep colour is very effective in contrast with the silver-white, rose tint of the rest of the flower.



FIG. 47.—POLYSTICHUM ACULEATUM GRACILLIMUM DRUERYI.

FRUIT REGISTER.

STONE FRUITS FOR AMATEURS.

BEGINNERS in the warmer counties may cultivate Apricots, Plums, Peaches and Cherries, the methods of their cultivation and the principles of summer and winter pruning being easily understood. The Peach, Nectarine and Apricot require the warmth and protection of a south, west or east wall in the south of England and Ireland, but in the north of England, i.e., north of the Humber River and in Scotland generally, the wood and the fruit will not mature on any tree other than one having a due south aspect. In all parts of the country some kind of protection is needed against frost at the time of flowering. The young shoots must not be trained so closely together as to prevent the summer's sun reaching the wall or they will not mature sufficiently to form good blossom-buds. In some Yorkshire gardens Apricots are grown in rough sheds having merely a glass roof; and the trees, if frequently syringed with clear water, do not suffer from red spider, a great pest of all wall trees. The syringing must cease when the fruit on any of the trees begins to change colour. After the crop has been gathered syringing may be continued at intervals till the month of August is out.

Plums of the common and culinary varieties may be grown as low standard trees and bushes, and are not out of place on a lawn, provided they are afforded liquid manure at the roots occasionally in the winter. Pruning at the winter season will be found a simple operation if it be borne in mind that the fruit is produced by the well-ripened shoots of the previous year. The "spurs" should not be closer than 8 inches apart, and they need to be kept shortened back when they exceed 4 or 5 inches in length. It is only on the lower half of the one-year-old shoots that fruit may be expected to form: the upper half may be removed at the annual winter pruning.

The dessert Plums are the better for the protection of a wall or fence, or they may be grown in bush-form in a warm part of the garden. Excellent varieties of Plums are the Gages, viz., Bryanstone, a large, round fruit blotched with red, and ripening in September; Green Gage, a well-known variety, Denniston's Superb, a greenish-yellow fruit of a large size for a Gage, is a prolific bearer and very hardy, and about a fortnight earlier in ripening than the common Green Gage. Oullin's Golden Gage is of great size; the fruits are greenish-yellow and ripen in August. Reine Claude de Bavay is a large, delicious Plum, prolific in bearing, and of a hardy constitution. Three delicious Gages were raised by the late T. Rivers, viz., Early Transparent, Golden Transparent and Late Transparent. Amongst Plums other than Gages may be recommended Early Favourite, Grand Duke and Late Rivers—the two latter ripening in October and November—and Monarch ripening late in September. The Czar ripens about the end of July; it is a richly flavoured fruit, and the tree is very hardy. Some fine culinary varieties suitable for amateur cultivators are Autumn Compôte, Curlew, and Early Rivers. Of Damsons, the Crittenden's, King of the Damsons, The Shropshire or Prune and the Common Damson offer a good assortment. The Damson makes a good standard tree and a good boundary or shelter tree for a plantation of other kinds of fruit.

The Cherry is a favourite fruit with most persons, and the varieties are many; it will, however, be sufficient to give the names of some of the best, with the proviso that the earliest to ripen should be given wall space. Ripening in the month of June out-of-doors are Guigne Annonay, Semis de Burr, Bigarreau Jaboulay; in July, Large Black, Large Red, Empress Eugénie, May Duke (against a wall), Noir de Guben—a Bigarreau, as is also de Schrecken, Black Tartarian (against a wall), Elton—earlier

than the Bigarreau varieties; Governor Wood, light red in colour, with tender flesh; Monstrueuse de Metz, dark red, one of the largest Cherries, and Turkey Blackheart, a favourite Kentish variety. The Morello and Belle Magnifique, both prolific, culinary varieties, and very hardy, may, with advantage, find places on a north wall, as well as be grown as standards or bushes in the open garden.

APPLE AND PEAR STOCKS.

It may be said that all varieties of Apples succeed on the broad-leaved Paradise stock, but it is not the kind on which should be worked large-growing, horizontally- or fan-trained trees, such as are commonly planted on walls in the cooler parts of these islands. The trees on this stock produce fruit when very young, and the formation of growth is thus restricted, so that the wall space would be bare of branches for several years after planting if the Paradise stock was employed. In addition, such trees scarcely have the vigour the Crab stock imparts; so that, for carrying a large fruitful head for a great number of years, the latter is the better stock. These remarks apply likewise to the Pear, for the Quince stock may only be advised for single and double cordons on walls and bushes and pyramids. Not every variety of the Pear does well when worked on the Quince, but needs an intermediate graft of a Pear that unites with the Quince stock satisfactorily. Such are those early July Pears, Doyenné d'Été and Citron des Carmes, which make good and fertile trees; Fondante d'Automne, a large melting Pear, forms a well-shaped pyramid tree on the Quince when double-grafted. This last is in season in October. That delicious but uncertain variety when worked on the Pear stock, Gansel's Bergamot, for early fruiting should be double-grafted on the Quince. The fruit is ripe in October. Thomson's Pear comes into use in the same month as the last-mentioned, and should be double-worked on the Quince, likewise the Seckle or Honey Pear of the Americans. Of January and February Pears, Zéphirin Grégoire and Knight's Monarch make good cordons on the Quince, double-grafted, as do Ne Plus Meuris and Beurré Rance. The latter is a good bearer, but requires a place on a south wall. F. M.

CULTURAL MEMORANDA.

ASPARAGUS PLUMOSUS.

THE months of March and April are most suitable for repotting this plant. The best compost is one consisting of turly loam one-third, leaf-mould two-thirds, and a small quantity of horn shavings or an artificial manure rich in ammonia. The drainage in the pot should be sufficient to secure a free outlet for water and no more. After potting, which should be performed by hand with some degree of firmness, the plant should be placed on a warm bed in a house or pit of considerable height, not plunged, or but slightly. No shade is necessary as a rule. If enough syringing or sprinkling be carried out there is no danger of burning or scalding, and the conditions are just those most favourable to good growth: the more so if the walls and paths are frequently moistened. After a long period of cloudy weather a thin kind of shading may be employed during brief periods of strong sunshine for a few days. When this Asparagus is grown for cutting it is usual to plant it in a bed or border of soil, and train the main shoots on vertical rods or strings, from which it is an easy matter to detach them when wanted. Asparagus plumosus nanus, it may be added, is obtainable from seeds. The fronds of seedlings differ slightly from those made by divided plants, being thicker and the stalks weaker, so as to cause them to assume a more pendant habit. This variety may be grown in pots or in beds of rich soil, and, if so desired, the main growths may be fastened to thin Bamboo rods. F

WHORTLEBERRIES AND CRANBERRIES.

(Concluded from page 84.)

OXYCOCCUS.

O. MACROCARPUS (AMERICAN CRANBERRY).—In habit and general character this species differs but little from our native Cranberry (*O. palustris*). It has the same trailing, wiry, but stouter stems, with larger leaves and fruits. Botanically, it differs chiefly in the position of the flowers on the shoot. In *O. palustris* they form a small terminal cluster; but in the present species they spring from the axils of small leaves or bracts below the extremity of the branch. Above the flowers, consequently, there is always a portion of leafy shoot. The leaves are oval to oblong (those of *O. palustris* are more pointed), $\frac{1}{4}$ to $\frac{1}{2}$ inch long, and glaucous, white beneath. The flower is light pink, and the globose fruit red, and $\frac{1}{2}$ inch or rather more across. The cultivation of this Cranberry in the Northern United States has developed into quite an important industry. Hundreds of acres have been specially prepared for its accommodation, the land being arranged so as to allow of its being flooded when necessary. According to Mr. J. Dawson, the cost of this preparation is sometimes as much as £60 per acre. But often a crop of 500 bushels of Cranberries is gathered from one acre of well-prepared land in a single season. A figure of a fruiting branch, showing the extraordinary fertility of this plant, was given in the *Gardeners' Chronicle* for October 30, 1880 (p. 569).

O. PALUSTRIS (CRANBERRY).—Our native Cranberry extends over a large portion of the northern hemisphere. It is common in the Eastern United States and Canada, and reaches westward to British Columbia. It is abundant in Northern Europe, and is widely spread over the British Isles, but most plentifully in the north of England and the south of Scotland. In all these places, as well as in Northern Asia, its habitat is always the same—boggy situations on moors and mountains. In general appearance it is a small edition of *O. macrocarpus*. It has the same entirely prostrate habit and trailing wiry stems, but its foliage and fruit are smaller. The leaves are $\frac{1}{4}$ to $\frac{3}{8}$ inch long, ovate, pointed, and glaucous beneath. The rosy-pink flowers come in a cluster of five or less at the ends of the branches. The berry is red and about the size of a Red Currant.

The gathering and sale of Cranberries in Great Britain is not so important an industry as it once was. The draining and enclosing of boggy land which was carried on so extensively during the great French wars of a century ago, and up to the repeal of the Corn Laws, destroyed many favourite habitats of the Cranberry in this country. At Longtown, in Cumberland, near Solway Firth, it is said that in the Cranberry season £30 worth of berries used to be sold on one market day. They have an acid and astringent taste, and are used for tarts, preserves, and sweetmeats.

CHIOGENES.

CHIOGENES SERPYLLIFOLIA (CREEPING SNOW-BERRY).—In habit this curious North American plant very much resembles *Oxycoccus palustris*. It has creeping, very slender stems, and small, ovate, pointed leaves, but is readily distinguished from the Cranberry by the leaves being furnished beneath with rigid, rusty-coloured bristles instead of being glaucous. The flowers, too, are quite different; they are very small, produced singly on a nodding stalk from the leaf axils, and the corolla is bell-shaped. The fruit is white, globular, and nearly $\frac{1}{2}$ inch in diameter, with a delicate acid and aromatic taste. The whole plant, indeed, has an aromatic odour resembling that of *Gaultheria procumbens*. This plant has a wide distribution in North America, reaching from Labrador westwards to British Columbia, and south to Minnesota, Michigan, and North Carolina. It inhabits peat bogs and damp woods. W. J. Bean.

THE ROSARY.

CULTURAL NOTES FOR FEBRUARY.

WHEN the ground is dry and free from frost advantage should be taken of the opportunity to finish any arrears of planting, including rooted cuttings that have been "heeled in" temporarily.

Roses of the rugosa type and hybrid Sweet Briars are very ornamental subjects for grouping in gardens or pleasure grounds. They suc-

ceed in a smoky atmosphere, and for that reason they should be planted in town gardens. *Rosa rugosa* var. *Blanche Double de Coubert* is a very effective, double white variety, free in flowering and with very fragrant blooms. *Rosa rugosa atropurpurea* has carmine-crimson flowers. The *Penzance Briars* are an acquisition not only for their rich perfume but also because

of their attractive fruits during the autumn months. The frost will have loosened in the soil many stocks and cuttings planted last autumn or since that time. With this in mind, carefully examine all newly-planted Roses, especially the standard Briars, and tread the soil about them firmly and then give a fresh surface mulch of manure.

All hardy climbing Roses can now have their shoots thinned and secured to the arches, pillars, or pergolas over which they are trained. of 60° F. is ample, but it may be increased 5 or 10° more with sun heat, provided there is plenty of top ventilation but no cold draught. Just before or at the time the flower-buds develop the plants should be well fed with liquid manure and soot water diluted to a light-brown colour. This food should be given two or three times a week. The plants will now be benefited by plenty of atmospheric moisture during the day, but the conditions at night-time should be drier, when a little top ventilation may be afforded.



FIG. 48.—LÆLIO-CATTELEYA FELICIA: AWARDED A FIRST-CLASS CERTIFICATE AT THE MEETING OF THE R.H.S. ON JANUARY 26.

(See page 98.)

ceed in a smoky atmosphere, and for that reason they should be planted in town gardens. *Rosa rugosa* var. *Blanche Double de Coubert* is a very effective, double white variety, free in flowering and with very fragrant blooms. *Rosa rugosa atropurpurea* has carmine-crimson flowers. The *Penzance Briars* are an acquisition not only for their rich perfume but also because

The majority of the pot Roses should be brought into a cold house or frame in order that they may gradually be started into growth and pruned at intervals before being brought into heat. By this method the results will be much better, both in the quality of the growth and blooms, than if they are forced in excessive warmth. An atmospheric temperature

The early-grafted plants will now be ready for a shift into 5-inch pots, using good rich loam with a small proportion of decayed or spent hot-bed manure and a dash of river or washed sand. Pot firmly and afterwards place the plants well up to the glass. Keep the structure closed for a few days. After one watering at the roots a light syringing overhead will suffice for several

days, or until the new roots begin to ramify in the fresh soil.

Soft grafting will now be in full operation, and will continue until the supply of stocks is exhausted. The propagation of Roses on their own roots will follow. As a general rule, early in March is a suitable time for rooting the cuttings, as by then the bulk of the herbaceous grafting will be completed. If hot-beds are to be employed for the purpose, no time should be lost in getting the manure together. Horse manure, without straw, is the best material, and it should be turned over several times into a heap to ferment and dry. If the hot-bed is made up properly, it should, with an occasional lining of fresh material, furnish a steady bottom heat of 75°, declining to 65°, up till such time as the cuttings are well rooted. The depth of the bed at the back should be at least 3 feet 6 inches, with a fall of 6 inches to the front. The manure must be trodden firmly. The space required for a two-light frame will be about 8 feet by 10 feet. This will allow a clear margin of 1 foot all around the bed for fresh linings when the heat of the frame begins to decline. A two-light box frame is about 7 feet square, and the bed and frame must be adjusted to each other according to circumstances. I have used, with some success, hot-water circulating tanks under closed frames for propagating Roses from cuttings, but, on the whole, the old-fashioned hot-bed is the more satisfactory.

The Roses in borders will now be making good progress, and plenty of fresh air may be admitted by both top and bottom ventilators. Use the syringe freely to clean the shoots and to keep down insect pests. If mildew appears, paint the pipes with a solution of soft soap and sulphur. Towards the close of the day the atmosphere in the house should be kept dry.

Whenever possible soft water should be used for watering. At the present time it is advisable to give no more moisture than will be fairly absorbed by the evening. An occasional sprinkling of slacked lime over the surface of the beds and walks will, in a degree, neutralise any sourness in the old soil. The use of lime will counteract the growth of algæ; it will also sweeten the soil and be beneficial generally to the growth of the plants. *J. D. G.*

CYPRIPEDIUM "EARL OF TANKERVILLE."

THIS beautiful hybrid (see fig. 49) was raised by Messrs. Sander & Sons, St. Albans, from *Cypripedium exul* and *C. nitens* "Sander's variety." The raisers first exhibited the plant at the Royal Horticultural Society's meeting on January 9, 1906, when it was given an Award of Merit by the Orchid Committee. A part of the original specimen passed into the collection of Col. G. L. Holford, C.I.E., C.V.O., Westonbirt (gr. Mr. H. G. Alexander), who exhibited it at the Royal Horticultural Society's meeting on January 26 this year, and from this plant our illustration was prepared. *Cypripedium exul* has never ranked high in the estimation of Orchidists, nor has it been of much value as an agent in hybridising. The present instance is, perhaps, the first really satisfactory cross, and in this case the good result has probably been due mostly to its combination with *C. nitens* "Sander's variety." There are numbers of hybrid *Cypripediums* with larger flowers than those of the Earl of Tankerville variety, but in form and marking it is difficult to imagine a more perfect bloom than that under notice. The flower is firm and wax-like in substance, with the dorsal sepal pure white, and a small, emerald-green base, bearing deep, chocolate-purple blotches, which change in the upper part to rose-purple. The remaining portion of the flower is yellow, tinged with purple-brown.

FLORISTS' FLOWERS.

SWEET PEAS.

It is a matter of some importance for cultivators to know that they are liable to purchase the same variety of Sweet Pea under more than one name. The descriptions in the catalogues may be a little differently worded, and this misleads the purchaser.

Amongst the best varieties for exhibition purposes and also for general garden decoration is one known as The King. This fine Sweet Pea has many good qualities in addition to that of size. It is a vigorous grower, and although some persons recommend it to be grown in slight shade I prefer planting it in an open position. The colour is best developed during bright weather, for in dull seasons the wings assume a magenta tinge that detracts from the appearance of the flower.

Mrs. A. Ireland is a new variety possessing good decorative qualities. It is the nearest to

ting near to obtaining a sun-proof scarlet. Prince of Asturias is a very fine chocolate-coloured variety. Not only are the flowers of a pleasing colour, but they are large and stout of petal. It should be grown for exhibition purposes, as the tone is suitable for mixing amongst lighter shades. The colour is pleasing even when seen in the flowers growing in the garden.

Paradise Ivory attracted much attention during 1908. This variety is wonderfully fine in flowering, the bloom being of a pleasing cream shade. The blooms are valuable when in the cut state, but the variety will be superseded, at least for show purposes, when Mrs. C. Curtis and the Primrose Spencers are better fixed. Mrs. J. Wilcox is the finest of the Spencer American type that I have noticed, and if the raisers can place a good stock of this variety upon the market they will earn the thanks of those who admire the striped forms of this flower. The growth is robust.

Evelyn Hemus is, without doubt, one of the



FIG. 49.—CYPRIPEDIUM "EARL OF TANKERVILLE": GRANTED A FIRST-CLASS CERTIFICATE BY THE ROYAL HORTICULTURAL SOCIETY ON TUESDAY LAST.

Jeannie Gordon of any of the Spencer form yet sent out. There are several other varieties described as nearly like this older variety, and when grown in comparison they will doubtless prove to be identical with it. Apple Blossom Spencer is, in my opinion, one of the finest Sweet Peas of recent introduction for planting in clumps in gardens. The flowers are less changeable in colour than those of many other kinds. This variety is very similar in many respects to Mrs. A. Ireland, yet quite distinct and altogether of a paler colouring. Some of the stocks of this variety are already quite fixed in character. George Stark is the finest scarlet variety yet raised. Seeds may not be had this season, as it is not yet placed in commerce. The flowers are not so affected by strong sunshine as others of a similar colour, and this is therefore a great advance in the direction of a "scarlet" that does not burn. There are several other seedlings which have the same good quality, thereby indicating that we are get-

most beautiful Sweet Peas ever raised. The colour of the flower blends and harmonises anywhere and everywhere, and never seems misplaced. The bine is healthy in growth, whilst the blooms withstand the weather well, although they are produced on long stems. Mrs. C. W. Breadmore need not be cultivated if Evelyn Hemus is grown, as they are very similar.

Elsie Herbert has qualities of habit and vigour equal to those of Evelyn Hemus, but the ground colour of the flowers is white instead of cream. The petals have a beautiful, pinkish edge, and it is the opinion of many that the variety is second to none for general beauty and usefulness.

The variety Constance Oliver has made a name for its raiser and is valuable to every exhibitor and lover of Sweet Peas. The long, strong flower-stems are crowned with mostly four, beautiful flowers of a creamy-yellow colouring suffused with an orange-pink tinge.

Etta Dyke has no equal amongst the white-flowering varieties, and may be relied upon to come true to character.

Mrs. Henry Bull is another of the cream-ground section that is finding general favour. In this section, although the differences in the flowers are not great, there is still sufficient distinction to allow of naming the varieties accurately at a glance. A cream ground suffused either with apricot-pink, orange-pink, or slightly-flushed pink is a very beautiful tone, and this type of Sweet Pea is valuable for all-round purposes.

James Grieve.—There are a few good stocks of this Sweet Pea which, when true to character, is not surpassed in depth of colour by any in the cream section. When seen growing in quantity the blooms present a somewhat greenish-yellow hue. The variety is very fine in flowering and forms one of the best of its colour for market purposes. Sweet Peas similar in character to Marjorie Willis are numerous, their nearest approach to colouring in the Spencer form is Prince of Wales. Most trade growers appear to have the type under varying names. At certain times, when at its brightest, the colour is pleasing, and the distinctive white blotch at the base of the standard adds to the effect. But there is a "Primula-sinensis pink" about the type that quickly fades into objectionable magneta shades, and the lower flowers upon the stem usually develop these shades before the top flowers are in perfection. If it can be shown on the same day as it is cut in large groups it is effective, but when sent the previous day from a long distance it is disappointing.

Maggie Stark may be classed with Helen Lewis. It is a variety with less substance in the petals than the true Helen Lewis, and somewhat brighter in colouring. Maggie Stark forms an effective variety for furnishing cut flowers, and may best be described as being between St. George and Helen Lewis. It is really a very greatly improved form of Evelyn Byatt. So far as I can discern, I cannot detect any difference between it and such varieties as Lord Althorp and Helen Grosvenor.

I should always include the variety Olive Ruffle in any collection of Sweet Peas. But it does not come true, and, like Audrey Crier, seems difficult to fix. At the same time it is a very desirable variety and deeper in colour than Constance Oliver and others of that class. The growth is of dwarf habit so far as I have observed. This does not affect the flower-stems or flowers which are mostly produced four upon each stem. There are other good varieties of recent raising, but as they are not all fixed or to be had in commerce, it would serve no useful purpose to write upon their merits. From my knowledge I may safely predict that the year 1909 will give us definite fixed improvements in some of the sections of this beautiful flower. Charles Foster.

NOTICES OF BOOKS.

* SCHOOL-GARDENING.

Those who have had to do with the organisation and management of school gardens know that many difficulties arise in the course of the work. The choice of ground is usually limited, the land is often in bad condition, and the work of the boys has to be arranged so that it will not interfere with their ordinary class work.

At the same time, if the teaching is to have any practical value, it is necessary that the ordinary routine of garden work should be followed as closely as possible, and this, with the rather uncertain supply of labour available, it is not easy to ensure. Above all, it is important that the best methods should be employed for carrying out even simple operations, and that some attempt should be made to explain clearly the meaning and value of each.

This little book is an attempt to meet such difficulties half-way. It contains little that is new, but offers useful advice as to the best methods of laying out school gardens and of planning the work. The descriptions and diagrams are clear, and should be of service, especially to inexperienced teachers.

A chapter is devoted to seed-sowing. The cultivation of the commoner garden crops is

* *School-Gardening*, by W. Francis Rankine. Pitman & Sons. Price 1s.

described at some length, and sufficient space is devoted to fruit culture, diagrams being given to illustrate correct methods of pruning, grafting and planting. Common diseases which attack garden crops are described, with their remedies, and lists of the best varieties are given in the chapters on fruit culture.

There is a short introduction by Mr. H. J. Wright, with whom we agree, that, in cases where the experience of the instructor has been limited through uncontrollable circumstances, this little work "should do much to establish the teaching on correct lines."

The Week's Work.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Roses.—The pruning of Roses trained on warm walls or planted in sheltered positions may be proceeded with. All dead wood and any weak growths should be removed. Train in strong, well-ripened shoots that may be required for furnishing the wall; any not required may be pruned to two or three buds. It is a good practice to train in some new shoots each year and to remove a corresponding number of the old ones, as this will impart fresh vigour to the plants. The shoots should be secured with tarred string, as this substance is more durable than ordinary string. Remove any of the surface soil that appears exhausted, replacing it with a fresh compost. Another plan of replenishing the soil is to make a trench at some distance from the stems and to refill it with fresh soil with which has been mixed a quantity of bonemeal.

Early blooming of Roses.—Among early-flowering varieties suitable for training against walls are Rosa sinica anemone (one of the very finest of all the early-flowering single Roses, the large petals being a delicate shade of pink); Viscountess Folkestone (creamy pink), Sunset (apricot), Niphotos (white), Catherine Mermet (pink), Reine Olga de Wurtemberg (red), Cheshunt Hybrid (maroon crimson, a fine variety for a wall), William Allen Richardson (deep orange yellow); L'Idéal (red, tinted yellow), Solfatare (sulphur yellow), Comtesse du Cayla (coppery carmine shaded with orange and yellow, an exquisite Rose when in the bud state), and Fulgens (crimson). The best-coloured blooms of the beautiful William Allen Richardson variety are obtained from plants trained against a west wall, which is also the best position for the well-known Maréchal Niel variety. The pretty and distinct Rose bracteata requires some slight protection in severe weather, and should always be planted against a warm wall. When the pruning and training of the Roses have been finished, the plants should be sprayed with a preparation containing nicotine, and another application should be given when the buds break into growth. This will ward off attacks of aphids.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Late-planted trees and shrubs.—Circumstances often necessitate the planting of trees and shrubs, the staking of trees, turfing, and other work being done late in the new year that would be better performed in the autumn. But with care such late work is generally successful, although the risk of failure is far greater as the summer approaches. In March late-planted trees and shrubs are often injured or killed by the cold winds.

Staking trees.—Standard trees should be secured to a stout stake immediately after planting; they will require special care in tying, so that the bark may not be injured by rubbing against the stake. The stems of all specimen trees planted by themselves should have from 7 to 8 feet of clear stem between the ground line and the branches; when less than this is allowed, there is a danger of the tops of the trees being broken by mischievous boys.

Best kinds of stakes.—The most serviceable stakes are Larch poles, with the bark intact, and the "ricker" poles, which, I believe, are of some imported coniferous tree. Both are straight and strong, and can be purchased in different sizes, ranging in length from 10 feet to 18 feet. The shorter lengths are best suited for newly-planted

trees, but for re-tying those that have been planted three or four years the taller stakes will be needed. Strips of sacking should, in all cases, be bound around the stem of the tree between the ligature and the bark. This will prevent injury from rubbing or from tightening of the string. Secure the plant very firmly as high up the stem as possible, using strong tarred cord for the purpose. Trees that have been planted a few years should have an occasional inspection to see that the string is not cutting into the bark. A young, fast-growing tree swells in girth considerably between the time of its planting and the time when it is stout enough to do without a support. During this period longer and stouter stakes become necessary, for when in full leafage the tree has to withstand a very great strain during strong winds.

Tree guards.—Some kind of tree-guard is necessary to protect Plane and other Avenue trees by the side of carriage drives. Ornamental guards are often employed, but a much less costly method of protecting tree stems is to place a narrow strip of small-meshed galvanised wire netting (usually about 18 inches wide) around both the stem and the stake. The netting should be made secure by lacing it together with wire.

RHODODENDRONS AND AZALEAS AS BEDDING PLANTS.

THERE is a varied assortment of flowering plants that will provide a display of flowers in spring, and a succession of bloom may be had from the time the earliest varieties of Narcissus and Tulips open until the summer bedding beautifies the gardens. We have, in addition to the spring bulbous flowering subjects, a large variety of "carpeting plants," such as Arabis, Myosotis, Violas, Polyanthus, &c.

It frequently happens that there is a time between the spring and summer displays when the beds are bare of flowers, especially if the weather is of such a nature that the work of planting the summer bedding subjects cannot be early proceeded with.

To avoid this "break" in flowering, I have for several seasons past filled a few beds with dwarf Rhododendrons and Ghent Azaleas. The showy flowers of these plants furnish a charming effect and one not easily excelled. Their flowering season follows that of the spring bedding plants, and they remain in bloom till the end of May or the first week in June. A few plants of Iris germanica mixed with the Azaleas enhance the effect. The bright purple flowers of the Irises provide a pleasing contrast to the soft shades of yellow, salmon-pink, &c., of the Azaleas.

After their flowering is over, the Rhododendrons are removed to the nursery, where they are planted in rows fairly close together. Directly they are planted the roots are given a copious watering, after which they are well mulched with manure, which, in addition to stimulating new growth, affords protection to the roots throughout the summer months. If a partially-shaded site is selected for them they will withstand the dry, hot weather of summer much better than if placed in an exposed position.

By the next autumn, flower-buds will have formed, and as new ones are produced each succeeding year the same plants can be used for several seasons. If two separate batches can be provided so much the better, as by using the plants in alternate seasons a period of 18 months in the nursery can be allotted to each, which is an obvious advantage. In the case of the Azaleas, the old shoots are cut hard back whenever the growth becomes irregular. By this method dwarf, bushy plants are maintained with plenty of healthy flowering growth. The Rhododendrons do not respond to this treatment quite so readily, but with the judicious use of the knife the plants can be kept dwarf and suitable for this method of planting for several years.

I have also used with good results for a similar purpose the light and graceful flowering Cineraria stellata, its beautiful shades of Aster-like flowers giving a charming effect. These, if raised from seeds sown about the end of July and grown in a cool frame or house, provide good plants for flowering during May. They can be plunged in pots, either in separate beds or mixed with other plants. If given a sheltered position, the Star Cineraria will continue to flower for three or four weeks. J. Rogers, Battersea Park.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Oncidium, &c.—The warmth-loving *Oncidium ampliatum* and the variety major will now be showing their flower-spikes, and the warm, moist atmosphere of the plant stove will be suitable for them until the flowers open, when they may be removed to a somewhat cooler structure. Immediately the spikes appear, water must be given sufficiently frequent to keep the roots moist. Plants of *O. Cavendishianum* that have their flower-spikes well advanced and are prominently showing their flower-buds should be placed in the warmest house, as the Mexican house, in which they made their growth, is rather too low in temperature for the proper expansion of the flowers. Any plants of *O. leucochilum*, *O. nigratum*, and *O. maculatum* that are showing their spikes and are at the warmer end of the *Odontoglossum* house should now be removed to the *Cattleya* house. Afford these *Oncidium*s sufficient water at the roots to keep the pseudo-bulbs in a fairly plump condition until the flowers open, when the quantity should be considerably lessened until growth recommences. Flowering plants of *Lælia harpophylla*, *Odontoglossum platycheilum*, and the cool-growing *Dendrobium tetragonum*, *D. æmulum*, *D. Kingianum* and its variety album, will also develop their flower-buds better if given similar treatment.

Odontoglossum citrosimum.—In the resting-house plants of *Odontoglossum citrosimum* are already starting into growth, but they should not be excited by heat or moisture to make any rapid advance, or they might grow away and fail to produce flowers at the proper season. Our plants of this species are in a dry atmosphere ranging between 50° and 55° at night, but rising several degrees by day with sun heat. They are kept in a comparatively dry condition at the root, thus causing the pseudo-bulbs to become somewhat shrivelled. Immediately the flower-spikes are seen pushing up through the centre of the new growths, the plants should be placed in a more genial atmosphere, and well supplied with water, after which, in a few days, the pseudo-bulbs will rapidly regain their former plump condition.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. Ford, Pencarrow Cornwall.

Stove foliage plants.—Such genera as *Alocasia*, *Calathea*, and *Maranta*, whose young leaves are mostly very tender, should be given any necessary repotting early in the year before the sun gains sufficient power to burn tender vegetation. The *Marantas* and allied plants are impatient of root disturbance, and it is usually the best plan to let them alone and be content with top-dressing those which are growing satisfactorily. At the same time, any plants in a poor condition or pot-bound should be repotted. A suitable soil is one consisting of peat, leaf-mould, and fibrous loam in equal quantities, with plenty of broken charcoal and sand. Potting must not be done too firmly. *Dieffenbachias* are more useful when dwarf, therefore the tops of the old plants should be cut off and rooted. Further stock may be obtained by cutting up the stems as in the case of *Cordylines*.

Caladium.—As soon as the tubers show signs of growing they should be potted. A suitable compost is one consisting of fibrous loam and peat (not finely broken up) in equal parts, to which should be added leaf-mould, dried cow dung, and silver sand. See that ample drainage is provided, as in the growing stage these plants require heavy waterings. After potting, place the plants in stove heat, applying but little water until they have developed foliage. A mild bottom heat, and frequent sprayings with tepid water, will induce free and vigorous growth. Keep the plants close to the glass, shading them only during the hottest part of sunny days: the humid atmosphere obtained by the frequent use of the syringe will prevent any burning of the leaves.

Eucharis grandiflora (amazonica).—Unlike most of the deciduous bulbs, this evergreen species is rarely grown for any particular season, so that no time can be stated for attending to their repotting. Except in the case of those which are showing flower scapes, it is usual to keep the plants slightly drier and cooler during

the winter. Plants which are doing well and flowering strongly at fairly regular intervals should not be disturbed, no matter how many years they have occupied the same pots, or how crowded the bulbs appear to be. The present, however, is a suitable time to repot those whose soil is in a bad condition. The bulbs should be washed free from the old soil in a pail of tepid water and repotted rather deeply in 10 or 12-inch pots, placing the bulbs closely together. Good loam, with one-fifth leaf-mould added and plenty of silver sand and some charcoal will be found a suitable soil. A plentiful supply of water is needed during the season of growth, but after the leaves have matured the plants require rather less water and a lower temperature.

FRUITS UNDER GLASS.

By E. HARRIS, Fruit Foreman, Royal Gardens, Frogmore.

Early Muscat vines.—When Muscat of Alexandria Grapes are required very early in the season, it is advisable that the vines be planted in inside borders only. By this system there is less chance of the vines receiving a check during the flowering stage. Before the vines burst into flower examine the borders, and, if dry, water them copiously with tepid water. It is not advisable to apply water to the vines when they are in flower, but it is equally bad for the borders to be dry. All laterals of a sufficient length to pinch should be stopped before the flowers expand. In most cases shoots should not be tied to the wires before the fruits have set. Care must be exercised to maintain an equable temperature in theinery when the flowers are shedding their pollen. A night temperature of 65° or 70° will be suitable. During the daytime the temperature may rise to 85° by sun heat, and this will cause no harm, provided there is no sudden fluctuation in the temperature, which can be prevented by giving close attention to ventilation. Let the flowers be artificially pollinated at mid-day by passing a rabbit's tail over them. The rods may be tapped occasionally also to assist pollination. Let the atmosphere be moderately dry, but should the surfaces of the borders become very dry they may be damped early on fine mornings.

Late Muscats.—As a rule theinery containing late Muscats should be prepared for forcing at the beginning of March. If it is deferred after that date there is a danger that the bunches may not perfectly ripen. Before starting the vines, thoroughly cleanse the house, and wash the rods with a mixture of soft soap and sulphur. Young vines when newly starting into growth are very subject to "bleeding." In such cases the cut surfaces should be dressed with Styptic.

The orchard house.—The buds on the trees, and especially those of Peaches and Nectarines, are swelling markedly. Therefore, the pots should be placed in position in the house, because if this is deferred the growing buds will be liable to suffer damage during the act of removal. Little pruning will be necessary if the shoots were properly stopped last summer, but any very strong growths should be pruned hard back and all weak growths not required for furnishing the tree removed altogether. In shortening the shoots, be careful to prune to a wood-bud, which can be easily distinguished from the flower-buds at this stage. Make a strong solution of soft soap and sulphur, and wash the stems with this mixture. Then place the trees on their sides and syringe the whole of the branches with similar mixture. Maiden trees should be cut back to five or six buds.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Strawberries.—The beds of established plants should be cleared of any dead leaves or other rubbish and the surface of the soil lightly dug with a fork; not deeply, or many of the roots will be injured. After this work is finished, and when the ground is hard with frost, sufficient manure should be wheeled on to the beds to provide a liberal dressing. In cases where the formation of new beds was decided upon last autumn, but it was found impossible to carry out the work at that time, the plants may now be planted. The land should first be trenched, working in plenty of farmyard manure as the digging proceeds. After the trenching has been done, a short time should

be allowed to elapse before planting the Strawberries, so that the ground may settle down again. Then spread some wood-ashes, lime, and soot over the soil and fork these in, not lower than the top spit. Consolidate the ground by treading, so that planting may be done firmly, and see that the crown of the plant is not placed lower or higher than the level of the soil. If it is decided to plant Strawberries next July or August, it is advisable to select the ground for the purpose now and to trench it as already recommended. In the intervening time the land may be cropped with early Potatoes. These will be ready for lifting in June and July, so that there will be plenty of time to get the ground into a proper condition for the Strawberries. This is a better practice than to leave the trenching until just before the ground is required for planting. Labour in summer-time is always scarce, and trenching is performed much better and quicker in cold than in hot weather. Plants that have been forced may be prepared for fruiting again in the autumn. They should be gradually hardened and planted out as early afterwards as safety will permit. Their chief requirements will be in the matter of watering till they are well established in their new quarters. In gardens where a number of young plants are planted each year, the runners should be layered as early in the season as possible, so that after they are well rooted they may be placed in their permanent quarters in good time. Such early-planted runners always produce the earliest and finest fruits. Royal Sovereign is one of the best varieties for early-fruiting, and I recommend Givon's Late Prolific for late-fruiting. Another late cropper is Laxton's Latest, a variety which will prolong the Strawberry season till the end of July.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Peas.—Suitable varieties may now be freely sown on ground in the open which has been deeply trenched and well manured. So many excellent kinds exist at the present time which are adapted for early crops, many being almost equal in point of flavour to the maincrop varieties, that gardeners may dispense entirely with the old round-seeded sorts. Wherever possible, I advise sowing the seeds in boxes, pots, or other suitable receptacles, raising them in a cool house, and afterwards, when thoroughly hardened, planting them out. Three or four sowings should be made in succession. For early use I prefer varieties which grow to a height of from 3 to 4 feet rather than the very dwarf kinds, although some of these latter are well suited for small gardens where stakes are difficult to procure. Suitable varieties for this sowing are Gradus, Early Giant, Early Morn, and Edwin Beckett. See that arrangements are made for trapping or destroying rats or mice. Plants which were raised early and which are growing in pots, boxes, or even planted out, under glass, should be top-dressed as required, and the growths neatly supported with stakes. Afford them all the light and air possible when the weather permits. Avoid hard forcing.

Broad Beans.—These should be sown at 1 inch apart in boxes and raised under glass for planting out. Select long-podded varieties. Batches of these Beans should be sown at intervals of from 10 days to a fortnight. I have always found that Beans do much better when transplanted than when allowed to remain in the ground where sown. They certainly come into bearing much quicker. Beans which may be growing in pots for supplying early crops should be assigned the coolest place. Place them quite near to the glass, where plenty of air can be admitted. Few vegetables are more easily injured by hard forcing than these, but most satisfactory results can be obtained if the plants are allowed plenty of air and a cool atmosphere.

Asparagus.—This vegetable can now be brought forward on mild hot-beds covered with portable frames. The chief requirement in the forcing of *Asparagus* is to place the roots in position and cover them immediately they are lifted, for if the roots are allowed to become dry the results are poor. Bury the crowns to a depth of about 3 inches and maintain a temperature of from 50° to 55°, which may be allowed to rise 10° more by sun heat in the afternoon after shutting up. The beds should be syringed twice each day.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, FEBRUARY 17—
Roy. Meteorological Soc. meet.

THURSDAY, FEBRUARY 18—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 10 (6 P.M.): Max. 41°; Min. 35°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, February 11 (10 A.M.): Bar. 29.6; Temp. 43°; Weather—Dull.

PROVINCES.—Wednesday, February 10 (6 P.M.): Max. 47° Ireland S.W.; Min. 33° Yorkshire.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—

Border Plants and Perennials, Lilliums, Begonias, Azaleas, Ferns, &c., at 12; Roses and Fruit Trees at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

TUESDAY—

Unreserved Clearance Sale of Carnations and other Greenhouse Plants, Greenhouses, Piping, &c., at The Gardens, Warren House, Hayes, Kent, by order of the Executors of Martin R. Smith (deceased), by Protheroe & Morris, at 12.

WEDNESDAY—

Lilliums, Hardy Bulbs and Tubers, Herbaceous Plants, &c., at 12; Roses and Fruit Trees at 1.30; Palms, Plants, Ferns, &c., at 5; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

A collection of Orchids from a private grower; also other Orchids in variety, at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

The Darwin Centenary.

The present year is the Anniversary of two events which are recorded for all time in the history of the world. On February 12, 1809, Charles Darwin was born, and 50 years later, in November, 1859, the *Origin of Species* was published. Therefore, we celebrate this year, in a twofold sense, the memory of Darwin: the centenary of his birth, the jubilee of the birth of his greatest work.

Though all will rightly claim to join in the celebrations, nevertheless, it is to the men who are occupied in laboratory, field or garden with the study of living things that the Darwin anniversaries will appeal with special force, for those whose occupations lead them to study Darwin's works in detail can appreciate most the compelling genius of the man. Each and every one of his published volumes would suffice to make or enhance the reputation of any professional man of science. The secrets which jealous Nature guarded since the world began are yielded up to the enchantment of his patient questioning. No aspect of Nature is too vast, nor none so small, for his enquiry.

Darwin's contributions to geology entitle him to rank with the great geologists. His contributions to zoology admit him to equality with the professors of that science. No contemporary botanist laid the science of botany under greater obligations than did Darwin. And beyond and above these several contributions to the individual sciences—contributions on coral reefs, cross and self-fertilisation of flowers, on Orchids, climbing-plants, earthworms, insectivorous plants, the expression of the emotions in man and animals, the power of movement of plants, and forms of flowers—there are his great works the *Origin of Species* and *The Variation of Animals and Plants Under Domestication*. Were they but mere compilations it had been no small feat for one man to publish such a mass of varied work. When it is recollected that all these special works contain the results of his own researches, then the outstanding ability of Darwin comes to be recognised.

Those great storehouses of facts, the *Origin of Species* and the work on variation contain, of course, much information collected from the most varied sources—not a little, as we are proud to remember, from the pages of this journal; but with what masterly generalship this motley array of facts is marshalled in ordered ranks! With what transcendent skill they are shown to contribute to the elucidation of that mystery of mysteries, the *Origin of Species*!

As when we are borne away from some rich landscape, the varied details merge in one another, and are lost, so, after some while of abstinence from reading Darwin's works, our memory plays us false, suggesting that his discoveries are concerned chiefly with variation. But when we revisit the landscape the details reappear the more strikingly in contrast with the illusion of sameness; so, as we turn the pages of this series of wonderful volumes, we realise that none but a genius could have produced work of such variety and worth.

There will be other opportunities during the present Anniversary year for considering in some detail certain of Darwin's several contributions to knowledge. In connection with the approaching celebration, the University of Cambridge is preparing a Darwin memorial volume—a testimony to the catholicity and profundity of his work. The publication of this volume will, in proving Darwin one of the most distinguished sons of Cambridge, reflect upon the University a lustre which time can never dull. Though the expression of genius is infinite in its variety, yet all men of genius have certain qualities in common: a singleness of purpose, an unquenchable truthfulness with respect to the work to be done, a power of imposing their influence on their fellow-men. All these attributes of genius are conspicuous in Darwin. His devotion to work, in spite of ill-health, in spite of the claims of family, in spite of easy circumstances, prove his singleness of purpose. His weighing of the evidence for and against his theories, his meticulous, sometimes painful care in saying only what he meant and no more, his ready admission of indebtedness to others, witness to his unflinching truthfulness.

His power of winning to his side the men

that count—Hooker, Huxley and Lyell—his power which is as strong to-day as ever of winning loyal and loving followers, testify to the magnetic influence which he exerts. But—and this is not so general among geniuses—Darwin was as great on the moral as on the intellectual side. To be great, said Whistler, is to be misunderstood, and, as ail the world knows, the *Origin of Species* evoked a storm of criticism. The survivors of those strenuous times must smile now when they recognise that, like other famous quarrels, this one was largely about words. No one can read the *Life and Letters* of Charles Darwin without venerating their subject. The biography is a contribution of the first order alike to literature and to science. It reveals Darwin's greatness, and from its perusal the reader rises up a better man.

We rejoice that this centenary is to be celebrated with due form and ceremony at Cambridge; we rejoice that Darwin's qualities were to such a high degree the expression of what we are fain to believe are typically British attributes—determination—it's dogged does it, as he used to say—love of fair play, steadfastness in friendship, and high courage. Our sole regret is that there should be no adequate national memorial to one whose works have contributed so much to the intellectual eminence of this country among the nations of the world.

The Royal Horticultural Society.

The proceedings at the annual meeting of the Royal Horticultural Society on Tuesday last were in every way satisfactory. The Report of the Council, which was published in these pages last week, shows clearly enough that the Society continues to enjoy unparalleled prosperity. That Report was so exhaustive that Sir Trevor Lawrence, who presided at the meeting, found little else to say regarding the year's work. In a few words, however, it was pointed out that a large measure of success has been already obtained at Wisley, and special reference was made to the work which is being done in connection with the Laboratory and in the training of students. Mr. Chittenden's trials with Nitro-Bacterine have been discussed in these pages, and in reference to these Sir Trevor Lawrence stated that in some experiments with Sweet Peas in his own garden at Burford, he obtained only the same negative results as have been reported by Mr. Chittenden.

In these days of motors, and other swift modes of conveyance, places that formerly were, to some degree at any rate, inaccessible, can be easily reached by considerable numbers of people, and it is a satisfactory circumstance that during the past year 11,000 visitors have been registered at the Wisley Gardens. These gardens have offered some valuable object lessons for practical gardeners; a remarkable instance occurred in the Vineries. The Wisley collection of Grapes is comprehensive, and the exhibit of numerous varieties in excellent condition which was made at one of the fortnightly meetings, was very creditable to the Superintendents responsible for their culture. In connection with the Society's examination, a considerable

development may be noticed in the arrangements that have been made for holding an examination in India at the invitation of the Indian Government.

Sir Trevor Lawrence referred to Sir Daniel Morris' appointment in connection with tropical agriculture, and Fellows will be glad that Sir Daniel Morris has again found it possible to accept a seat on the Council.

The intimation that the Council is taking steps to provide the Society with a first-class painting of Baron Sir Henry Schröder, Part., will be received with the utmost satisfaction. Baron Schröder's great liberality to the funds, and especially his munificent contribution towards the expenses of providing the Horticultural Hall, will ever be remembered with gratitude. But besides these acts of munificence Baron Schröder has exhibited from time to time magnificent collections of Orchids from his famous garden at Egham.

Mr. Gurney Fowler, in seconding the adoption of the Report, made one of those straightforward statements of income and expenditure that we have come to expect from the Treasurer. He told us that the surplus income over expenditure during the year amounted to £7,867. The receipts were £1,400 higher than in the previous year, but the expenses were increased only by £11. The income from subscriptions alone showed an excess of £1,000. In connection with this extraordinary growth in the Fellowship of the Society it is interesting to remark that since January 1 in the present year a sum of £10,483 has been received from annual subscriptions, this sum representing an increase of £843 over the amount received in the same number of days at the commencement of last year. A slight decrease in the receipts from shows is explained by the unfavourable weather which prevailed on several occasions during the time the exhibitions were open to the public. There has been a saving of £878 on the cost of the *Journal*, notwithstanding that four numbers have been issued during the year.

An interesting incident was the presentation by the President of two Veitch Memorial Medals on behalf of the Trustees, and two Victoria Medals of Honour, awarded by the Council of the Royal Horticultural Society. In order to show how worthily the medals were awarded, it is only necessary to say that the Veitch Medallists on this occasion were the Secretary of the Royal Horticultural Society, Rev. W. Wilks, and the Chairman of the Floral Committee, Mr. William Marshall. The Victoria Medals were presented to Sir Jeremiah Colman, Bart., whose magnificent exhibits of Orchids to the Society's meetings and to the Temple and Holland Park Shows have excited the greatest admiration, and to Mr. Charles Ross, who has enriched our collection of Apples to an extent unequalled by any other raiser. Particulars of the fruits raised by Mr. Ross have been printed in this journal.

Mr. Elwes initiated a discussion on the management of the Lindley Library, complaining that only £29 was spent by the Society in purchasing books during the past year. Several Fellows followed in a similar strain, showing that there is a real desire that the Library should be properly maintained and that it should be made as com-

plete as possible, particularly in works having the greatest horticultural value. The Rev. J. Jacob proposed that a sum of £1,000 should be taken from last year's receipts for this purpose. It was pointed out that the Library does not belong to the Society, but to Trustees, and therefore any money spent by the Society in the purchase of books is in fact a presentation to the Trustees. The Fellows appeared to think that these circumstances do not tend to the best interests of the Library, and it was suggested that the Society should commence the formation of a library which would be strictly its own property. This, however, might lead to considerable overlapping. If the discussion has the effect of stimulating the Council to increase its grants to the Trustees it will do good. We have again and again urged the interests of the Library, and we hope that the Council will treat this question in the most liberal spirit possible. The explanation of the present policy of the Council in saving several thousands of pounds every year, is that it is imperative to provide a satisfactory reserve fund. When this has been accomplished the Council will probably feel at greater liberty to adjust its income and expenditure in such a manner that there will be better provision even than now for carrying out desirable work for the extension of scientific horticulture.

FLOWERS IN SEASON.—Messrs. WILLIAM ARTINDALE & SONS, Sheffield, have forwarded flowers of their improved strain of *Primula obconica*. The blooms are exceptionally large for this species, and the colours are a great advance upon the rather washy magenta of the type. Some of deep rose-colour are especially pleasing. Messrs. ARTINDALE inform us that their plants have been continually in flower since last September, and that they are potted in ordinary soil and afforded a temperature of about 50°. The seeds were sown at periods from March to June.

BRITISH GARDENERS' ASSOCIATION (HASLEMERE AND DISTRICT BRANCH).—The next meeting of the Haslemere branch will take place on February 20, at 7.30 p.m., at the Co-operative Hall, Clay Hill, Haslemere, when Mr. GEORGE GORDON, V.M.H., will give a lecture on "Gardens of Roses," illustrated by limelight views. All professional gardeners are invited to be present.

NEW APPOINTMENT FOR SIR DANIEL MORRIS.—Sir DANIEL MORRIS, K.C.M.G., late Imperial Commissioner of Agriculture for the West Indies, has been selected for the newly-created office of Scientific Adviser to the Secretary of State for the Colonies on matters of an agricultural character relating to British possessions in the tropics.

LINNEAN SOCIETY.—The next meeting will take place on Thursday, February 18. A discussion on "Alternation of Generations" will be opened by Dr. W. H. LANG.

ROYAL METEOROLOGICAL SOCIETY.—A meeting of this society will be held at the Institution of Civil Engineers, Great George Street, Westminster, on February 17, at 7.30 p.m. The papers to be read include: 1, "Report on the Phenological Observations for 1908," by Mr. EDWARD MAWLEY; 2, "The Cold Spell at the end of December, 1908," by Mr. WILLIAM MARRIOTT.

NATIONAL AURICULA SOCIETY (MIDLAND SECTION).—We are requested to announce that the dates of this society's show have been altered to Wednesday and Thursday, April 28 and 29.

THE INNES BEQUEST.—In our issue for January 30 was printed the details of the munificent bequest to horticulture made by the late Mr. INNES. In view of the importance of this bequest, the following biographical details are interesting:—The late Mr. JOHN INNES was born on January, 1829, and was educated privately at Brighton. At a comparatively early age he adopted a mercantile career, in the course of which he and his elder brother, the late Mr. JAMES INNES (of Roffey Park, Horsham), acquired a considerable amount of property in the City of London. In the year 1864 they became the founders of the City of London Real Property Co., Ltd., which continues as an institution of the highest repute. About the year 1867 the brothers acquired the Merton Park Estate, and from that date until his death the chief energies of Mr. JOHN INNES were directed to the development of that property, and the advancement of the welfare of the neighbourhood. Mr. INNES was the founder of the Boys' Club and the Manor Club, two institutions which have proved of the greatest advantage to the working classes of Merton, while the elementary schools of the parish were always the subject of his warmest interest. The Rutlish School, moreover, owes much of its success to the energy he showed when the ancient endowment was made available for starting it on its present successful career. It will be remembered that, under the scheme recently sealed by the Charity Commissioners, scholarships of the annual value of £154 are founded at the Rutlish School to be known as "John Innes' Scholarships." The sum available for the purposes of Horticultural Education and Research will yield an annual income of £5,500.

MR. GEORGE WYTHES, V.M.H.—Much sympathy will be felt with Mr. GEO. WYTHES, late gardener at Syon House, Brentford, in the bereavement he has sustained in the death of his wife on the 8th inst.

PRIZES FOR BEST CULTIVATED SMALL HOLDINGS.—The editor of *Lloyd's News* has sent us particulars of a new land culture scheme which our contemporary has promoted to advance the small holdings and allotments movement. The scheme has the approval of Earl CARRINGTON, President of the Board of Agriculture and Fisheries, who has described at a public meeting the conditions of the competition in Classes A, B, and C.

A GARDENER'S CATECHISM.—A correspondent has forwarded to us what we venture to think is a unique document. It consists of five folio pages on which are printed no fewer than fifty-eight questions which, as we gather, aspirants for the post of gardener to a particular employer are expected to answer before success can attend their applications. What they would be required to do afterwards is fortunately not stated. Anyone thinking of applying for the post must state, among other things, what has been his experience of pot Roses under glass; whether he has grown them to flower during November, December and January; the largest number brought into bloom for each month—scope here indeed—if the applicant had sole charge, if not, what charge—probably in the "counting house"—how long he had charge? Answers to the same questions must be repeated

for February, March, April and May. A similar series of questions relates to Roses planted out in borders under glass. With respect to Roses outside, only four questions are asked; for Tree Carnations seven, Souvenir de la Malmaison Carnations seven more. As to general greenhouse work, the applicant whose hand aches and whose head reels has to say what experience he has had with Ferns, bulbs, decorative and flowering plants for the house and general greenhouse work. Having done all this, the aspirant turns to the last page and finds it easy to answer the last ten questions: as to whether his knowledge of trees and shrubs is good, his experience of planting above the average, his knowledge of rock plants, also general outside gardening work, and of fruit cultivation under glass. His experience with Grapes, Peaches, Plums, Cherries; whether he has a good control of men and can get the full amount of work out of them, and whether he is strictly economical in his methods of working a place. Finally, this application-form concludes with a solicitous enquiry after the health of the applicant in the past and in the present. There is a silence, which can only be due to oversight or exhaustion, as to the future state of health of the successful applicant. Not a word occurs in the document on the subject of remuneration.

PUBLICATIONS RECEIVED.—*That Rock Garden of Ours*, by F. E. Hulme, F.L.S., F.S.A. With eight coloured plates and 42 illustrations. (London: Fisher Unwin.) Price 10s. 6d. net.—*The Journal of Botany, British and Foreign*, edited by James Britten, K.S.G., F.L.S. (February). (London: West, Newman & Co., 54, Hatton Garden, E.C.) Price 1s. 8d. **New York Agricultural Experimental Station, Geneva, N.Y.** Bulletin No. 304: Report of Analyses of Samples of Fertilisers collected by the Commissioner of Agriculture during 1908. Bulletin No. 305: Troubles of Alfalfa in New York, by F. C. Stewart, G. T. French, and J. K. Wilson. Bulletin No. 306: Control of Leaf Blister Mite in Apple Orchards, by P. J. Parrott. Technical Bulletin, No. 7: The Sporotrichum bud-rot of Carnations and the silver top of June Grass, by F. C. Stewart and H. E. Hodgkiss. Technical Bulletin No. 8: The Bacterial Flora of Cheddar Cheese, by H. A. Harding and M. J. Prucha. (Published by the Station.)—*The Agricultural Journal of the Cape of Good Hope*. (January, 1909). (Cape Town: Cape Times, Ltd.) Price 6d.—**U.S. Department of Agriculture, Bureau of Plant Industry.** Bulletin No. 135: Orchard Fruits in the Piedmont and Blue Ridge Regions of Virginia and the South Atlantic States, by H. P. Gould. Bulletin No. 137: Seeds and Plants imported during the period from January 1 to March 31, 1908. Inventory No. 14: Nos. 21,732 to 22,510. Bulletin No. 138: The Production of Cigar-Wrapper Tobacco under Shade in the Connecticut Valley, by J. B. Stewart. Bulletin No. 75, Part IV.: The Relation of the Etiology (cause) of Bee Diseases to the Treatment, by G. F. White, Ph.D. Bulletin No. 75, Part V.: A Brief Survey of Hawaiian Bee-Keeping, by E. F. Phillips, Ph.D. Bulletin No. 68, Part VIII.: The Grape-Leaf Skeletoniser, by P. R. Jones; Report of the Entomologist for 1908, by L. O. Howard. (From annual reports of the Department of Agriculture.) Circular No. 107: What can be done in Destroying the Cotton Boll Weevil during the Winter? by W. D. Hunter. (Washington: Government Printing Office.)—**Imperial Department of Agriculture for the West Indies.** Reports on the Botanic Station, Experimental Plots, and Agricultural Education, Antigua, 1907-8. (Barbados: Imperial Commissioner of Agriculture for the West Indies.) Price 6d.

A NOBLE AGAVE.

(See Supplementary Illustration.)

AGAVE ATTENUATA is a native of Mexico and has been known to cultivators since about 1834. It first flowered at Kew in 1861, after having been grown for many years in the Succulent House under the name of *A. glaucescens*. An excellent figure of this plant by Fitch was published in the *Botanical Magazine* in 1862 (t. 5333), where we are told that it was a very attractive

object during the whole winter. The expansion of the innumerable flowers on the long and singularly decurved spike was very gradual, and in August the spike still remained with a few imperfect capsules, and an immense quantity of young plants (bulbils) growing on the rachis. The leaves had by that time withered and the stem showed signs of decay, but suckers were produced from the base of the stem, and there was altogether a most abundant crop of young plants. The flowering of this species has been repeated at least half a dozen times at Kew since then, a plant of it being in flower in the Succulent House at the present time. This has a clear stem 7 feet long and an inflorescence about 9 feet long. Being monocarpic, the plant dies after once flowering. The prolific character of the inflorescence in this and other species of Agave should be borne in mind, a crop of bulbils usually being developed when the whole plant is in the last stage of dissolution.

The growth made by this species in New South Wales is sturdier than anything seen here. Messrs. Anderson and Co., of Sydney, state that the example shown in the Supplementary Illustration was planted in 1885, and that for many years it grew vigorously and was a magnificent specimen. The photograph was taken last July, when the flower-spike measured 12 feet in length and about 9 inches in diameter at the base. The flowers open slowly from the base upwards, the upper half of the spike as shown being still in bud; they are green, with yellow anthers. The small, supplementary spike shown in the illustration is noteworthy, being quite unusual. The leaves of *A. attenuata* are soft, fleshy, glaucous green and spineless; this and *A. Ellemetiana*, a near ally, being the only two broad-leaved species of Agave which have not spine-tipped leaves. The grandeur of the great Agave family has never been realised in British horticulture, always excepting the Tresco Gardens, where there is a good collection in magnificent condition. Where Agaves are allowed a little space they are usually half starved, being confined to small pots and wintered in sheds. They are not considered to be good enough for the glasshouse accommodation necessary for their full development; indeed, the few men who have thought such plants worth attention have been looked upon as "cranks." Still, Agaves are among the nobility of the vegetable kingdom, as anyone who has seen the collection at La Mortola and other places on the Riviera will admit. It would be difficult to find a more striking object or a more interesting plant than this example of *A. attenuata* must have been when it was in the full flush of its procreative effort. For 20 years it had made steady growth, and accumulated the life force which resulted in the putting forth in a few months of a pole-like spike bearing thousands of flowers to be followed by capsules of seeds and numerous bulbils. The curve in the spike is usual; one may wonder what it means. *W. W., Kew.*

LAW NOTES.

CLAIM FOR DISCOUNT.

At the Redhill County Court on the 3rd inst., Messrs. William Wells & Co., Chrysanthemum growers, Merstham, sued Mr. William Sydenham, of Tamworth, nurseryman, for £4 3s. 4d. for Chrysanthemums supplied. Defendant counter-claimed for £7 10s., agreed trade discount in respect of such Chrysanthemums, and £3 6s. 8d., the difference between the actual amount due for plaintiffs' account, and amount paid to plaintiffs generally on trading account.

Mr. William Wells said he had for some years supplied the defendant with ordinary Chrysanthemums, and allowed him the usual trade discount, but had refused to supply him with the novelties, as on a previous occasion defendant ordered 12 "Goacher's Crimson, 1902," but be-

fore he was supplied it was found that he had put them in his catalogue at 6d. less than he himself was offering them. When it was found out that he had been cutting prices, the plaintiffs refused to supply him. In each succeeding year defendant had made application for the novelties, but they refused to supply them until he agreed to ask the same prices as the plaintiffs in the second year. On November 15, 1906, defendant ordered certain Chrysanthemums from the catalogue, and plaintiff told him he would be supplied at a discount. On December 4 the plaintiffs issued a fresh circular, making a considerable reduction in the price of their "Early Singles," and on December 8, 1906, defendant wrote on the strength of this circular, ordering ten of each of their "Early Singles." In the circular, in notifying the reduction, the plaintiffs stated that no trade reduction would be allowed. The goods were supplied and the account delivered, to which the defendant took no exception, but on October 11, 1907, he sent £20 on account, and did not in any way claim a discount. He first raised a question about discount on December 18, 1907.

Mr. Hooper contended that the defendant had always been and was entitled to the usual discount.

His Honour gave judgment for the plaintiffs on the claim and counter-claim.

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

CHRYSANTHEMUM FRAMFIELD PINK.—The colour of this variety varies considerably. I have seen it at different places quite a good colour; but in these gardens we have never had any really pink blooms, they always came white, flushed with pink. I should advise Mr. R. Richards and Mr. T. Down to discard this variety, as I have done, in favour of Winter Cheer. It is very similar in growth; the stems are stiff, and the foliage remains more free from rust and mildew than some of the very late-flowering Chrysanthemums. The colour is a deep rosy-pink. I believe it is a sport from Framfield Pink, though the plants with us grow less tall than that variety. Winter Cheer succeeds best when potted singly in 6 and 7-inch pots, or three plants may be grown together in a 9-inch pot. For flowering at the end of December, the last stopping may take place at the beginning of July. If the flowers are cut immediately they are out they will last fully three weeks in water. The flowers may be disbudded to one on each stem, or they may be left in sprays, or the centre bud may be removed and the buds surrounding it left to flower. The former method produces the earliest flowers. Some very fine disbudded blooms were shown by a market-grower at the N.C.S. show in November last. *A. Jefferies, Moor Hall Gardens, Harlow.*

ERYNGIUM PANDANIFOLIUM.—I found this plant referred to by *J. G. W., Gardeners' Chronicle*, January 30, p. 76, in a garden in Jersey. The flower-heads are very small, about $\frac{3}{4}$ inch, and of no beauty; but the foliage is interesting as mimicking that of Pandanus in external form and internal structure, as both have long air chambers surrounded by similar cellular tissue. There are several species, e.g., *E. aloefolium*, more or less resembling monocotyledons in moist ground in Brazil. As air chambers are only characteristic of submerged plants, this group of Eryngiums corroborates the theory that monocotyledons were primitively derived from aquatic dicotyledons. We thus find many terrestrial plants retaining, by heredity, characters acquired when they were aquatic in habit. It may be noted that a leaf of a Banana has similar air chambers. *George Henslow.*

FREESIAS.—In reply to *W. R. H.*, p. 92, it is no uncommon occurrence here for Freesias to produce nine and ten blooms on an inflorescence, and occasionally we have had as many as 12 blooms on a single flower-spike. *Wilmot H. Yates, Rotherfield Park Gardens, Alton, Hants.*

—My batch of plants is flowering well this season. It consists of the same bulbs that I have used for seven years. The inflorescences on several of the stems bear 15, 12, 11, 10, and 9 blooms respectively. *R. A.*

GRAPE MILL HILL HAMBURGH.—As a rule I have great respect for the opinion of *E. M.*, but his remarks on p. 76 on this subject are certainly wrong. His description there agrees in every way with the Dutch Hamburg, a very inferior Grape (see Hogg's *Fruit Manual*, p. 384). I maintain that Mill Hill Hamburg has all the good qualities of the Black Hamburg, and the berries colour easier than those of that variety. *F. B. S.*

TWO HARDY WINTER GREENS.—Brussels Sprouts, Broccoli, especially the sprouting variety; most of the Kales and other green vegetables in general, have been much injured by frost in this district. On December 29 we experienced 29° of frost, when the plants were wet, and in consequence the damage was greater than if the foliage had been dry. Late Queen Broccoli and Hardy Sprouting Kale escaped injury, thus proving the extreme hardiness of these varieties. This hardy Kale is one of the most useful and reliable of winter greens. Other varieties, including the well-known Curled Kale, were damaged by the frost. *Wilmot H. Yates, Alton.*

TRENCHING.—Mr. Beckett (p. 76) says nothing as to how the first crops fared after trenching, although 2 feet of stiff clay had been brought to the surface, and this is the whole point of my objection. If there is a piece of ground at Aldenham with 10 inches of surface soil and 2 feet of heavy subsoil still untrenched, it would be interesting to see the first crops after it had been trenched. I quite agree with all Mr. Beckett says as to the value of, and necessity for, working vegetable quarters deeply, and fully recognise the good results that will be obtained after a few years, when the heavy material has been manured, broken up, and cultivated a few times; but the system I advocate, while producing the same result in the end, is much safer for the initial cropping. Since my former letter was written, two gardeners have furnished me with instances of failure through bringing the subsoil to the top. *A. Shakelton, The Gardens, Forde Abbey, Churd.*

I am pleased to read the testimony of Mr. Beckett at p. 76 as to the value of bringing to the surface the bottom layer of soil when land is trenched. Some persons appear to have a dislike bordering on dread at seeing the clay soil on the surface, forgetting or ignoring that it is amenable to a treatment in that position that will render it of immense value. What is so frequently termed "inert" soil is too often left below to remain inert. Many years ago, when in charge of a Sydenham Hill garden, I had to deal with a very tenacious kind of clay that formed part of the borings of the Penge tunnel. So unworkable was this clay that it was decided to burn it, and, with this heavy task accomplished, trenching was begun, and the lightly-burnt clay freely distributed as the work proceeded. In this way, and by adding all the light material available, this most tenacious of soils was rendered workable, and made capable of producing the finest crops. The benefits accruing from the burnt clay were a revelation to me, the soil being lightened, warmed, and drained by a single operation that was lasting in its results. *E. H. Jenkins.*

Had Mr. Beckett our soil to deal with, he would have been unable to follow his system, for nothing will grow in the subsoil, which is a barren, loamy sand, for a great number of years. When brought to the surface, even weeds cannot exist in it. *J. S.*

In recommending the raising of even the most unkindly of subsoils to the surface, Mr. Beckett is, perhaps, thinking of gardens where exceptional facilities are at command for carrying out the great amount of work necessary to render the soil suitable for an immediate crop. Having some knowledge of hard, impene-trable clods, which bake like bricks in the summer's heat when unalloyed clay is exposed by ordinary trenching, I am confident that a profitable crop of the majority of vegetables cannot be obtained in such ill-conditioned staple. If the trenched plot could be left fallow for a season, much might, of course, be done with it, but, failing this, double-digging seems the more rational course to pursue. Besides, those plots which the short-handed gardener finds time to deeply dig, are usually those upon which he relies for his best produce; he should certainly think twice before embarking on an enterprise

which seems likely to leave his soil in a worse state than before, especially if he has no ground to spare for experiment. Taking these things into consideration, I feel sure that I have misunderstood Mr. Beckett or, otherwise, that his advice was given subject to reservation. *Joseph E. Simms, Northwick Park Gardens, Blockley.*

HYBRID CYCLAMENS.—At the meeting of the Royal Horticultural Society, held on the 26th ult., a few flowers of some hybrid Cyclamens were shown by Mr. F. H. Chapman. These flowers were the result of crossing *C. ibericum* with *C. persicum*, and though not as yet of much merit horticulturally, they are of great interest, for it has long been supposed that *C. persicum* would not cross with any of the hardy species. It has often been attempted without success. In 1895, Sir W. Thistleton Dyer, in a communication to the Royal Society, gave an interesting sketch of the cultural evolution of the florist's Cyclamen. He chose this flower as being certainly of pure descent, in order to illustrate the view that evolution has proceeded by the accumulation of small "continuous" variations, rather than by sudden sports, or by natural hybridisation, and in the course of his remarks he said: "There is no question of hybridity; *Cyclamen latifolium* (*persicum*) has resisted every attempt to cross it with any other species." As he had consulted the leading growers, and relied especially for his facts on information supplied by Messrs. Suttons' hybridist, Mr. J. Martin, it may be assumed that they all concurred in this opinion. A year previous to seeing this, I fertilised a number of flowers of *C. persicum*, some with the pollen of *C. coum*, and some with that of *C. hederæ-folium*; but I got no seed at all from any of the crossed flowers. It may be noted that *C. ibericum* is one of the parents of the hybrid *C. Atkinsii*, the only one recorded in Johnson's *Gardener's Dictionary*; but other hybrids have been raised among the hardy species. Until they have been tested by further generations, and by repeating the original cross, caution is no doubt advisable with regard to the reputed hybrid parentage of these, as of any seedlings, even when every precaution has been taken. But Mr. Chapman is a careful and skilful hybridist, and, in the opinion of several experts who have seen the flowers, they are hybrids. Mr. Chapman has given me the following particulars of his crossings. He says: "I commenced three years ago, using *C. ibericum* roseum as the seed parent, and some large-flowered forms of *C. persicum* for pollen. The parent plants are in pans in a cold house, and the pollinating is repeated to a considerable extent. The first seedlings commenced to flower a year ago, and there was then no advance, but the colours varied. This year, a small proportion of the flowers are distinctly larger, but clumsy; the petals do not reflex neatly and regularly as in the seed parent, but flop about in an ungainly way. Those that resemble *C. ibericum* in other respects vary greatly as to colour." Though these seedlings of the first generation are not in themselves an improvement on existing forms, still, if they prove fertile, it may be hoped they will be the beginning of a race of hardy, large-flowered Cyclamens, with the same range of colour as now obtains in the florists' Cyclamen. It has yet to be proved whether the hybrids are hardy; but there is every reason, on Mendelian principles, to expect that, at any rate, they or some of their progeny will be. There is, likewise, the possibility of a correlation between size or colour and hardiness, so that only the smaller-flowered seedlings—those nearer *C. ibericum*—would be hardy, while the larger-flowered ones would retain the tenderness of *C. persicum*. But I think it is more probable that at least some among the seedlings will be found to combine the size and colour characters of the one parent with the hardiness of the other. Such a race would be a welcome addition to our early-flowering hardy border plants. *A. J. B.*

TRADE NOTICE.

MESSRS. NUTTING & SONS, LTD.

This private company has been formed with a capital of £20,000 in £1 shares to take over the business of seed merchants, carried on at 106, Southwark Street, S.E., as NUTTING & SONS, and to adopt an agreement with W. J. NUTTING, H. W. W. NUTTING, and H. R. NUTTING.

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 9.—The meeting on Tuesday last was the occasion of the annual general meeting of the Society, and, as is usual at this anniversary gathering, there was a fine display of exhibits of all kinds. No fewer than three Gold Medals were awarded—one for Orchids, another for cut flowers, and the other for a display of Apples. There was a good attendance of visitors. The only awards to novelties were conferred by the ORCHID COMMITTEE, which granted one First-class Certificate and two Awards of Merit; and, on re-consideration, the award granted to *Cypripedium* "Earl of Tankerville" (see p. 101, fig. 49) was raised to a First-class Certificate. The annual meeting took place at 3 o'clock. A short account of the proceedings is subjoined.

Floral Committee.

Present: W. Marshall, Esq. (chairman), and Messrs. C. T. Drury, Henry B. May, Jno. Green, T. W. Turner, G. Reuthe, W. J. Bean, J. T. Bennett Poë, J. Jennings, W. Howe, C. R. Fielder, R. Hooper Pearson, J. F. McLeod, R. W. Wallace, Chas. Dixon, Jas. Douglas, Arthur Turner, Chas. E. Pearson, Chas. E. Shea, W. Cuthbertson, F. Page Roberts, Herbert J. Cutbush, W. P. Thomson, E. H. Jenkins, M. J. James, George Paul, E. A. Bowles, and R. C. Notcutt.

An imposing display of Liliacs, Carnations and Daffodils was made by Mr. W. H. PAGE, Tangley Nursery, Hampton, for which a Gold Medal was awarded. The group was very large, and attracted much attention. There were bold stands, 5 or 6 feet in height, filled with choice blooms of *Lilium speciosum album*, *L. longiflorum*, and in the centre *L. speciosum*. Between these the exhibitor arranged vases of perpetual-blooming Carnations of varieties best suited for decorative purposes. The golden trumpets of the Daffodils showed in bold relief against the softer tints of the Carnations. The group was staged in an artistic manner.

Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea, arranged an exhibit of greenhouse flowering plants, with many decorative Ferns and other suitable greenery. A novelty was seen in *Nottonia Grantii* from Uganda. The stem and foliage are succulent, as in some *Euphorbias*; the inflorescence consists of a head of small, red flowers, like a miniature *Nerine* set in an involucre. Other plants in the group were *Jacobinia coccinea*, *Colens thyrsoideus*, *Eupatorium vernale*, *Lopezia miniata*, &c. (Silver-Gilt Banksian Medal.)

Messrs. WM. CUTBUSH & SON, Highgate, London, N., displayed a very handsome exhibit of the perpetual-blooming Carnation, tall vases filled with large bouquets of such beautiful varieties as White Perfection, Fair Maid (pink), Victory (scarlet), Mrs. Burnet (salmon), with shorter receptacles containing a great number of other kinds, including the new Rose Doré, made a pleasing group. Messrs. CUTBUSH also showed a hybrid between the perpetual-blooming and the *Souvenir de la Malmaison* types named Lady Millar. The habit more nearly resembles the *Souvenir de la Malmaison* variety: the bloom is blush colour passing to a bright rose at the edge. The same firm also exhibited forced flowering shrubs and a rock-garden planted with many early-blooming Irises, Crocuses, Tulips, Hellebores, and other early-flowering plants. (Silver-Gilt Banksian Medal.)

Mr. H. BURNETT, Guernsey, showed beautifully-developed blooms of the perpetual-flowering Carnation, the colouring in the flowers being developed to a remarkable degree. The varieties were numerous and represented the best of those in commerce. (Silver Flora Medal.)

Messrs. HUGH LOW & CO., Bush Hill Park, Enfield, showed plants of the rose-coloured variety of *Daphne indica*, also a batch of *Cyclamen latifolium*, in which the Salmon King variety showed to advantage. The group also contained varieties with white, red, rose, crimson and other shades. On another table this firm made a very large exhibit of perpetual-flowering Carnations. (Silver Banksian Medal.)

Messrs. H. B. MAY & SONS, The Nurseries, Upper Edmonton, showed an assortment of

greenhouse plants of both flowering and foliage types. In the centre of the display a batch of colouring was afforded by a group of *Rhododendron indicum*. There was also a batch of *Primula obconica* with very deeply-coloured flowers, and another of *Cyclamen latifolium*. Ferns of the elegant *Nephrolepis exaltata* Amerphofii, *N. e. Todeaoides*, *Adiantum gracillimum*, *Davallia epiphylla*, *Platyterium allicorne*, and other decorative varieties were intermingled in the group. (Silver Banksian Medal.)

Messrs. R. & G. CUTHBERT, Southgate Nurseries, exhibited a large floor group consisting mainly of forced plants of Lilac, Magnolia in variety as bushes and tall standard trees, *Forsythia suspensa*, Japanese Acers, *Prunus* species, *Pyrus floribunda* and *Azalea sinensis*. (Silver-Gilt Flora Medal.)

Messrs. SUTTON & SONS, Reading, showed an exhibit of *Primula sinensis* that occupied the whole of one of the longest tables. The plants were a very compact-growing type, with stout foliage and inflorescences carrying blooms of the largest size. They represented a mixed strain, in which were seen all the gradations of colouring formed in this useful winter-blooming plant; especially fine were those of crimson, rose, magenta and salmon shades. The exhibit was set forth in an attractive style, small Ferns, Palms and *Isolepis gracilis* being employed for relief. (Silver Flora Medal.)

Messrs. H. CANNELL & SONS, Swanley, Kent, also exhibited a number of *Primula sinensis* in pots. The flowers were in most instances of fine quality and large size. The best white varieties were Moonlight and White Perfection; a fine outstanding pink-flowered variety was Pink Perfection. Other good varieties were Miss Caroline Ward (pink), Mr. Herbert Bennett (pale purple), Mr. J. A. Gardiner (a symmetrical flower of a bright pink tint), and Mr. Raphael (deep crimson). (Silver Flora Medal.)

Messrs. ROBERT SYDENHAM, LTD., showed Lily of the Valley in very fine condition, developed from retarded crowns. The pots in which these had been grown were without drainage material but contained moss-fibre.

Messrs. R. H. BATH, LTD., Wisbech, exhibited bulbous plants—Crocuses and Daffodils—grown in bowls containing moss-fibre.

Messrs. GEO. MOUNT & SONS, LTD., The Nurseries, Canterbury, showed a number of cut blooms of Roses, the varieties being Joseph Lowe, a new Hybrid Tea; Mr. W. J. Grant and Richmond. (Silver Banksian Medal.)

Mr. W. SEWARD, The Beeches, Hanwell, Middlesex, exhibited a large collection of *Cyclamen latifolium*. The inflorescences had a wide range of colour, whilst the leafage was dwarf and compact. The plants carried masses of blooms, and were capital examples of good culture. (Silver-gilt Banksian Medal.)

Mr. L. R. RUSSELL, Richmond Nurseries, Richmond, Surrey, showed a large number of plants of *Citrus japonica* as bushes beautifully fruited and their fruits approaching maturity. Mr. RUSSELL was likewise an exhibitor of a large number of the Witch Hazel *Hamamelis arborea*. (Silver Banksian Medal.)

Messrs. J. PEED & SON, West Norwood Nurseries, showed a rockery of rough stones planted in a natural manner with various species of Ferns, Sedums, bulbous plants, hardy species of *Cyclamen*, Narcissus, &c., intermixed with *Skimmias*, tree Ivies, *Bambusas*, *Ledums*, *Azaleas*, and *Cacti*. (Silver Banksian Medal.)

Mr. HERBERT CHAPMAN, of Rye, again showed his varieties of hybrid *Freesias*.

Messrs. T. S. WARE & SONS, Feltham, Middlesex, showed an extensive collection of *Primula obconica*. The plants had been selected for improvements in colour, size and form of the flowers, in height of the stalk and size of the trusses. (Silver Banksian Medal.)

Messrs. G. & A. CLARK, LTD., The Nurseries, Dover, arranged on the floor in a realistic manner a rock-garden exhibit. Separating the larger "bays" were grass paths and at appropriate spots, shrubs were utilised. The rockery was furnished with seasonable flowering plants. (Silver Banksian Medal.)

Mr. GEO. REUTHE, Keston, Kent, showed specialities in hardy-flowering plants, also Himalayan species of *Rhododendron*, *Daph-*

phyllum macropodum, *Lomatia pinnatifolia*, *Guevina avellana*, *Berberis japonica*, *Hamamelis arborea* var. *Zuccariniana*, *Berberis nepalensis*, *B. japonica* var. *Bealii* (with fragrant flowers), *B. dulcis nana*, and other interesting shrubs. (Bronze Flora Medal.)

Messrs. BARR & SONS, King Street, Covent Garden, London, W.C., showed early-flowering hardy plants, including many tuberous and bulbous subjects. Amongst them we noticed *Iris reticulata*, *I. Danfordia*, a very dwarf species with intense yellow-coloured blooms; *Crocuses* in variety; *Snowdrops*, *Lachenalia*s, *Scillas*, *Freesias*, *Narcissi*, *Anemones*, *Adonis amurensis* and *Cyclamen Coum*.

Messrs. R. WALLACE & Co., Kilnfield Nurseries, Colchester, showed species of *Crocus*, viz., *C. biflorus*, *C. Sieberi*, *C. Weldenii*, and *C. Imperati*.

Miss ALICE SMITH, Barnham, Bognor, made an interesting show of hardy *Primulas* and other flowers that had been grown in cold frames.

A small rock-garden exhibit was arranged by the Misses HOPKINS, Mere Gardens, Shepperton-on-Thames, with *Primroses*, *Daisies*, *Hellebores*, *Cyclamen Coum*, *Lithospermum prostratum*, &c.

Messrs. JOSEPH CHEAL & SONS, Crawley, displayed boxes of Alpine plants, also dwarf shrubs, including *Conifers*, suitable for the rock garden.

Plants of *Sarracenia purpurea* from the open garden were shown by Sir EDMUND LODER, Bart., Leonardslee, Horsham (gr. Mr. W. A. Cook).

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair); and Messrs. Jas. O'Brien (hon. sec.), Harry J. Veitch, de B. Crawshaw, Gurney Wilson, Norman C. Cookson, W. Bolton, H. Little, W. Boxall, J. Forster Alcock, Stuart Low, F. J. Hanbury, F. M. Ogilvie, G. F. Moore, J. Charlesworth, A. A. McBean, W. Cobb, W. P. Bound, W. H. Hatcher, H. Ballantine, H. A. Tracy, A. Dye, C. H. Curtis, H. G. Alexander, W. H. White, C. J. Lucas, and J. Wilson Potter.

Messrs. CHARLESWORTH & Co., Haywards Heath, were awarded the Society's Gold Medal for a display of Orchids, the middle portion of the group being composed of about 100 grandly-flowered specimens of *Phalaenopsis Schilleriana* literally laden with finely-developed, rose-pink flowers, borne on plants in the best possible condition of culture. Probably there has never before been staged at an exhibition such a magnificent display of this *Phalaenopsis*. In the centre was a selection of rare kinds, including the pure white *Phalaenopsis Schilleriana vestalis*, *P. intermedia Portei*, *P. Stuartiana grandis*, and others. At one end of the exhibit was a selection of *Laelio-Cattleya callistoglossa* and other *Laelio-Cattleyas*, a batch of the pretty *Cattleya Enid*, the scarlet *Renanthera Imschootiana*, the front portion of this group having an edging of the dwarf yellow *Oncidium cheiroporum*. At the other end was an excellent and varied display of hybrid *Odontoglossums*, also *Odontiodas*, *Brasso-Cattleya Queen Alexandra*, *Miltonia Hyeana*, &c. The whole display was edged with specimens of the brilliant scarlet-flowered *Sophranitis grandiflora*.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate (gr. Mr. Collier), exhibited a select group of rare and pretty species, including *Dendrobium macrophyllum*, the elegant white *D. aemulum*, *D. Kingianum album*, *Masdevallia cucullata*, with seven blackish-purple coloured flowers, *M. chimera*, and its variety *area*, *Restrepia striata*, two varieties of *Pleione yunnanensis*, and *Pleurothallis astrophora*, a very singular little species. Of hybrids there was a very fine specimen of *Dendrobium* raised at Gatton with large and beautifully-formed flowers; also *Phaio-Calanthe Colmanii*.

Col. G. L. HOLFORD, C.I.E., C.V.O., Westobirt (gr. Mr. H. G. Alexander), showed a noble plant of *Odontoglossum crispum-Harryanum* with four immense branched spikes bearing altogether 125 flowers, the largest spike having 61 blooms. The Lindley Medal was awarded to Mr. Alexander, the cultivator, for the extraordinary good culture seen in the specimen. The same exhibitor showed *Laelio-Cattleya Gold-*

finch superba (see Awards); *L.-C. Goldfinch* var. *Argus*, with bright chrome-yellow flowers with Indian-red coloured lip veined with gold; the beautiful *Cymbidium Holfordianum* with two flower-spikes; and *Cypripedium Helen II.* Holford's variety, a large, distinctly-spotted flower.

Sir TREVOR LAWRENCE, Bart., K.C.V.O. (gr. Mr. W. H. White), showed a fine branched inflorescence of the rare Mexican *Epidendrum erubescens*, which had been in bloom for many weeks, but was still perfect and with some flower-buds unexpanded.

Messrs. J. & A. A. McBEAN, Cooksbridge, were awarded a Silver Flora Medal for an elegant group of splendidly-grown white varieties of *Laelia anceps*, the flowers being large and finely developed on very strong spikes.

NORMAN C. COOKSON, Esq., Oakwood, Wylam (gr. Mr. H. J. Chapman), received a Silver-gilt Flora Medal for a remarkable group containing many handsomely-blotched *Odontoglossums*, for which this exhibitor's collection is noted. Amongst unnamed varieties was a large-flowered *Odontoglossum crispum* with the inner parts of the segments of a deep reddish-purple, the like of which had not been shown before. Other choice plants noted were *O. crispum Mossiae*, with fine white flowers densely spotted with purple; varieties of *O. ardentissimum*; the new *Brasso-Laelio-Cattleya Cooksonii*, with yellow flowers heavily tinted with coppery-red, and which was obtained by crossing *Brasso-Laelia Gratrixiae* and *Cattleya Dowiana*; *Cypripedium Chapmanii* Oakwood variety, and others.

Messrs. CYPHER & SONS, Cheltenham, secured a Silver Flora Medal for an extensive group of choice *Cypripediums* which included *C. Mrs. Wm. Mostyn*, *C. Miss Louisa Fowler*, *C. Vandike*, and varieties of *C. aureum*. With these was a central arrangement of *Calanthe Bryan*, also hybrids of *Odontoglossum Pescatorei*, *Lycaste Skinneri*, *Angraecum eburneum*, *Vanda Amesiana*, and a bright display of the scarlet-flowered *Sophranitis*.

Messrs. HUGH LOW & Co., Bush Hill Park, Enfield, obtained a Silver Flora Medal for a varied group, in which were *Cypripedium aureum Surprise*, *C. aureum virginale*, with eight flowers; *Saccolabium Harrisonianum*, *Dendrobium nobile virginale*, *D. speciosum*, *D. Wiganiae xanthochilum*, *Bulbophyllum cupreum*, and well-flowered plants of *Sophranitis grandiflora*.

Messrs. J. W. MOORE, LTD., Rawdon, Leeds, showed an interesting group in which *Cypripediums* were specially good. Amongst them were the beautiful, dark-tinted *C. Mrs. Francis Wellesley*, the fine *C. Tracyanum*, and a new form of *C. Harrisonianum*, or a closely-allied hybrid, with very dark and finely-formed flower; *C. Rothschildianum Dulcote* variety, *C. aureum compactum*, *C. a. Hyeanum*, *C. Sallieri* varieties, and *C. Chapmanii*. (Silver Banksian Medal.)

Messrs. JAS. VEITCH & SONS, LTD., Chelsea, were awarded a Silver Banksian Medal for an effective arrangement of choice *Odontoglossums* and hybrid *Cypripediums*.

M. MERTENS, Ghent, staged a small group of hybrid *Odontoglossums*.

Mr. F. McBEAN, Plumpton, showed varieties of *Cattleya Trianae* and *Odontoglossum crispum*. The *Odontoglossums* included a very pretty blotched variety, the markings being on a clear white ground.

The Duke of MARLBOROUGH, Blenheim Palace (gr. Mr. Hunter), sent *Cattleya Trianae* "Blenheim variety," a large and finely-coloured flower.

J. FORSTER ALCOCK, Esq., Exhims, Northchurch, showed *Cypripedium Helen II.* Exhims variety, *C. Leoniae Gratrix*'s variety, and *C. Leander* Exhims variety. (See Awards.)

W. BOLTON, Esq., Wilderspool, Warrington, sent *Cypripedium Iris magnificum* (Chamberlainianum magnificum × *Maudiae*), a very distinct flower, much larger than *C. Chamberlainianum*. The round dorsal sepal is white with a green base and has a dark purple centre with lines of the same colour. The lip is large and densely spotted with rose. The petals are broad but with some undulation as in *C. Chamberlainianum*, yellowish and veined with dark purple.

Sir W. MARRIOTT, Down House, Blandford, sent cut spikes of *Sophranitis-Cattleya Warn-*

hamiensis var. Cerise, and Sophro-Lælia Marriottiana.

Messrs. ARMSTRONG & BROWN, Tunbridge Wells, showed a notable example of *Cypripedium Euryades* "New Hall Hey variety."

Messrs. DUCHESNE, Watermael, Belgium, sent *Cattleya Schröderæ* The Giant with many large flowers of a uniform pale lilac tint, and of good shape.

R. G. THWAITES, Esq., Chessington, Streatham (gr. Mr. Black), sent his form of *Odontioda Bradshawia*, which has slightly broader segments and different red markings to the original plant of this raising.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontoglossum ardentissimum "Phæbe," from NORMAN C. COOKSON, Esq., Oakwood, Wylam (gr. Mr. H. J. Chapman). A very beautiful form with new features in this variable hybrid, the flowers being of a deep reddish claret colour on the inner halves of the segments: the tips and margin pure white. The lip is also finely developed and distinctly marked.

AWARDS OF MERIT.

Lælio-Cattleya Goldfinch superba (L.-C. *Warnhamiensis* × C. *Dowiana aurea*), from Col. G. L. HOLFORD, C.I.E., C.V.O., Westonbirt (gr. Mr. H. J. Chapman). A charming and profuse-flowering hybrid with bright yellow sepals and petals, and deep crimson-purple lip with orange lines at the base.

Cypripedium Leander "Exhims variety" (*villosum* × *Lecanum* variety), from J. FORSTER ALCOCK, Esq., Exhims, Northchurch. A handsome flower, with a large circular, white dorsal sepal that is blotched with deep rose-purple. The broad petals and lip are of a yellow shade tinged with light purple.

Fruit and Vegetable Committee.

Present: G. Bunyard, Esq., V.M.H. (Chairman); and Messrs. J. Cheal, W. Bates, G. Woodward, A. Dean, A. Beckett, A. R. Allan, H. Parr, G. Hobday, H. Hooper, J. Davis, W. Crump, C. Foster, J. Jacques, G. Kelf, J. Lyne, J. McIndoe, W. Poupert, H. S. Rivers, O. Thomas, C. G. A. Nix, P. D. Tuckett and G. Reynolds.

Prior to the commencement of business, it was decided that the secretary should send to Mr. G. Wythes, V.M.H., sympathy and condolence on the death of Mrs. Wythes.

The competitive classes in Late Pears brought four single dishes only, no entries being seen in the other classes. Lord FOLEY, Ruxley Lodge, Esher (gr. Mr. Gardiner), won the 1st prize with fruits of Glou Morceau; 2nd the Dowager Countess of ILCHESTER, Holland House, Kensington (gr. Mr. C. Dixon), with fair samples of Easter Beurré. Other varieties shown were Josephine des Malines and Bergamotte d'Espéren.

A few seedling Apples were presented, but none merited an award. One sample shown as new was Annie Elizabeth.

Mr. J. R. ALLAN, Osberton, Worksop, sent six good pods of *Vanilla planifolia*, for which a Cultural Commendation was awarded.

Messrs. G. BUNYARD & Co., Maidstone, staged a superb collection of 150 dishes and varieties of Apples. The whole collection presented an object-lesson as to the wealth of fine varieties suitable for late keeping, and the effectiveness of such storing as is adopted in the Allington Nursery. Amongst dessert varieties were Cox's Orange Pippin, Cornish Aromatic, Brownlees' Kusset, Mother Apple, Adams' Pearmain, Baumann's Reinette, Dutch Mignonne, King's Acre Pippin, Lord Hindlip, Scarlet Nonpareil, Braddick's Nonpareil, and Barnack Beauty. Of kitchen Apples the following were seen in excellent samples:—Smart's Prince Arthur, Golden Noble, Annie Elizabeth, Bismarck, Lane's Prince Albert, New Hawthornden, Alfriston, Lord Derby, Newton Wonder, Belle de Pontoise, Bramley's Seedling, and Hornead Pearmain. (Gold Medal.)

Messrs. JAS. CARTER & Co., High Holborn, staged a very fine collection of some 160 dishes of Potatos. Many white-skinned Potatos differ very little in the tuber, and thus in a large collection such as that exhibited by Messrs. CARTER, many necessarily bear a close resemblance to each other. That is par-

ticularly the case with the Up-to-Date strain. The chief test of distinctness is necessarily found in their habit of growth, season of cropping, &c. Amongst the white-skinned varieties were noticed Abundance, Factor, Maincrop, Dalmeny Radium, and Langholme Model; whilst of coloured varieties we may instance Mr. Breese, King Edward VII., Sunrise, Purple Perfection, Queen of the Veldt, Ruby Queen, Vicar of Laleham, and Sunrise as notable kinds. (Silver Knightian Medal.)

Messrs. CARTER, PAGE & Co., London Wall, sent a dozen punnets of very excellent and capitally-blanched Seakale of the old variety; also roots trimmed ready for forcing, and a few root cuttings. (Cultural Commendation of Horticulture.)

Mr. C. FOSTER, assistant director of Horticulture, University College Gardens, Reading exhibited a collection of forced vegetables of high merit, including capital Seakale, Linnaeus and Albert Rhubarbs, Witloof Chicory, Eclipse Tomatos, Golden Frame and Paris Frame Cabbage Lettuces, and some roots and crowns of Asparagus, showing one, two, three, four and five-years-old specimens. The Asparagus formed a valuable object-lesson in its development. (Silver Banksian Medal.)

THE ANNUAL MEETING.

The one hundred and fifth Annual General Meeting of Fellows took place in the Lecture Room at three o'clock. The President, Sir Trevor Lawrence, Bart., occupied the chair, and he was supported by the members of the Council and a representative gathering of the Fellows. The first business was the submitting of 72 names for Fellowship, and these were elected.

Sir Trevor Lawrence, in moving the adoption of the report, stated that there could be few Fellows who were not fully satisfied with the good work the Society had done and is continuing to do. It was a matter of satisfaction to the Council that the School of Horticulture at Wisley had attained to so high a position of efficiency in the short time it had been established. The report by the Government inspector was very gratifying. The scientific director had conducted some important experiments, including some with the nitro-bacterine on leguminous crops. Sir Trevor Lawrence stated he had conducted a small experiment of a similar nature with Sweet Peas, and his results were similar to those obtained by Mr. Chittenden.

The President referred to the excursion of the Council and committees to Windsor, and he had written to Sir Dighton Probyn expressing the admiration of himself and the other members of the party at the excellent manner in which the gardens were maintained in all departments, reflecting credit on the head gardener, Mr. MacKellar. The number of visitors to the gardens at Wisley had shown a great increase, and he referred to the excellent labours of the superintendent, Mr. Wright, and the garden staff generally.

The Society had sent deputations to important provincial flower-shows, and Sir Trevor Lawrence referred especially to the exhibition at York, which he declared was one of the finest shows he had attended.

The educational side of the Society, as carried on in the numerous examinations held under its auspices, had great value and importance. He had pleasure in announcing that the Indian Government had requested the Society to undertake an examination in India. The members were to be congratulated on the fact that Professor Hugo de Vries had consented to deliver two lectures in connection with the Masters Memorial. Referring to the late Mr. George Nicholson, it had been decided to perpetuate his memory by awarding annual prizes in connection with the students' work at Wisley. The number of Fellows was nearly 11,000, which was the largest membership of any Royal society in the United Kingdom. The Council desired to express their sense of gratitude to the secretary and other members of the permanent staff. Sir Trevor Lawrence next presented the Veitch Memorial and Victorian Medals to the Rev. W. Wilks, M.A., Mr. William Marshall, V.M.H., Sir Jeremiah Colman, Bart., and Mr. Chas. Ross respectively. The speaker next referred to the indebtedness of the Society to Baron Schröder, and it was with pleasure he announced that Baron Schröder

had allowed them to copy Professor Sir Hubert von Herkomer's portrait of himself to hang in the Hall. The President concluded by thanking the members of the committees and those who had read papers at the afternoon meetings.

The Hon. Treasurer, Mr. Gurney Fowler, in a very lucid manner referred to the financial position of the Society, and stated that whilst the receipts had increased by £11,000, the expenditure had exceeded those of the previous year by only £11.

Mr. H. J. Elwes, F.R.S., regretted that no remark on the Lindley Library was contained in the report. The sum of £29 expended during the year on the library was totally inadequate.

The Rev. J. Jacob supported Mr. Elwes in his appeal for the library, and suggested that the Council should apportion a sum—say, £1,000—to purchase books as occasion arose.

The President replied that the library was the property of the Lindley Library Trustees, and the Society was only in the position of custodians. He deprecated any sum being earmarked for the library.

Mr. J. McIndoe expressed regret that the Society undertook such work as the inspection of gardens, &c., in competition with those Fellows who were professionally engaged in this work as a means of livelihood.

LINNEAN SOCIETY.

JANUARY 21.—At a meeting held on this date Dr. Otto Stapf, F.R.S., Sec.L.S., exhibited male and female specimens of *Plagianthus Helmsii*, F. Muell. and Tate, and demonstrated with the aid of lantern-slides their peculiar leaf and floral structure, pointing out, at the same time, that it appears more natural to treat this species together with *Plagianthus microphyllus* and *P. squamatus* as members of a distinct genus, for which Mueller's name *Halothamnus*, originally applied to *P. microphyllus*, would have to stand.

The paper by Mr. A. W. Hill, M.A., F.L.S., entitled "The Genus *Nototriche*, Turcz.," was illustrated by specimens and lantern-slides. The genus *Nototriche* (Malvaceæ) includes some 70 species formerly placed in the genus *Malvastrum*, A. Gray. It is distinguished especially by the absence of an involucre and by the adnation of the peduncles and stipules to the petioles. The species are determined very largely by the character of the leaf lamina, which may be palmatifid or palmatisect, pinnatifid, bipinnatifid, or variously dissected and lobed. The shape of the stipules and the nature of the stellate hairs are also of value for taxonomic purposes, each species being found to have a definite and characteristic tomentum. Two types of flower are found in the genus: in the one case the petals are almost free, and are fused with the staminal column only at the base; in the other, including the majority of the species, there is a definite tube formed by the fusion of the petals with the staminal tube. At the base of each calyx-segment there is a glandular nectary. The carpels are beaked and dehiscent, and are often provided with long, silky, stellate hairs. In the paper several new species are defined, and the descriptions of those already known have been amplified and rewritten. The genus ranges from the north of Ecuador to the Cordillera of Santiago in Chili, some species being found in the Cordillera of Western Argentina. Only two annual species are known. The vertical range of this genus lies between 3,900 and 5,700 m. in Tropical South America, and is about 2,500 m. in Temperate South America. The highest recorded species are *N. flabellata* and *Friesii*, which have been found between 5,600 and 5,700 m.

The second paper, on the "Longitudinal Symmetry of Centrospermae," by Dr. Percy Groom, F.L.S., was also illustrated by curves shown on the screen. By means of measurements of many stems—primary, secondary, tertiary, and quaternary—of one species, *Atriplex rosea*, and of other *Chenopodiaceae* genera, namely, *Salsola* and *Chenopodium*, additional evidence is given that the internode-curve of alternate-leaved *Chenopodiaceae* is always of a zigzag nature, and can be analysed into two sub-curves. Of these, one represents the displacements of the leaves from the originally opposite arrangement at the successive nodes, and the other indicates the lengths of the modern representatives of the original internodes. In order to test whether or

no opposite phyllotaxis was the original type of arrangement throughout the Centrospermæ, and alternate phyllotaxis derivative therefrom by relative displacement of the leaves, measurements were made of the stems of various Caryophyllaceæ, Aizoaceæ, Amarantaceæ, Phytolaccaceæ, and Portulacaceæ. It is found that, throughout the cohort, in the case of opposite-leaved species, the internode-curves are regular or tend to be so, whereas, in alternate-leaved species, the internode-curves are invariably irregular. The irregular zigzag internode-curves of the latter species when analysed into two sub-curves, generally yield two more or less regular or consistent curves, which largely conform with those of corresponding stems belonging to more typical herbs.

The irregularities of the internode-curves of the alternate-leaved species are different, often utterly so, from those of the opposite-leaved species: the irregularities of the former are sudden, recurrent, and often very ample, whereas those of the latter are more gradual, less numerous, and probably largely due to the influence of external variations, which are not periodic.

LEEDS PROFESSIONAL GARDENERS'.

This gardeners' benefit society is a branch of the Grand United Order of Odd-Fellows. Gardeners between 18 and 40 years of age, residing in any part of the United Kingdom, are eligible for membership, but prospective members must have been engaged for at least three years successively in some branch of horticulture.

The forty-second annual report shows that 16 members have received sick benefits during the past year, the total amount paid to them being £71 0s. 10d. £20 has been paid in funeral allowances, making the total amount paid out of the benefit fund £91 0s. 10d. This fund now amounts to £1,564 13s. 11d., an increase during the year of £82 2s.

The amount of the distress fund is £3 3s. 4d., an increase of £1 6s. 2d., making a total increase in the whole of the funds or total saving for the year, of £83 8s. 2d.

Fifteen new members have been enrolled, two have died, and three have resigned. The membership totals 147, an increase of 10.

At the annual dinner, held on February 12, the Grand Master, Mr. George Bumby, on behalf of the members, presented to Mr. James Inman a framed emblem of the order as an appreciation of the long and valuable services he has rendered to the Lodge.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JANUARY 21.—There was a good display of plants at the meeting held on this date.

In my last report I omitted to include a notice of a fine group of *Cypripediums* shown by O. O. WRIGLEY, Esq., Bury (gr. Mr. Rogers).

E. ROGERSON, Esq., Didsbury (gr. Mr. Price), received Awards of Merit for *Cypripedium* × *Lilie* Mayall, and *Odontoglossum* × *Lilie* Mayall.

J. H. CRAVEN, Esq., Keighley (gr. Mr. Corney), exhibited *Cypripedium* × *Ville-actæus*, to which an Award of Merit was given.

H. J. BROMILOW, Esq., Rainhill (gr. Mr. Morgan), exhibited a group of *Cypripediums*, to which a Silver-gilt Medal was awarded. The plants in the group were mostly well-known hybrids.

Mr. JOHN ROBSON, Altrincham, was awarded a First-class Certificate for *Odontoglossum* × *Wardiae*, a fine, bold, richly-coloured flower.

N. GALLOWAY, Esq., Great Horton, Bradford, was awarded a Bronze Medal for a group of *Cypripediums*, including *C.* × *Charlesianum*, *C.* × *Adrastus* var. *Marie*, and *C.* × *Lucienianum* var. *superbum*.

Mr. W. SHACKLETON was awarded a Bronze Medal for a group of *Cypripediums*.

A. WARBURTON, Esq., Haslingden, exhibited a group of *Cypripediums*; two new varieties of (*C.* × *Euryades*, viz., *C.* × *Euryades* var. *Tantalus* and *C.* × *E.* var. *Jacquard*, received Awards of Merit. (Silver Medal.)

C. PARKER, Esq., Preston, was awarded a Bronze Medal for a small exhibit of *Cypripediums*, which included some well-known forms of *C. insigne*.

J. MCCARTNEY, Esq., Bolton (gr. Mr. Holmes), gained a Silver Medal for a group of *Lælias* and *Cattleyas*, amongst which were some well-flowered varieties of *Lælia anceps*. *Cattleya Trianae* var. *Donald* received an Award of Merit.

Z. A. WARD, Esq., Northenden (gr. Mr. Weatherby), staged a group of *Odontoglossums*, including the pure white *O.* × *ardentissimum* and several interesting hybrids. (Silver-gilt Medal.)

H. ARTHUR, Esq., Blackburn, was awarded a Bronze Medal for a small miscellaneous group of Orchids.

Messrs. JAMES CYPHER & SONS, Cheltenham, showed some noteworthy *Cypripediums*, *Lælias*, and *Cattleyas* in variety.

R. ASHWORTH, Esq., Newchurch (gr. Mr. Fletcher), was awarded a Silver Medal for a miscellaneous display, in which were noticed several *Odontoglossums* of good quality.

Messrs. HUGH LOW & CO., Enfield, exhibited several choice varieties of *Cattleya Trianae*. P. W.

ABERDEEN CHRYSANTHEMUM.

JANUARY 30.—The annual general meeting of this society was held in the Christian Institute, Aberdeen, on this date. Mr. Andrew Davidson, chairman of directors, presided. The annual report stated that on the second day of the November exhibition unfavourable weather was experienced, and this was mainly responsible for a loss of £29 5s. 10d. The balance-sheet of the society shows £300 5s. 6d. assets: the expenditure for the year has amounted to £204 2s. 10d., leaving a balance in favour of the society of £96 2s. 8d. Hope was expressed that the members would endeavour to enlist the interest of their friends in the society, and thereby increase the membership and strengthen the financial position. The officers were elected, Mr. M. H. Sinclair being again appointed secretary.

SCOTTISH HORTICULTURAL.

FEBRUARY 2.—The monthly meeting of this association was held at 5, St. Andrew Square, Edinburgh, on this date. The president, Mr. Whytock, occupied the chair, and he gave a short opening address to a large gathering of the members. Mr. Whytock dealt chiefly with the position of the private professional gardener as it is affected by the market grower of to-day. Flowers and fruits can be purchased at very cheap prices, and at all seasons of the year, but a private garden properly equipped would yield produce of better quality and at a cheaper rate than could be procured by purchase. It was to be regretted that the flower shows in Edinburgh, which for many years past had been the most enjoyable meetings of the year, had undergone changes in their character, for there was a demand on the part of the public for other popular attractions in addition to the horticultural displays.

Mr. E. L. Brown displayed a series of photographs of flowers, fruits, &c., in their natural colours, obtained by means of the Lumière plates. Mr. Brown pointed out the advantage of these plates over ordinary ones.

Flower-spikes of *Moschosma riparium* were exhibited by Mr. W. T. STAWARD, Belford Hall, Northumberland, and Mr. JAS. L. SCARLETT, Sweethope, Musselburgh, exhibited and explained the "Symphonia" plant sprayer.

Twenty-five new members were elected. The paper at the meeting on March 2 will be by Mr. John Hunter, F.I.C., County Analyst, Edinburgh, on "Soil Science."

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

FEBRUARY 8.—The monthly committee meeting of the above society was held at the Royal Horticultural Hall, Vincent Square, Westminster, on this date. Mr. Chas. H. Curtis occupied the chair. Eleven new members were elected. Two members were allowed to transfer from the lower to the higher scale. The annual meeting will be held at the above-named Hall on Monday, March 8 next, at 8 p.m.

NATIONAL FRUIT GROWERS' FEDERATION.

(ANNUAL MEETING.)

FEBRUARY 8.—The annual meeting of the National Fruit Growers' Federation was held on this date at the Royal Horticultural Hall, Westminster. Col. C. E. Warde, M.P., presided. The annual report showed that the members number about 400. The Council have secured the services of Mr. E. S. Salmon and Mr. F. V. Theobald, of the South-Eastern Agricultural College, Wye, as hon. advisors in mycology and entomology. The Council will appoint a member on the "John Innes Trust." Matters the society have considered include the increase of "black scab" in Potatoes, the rating question, and late delivery in the markets by the railway companies. In consequence of the Council's representation, the Board of Agriculture has removed the restrictions prohibiting the importation of Black Currant trees.

The report was adopted, and officers were re-elected. Mr. George Bunyard, V.M.H., and Mr. F. S. W. Cornwallis were appointed vice-presidents.

At the conclusion of the ordinary business various papers were read, including one by Mr. C. S. Martin, manager of the Toddington Orchard Co., Winchcombe, on "The Sale of Fruit and Vegetables by Weight." The most important difference of opinion arose over the standard weight of the half sieve for Plums, Cherries and Gooseberries. It was the opinion of the meeting that the weight should be 24 lbs. in the case of these fruits. In the case of light fruit the sieves should be uniformly filled and the net weight declared. As regards Strawberries, the opinion prevailed that the gallon basket should contain 5 lbs. and the chip basket 6 lbs.

Mr. A. D. Hall, Rothamsted, gave an address on the soils of the fruit-growing areas in Kent, Surrey and Sussex.

At the afternoon session a paper by Mr. A. Griffith was read on the committee's recommendations on rating and taxation.

HEMEL HEMPSTEAD HORTICULTURAL.

At the annual meeting of this society held recently, it was decided to hold a special Rose and Sweet Pea show on July 7, and a general flower, fruit, vegetable and farm produce show on August 18—this being the Jubilee year of the society. The subscriptions for 1908 show an increase of £22 over those of the previous years. The hon. secretary, Mr. J. W. Burrows, of Standish Gardens, stated that the society has a balance of £24 on the year's working. Mr. Burrows was again elected hon. secretary and collector, and he was given an honorarium of £10 10s. J. R. Drake, Esq., of Gadebridge Park, was elected president for 1909.

Obituary.

GEORGE A. DICKSON.—The announcement of the death of Mr. Geo. Dickson, head of the firm of Messrs. Dicksons, Nurserymen, Chester, will be received with regret. Deceased had been ailing for some time past, but was at business in the early part of last week; later, however, he was taken ill with an attack of pneumonia, and passed away at his home, Springfield, Newton, Chester, on Saturday, February 6. The late Mr. Dickson was born at Chester 74 years ago. He entered the Chester City Council in 1879, was elected mayor in the year 1886, and alderman in 1896. He retired in 1904. Mr. Dickson was one of a number of citizens who, for their long public services, were granted the honorary freedom of the city on the occasion of the Diamond Jubilee celebration. He was also a city and county magistrate. When the Royal Agricultural Show was held at Chester in 1893, Mr. Dickson acted as hon. secretary. Deceased leaves a widow and family to mourn his loss.

MARKETS.

COVENT GARDEN, February 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 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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers such as Acacia (Mimosas), Anemone fulgens, Azalea, Bouvardia, Calla aethiopica, Camellias, Carnations, Chrysanthemums, Cypripediums, Daffodils, Dendrobium nobile, Eucharis grandiflora, Freesias, Gardenias, Hyacinths, Lilies, Lilium auratum, and others with their respective prices.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage plants such as Adiantum cuneatum, Agrostis, Asparagus plumosus, Berberis, Croton leaves, Cycas leaves, Daffodil foliage, Ferns, and others with their respective prices.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various potted plants such as Ampelopsis Veitchii, Aralia Sieboldii, Begonia Gloire de Lorraine, Cinerarias, Clematis, Cocos Weddelliana, and others with their respective prices.

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

Continuation of the Plants in Pots table, listing items like Hyacinths, Isoplepis, Kentia Belmoreana, Latania borbonica, and Lilium longiflorum.

Fruit: Average Wholesale Prices.

Table listing various fruits such as Apples (Foreign and Domestic), Bananas, Cape fruit, Cranberries, Custard Apples, Dates, Figs, Grape Fruit, Grapes, Lemons, Limes, Mandarins, Nuts, Oranges, Peaches, Pears, Pineapples, Tangerines, and others with their respective prices.

Vegetables: Average Wholesale Prices.

Table listing various vegetables such as Artichokes, Asparagus, Beetroot, Brussel Sprouts, Cabbages, Cardoon, Carrots, Cauliflowers, Celery, Celeriac, Chicory, Cucumbers, Endive, Horseradish, Kale, Leeks, Lettuce, Mint, Mushrooms, Mustard and Cress, Onions, Parsnips, Peas, Potatoes, Radishes, Rhubarb, Salsafy, Seakale, Spinach, Savoys, Turnips, Tomatoes, and Watercress.

Table listing various types of Potatoes such as Kents, Snowdrop, Sbarpe's Express, Epicure, Up-to-Date, Lincolns, and others with their respective prices.

REMARKS.—There is no great alteration in prices. Supplies are plentiful, the demand being about an average one. Edward J. Newborn, Covent Garden and St. Pancras, February 10, 1909.

COVENT GARDEN FLOWER MARKET.

Trade appears to have improved a little, but there is no great change to record. I have heard it remarked that Covent Garden Market is simply a dumping ground for surplus stock, but this is not quite correct, for there are many growers who depend entirely on the market for the sale of pot plants, and large consignments of the best cut flowers are disposed of in this market.

POT PLANTS.

During unfavourable weather growers are careful not to send large supplies of plants that can be kept a little longer at the nursery, and buyers are equally careful not to purchase more than they require. Azaleas are too numerous to be valuable. Yesterday (Tuesday) I saw well-flowered plants sold for what they cost in Belgium before forcing. Some good Rhododendrons, including R. (Azalea) sinense, are seen. Cinerarias from Mr. Mott's and from Mr. Sweet's nurseries are good specimens. Plants of Erica melanthera are well flowered this year; this species finds increased favour with the florists. Plants of Lilium longiflorum sent by Mr. Holdrup are of especial quality. Marguerites are remarkably good from several growers. Spiraeas have rather tender foliage this season. Hyacinths in pots are to be had. Daffodils in several varieties are numerous. Good Callas are seen, but there appears to be little demand for them. Messrs. Butler Bros. are sending in plants of a round-fruited Capsicum; they are very pretty. In foliage plants variegated-leaved Funkias are prominent. The specimens of Aralia Sieboldii seen are well finished, but in many instances new growth will soon be starting, and then they will not withstand rough treatment so well. Aspidistras, Palms, and Ferns are well supplied.

CUT FLOWERS.

Supplies of Chrysanthemums still hold out. Varieties noticed include W. J. Crossley (a shade of bronze), Francois Pilan (yellow), Madame Charvet, Madame Felix Perrin, and Niveum. Roses are scarce, and best blooms are making high prices. There have been some fine blooms of Caroline Testout, Richmond, and Mrs. W. J. Grant, but they were not exposed for sale long. Carnations are plentiful and generally of good quality. Good fresh blooms make from 2s. to 3s. per dozen. The best of the mid-season varieties of Tulips are now coming in; the double-flowered varieties are sold for the highest prices. Vuurbak is the finest crimson-scarlet variety, and is one of the most expensive to purchase, the lowest price being 2s. 6d. per dozen blooms. Murillo and Salvador Rose are excellent double varieties.

Daffodils occupy much space in the market; they are arriving from all sources, but those from English sources are the best. Emperor is now very good, also Empress, whilst Victoria may be regarded as one of the best of the bicolor kinds. Sir Watkin is good. Golden Spur has no rival as a pure yellow trumpet Daffodil. Narcissus ornatus is abundant from all sources. Violets are plentiful; the Parma Violets may advance in price, but at present they are fairly plentiful. Eucharis blooms are plentiful again, and their prices have dropped. French flowers are arriving in good condition. A. H., Covent Garden, Wednesday, February 10, 1909.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending February 10. A week of striking contrasts in temperature.—The first three days were unseasonably warm, but since then the weather has remained cold for the time of year. The first day of the week proved very warm; the temperature in the thermometer screen in the middle of the day rose to 55 degrees, which is a remarkably high reading for so early in February. During the previous night the exposed thermometer only fell to 45 degrees, which is equally exceptional for so early in this month. By way of contrast it may be stated that four days afterwards the highest reading in the thermometer screen was only 35 degrees, while the exposed thermometer on the previous night registered 14 degrees of frost. The ground is now one degree colder at 2 feet deep, and two degrees colder at 1 foot deep, than is seasonable. Rain or snow fell on two days, but to the total depth of only about one-tenth of an inch. There has been no measurable percolation through either gauge for nearly three weeks. The sun shone on an average for only one and three-quarter hours a day, which is 22 minutes a day short of the average duration for the early part of February. On four days no sunshine at all was recorded. On the first three days of the week the wind remained high, and in the windiest hour the mean velocity amounted to 20 miles—direction, W.N.W. During the rest of the week light airs and calms alone prevailed. The average amount of moisture in the air at 4 p.m. exceeded a seasonable quantity for that hour by 4 per cent. E. M., Berkhamsted, February 10, 1909.

REMARKS.—Apples from France are selling freely at good prices. Californian Oranges are slightly cheaper but they continue to sell well. Denia and Valencia Oranges are also lower in price. Rhubarb is arriving in increased quantities; the demand is fair. Muscat of Alexandria Grapes are finished for the season. Vegetables are not plentiful. Savoys are dearer; also "Nigger" Beans. Madeira Beans are a shorter supply. Trade generally is quiet. E. H. R., Covent Garden, Wednesday, February 10, 1909.

ENQUIRIES AND REPLIES.

TIMBER FOR FORCING HOUSES.—After an experience extending over well-nigh 40 years, I unhesitatingly declare in favour of pitch pine for lasting qualities where a moist and hot temperature is maintained. There is a great difference in the quality of pitch pine, just as in other varieties of timber. I advise Mr. Elwes either to select his own logs at the timber yard, free from sap, and then make arrangements to have them sawn up into bars, wallplates, &c.; or to go to a local builder and contract with him to supply the timber without sap. In making the selection at the timber yard, a small advance on the ordinary prices may be expected. Ordinary pitch pine, taken haphazard, is worse than good common red deal. Best-quality red deal will last at least 20 years; selected pitch pine, absolutely free from sap, under the most trying conditions, will last half a century. A plant-house in my nursery, built 25 years ago of selected pitch pine, and used as a store, is as sound as when built. I tried to insert my pocket-knife into it to-day, but the wood was hard. The interior of the house has never had a paint-brush on it. The nursery also contains a range of glasshouses built 45 years ago, and the timber of which the houses are constructed is almost without a trace of decay. *A. J. A. Binn, Chorlton-cum-Hardy.*

—More depends upon skilful workmanship and careful painting than the kind of timber used. Moisture and heat are the enemies to guard against. Sills, ledges, and wallplates should be sharply bevelled and well coated with paint made of white lead. A span-roofed house, 60 feet long and 18 feet wide, built for me in 1880, was removed by the London County Council to Brockwell Park, S.E., two or three years ago, in good condition. The boiler was worn out, but everything else was sound, and the building can be seen as a show-house in the public park. No expense had been spared in the first instance, and the house had not been built by contract. The age of structures used by market-gardeners is never very great, and, in many cases, it does not exceed 10 years. *W. Roupell.*

—I have had experience in the construction of plant-houses with deal, pitch pine and teak woods, and I have come to the conclusion that there is scarcely any difference in the duration of these timbers. Three years ago we erected a new Peach house in these gardens, and instead of using an ordinary wooden frame for the fronts, we made a cement sill and built mullions of 9-inch brickwork or piers, with a 3/4-inch rebate of cement on them to form the casings for the front lights. The furniture for the ventilating gear was built in as the work proceeded. The piers should be built about four days before the wallplate to which the rafters are fixed, in order to allow time for the cement to set. All wood should be sufficiently bevelled to carry off the moisture from condensation, and the less mortising the better, as in such holes decay usually commences. Our houses are all built on the longitudinal purline system, so that there is no outside painting on the roofs, and no putty required for glazing, the glass being fixed by strips of lead, scalloped, tacked on the purlines and turned up over the glass. *James Sherlock, Fowley Gardens, Liphook, Hants.*

GARDENING APPOINTMENTS.

- Mr. P. J. CLINCH, for the past 7 years Gardener at Scribbles-town Park, Castleknock, Co. Dublin, as Gardener to Lady Mowbray and STURTON, Corbalton Hall, Tara, Co. Meath.
- Mr. JAMES MILLS, for the past 7 years Foreman at Broad-oaks Gardens, West Byfleet, as Gardener to Mrs. Brendt, Tandridge Hall, Oxted, Surrey.
- Mr. H. REYNOLDS, for the past 3 years Foreman in Pottaloch Gardens, Lochgilphead, Argyllshire, as Gardener to J. MUSKER, Esq., Shadwell Court, Theiford, Norfolk.
- Mr. F. HOWELL, late Foreman at Bramham Park, Boston Spa, Yorkshire, as Gardener to F. W. WIGNALL, Esq., Bank House, Tattenhall, near Chester.
- Mr. JOHN ED. HALL, for the past 34 years Foreman at the Castle Gardens, Castle Eden, Co. Durham, as Gardener to M. D'ARCY WYVILL, Esq., Constable Burton Hall, Constable Burton, Yorkshire.
- Mr. G. HYLAND, for the past 2 1/2 years Fruit Foreman at Aston Rowant Gardens, Oxon, as Gardener to Major HIBBERT, Ashby St. Ledgers, Rugby, and Braywick Lodge, Maidenhead.
- Mr. J. CAWKWELL, lately with Messrs. KENT & BRYDON, Darlington, as Gardener to W. BURDETT-COUTTS, Esq., M.P., The Grove, Witton-le-Wear.



CARNATION MAGGOT (ANTHOMYIA): W. E. Flies of species of *Anthomyia* are on the wing throughout the summer, appearing first in early spring. Hence successive generations of larvæ are kept up till November. After that time the pupa lie in the ground unhatched till spring or early summer. The flies may also live throughout the winter secreted in holes and crevices. The larvæ live some months and take three weeks to hatch.

CELERY DISEASED: W. W. See reply to W. Truster, p. 64 in the issue for January 23.

CYPRIPEDIUM UNHEALTHY: R. The growth appears to have been damaged by excessive moisture during a temporary fall in the temperature.

DYEING FOLIAGE RED: F. H. W. Place sufficient red aniline in rain-water to make a strong dye and boil it. Dip the foliage in this solution whilst still hot.

EGGS ON APPLE TWIGS: X. Y. Z. The eggs are those of the Lackey Moth, *Bombyx neustria*. The perfect moths may be observed on the wing in July and August, and are very pretty, but somewhat variously coloured. The eggs are laid in rings around the bark of the branch, and the caterpillars emerge during April in the following year. The caterpillars live in colonies surrounded by webs spun over the leaves. Cut off any shoots that are seen to be infested with eggs, and burn them. Examine the trees in May or June, and cut off the branches where colonies of larvæ exist, destroying them in a bucket containing some strong insecticide.

HYBRIDISATION OF VIOLETS: J. M., Greyfriar. The hybridisation of Violets, and *Violas* generally, is not easy. Emasculation can be effected, but it is difficult to make certain when pollination has taken place. The flowers must be emasculated in bud. If a fairly large bud is chosen, it is easy to expose the stamens by turning back one of the lateral petals. When so exposed, the stamens can be picked off by means of a fine pair of forceps. The stamens must be examined as they are removed to see that there is no loose pollen about. It is sometimes necessary to tear off the lateral petal in order to expose the base of the stamens sufficiently; but it is better to avoid this if possible and to turn back the petal into place after the operation is performed. The expanding of the uninjured petals is a useful guide as to the proper time for pollination. The process of pollination is best effected by taking a recently-dehiscent stamen from the male parent, holding it in a pair of fine forceps, and applying it to the stigmatic surface by gently rubbing the under surface of the stigma with it. For some reason, and it may be owing to the structure of the stigma, this method is not always successful in getting the pollen applied to the right spot, and it is sometimes found desirable to use a fine camel's hair brush, which is covered with pollen by being pushed into the throat of the flower which is to be used as the male parent. The brush is then rubbed on the under surface of the stigma of the castrated flower. If a brush is used, several brushes must be placed in readiness, as each must be sterilised between each operation by dipping into strong spirit. They cannot be used again till they are dry. These are the only methods of castration and pollination which we have found it necessary to adopt; they are successful in a fair percentage of cases, but there is no doubt that the operation is not an entirely simple one. The difficulty seems to lie in the application of the pollen to the receptive area of the stigma. In addition to this, one has to reckon with the sterility which is not an uncommon feature of hybrid *Violas*. If the sterility lies in the failure of the stamens to produce good pollen in sufficient quantity, it is worth while to try using the plant as the female parent before giving up hope of using it in crossing experiments. We doubt if it is possible satisfactorily to emasculate cleistogamous flowers. It would be very difficult to make certain that self-pollination had not

occurred before emasculation was carried out. In the case of hybrids, they would provide a very easy method of obtaining "selfs," and would save much labour in that part of the work.

MICE IN THE GARDEN.—Field rats and mice are easily killed by placing in their holes some moistened bran or meal, to which some white arsenic has been added. If poultry is present, a temporary enclosure of wire-netting should be put up where there are most mice, and where it is practicable to feed them for a short period. This will draw large quantities to the feeding-place, and they can be killed in this manner. The surplus poison can be dug in the ground, and the netting, if it be necessary, removed to a different part of the garden and used in the same way.

NAMES OF FRUITS: S. Nye. Bergamotte Esperein.

NAMES OF PLANTS: J. W. M. 1, *Rhododendrom ferrugineum*; 2, *R. hirsutum*; 3, R. Hammondii. —Foreman. 1, *Cœlogyne ochracea*; 2, *Cochliodia sanguinea*; 3, *Oncidium cheiroporum*.—A. C. H. *Cœlogyne* (next week).

NITROGEN: G. H. H. W. The probable explanation is that the soil in which Gorse lives is of a sandy nature and very light in texture. From such soils soluble substances, such as nitrates, are washed out readily by rain. The nitrogen fixed by the Nodule organism would sooner or later be converted by the action of other races of soil-bacteria into either nitrates, ammonia compounds, or free nitrogen. The last-named substance, if formed, escapes into the air; the two former substances would tend to be washed out from the soil, by rain. Hence no considerable accumulation of nitrogenous food-material occurs in the soil. At the same time it is to be observed that the Nodule organism does in fact enrich even poor, sandy soil in nitrogen to some extent. Thus Lupins are used largely and with success in Germany as a means of reclamation of waste, sandy soils.

ROCKERY: C. H. Your best course will be to cut a semi-circular pathway, 2 feet wide, through the site. This will provide one half-moon-shaped bed at the front and another bed behind it, the pathway intersecting. Collect sufficient soil to raise the half-moon-bed 5 to 6 feet high at its centre, and make the ends of the hindermost bed agree in height also. Place your stones so that they will support the soil in position, and each stone be practically on the same horizontal plane as its neighbour, forming little bluffs and declivities or down gradients behind each bluff. Your aim must be to represent an outcrop of rock, from the top and one face of which the weather has eroded hollows, fissures and crannies. These are destined to be the home of the rock plants proper. All the other spaces can be furnished with Alpine species of coarser growth, and low-growing shrubs and bulbous plants. When finished, your rock-garden should represent a series of irregular rocky ledges supporting the soil in position, the principal seams or joints of which must trend in one direction, e.g., from the highest point. Plants for such a rock garden may include *Arabis*, *Aubrietia*, *Saxifraga*, and *Arenaria* in many species, and *Lithospermum*, Alpine *Phloxes*, *Gypsophila repens*, trailing and tufted *Veronicas*, *Sedums*, *Primulas*, Alpine *Columbines*, *Linarias*, and *Saponarias*. All kinds of *Heather* and *Veronica Hectori* and *V. decumbens* may be used for the less dry sites. The plants will teach their own lesson. Those with long, whip-like roots and trailing growths will grow between horizontal layers of stone and drape their faces; those with slender fibrils and trailing growths, as in *Campanula*, will need gritty ledges. If you cannot get natural rock stone in sufficient quantity, it does not matter how your seams run. In such a case use every effort to cover with plants as much of the stone, clinker, or other supporting material as possible.

COMMUNICATIONS RECEIVED.—W. G.—G. E.—F. E. M.—F. L. Cernisco—Sutton's—R.—H. D.—J. M.—Rina S.—A. H.—L. M.—Ashtonian—Prof. B.—Rev. G. H. E.—(Next week) W. C.—W. A. C.—W. G. S.—J. G. W.—A. C. B.—Linnean Soc.—W. P. W.—S. B.—T. A. S.—H. B. H.—Gurney Wilson—R. P. B.—C. T. D.—E. H. J.—E. S.—O. T.—N. & Sons—Anxious—R. M.—W. D. H.—Mushroom—W. H.—F. N.—W. B. H.—P. A.—T. F. U.—J. C.



AGAVE ATTENUATA, FLOWERING IN THE ROYAL AGRICULTURAL SOCIETY'S GROUNDS,
SYDNEY, NEW SOUTH WALES.



THE
Gardeners' Chronicle

No. 1,156.—SATURDAY, February 20, 1909.

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PARADISE RETRIEV'D.

THOSE who are acquainted with the scores of political pamphlets and the religious sermonettes of the latter half of the 17th century must be well aware of the discrimination the authors exhibited in labelling them with telling titles. They were followed, but at a far distance, by dramatists and others, among whom must be included a few writers on gardening, and *Paradise Retriev'd* is a good instance.

It is in some respects a remarkable book. For one thing, its author seems to have written and published it to confute certain propositions of the Rev. John Lawrence, who had already published *The Gentleman's Recreation*, in which the offensive statements had appeared and a concise treatise on fruit culture, *Paradise Retriev'd* is noteworthy as being far in advance of anything that had appeared on that subject up to the time of its publication in 1717. Its author was Samuel Collins, Esq., of Archester, Northamptonshire, and the cause of his rushing into print was that Mr. Lawrence, who was rector of a parish in his neighbourhood and had taken up fruit culture with great enthusiasm as a means of securing a crop of fruit, had recommended building tiles into

fruit walls: the tiles to be set at regular intervals and to extend outwards an inch and a half from the wall. Mr. Collins' curiosity having been excited on reading the description of this novel fruit-protector, made a journey to Yelvertoft Rectory, where, to his great disappointment, he found only "stuck about twenty tiles into an old dirt Wall with Lime." In this book he shows that these "horizontal shelters," as they came to be called, had never been proved by their inventor, and that they were ineffective as a means of warding off intense cold. The next year Mr. Lawrence published *The Fruit Garden Kalender*, in which he disclaims any connection with *The Lady's Recreation*, a kind of bookseller's book on gardening, but nothing appears concerning Collins' outspoken statements, so that one can hardly escape giving them credence.

At the same time it must be mentioned as proof of the great popularity attained by Mr. Lawrence as a fruit-grower that Hitt mentions his device of tiles, though with disapproval, as being in use as late as 1755.

While the above seems to have been the reason for Collins writing: indeed, in the preface to his book he declares that "the only motive that induced me to write was the sight I had of Mr. Lawrence and his Garden after reading his Book," yet it contains a good deal on fruit culture that must have been helpful to its readers. He modestly affirms that his own garden was "managed to a very great perfection," and as one peruses chapter after chapter it is obvious that gardening must have formed the chief employment of his life. He takes occasion to warn owners of gardens to be slow to change gardeners frequently, which seems, as in these times, to have been customary with too many employers, and demonstrates how a man of "middling capacity," if honest and industrious, is not to be lightly superseded, and almost certainly not without loss to the garden.

A few points in his teaching may be noted. He preferred trees to be the first year from the bud. He insisted on planting in October; but early planting, though not invariably the rule, must have been customary, for he quotes an old adage to the effect:—

He who would a good tree have
Must bring the old leaf to the grave.

Roots were to be shortened slightly previous to planting, and pruning deferred till the following February. Writing of Apricots, he gave it as his experience that old trees which had been "blasted" might be cut over with advantage, and that they would produce a sufficient number of young shoots in the course of three years to again cover the walls. The advantage of properly thinning fruit is dwelt upon, one of the reasons he gave being the better quality of the fruit as compared with that only slightly thinned; and not only is the necessity of laying in a limited number of shoots insisted upon, but an engraving shows how trees should be trained. Another engraving exhibits Pears trained as Espaliers, in which the branches have more space than any previous authority had recommended. The branches, it may be noted, were not trained straight, but slightly curved, a fashion which continued for some time. The evil of allowing moss to

vegetate on fruit trees is pointed out, and rubbing with "hair cloth" the remedy proposed.

A part of the volume is devoted to a separate *Treatise of Melons and Cucumbers*. He had already discovered that old seed of the former was to be preferred to new seed, the plants from which "spend themselves too freely in their vines without fruiting." He also asserted that fruit from old seed was "better tasted." The "Mellonry" was at this period an important adjunct to the garden, and Collins describes his own. This was an area of 19 yards by 16 yards, and it was enclosed on all sides but the south with a hedge of Yew, which on the north attained a height of 10 feet. In order to ensure the greatest possible warmth, the ground inside was excavated to a depth of 16 inches. As a further protection from wind there were 8-foot hedges of Willow between the lines of frames and ridges. The fullest details are recorded of how to produce both Melons and Cucumbers early and late by means of heated dung and grass, bell-glasses and frames. The treatise concludes with a warning "that Ladies should not be invited to this Place" lest the Melons should refuse to set, the last quaint words of the book being:—"I have been oblig'd at that time of fruiting to deny their entrance into the Mellonry." R. P. Brotherston.

NEW OR NOTEWORTHY PLANTS.

IRIS RETICULATA ATROPURPUREA.

A REMARKABLE form of *Iris reticulata*, which is as yet, I believe, undescribed, is now flowering here for the first time. It might even be given rank as a distinct species if specific names are given to *histrion* and *histrionoides*; but, if these are regarded merely as local varieties of *I. reticulata*, then this new form may be known as *I. reticulata atropurpurea*.

During last summer I received a few bulbs of *I. reticulata* from Marash, in Asia Minor, and this flower now appears among them, together with a very fine form of *histrionoides* distinguished by the fact that the deeper shades of blue on the falls occur rather as mottlings than as blotches.

The buds of the variety *atropurpurea* appear when the two four-sided leaves are only 2 or 3 inches high. They somewhat resemble buds of *I. Krelagei*, but differ in having veinings of purple-red on a whitish ground.

When the flower unfolds, the blade of the fall is seen to be of a uniform velvety-black, which fades a little to red-black at the edges. There is only the merest trace of a signal or ridge in the form of a minute touch of dingy yellow, but along the haft there runs a row of glistening black spines about a sixteenth of an inch in height. These stand out conspicuously on a black ground, which is bordered on either side by a slightly lighter, reddish groundwork veined with black-purple. The small, narrow standards are dark, blackish-red, widening at the top, with a characteristic outward curve, whilst the styles are of a somewhat lighter shade of red, especially at the edges. In one respect this *Iris* differs from all other forms of *I. reticulata*, namely, in having spathes that are veined and blotched with red-purple. In other varieties the spathes are either green or colourless, but in this case it is hard to distinguish the spotted spathes from the similarly spotted tube. W. R. Dykes, Charterhouse, Godalming.

EXPERIMENTS WITH NITRO-BACTERINE.

(Concluded from page 91.)

It has been shown that in the Wisley experiments on fallowed soil three lots of inoculated seed were planted under such conditions that, as definitely stated in the directions for using the cultures, inoculation would be either *useless* or a *failure*.

Comparing the total weight of Peas of inoculated seed with that of non-inoculated seed from the three plots where inoculation might be reasonably expected to produce good results, we have the following figures:—

Table H	Non-inoculated		Inoculated		Increase.
	Seed.	Gr.	Seed.	Gr.	
... 1	7,175	...	8,188	...	1,013
... L	7,093	...	7,963	...	870
...	4,182	...	4,702	...	520
	18,450		20,853		2,403

Increase in favour of inoculated seed = 13 per cent.

* Number of plants in plots equalised to number of inoculated plants.

We contend that it is both unscientific and unfair to add the results from plots which are known beforehand to be either unfavourable or injurious to inoculation, to those from plots on which it is stated inoculation may be beneficial, and then to draw a conclusion either for or against inoculation therefrom. If Mr. Chittenden's method is the correct one, it is quite easy to prove that any manure, if only sufficiently unfavourable conditions are taken, is useless on ordinary garden soil.

Further, we cannot accept Table J of the Wisley report as a fair statement of results. In order to obtain this table the produce of "maincrop" is omitted entirely, because in Table I there is a variation in the number of plants, although "maincrop" in both Tables H and I gives the largest increase for inoculation in weight of Peas. Surely the scientific method would have been to equalise the number of plants where there was a difference, as is done in the following table:—

Weight of Peas.		
Untreated ...	7,093 grs.	
Soil inoculated ...	7,175	= 1 per cent. increase.
Seed inoculated ...	7,963	= 10.8 " " "
Seed + soil inoculation ...	8,188	= 15.4 " " "

* Number of plants in plots equalised to number of inoculated plants.

These figures indicate the value of double inoculation. In the directions sent out with the culture material, it is recommended that the seed be inoculated, and then later the growing plants watered with the culture solution. It is definitely stated that this double inoculation will give the best results. Yet the effect of watering with the culture solution after seed inoculation was not tried at Wisley. The experiment described by Professor Henslow in last week's *Gardeners' Chronicle* is interesting as showing what may be the effect of watering with culture solution under certain conditions. Just a word about the Wye experiments. These certainly indicate that seed inoculation was useless on this ground. A probable reason for this is given by Mr. Gimingham in his report. He states that "both lots formed nodules on their roots to about the same extent." Evidently there were already present in the soil sufficient bacteria to produce a supply of nodules. In "Seed and Soil Inoculation" (p. 10) it is pointed out that under these conditions inoculation is useless. Hence the Wye experiments confirm one of the conditions under which it has been stated in Germany and America, as well as in this country, that inoculation will be useless, but they do not furnish "a triumphant proof" that inoculation is useless on ordinary garden soils, for we have inoculated seed on garden soil giving an increase of 10.8 per cent. at Wisley and 7.6 per cent. at Reading.

After all, the question of cost is an important factor in determining the practical value of any manurial material. Considering that seed sufficient for an acre of land can be

inoculated for less than 1s., the cost of testing inoculation on any garden soil is not a prohibitive one. There may be no result—as at Wye. On the other hand, there may be success, as at Wisley and Reading, where the inoculated seed not only gave an increased yield, but this yield was larger than the yield from equal plots treated with manures which would cost not much less than £1 per acre.

I quite agree with Dr. Keeble that further experiments are required, but these must be in field and garden as well as in the laboratory. We know something about the conditions under which the nitrogen-fixing bacteria work best in the soil, but many points are still obscure and require further investigation. We want to find out how these bacteria can benefit agriculture and horticulture, but this can only be done by recognising their limitations, and experimenting with them under conditions which give them a chance of doing their work properly. *W. B. Bottomley, King's College, London.*

THE CLEOMES.

THERE is no modern monograph of the Caparidaceae or Caper family, and identifications of plants of that family have accordingly to be based mainly on the descriptions given in local floras. The South American species were revised by Eichler in the *Flora Brasiliensis*, vol. xiii., part 1, and from the account there given, the Cleome shown in fig. 50 has been identified as *Cleome spinosa*, forma *spinosa*, Eichl.

Eichler divided Cleome into two main sections, one of which includes all the shrubby or tree-like species, in which the petals are gradually narrowed down to the base, so that they have no distinct claw; whilst the other consists entirely of herbs, in which the petals are provided with a distinct claw. *C. spinosa* belongs to the latter section.

Two of the shrubby or arborescent species have been introduced into cultivation, namely, *C. gigantea* (*Botanical Magazine*, t. 3137), a shrub widely distributed over tropical America; 3 to 5 feet high, and with greenish-coloured flowers; and *C. dendroidea* (*Botanical Magazine*, t. 3296), which, according to Gardner, who found it growing on the seashore near Rio de Janeiro, is a small tree attaining to a height of 10 to 14 feet. The flowers are blackish-purple, and the plant presents a beautiful object when in flower.

The eight other shrubby species inhabit rather restricted areas in the Andes of Venezuela, Colombia, or Peru, and the section as a whole appears to represent an archaic type in slow process of extinction. According to this view, the gradually narrowed petals met with in the shrubby section, being less differentiated, would be regarded as more primitive than the distinctly-clawed petals which are found in all the herbaceous species.

The herbaceous section includes a large number of species, among which are several cosmopolitan weeds, and it may, accordingly, be regarded as a more modern group. At any rate, most of the species are evidently more in harmony with prevailing modern conditions than are those of the shrubby section. The species are in many cases difficult to distinguish, but *C. spinosa* may be distinguished from most of its allies by the paired stipular prickles which occur one on either side of the base of the petiole. As defined by Eichler, it seems to consist of an unwieldy assemblage of forms, some of which are strikingly unlike. He describes it as being in the highest degree variable, sometimes almost glabrous, sometimes hirsute; the petioles and veins on the lower surface of the leaf prickly in some forms and unarmed in others; the bracts varying between orbicular-cordate and lanceolate; the flowers white, pinkish or deep purple; the ovary glabrous in some forms and glandular in others; and the gynophore sometimes as long as the pod, and in other cases only half as long.

Eichler distinguished three forms of *Cleome spinosa*, taking into account only the character of the prickles on the petioles and leaflets and the colour of the flowers:—

(a) *Forma pungens*.—Petiole unarmed (not counting the basal stipular prickles), or with one or two small prickles; flowers white or pale rose.

(b) *Forma spinosa*.—Petiole armed with stout prickles; flowers rose or deep purple (see fig 50).

(c) *Forma horrida*.—Petiole with crowded prickles; flowers white or pale rose.

According to these definitions, the plant illustrated in fig. 50 belongs to forma *spinosa*; while the plant represented in *Bot. Mag.* t. 1640, belongs to forma *pungens*, for the petioles are unarmed. Eichler, however, expressly referred the plant shown in the *Botanical Magazine* to his forma *spinosa*, apparently because the petals were of a deep-rose colour. The presence or absence of prickles is of greater systematic importance than a slight difference in the coloration of the petals, whilst the shape of the bracts probably affords a character of even greater value, and should certainly be taken into account in any attempt to sub-divide the species. Without monographic study, however, it would be unsafe to construct a revised classification of the forms hitherto placed under *C. spinosa*, and it seems desirable, therefore, to follow Eichler in the meantime. Nevertheless, having seen actual specimens of both the plant now figured and also the typical *C. spinosa* (which falls under forma *pungens*), I am convinced that they are specifically distinct from one another. Typical *Cleome spinosa*, which I have collected in waste ground at Ciudad Bolivar, the port of the Orinoco, has comparatively glabrous stems and leaves, unarmed petioles (except for the stipular prickles), suborbicular bracts and white flowers. The plant shown in fig. 50 has a densely glandular, pubescent stem and leaves, prickly petioles, lanceolate bracts and purple-magenta flowers. In fact, it has much more the habit of *C. Selloana*, Eichl., from which it differs in having the ovary and pod glabrous instead of densely glandular.

As to the history of the cultivated plant nothing seems to be known. Two plants were received at the Royal Botanic Gardens, Kew, last August, from Messrs. R. Veitch & Sons, Exeter, and flowering specimens were received for identification in September from Mr. W. E. Gumbleton; the figure was drawn from Mr. Gumbleton's specimens, with the exception of the separate large leaf and a few other details, which were drawn from material sent by Mr. R. C. Notcutt, of the Nurseries, Woodbridge. In order to aid identification, a short, popular description is now given.

An erect, herbaceous, sticky plant, about 3 feet high, emitting an odour not unlike that of mint, but a trifle fetid. The leaves fingered, the upper with five leaflets and the rest with seven leaflets each. The leaf-stalks are prickly, and at the bottom of the stalk a pair of prickles, one on either side, point downwards. The midrib of the leaflets is prickly on the under side. The bracts, or leaves below the flower-stalks, are lance-shaped and sharp pointed. The flower-stalks vary in length from 1 to 1½ inch. The sepals, which are awl-shaped, are under ½ inch in length and ascending. The petals are of a purple-magenta colour and nearly 1 inch long, including their stalks, which measure about ½ inch in length. While the upper parts of the petals are still folded together, the filaments begin to grow faster than the petals, and as the long anthers at the end are tightly held by the petals the six filaments bulge out in the middle in the form of a bow. It is interesting to note that this is clearly shown in a woodcut of a Cleome in plate No. 34 of Marcgraf's *Natural History of Brazil*, which was published as long ago as 1648. *T. A. Sprague.*



FIG. 50.—CLEOME SPINOSA: FLOWERS MAGENTA OR MAGENTA-PURPLE.
(See pp. 114 & 118.)

VEGETABLES.

CHICORY.

THE exhibition of Chicory as a forced vegetable at a recent meeting of the Royal Horticultural Society may attract attention to its value as a winter product. Recent frosts have done enormous damage to ordinary Brassica crops, and in that way greatly reduced the supply of fresh vegetables. From a late summer sowing, Chicory roots are obtainable in winter and, if these are lifted and safely stored, are available to furnish blanched heads. It is generally assumed that Chicory when blanched is only suitable as a salad. But it makes also, when properly cooked, an acceptable vegetable. Whilst Seakale may be regarded as more useful for the table, its cultivation necessitates far greater labour than is the case with Chicory. Seakale, if raised from seeds, must be sown in April, and the plants must be severely thinned. If grown from root cuttings and planted in April, considerable preparation and labour in the planting and subsequent treatment are needed. A sowing of the Witloof variety of Chicory may be made in drills 12 inches apart, and the plants in the rows should be thinned out to 9 inches apart. Sowings may be made in May, June, and even in July if the soil is exceptionally good. As soon as stout roots have formed in the autumn, some may be lifted, have their leaves cut off, and be placed in large pots or boxes filled with soil. They should be covered with inverted pots and placed in a warm structure from which sunlight is excluded. This process of producing heads, some 6 inches tall, and fairly compact, may be continued all the winter if the supply of roots is sufficient. The roots are white and fleshy, but, like those of Seakale, they are inedible. In reference to a different method of blanching, Mr. C. R. Fielder, North Myms Park Gardens, tell me that his way is to open a trench in the ground, 12 inches deep, and of slightly greater width. The soil thrown out is piled up on each side, thus making the entire depth of the trench about 18 inches. Into one end of such trench he puts the Chicory roots fairly close together. The sets have already been cut level at the base. He fills in round them and up to the top of the ridge with sifted soil from the potting bench; on this is laid some 2 feet thickness of warm manure. Splendid crowns result in about three weeks. Additional roots are treated in a similar manner to maintain the supply. A. D.

FLORISTS' FLOWERS.

THE NEW R.H.S. CLASSIFICATION OF DAFFODILS.

I HAVE been asked by several of those most closely interested in the subject to express my opinion of the new classification of Daffodils. My study of these flowers for over a quarter of a century gives me a claim to speak, and will acquit me of presumption in speaking plainly.

It appears to me that the procedure adopted in the issue of the classification has been unusual and unfortunate. According to the official report of the Royal Horticultural Society for 1908, "at the request of the Daffodil Committee, the Council appointed a committee. . . . The committee have delivered their report, instituting an entirely new system of classification, which the Council has accepted, and ordered to be used at the Society's shows." And the newly-classified list of Daffodil names printed by authority of the Council is enjoined "for use at all exhibitions of the R.H.S."

It would surely have been expedient, and in accord with all received custom in such deliberations, to have referred the report of the special committee to the Narcissus Committee as a whole, that they might have a full oppor-

tunity of considering such a sweeping innovation, before imposing it by edict of the Council upon the Society and the public. The more so, because the authors of the new scheme betray doubt as to its reception, by the expressions "for the present experimentally adopted," "if the principle involved in the present list should find acceptance." The large number of errors the list contains indicates undue haste in publication, and the only result at present of this precipitancy has been confusion. The schedules of one or two of the spring Flower-shows have been altered in accordance with the new classification; in others the old system is retained. The bulb lists of the chief professionals, including that of Messrs. Barr & Sons, which is counted a standard classic, are retaining the older arrangement.

I may mention here that, by some extraordinary blunder, the name of Mr. P. R. Barr, who originated the demand for some amended plan of nomenclature, and whose advice would have been invaluable, was omitted from the special committee. I myself was, unfortunately, prevented from attending. I believe I am at liberty to couple Mr. Barr's name with my own, and to

writes that it is exclusively for convenience at the shows, i.e., for experts, and that the old order might remain in use concurrently for ordinary purposes!

The manifest and insuperable fault of the new arrangement is that it absolutely abolishes any approximation to natural classification. It is all very well for its authors to write of being "compelled to fall back on purely arbitrary divisions," but to push this supposed necessity to extremes is to arrive at the obviously absurd and grotesque. The ridicule will be incurred even of "the man in the street" when he sees on a stand such evidently incompatible flowers grouped together as, for instance, those included in the new division 7. Here we have—

- (a) Ordinary Polyanthus Narcissus.
- (b) Triandrus.
- (c) Jonquil.
- (d) Hybrids of Ajax and Triandrus.
- (e) "Hyacinth," and similar varieties.
- (f) Odorus.
- (g) Tridymus.

Let us consider some of these items. To pass over the fact that the eye rebels against bringing



FIG. 51.—VIEW IN THE PLANTATION ADJOINING MR. NOTCUTT'S NURSERY.

(See p. 117)

say that we should both have strongly opposed the new classification as now published. Every expert with whom I have corresponded expresses himself in the same sense, and all agree in regretting that the criticism of the Narcissus Committee was not invited.

To me it seems in no single feature an improvement on the old order, but a revolution, indistinct in intention, and without results sufficient to compensate for the disturbance it has created. Its want of clear aim will appear from the widely different views of members of the special committee. One writes to me that the nature of the new arrangement matters little, but the one thing required is to get every single flower clearly ticketed with its own class-label. But if this is all, a very moderate alteration of the old arrangement would still serve, for a sub-committee appointed for the purpose could assign to its proper pigeonhole every flower as it arrives. Another member tells me that the new list is simply for "the man in the street," and not for experts. On the contrary, another

a, b, c and g into one class, it may be noted that a single seed pod of Ajax × triandrus (d) commonly yields single-flowered plants and multi-flowered, also flowers differing in length of crown. Moreover, the same plant is often single-flowered one season, and two or more flowered the next. Therefore, what are virtually identical plants are classed in the new list under three several divisions, e.g., 1, "Count Visconti"; 2, "Countess Grey"; 7, "Betty Berkeley"—"which is absurd," as Euclid would conclude. "Hyacinth" (e) is a short-cupped, single-bloomed flower, which occasionally "freaks" to twin flowers, just as *Poeticus ornatus* will do under certain conditions. Thus an accident is made to determine its class. Odorus (f) is a hybrid of Ajax and Jonquil, and is classed in division 7 because it bears two or more flowers. "Buttercup," although from the very same cross, is put into division 2 because it is usually single-flowered. But seedlings from this cross and from the same pod vary from one to three flowers permanently

or in successive years. In the latter case, *the flowers of the same plant* must be shown one season under division 2 and the next under division 7!

Again, under division 1 we have flowers so totally distinct by nature, and to the eye, as Ajax proper, Cyclamineus, hybrids of triandrus and bulbocodium. A child—let alone “the man in the street”—would refuse to squeeze things so dissimilar into one compartment. Did space permit, similar absurdities could be shown throughout the list. In brief, this is the principle of arbitrary division by measurement run mad. The old classification of Mr. Baker and

not be confused with them. Thus, pure Ajax and pure Poeticus should each form a division, and the expert will be at fault so rarely as not to matter in distinguishing, say, the pure Poeticus from its nearest hybrids. Any classification is really for the expert, in the first instance, for it is he who has to assign each new flower to its proper place in the system. I have been answered that division 4 of the new scheme admits of, and was intended to contain, a separate sub-division of pure Poeticus. But this concession appears to me to acknowledge in principle the superiority of the older classification.

It must be seen, too, that, in proportion as

NURSERY NOTES.

MR. R. C. NOTCUTT'S, WOODBRIDGE.

THIS nursery in the interesting little town of Woodbridge in Suffolk was established by a Mr. Woods, some 150 years ago, and was successfully carried on by that family until the death of the late Mr. John Woods in 1896. It was taken over by Mr. Notcutt in March, 1897, in conjunction with his nursery at Ipswich. That its formation has not taken place in recent years is plain enough, even on a casual inspection. It contains pleasant little nooks and other features that seem never to find a place in nursery grounds laid out in the present day. Many old-fashioned plants have been permitted to remain long after they ceased to have a commercial value, and, consequently, they are now fine specimens possessing much interest. Adjoining the nursery is a wood or plantation which, having but little economic importance, is put to a different use, and it might be almost described as a woodland pleasure-ground. We will not attempt to describe its sylvan effects in the different seasons, but direct the reader's attention to the illustration in fig. 51, which shows, although inadequately, that the paths are flanked with bulbs, which in spring-time light up the wood with their brilliantly-coloured flowers. Woodbridge being not far from the coast, the climate encourages the growth of shrubs that in many localities are insufficiently hardy for out-of-doors culture, but this occurs only in places more or less sheltered from the prevailing winds. At the same time, there are many plants that succeed but indifferently on this part of the East coast. So much is this the case, that those interested find it necessary to study the matter pretty closely. Mr. Notcutt's collection is, in the main, a selection of the best of those which have proved themselves suitable for the district. Several species of *Potentilla* were blooming finely at the end of last summer, especially *P. fruticosa*, which formed pretty little shrubs about 2 feet in height. *Buddleia variabilis Veitchii* and *magnifica* both succeed well, but the better of these new varieties appears to be *magnifica*. It is more vigorous at Woodbridge than *Veitchii*, and the flowers, being of darker colour, have the greater effect. The collection of shrubby *Spiræas* contains most of the known species, and *S. Menziesii* triumphans attracted our attention by its rich colouring. *Leycesteria formosa*, *Weigela*s, *Hedysarum multijugum* and *Bignonia grandiflora* all grow well and flower freely. Species of *Cistus* succeed remarkably well, forming fine little sub-shrubs like the specimen of *C. albidus* shown in fig. 52. An excellent variety was noticed in *C. ladaniferus purpureus*, which possesses rich colouring. There appears to be a big demand for Brooms, both standards and dwarfs, which are grafted in the spring of each year in considerable numbers, and grown in pots. Among the many species and varieties of *Berberis*, a variety of *B. stenophylla* named *gracilis* has very attractive foliage. The collection of *Hydrangeas* included *H. arborescens grandiflora*, for which plant Messrs. Paul obtained an Award of Merit from the Royal Horticultural Society on May 14, 1907. The flowers are white, and the plant may be recommended for culture out-of-doors. *Colutea cruenta*, a species of Bladder Senna, with reddish-yellow flowers, and growing about 5 feet high, appears not to be common, although a very old garden plant. Of the numerous Privets, one of the most ornamental varieties for cultivation as standards is *Ligustrum japonicum superbum*. It has variegated foliage of considerable size. Evergreen Oaks are largely grown, and these could be seen



FIG. 52.—CISTUS ALBIDUS IN MR. NOTCUTT'S NURSERY, WOODBRIDGE, SUFFOLK.

Mr. Peter Barr was an admirable piece of work, inasmuch as it contrived to be usefully arbitrary without doing unnecessary violence to the natural divisions. I maintain that, with certain omissions and additions, the broad framework of this arrangement must always be retained—*naturam expellas furcâ tamen usque recurret*.

There are other great objections to the new order. Where the work of disentanglement and arrangement has to be done is in the mass of modern intermediate forms; but the pure elements from which they have been bred should

natural classification is dropped, not only does form become more important in making divisions, but colour also. Any scheme claiming to be ready for actual use must provide for, and should improve upon, the old colour distinctions in each division. This is of the essence of a useful scheme, and it is not enough to suggest, as the new list does, that this may be added in a later edition. Even if its general principle were acceptable, which I deny, this new classification ought not to have been launched until more complete. *G. H. Engleheart.*

in various sizes, from seedlings in thumb pots to large plants from 5 to 6 feet in height.

We cannot, however, enumerate a tithe of the plants in the home nursery which covers an area of 20 acres. Passing to the collection of herbaceous, perennial plants, and annuals, we were particularly impressed by a magnificent bed of *Dierama* (*Sparaxis*) *pulcherrima*. The plants were 7 feet in height, and bore purple flowers on very slender but erect spikes that only bent a little under the weight of the seeds. The species is hardy, and succeeds best when the bulbs have remained undisturbed for a couple of seasons; Mr. Notcutt's plants were three years old from seed.

Another very interesting plant was *Cleome spinosa*, of which an illustration is shown in fig. 50. The illustration was drawn by Mr. Worthington Smith, who had specimens from Mr. W. E. Gumbleton, Queenstown, Ireland, and from Mr. Notcutt. The bed of plants in Mr. Notcutt's nursery was a picture of deep rose-coloured flowers, and the plants were 3 or more feet in height. The seeds were sown indoors, and the seedlings planted into the bed in May or June. Mr. Gumbleton's plants, we believe, grew less high, and the colour of the flower was rather developed. Mr. Notcutt's variety is either superior, or there was a difference due merely to local conditions and cultivation. The flowers have a curious appearance, owing to the extremely long styles characteristic of most of the *Capparidæ*. The plant commences to bloom in July or August.

Amongst a large collection of *Gladioli*, our attention was directed to the American novelty known as *Princeps*. This variety has very large flowers of great substance, and of a brilliant, bright scarlet colour with white markings. A bed of *Asclepias tuberosa* was in full bloom. We inspected a large collection of herbaceous *Phloxes* then in full flower, also collections of *Dahlias*, border *Chrysanthemums*, *Clematis*, *Roses*, and other plants, including many old species of herbaceous flowering plants now seldom seen in gardens.

In the fruit-tree department about 20,000 Apples are worked every year, and half that number of Pears. Most of the Pears are worked on the Quince stock, there being but little demand for Pears on the free stock. The collection of Plum and Cherry trees included about 5,000 trees of each kind. Conference is one of the very best Pears for the Woodbridge neighbourhood, and it crops splendidly. Winter Orange is an old Suffolk Pear, for which Mr. Notcutt obtained an Award of Merit from the Royal Horticultural Society in March, 1899. It is not a dessert variety, but for stewing purposes it possesses excellent qualities, and when cooked retains a very attractive red colour.

Some little distance away from the home nursery is another nursery known as Martlesham Field. This field has an area of about 23 acres. Here we inspected another collection of trees and shrubs, including a fine selection of species and varieties of *Tamarix*, which naturally enough succeed uncommonly well in this East Anglian district. The Judas Tree (*Cercis siliquastrum*) is a favourite tree in the gardens around Woodbridge and Ipswich, where one may frequently see specimens in the front gardens of the suburban villas.

Mr. Notcutt has also the Creek Farm, which consists of about 140 acres, part of which is let. Mr. Notcutt farms about 50 acres, and 20 acres are planted with nursery stock. At Creek Farm the principal features are *Roses*, and even late in autumn many of the plants, especially the hybrid *Teas*, were still blooming well. About 20,000 *Roses* are budded each season.

Altogether, Mr. Notcutt's nurseries are exceedingly interesting, especially the home nursery, for in this the plant-lover will be sure to find something of interest at any time during the spring, summer, or autumn seasons.

The Week's Work.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Paths.—The paths in the kitchen garden should be well drained and made with suitable material. In many cases Grass paths are favoured, and if well kept these are satisfactory. They are not to be generally recommended, however, as they will not withstand rough wear, and the cost of their upkeep is considerable. In my opinion, nothing is better than good gravel, bordered with Staffordshire tiles, which should be set in concrete. The present is a favourable time either for making new paths or putting old ones in a state of repair. If dwarf hedges of *Box* have become too large, the plants may be taken up, trimmed, and replanted: or this work may be deferred until the autumn.

Shallots.—Plant these without delay on ground which has been deeply dug and heavily manured. Fortunately, Shallots may be cultivated on the same ground for many years in succession, provided it is well enriched with manure each season. Shallots are perfectly hardy plants, and, to ensure good results, must be planted early. The rows should be made 1 foot apart, and the bulbs, which should be buried about two-thirds their depth and made firm, should be set at distances of about 9 to 10 inches apart. Wood ashes and soot should be liberally employed throughout their growing season.

Garlic.—Garlic requires practically the same treatment as Shallots, and may also be planted. A small quantity of Garlic is generally sufficient for any garden.

Lettuce.—Further sowings of both *Cos* and *Cabbage* varieties should be made in boxes and raised in a gentle heat. Earlier-raised plants should be placed from 8 to 10 inches apart in pits or frames as near to the glass as the growth of each variety will allow. The soil should be free from wireworm, and must afterwards be made very firm.

Turnips.—Make a small sowing, on a very mild hot-bed in frames, of Early Long Forcing. This variety I have grown for some years with the best results.

Leeks.—Another small sowing of Leeks should be made in heat, and seedlings of earlier sowings pricked off in boxes as they become ready.

Tomatos.—Plants raised last December should be encouraged to make growth so that they may be transferred to the final pots. They may be given a temperature of about 60°. Winter-fruiting varieties which are now bearing ripe fruits must not be overwatered, and the conditions of the house in which they are growing must be kept dry. Maintain a temperature of about 60° and admit air whenever possible. Make another sowing for successional crops, both in and out-of-doors. The plants can hardly be too forward for planting in the open ground provided the growth is sturdy.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Palms.—Experience soon teaches the plantsman that there are few pot-plants which resent root disturbance so much as *Palms*. As a rule, the healthiest specimens are those growing in comparatively small pots, and as these plants are the most useful for decorative purposes, it is always wise to leave them alone, no matter how full the receptacles may be of roots. But in the case of *Palms* which have not yet attained a required size, as well as those which are in an unhealthy state, potting becomes necessary. Peat is needed for very few species of *Palm*. Of those usually grown in gardens, it is necessary only for the species of *Cocos*. For most other *Palms* some good yellow loam, with a liberal quantity of broken charcoal and silver sand will be suitable. In dealing with a plant which has roots almost as deep as the pot it is to be placed in, it will be well to retain the roots but to dispense with nearly all the crocks. Place the roots immediately over the drainage hole and a few crocks around the massive roots, covering these

crocks with lumps of fibrous loam. This will provide ample drainage and be better than mutilating the roots, although in some cases root mutilation may not be followed by unsatisfactory results. If we except species which produce suckers, the stems of other *Palms* should not be inserted below the level of the soil. In the case of *Cocos Weddelliana*, the cause of failure is frequently that of deep potting. *Palms* require an abundance of moisture in the atmosphere as well as at the roots, and a moderately high temperature during the season of growth. Established plants that have filled their pots with roots may be benefited by frequent applications of liquid manure.

Bouvardia.—As *Bouvardia* plants pass out of flower they may be kept slightly drier at the roots. Surplus plants, which will not be required for propagating purposes or forming larger specimens, may at once be destroyed. Propagation is effected either by stem or by root cuttings, the latter method being the better.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Children's playgrounds.—The gymnasiums or children's playgrounds are divided into three classes—for the use of boys, girls, and men respectively. In the London parks there are altogether 16 separate gymnasia for girls and boys, about 12 for girls, women and boys under 10 years of age, and six for the use of men only. Each gymnasium and playground is under the care of an attendant, and those for girls and children are conducted by a female supervisor. The children's gymnasia are open from 9 a.m. until sunset, on every day except Sundays. Several of these playgrounds have a pit of clean, fine sea sand, which is renewed periodically, for the children to dig in and otherwise amuse themselves. The playgrounds are frequented by children at such times as the schools are closed, and they are much appreciated during the holidays. Provision is made for other amusements, such as swings, giant-strides, parallel bars, horizontal ladders, and skipping ropes. Each of these playgrounds contains a large open shed where the children may take shelter in wet weather.

Size of a children's playground.—This depends upon the space available, but in all cases the open-fronted shed should be as large as possible. Our playground measures 75 feet by 25 feet, and it is enclosed by high brick walls on three sides. Provision is made for lavatories, and there is a fountain of drinking water in the centre of the back wall. The covered shed is supported on columns, and it has a corrugated iron roof. There is an attendant's cabin at one end of the playground. A suitable floor must be formed either of wooden blocks or fine asphalt. It is advisable to enclose the swings, &c., with railings, in order to prevent the children crowding round them and receiving injury. On busy days a small number can be admitted into the enclosure at one time, and much confusion and trouble saved. There have been occasions when more than 8,000 children have in one day entered the playground at Victoria Park. Frequently, during the time of the children's holidays, as many as 4,000 and 5,000 may be seen at play.

The sand-pit.—The heap of sea sand has much to recommend it. It is simple, and it affords an amusement and recreation to a large number of children at one time. A large pit is dug out, generally about 50 or 60 feet square, and about 1½ to 2 feet in depth. The sides should be built of well-seasoned Oak timber about 2 inches in thickness; timber from an old ship serves admirably. A floor made with bricks, but not cemented together, is an advantage, and it is wise to place tarred paving around the outside, say, to a width of 4 or 5 feet, so that any displaced sand may be readily swept back again. Our sand is procured from Lowestoft. About 100 tons is a sufficient quantity for filling a good-sized pit. There is a little wastage, therefore in the spring-time the sand is either wholly renewed or an addition is made to it as may be desired. Although some authorities have condemned these sand-pits, no analytical test has ever discovered anything in the sand other than ordinary dirt. It has not been proved that such pits have an influence in the spreading of diseases.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Peaches and Nectarines.—If these trees were loosened from the wires early in winter in order to delay the development of the buds, they must now be trained. Assuming that the trees were disbudded, and the shoots pinched during last summer, very little pruning will now be necessary. Cleanse the trees with an insecticide, taking care to work the mixture well into the crevices or rough places in the bark of the old wood. Before commencing to train the smaller shoots, fasten the main branches securely to the wires in such a manner as to dispose the tree to the best advantage. Train in the smaller shoots between the branches and leave a space of from 6 to 9 inches between each shoot. When the training has been done a top-dressing may be applied to the roots of any trees that have showed signs of exhaustion through over-fruiting or other cause. The top-dressing should consist mainly of good loam and lime rubble, with some approved chemical manure added to it. A heavy mulching applied after the top-dressing has been made quite firm will also assist the trees in regaining their vigour. When the borders have been given this attention, the roots should receive a copious watering. It should be remembered that wall fruit trees suffer from drought more frequently than is generally supposed to be the case. Young trees that are growing vigorously do not require a top-dressing: the borders in this case should merely have their surfaces forked over lightly.

Peach-blister and leaf-curl.—Peach-blister is usually the source of considerable trouble, and it may, therefore, be useful to say that the preparation called "Medela" has been used in these gardens against this pest with success. This specific should be applied at the present time, according to the published directions.

General work.—Take advantage, during unsuitable weather for work out-of-doors, to prepare stakes and labels. All the varieties of fruits should be labelled plainly, it being much more convenient if the name of any particular tree is known in winter as well as in summer. Nets may be overhauled, it being more than probable that some of them require to be repaired. If any new ones are needed, the order for them should be sent early, for the vendors of such nets are usually inundated with orders after the commencement of the fruit season.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Masdevallias.—*Masdevallia tovarensis*, although at one time a very rare and expensive plant, is now well known throughout the country, and is much appreciated by all lovers of Orchids. Its pure white flowers, which are produced during the months of December and January, last a long time in perfection. Being a compact-growing plant, and developing its flowers well above the foliage, it is especially valuable as a decorative plant; the spike of two or three flowers is also extremely useful when other flowers are scarce, for wearing in buttonholes and for similar purposes. The inflorescences will continue to develop flowers for several successive seasons, but it is not advisable to retain the old spikes after they have once carried their complement of flowers, otherwise the plant is liable to deteriorate. The flowering season being over, the present is a suitable time to examine the plants, and any which are bare of foliage in their centres may be broken up and re-made into small, compact specimens. Healthy plants which have sufficient space wherein to grow should not be unnecessarily disturbed. In cases where the compost has become exhausted, the soil may be carefully removed and fresh material substituted. This is more easily done when the soil in the pots is dry. In repotting, the pots or pans used should be filled to about one-half of their depth with broken crocks for drainage, making this secure with a layer of rough Sphagnum-moss. As a potting medium, use good, fibrous peat and Sphagnum-moss in equal parts, taking care to add sufficient small crocks to ensure proper drainage and aeration. About

two months ago several small plants of this species at Burford showed no indication of flowering, but commenced to grow prematurely. They were repotted in a mixture of *Osmunda* and *Polypodium* fibre, intermixed with plenty of small crocks. Up to the present time they have lost no foliage, but appear to be in excellent health. Repotted plants should be very carefully watered till the young leaves are well advanced and the roots have obtained a firm hold of the compost, for if too much water be afforded, both roots and leaves will decay quickly. When well established, plenty of water at the roots is necessary. For the next two months the plants should be kept near the glass on the shady side of the intermediate house, after which time they may be removed to the cool house for the summer.

Cypripediums in the intermediate house.—Such species and hybrids as *C. Fairrieanum*, *C. purpuratum*, *C. Euryades*, *C. Hera*, *C. Arthuri-anum*, *C. Charlesworthii*, *C. Spicerianum*, *C. Sallieri Hyeatum*, *C. nitens*, *C. Actæus*, *C. Lee-anum*, *C. Alcibiades*, *C. Mons. le Curte*, *C. Mrs. Mostyn* and *C. insigne* and its varieties, that have finished blooming should now be given attention provided any have become pot-bound, or, being rare varieties, require dividing for propagating purposes. Strong healthy plants that may be required to form specimens and are already well rooted, may be put into pots 2 inches more in diameter than those they are now growing in. The pots should be made about one-third full of drainage, secured with a thin layer of Sphagnum-moss. When placing the plant in the centre of the pot, it is advisable to keep the base of the leaves just below the rim, so as to make watering easy. A compost consisting of equal parts good yellow loam, turfy peat, leaf-mould, and Sphagnum-moss, well mixed together, with the addition of a moderate quantity of small crocks, will suit any of the plants I have named, also such species as *C. villosum* and *C. Boxallii*. Both these plants are now opening their flowers. The best season for repotting is within a few weeks after the flowering stage. Annual repotting is not desirable. It is only when the old compost is sour, or has decayed, or division of the plants is necessary, that the operation should be done. After repotting the plants apply to the compost a light sprinkling over the surface. This should be continued for a few weeks each time it appears to be dry, after which time ordinary root-waterings should be given. Always keep the atmosphere fairly moist. Shade the plants from direct sunshine.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Tulips.—It is advisable, as soon as the Tulip growths can be seen through the soil, to apply a top-dressing consisting of some sifted leaf-mould with a little soot, lime and chemical fertiliser added. Such a top-dressing is also useful for Crocuses, Hyacinths, *Silene*, *Myosotis*, Wall-flowers and Arabis. Crocuses and Snowdrops growing in Grass more especially need such a top-dressing.

Ranunculus.—It is a suitable time to plant *Ranunculus*. The best soil is one composed of a rich, rather light loam into which has been incorporated some well-decomposed cow manure and sand. The bulbs should be planted about 2 inches deep and 3 inches apart. Planting may be continued until the middle of March if desired. Turban *Ranunculus* flower about the middle of May, and Persian sorts the end of May or beginning of June.

Tree Peonies.—These should be planted as soon as the weather is favourable; being gross feeding plants, they require a very rich soil. It is necessary to protect the young growths from spring frosts.

Tuberous-rooting Begonias should be examined with a view to starting them into growth. The largest tubers can be divided, should it be necessary to increase the stock. Afford sufficient warmth only to induce a slow growth at the start. The same remarks apply to *Cannas*. Seedling plants in pits and frames should be kept somewhat dry, as they withstand frost better in that condition.

Vacant flower-beds or borders should be deeply dug and manured. If they are occupied by spring bedding plants, the necessary manure must be placed ready at hand so that as soon as the spring-flowering plants have bloomed the land can be got ready for the summer bedding.

Cortaderia argentea (Pampas Grass).—The clumps of this ornamental Grass should be trimmed, the old inflorescences removed, and the plants generally made tidy. The present is a suitable time to plant the Pampas Grass. Select a position by the side of a stream or lake or a position on a Grass plot, but the site must be a fairly sheltered one, otherwise strong winds will break the plumes. The best soil for the Pampas Grass is a moderately light one, and one containing plenty of manure. As the inflorescences are developing in summer-time, copious watering at the roots will be of benefit. The Pampas Grass can be propagated by division of the clumps and from seeds; the latter should be selected from the finest plants.

The bog garden.—As dead and withered foliage will protect the plants from damage by severe frosts, the plants should not be made tidy until the winter is past.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Planting one-year-old vines.—The border should be prepared two or three weeks before the vines are to be planted, in order that the soil may become properly settled and suitably warmed. All the old soil should be removed, and advantage should be taken when the house is empty, to cleanse the woodwork or repaint it if necessary. The depth the border should be made will depend on the variety to be planted and, to some extent, on the width of theinery. For the first two years a width of 4 feet will be ample. In the case of late vines, the borders should be at least 3 feet deep, but plenty of drainage material must be provided. It is a mistake to plant late varieties of Grapes in shallow borders, as these require water too frequently. For early and mid-season varieties a depth of 2 feet 6 inches will be ample. The bottom of the border should be concreted, unless the subsoil is gravel, and a layer, not less than 9 inches deep, of material for drainage should be provided. The vine enjoys a rich, calcareous loam, containing plenty of vegetable fibre; the top spit of an old pasture is the most suitable material. Artificial manures and coarse bones should be added, and the quantity will be more or less according to the quality of the soil. I do not advise the use of farmyard manure for vine borders except as a surface dressing. Old mortar rubble and wood ashes may be freely employed, especially if the soil be of a heavy nature. In making the border, it is important to ram the soil as firmly as possible. The best time to plant is when growth is just becoming active. The roots should be spread out evenly, and for this reason they should be carefully separated with a pointed stick; this work will be facilitated by occasionally dipping the "ball" into a tub of lukewarm water. Make a hole of sufficient depth for the roots, spread them out to their full length, and work in some fine soil amongst them, arranging them carefully and near to the surface. The planting should be done as expeditiously as possible, and, as soon as completed, the roots should receive a copious watering, making the water tepid and applying it by means of a fine-rose can. Theinery should be kept warm and close, but artificial heat should be used very sparingly till the roots are active, or the vines will grow weakly.

Cherries.—The house should be fumigated just before the trees come into bloom. The Cherry is very impatient of forcing, and for this reason sudden increases in temperature are to be avoided, especially when the trees are in flower. At this stage the atmosphere in the house should be moderately dry and in constant circulation, but there should be no severe draughts of cold air. Tap the trees at mid-day to aid the dispersion of the pollen. Pot trees will require very careful watering until the fruits commence to swell.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, FEBRUARY 23—

Roy. Hort. Soc. Coms. meet. (Competitive Classes for late dessert Apples. Lecture at 3 p.m. by Mr. Arthur W. Sutton, on "A Camping Tour through Syria to Petra in Arabia.") Surveyors' Institution Annual Dinner at Hotel Métropole.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—39.9°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, February 17 (6 P.M.): Max. 44°; Min. 31°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, February 18 (10 A.M.): Bar. 30.0; Temp. 43°; Weather—Fine.

PROVINCES.—Wednesday, February 17 (6 P.M.): Max. 49° Sligo; Min. 35° Scarborough.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—

Herbaceous and Border Plants, Lilliums, Bulbs, Plants, &c., at 12; Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY—

Perennials, Border Plants and Bulbs, Lilliums, &c., at 12; Roses and Fruit Trees, at 1.30; Palms and Plants, at 5; Miscellaneous Bulbs and Roots, at 11.30; Japanese Lilliums, at 1; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

THURSDAY—

Special Spring Clearance Sale of Nursery Stock at Hollamby's Nurseries, Groombridge, near Tunbridge Wells, by Protheroe & Morris, at 11.

FRIDAY—

Choice Imported and Established Orchids, Orchids in Flower and Bud, at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

The Orphan Fund.

A few weeks since we recorded the proceedings at the Annual Meeting of the Gardeners' Royal Benevolent Institution. In the present issue it is the turn of the Royal Gardeners' Orphan Fund. Just as in the case of the Benevolent Institution, this Report of the Executive Committee goes to show that a large amount of money has been subscribed for the purposes of charity. The year 1908 saw the Coming-of-Age of the Orphan Fund, therefore extra efforts were put forward to make the year one of greater progress than usual. The Duke of Bedford, president of the Fund, presided at the Annual Festival, and, in connection with that event, a greater sum of money was raised than at any similar Festival in the history of the Fund. In order to spread an interest in the work, especially amongst those young gardeners who have not felt themselves in a position to subscribe 5s. a year, the committee invited shilling contributions. This new means of appeal obtained a considerable degree of popularity, and resulted in the collection of a sum of £250. The shilling contribution, therefore, rendered considerable financial assistance, but beyond this it served to make the Fund better known to many who heretofore had displayed but little interest in it.

The proceedings at the Annual Meeting will be read with supreme satisfaction, for not only were 20 additional children elected to

the Fund, but after an appeal by Mr. Harry J. Veitch in favour of the candidates who had met with ill-success at the poll, the committee and general meeting resolved to place these also upon full benefit. We believe that the committee is well advised to thus employ to the full the funds at their disposal, rather than to save an amount each year greater than is necessary to provide for a proper reserve fund. Gardeners and others who have supported the Orphan Fund in the past will be the more encouraged in their liberality by such enterprising policy. It was pointed out at the meeting that the two candidates who received most votes were orphans of a gardener who had been a life member of the Fund, and who, in other directions, had done all he could for the charity during the time that he was in a position to afford help. This may be taken as a reliable indication that, if gardeners subscribe to the Fund, their children will be the more certain of obtaining support should it ever be necessary for them to appeal to the subscribers. During the 21 years that the Fund has been in existence, it has distributed the sum of £19,506. The total number of orphans who have received benefits is 253. The disbursements last year amounted to £1,621 7s. 6d.

Mr. Henry B. May announced that already there were nine candidates whose applications had been accepted by the committee, and who therefore will come up for election next February. Circumstances seem to show, therefore, that the list next year will be a heavy one. We have every reason to hope, however, that the support the Fund will receive during this year will be equally large, and that, at the next annual meeting, it may be found again possible to grant assistance to every child on whose behalf application is made for relief.

The Shropshire Show.

The Secretaries of the Shropshire Horticultural Society have sent us a copy of the schedule of prizes to be offered at the exhibition which will be held at Shrewsbury, on August 18 and 19 next. We do not find any important additions or omissions in the section for plants and cut flowers. Liberal prizes, amounting in some classes to £50, are again offered for groups of plants, and in others that are less exacting the prizes are proportionately high. In the classes for cut flowers there appears provision for almost every species that may be expected to be in season at that time. The principal class in the fruit department, as last year, is one for a collection of 30 dishes of ripe fruits in not fewer than 10 distinct kinds. The 1st prize will consist of a handsome silver Champion Cup, value 25 guineas (to be won three times), and £20 in cash, with the Society's Gold Medal. In the remaining prizes in the same class a sum of £55 is offered and two medals. The Cup was won for the first time last year by the Duke of Westminster's gardener, Mr. N. F. Barnes. Most of the other classes for fruit familiar at Shrewsbury are repeated, and an excellent display may be confidently anticipated.

The show of vegetables will be of less extent than usual, but this will not be due to any cutting down of the Society's own classes. It will be caused by the omission of most of the special prizes usually offered by

the principal seedsmen. We understand that an explanation of the absence of these classes is to be found in a new regulation which the Society has introduced to the effect that no condition shall be expressed in the schedule which would require the seeds to be purchased from the donors of the prizes. We for our part are, nevertheless, disposed to regard this regulation as introducing a salutary reform. The familiar cards stating that the produce has been grown from So-and-so's seeds have little, if any, value to the public; whilst they certainly detract from the general appearance and repute of the exhibition. Assuming that in all cases the exhibits have actually been raised from such particular seeds, the practice has the effect of implying that the superior quality of the produce is due solely or chiefly to that fact; whereas, the greater part of the credit rightly belongs to the cultivator, and therefore the exhibitor. It has been alleged again and again that sufficient care is not always exercised in the placing of such cards; but whether this is the case or not, the practice of admitting them to the exhibition is certainly susceptible of abuse, whilst the condition that only such exhibitors who purchase seeds from the firms offering the prizes may compete, serves to limit unnecessarily the number of competitors. It is to be hoped, therefore, that the trade will come to recognise that the new regulation which is designed to increase the prestige of the show is in no wise derogatory to that of the trade itself. Such being the case, the Society deserves all support. On another page a correspondent points out that it may be possible to evade the spirit of the Society's regulation, owing to the wording of the schedule in the few special classes that have been retained. If this is true and the intention of the committee is frustrated amended regulations will be required.

A further innovation is to be noticed with regard to the honorary exhibits. In future a definite number only of silver cups, and gold and silver medals will be awarded to non-competitive exhibitors, probably with a view to enhancing the value of these awards.

OUR SUPPLEMENTARY ILLUSTRATION.—Some years ago Messrs. CHARLESWORTH & Co., of Haywards Heath, raised and flowered a hybrid between *Lælia harpophylla* and *L. cinnabarina*, which they named *L. coronet*. Its flowers were of bright orange colour, similar to *L. harpophylla*, and they were larger than that species. In other respects, however, the hybrid possessed but little qualification as a garden plant. Like some other despised seedlings, it has made a very good parent, and when crossed with *Cattleya Schröderæ* it has produced a hybrid which retains the intensely bright and deep orange colour whilst the flowers are of good size and substance. The plant depicted in our Supplementary Illustration was shown by Messrs. CHARLESWORTH & Co. at the Royal Horticultural Society's meeting on March 17, 1908, when it obtained an Award of Merit. It is known as *Lælio-Cattleya Elinor*.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will take place on Tuesday, the 23rd inst. At 3 p.m. a lecture on "A Camping Tour through Syria to Petra in Arabia" will be delivered by A. W. SUTTON, Esq., J.P., F.L.S., V.M.H. This interesting lecture will be illustrated with lantern-slides.

EXAMINATION OF EMPLOYÉS IN PUBLIC PARKS.—The Royal Horticultural Society's fourth examination of the employés in public parks was held on January 11 last. As previously, the examination was partly *viva voce* and partly written, occupying about 3 hours and a half. It was held at the Society's Hall in Vincent Square, Westminster. One hundred and nineteen candidates entered, and of these 25 secured places in the first class, 40 in the second, and 37 in the third, leaving 17 candidates who failed to obtain the minimum marks required. No one candidate stands out prominently before the others, and the highest marks obtained fall considerably below those of 1908. It is encouraging, however, to notice that about 50 per cent. of the candidates in Class I. consisted of those who had been in the lower classes last year, and that other candidates of former years, if not yet in Class I., are higher in the list this year than they were previously. Reviewing the results generally, the examiners state that "there is still much room for improvement, the higher standard hoped for in last year's report having to be still held in anticipation. A complete knowledge of garden practice and the reasons for it; the values of phosphatic and nitrogenous manures, their comparative cost, and the quantities required; the art of curves and the power to express them neatly on paper; arithmetical calculations for land measures and simple cash computations—such things as these, added to a more extensive knowledge of gardening specialised for public parks, are necessary to raise the employés to the standard of really first-class craftsmen whose skill is to find expression in the gardens in which they serve. The higher places gained by most of the old candidates in the lists should be an encouragement to the less successful to persevere diligently with their work and try again next year."

APPOINTMENTS.—Mr. ARCHIBALD CLARENCE MILES, a member of the gardening staff of the Royal Botanic Gardens, Kew, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, a Curator of Botanic Stations in the Agricultural Department of the Gold Coast. Mr. W. C. WORSDELL has been appointed deputy Professor of Botany at the South African College, Cape Town, South Africa, in the room of Professor H. H. W. PEARSON during his travels in Angola and elsewhere in the present year. *Kew Bulletin.*

CHANGES AT KEW.—Mr. WILLIAM DALLIMORE, who has had charge of the Arboretum at Kew for some years past, has been appointed to the New Museum for British Forestry, under Mr. HILLIER. Mr. ARTHUR OSBORNE, Foreman in the decorative department, will succeed Mr. DALLIMORE as Foreman in the Arboretum.

MR. CHARLES FOSTER, Assistant Director of Horticulture at the Reading University College, will remove to Sutton Place, Guildford, in July next to take up the position of director of a model farm which Lord NORTHCLEFFE is about to establish.

SCHOOL GARDENS IN STAFFORDSHIRE.—In the quarterly report of the Staffordshire Education Committee it is stated that the former system of evening gardens is to be superseded, as it has been found to overlap with the elementary day-school gardens. Four schemes are put forward in replacement, by which instruction in horticulture can be given. The scheme to be adopted in any place will depend upon local circumstances and the report of the instructor. The schemes are as follow:—(1) Allotment demonstration plots, (2) model cottage gardens in villages, (3) fruit demonstration stations, (4) evening gardens of fruit and vegetables.

SOUTH-EASTERN AGRICULTURAL COLLEGE.

—A meeting of the Governors of the South-Eastern Agricultural College was held at the Charing Cross Hotel on Monday, February 8. The Right Hon. Lord ASHCOTTE, who was elected chairman for the ensuing year, presided. The Principal, Mr. M. J. R. DUNSTAN, in his report, stated that the number of students attending the college courses was 127, the largest number on record for the spring term, and that the new horticultural course had commenced with 14 students.

VISITORS TO KEW DURING 1908.—The number of persons who visited the Royal Botanic Gardens during the year 1908 was 2,710,220. These figures show a decrease of 252,494 visitors over the year 1907, when the number of visitors was the largest yet recorded. During the last 10 years (1898-1907) 16,428,084 persons have visited the Gardens, giving an average of 1,642,808. The total number on Sundays was 1,321,384 and on week-days 1,388,836. The number of visitors on Sundays is the largest on record, being in excess of that for 1907 by 52,883. The increase is probably very largely due to the great number of French visitors during the summer. The total number on week-days was 1,388,836, the corresponding number for 1907, 1,691,213. The maximum attendance on any one day was 98,388 on August 3. The smallest number on any one day was 68 on January 21. The greatest number on a Sunday was 70,904 on July 26, and is a record number for a Sunday, showing an excess of 5,990 visitors over the figures for 1907. The smallest number on a Sunday was 1,032 on December 6. *Kew Bulletin.*

THE LATE G. H. SAGE.—Many of our readers will regret to hear that Mr. G. H. SAGE, whose somewhat unexpected death was recorded in these pages recently, has left a widow and young children almost or entirely unprovided for. We have received a letter from Mr. W. A. COOK, gardener at Leonardslee, Horsham, in which he states that a number of friends have decided to raise a sum of money for presentation to the widow, and it is hoped that gardeners will assist this fund to the extent of their ability. Mr. COOK states that the following sums have been already given or promised: Messrs. R. & G. CUTHBERT, 2 guineas; "X.Y.Z.," 20s.; J. JENNINGS, 10s.; H. G. SMYTH, 10s.; J. BARNSHAW, 2s. 6d. Others interested in this movement are:—Messrs. CHARLES DICKSON, JOHN MCKERCHER, CHAS. FOSTER, JOHN WEATHERS, JOSEPH GODSEFF, H. G. ALEXANDER, HERBERT J. CUTBUSH, W. J. WATSON, L. R. RUSSELL, C. F. WATERS, T. WALTERS, A. R. ALLAN, A. TAYLOR, A. R. SEARLE. Mr. W. A. COOK is the honorary secretary, and contributions may be sent to him. It is suggested that a shilling contribution, if generally supported, would be sufficient to meet the case.

THE KING'S VISIT TO BERLIN.—It is interesting to record that the whole of the floral decoration for the banquet offered by the British Embassy to their Majesties the KING and QUEEN during their recent visit to Berlin was entrusted to a London firm of florists—Messrs. FELTON & SONS, of Hanover Square. The flowers used for this purpose were scarlet Carnations, Lilies of the Valley and white Lilac. Owing to the fact that the flowers obtainable in the German capital were not of so high a quality as the best grown in this country, it was found necessary to arrange them in masses instead of lightly, as would have been done if finer blooms with longer stems had been available. Among the other floral decorations carried out by Messrs. FELTON in connection with the Royal visit were those of Messrs. WARING & GILLOW's Berlin establishment. Here the effect was produced by the use of "Mimosa" (Acacia), Violets, brown foliage, and mauve ribbons.

In carrying out this work, undertaken at three days' notice, 100 workmen and three interpreters were employed. Only the kindly aid of the Municipal Fire Brigade in the shape of two fire escapes enabled the men to place the floral and other decorations at the higher altitudes of the building. It is a matter of congratulation for Messrs. FELTON to know that both His Majesty KING EDWARD and H.I.M. the KAISER expressed their appreciation of the work.

RECREATION GROUND FOR SOUTHALL.—A new recreation ground has been secured by the Southall District Council, says the *Times*, and it is to be called Southall Park. After the completion of the erection of a new lodge at the entrance, Lord and Lady JERSEY will perform the opening ceremony, which has been fixed for May 1.

BERLIN INTERNATIONAL HORTICULTURAL EXHIBITION.

—The Prussian Horticultural Society (Der Verein zur Beförderung des Gartenbaues in den Preussischen Staaten) is making preparations for an international exhibition to be held about Easter in the newly-erected Exhibition Halls at the Berlin Zoological Garden. The honorary president of the exhibition is Herr VAN ARNIM-CRIEWEN, Minister of Agriculture. The Prussian Government has appointed official representatives of all foreign European states, and from these special exhibition commissioners are selected. His Majesty the KAISER, who, like all kings of Prussia since the year 1822, is the patron of the society, will give a prize of honour for the most excellent exhibit. Her Majesty the KAISERIN, who takes the greatest interest in plants and in flower shows, will award a Gold Medal for the best object of the florist's art, a silver medal for the finest specimen of German Rose culture, and a bronze medal for the best German Lily of the Valley. Her Imperial Highness the CROWN PRINCESS, as showing her sympathy in the exhibition, will give an award of honour. The city of Berlin has sanctioned prizes of a total sum of 6,000 marks, and many suburban authorities are also offering prizes. A guarantee fund has been raised of more than 100,000 marks. The entire building construction and the horticultural decorations in the two adjacent halls are so planned that the more decorative Hall I will be chiefly set apart for German exhibitors and their exhibits. The handsome orchestral space will be enlarged and made to resemble the castle terrace of the Achilleion, in Corfu, and its gardens. It is stated that Holland intends to have a special show, in which bulbs, Rhododendrons, Azaleas, fruits and vegetables will be chiefly represented. France is preparing for a private exhibition of novelties in plants, forced fruits, vegetables, and French floral arrangements. From Belgium will be shown stove and greenhouse plants, Palms, Azaleas, Araucarias, and hybrid Orchids. It is hoped that England will be well represented. About one-third of the available space will be occupied by foreign exhibits.

"ZEITSCHRIFT FÜR BOTANIKER."—The first number of a new German botanical periodical, the *Zeitschrift Für Botanik*, has just been issued. The *Zeitschrift* is edited by Professors JOST, OLTMANN and GRAF ZU SOLMS-LAUBACH, and published by GUSTAV FISCHER in Jena at the price of 24 marks per annum. The first number contains an account by HANS FITTING of his investigations, conducted for the most part in the Botanic Gardens of Buitenzorg (Java), on the effects of pollination, &c., on the flowers of Orchids. The number contains also a series of reviews of current, botanical research publications and classified lists of new literature. The names of the editors and publisher are a sufficient guarantee that the *Zeitschrift* will be a valuable addition to periodical botanical literature.

LAW NOTES.

OWNER'S RISK.

As an effort is again being made to get this question brought before Parliament, may I be permitted to state briefly the position?

The attitude of the railway companies.—Last year a well-known nursery firm in the north had 6,000 five-year Spruce trees rendered worthless in transit. A claim was made and the following was the reply received from the traffic manager of the railway company:—

I submitted your claim to a meeting of the Joint Claims Committee of the Scotch Railway Companies, held at Perth on 2nd inst., but regret to say could not get it passed for settlement.

The owners risk note which was signed at the time of forwarding clearly protects the company and relieves them from all liability, not only for loss, but also for injury.

I am exceedingly sorry that you should have suffered through this accident, but the difference saved by carrying your goods at the owner's risk rates, instead of company's, must amount to a considerable sum in the year, and should go some way at least towards covering your loss.

The attitude of the Courts.—The judge said if people would persist in taking advantage of these low rates and signing contract notes which relieved the company of all liability, he did not see how they hoped to recover. Judgment would be given for defendants—the railway company, with costs.

The official attitude.—Extract of report of Departmental Committee on Fruit Industry appointed by Lord Onslow, President of the Board of Agriculture, 1903.

With regard to the refusal of the companies to pay claims for loss or damage, especially in the case of fruit consigned at owner's risk, the committee are strongly of opinion that it would be a great advantage to all parties if carriage at owner's risk were done away with altogether. Mr. Hennell, as representing the companies, was clearly of this opinion, and stated that, when the Great Western Company framed their new scale for goods traffic, they made the rates at company's risk only, and that they did not, as a rule, give owner's risk rates between places where they controlled the traffic, on account of the friction which invariably arose. We believe that if the owner's risk rates at present in existence were slightly raised, say, 5 per cent. (which Mr. Vincent Hill suggested was the proper difference between them and company's risk rates—though the actual difference is generally much more, and varies enormously), and if all fruit, both by goods and passenger trains, were carried at company's risk in future, growers would gladly pay the small extra amount, and get rid of the present annoyances and loss occasioned by the non-payment of claims, or the payment of them only after much correspondence and delay.

In the event, however, of the owner's risk rates being maintained, the committee are of opinion that the exemption of a company from liability unless "wilful misconduct" is proved, is too stringent a condition; for, in hardly any case would it be possible for a consignee to obtain the necessary evidence, as that would have to be derived from the servants of the company itself. They consider that the term "culpable negligence" should be substituted for "wilful misconduct."

They are glad, however, to note that, according to Mr. Hennell, the railway companies seem inclined to take a more reasonable view of their liability, and to admit claims in the case of total loss, and sometimes in the case of damage, the assumption of this attitude being, no doubt, largely due to the representations made by the Board of Agriculture to the railway companies in Great Britain, the correspondence being subsequently presented to Parliament.

The attitude of the horticultural trade. It is universally felt that it would be a great gain if a Bill on the lines of Mr. Hooper's could be got through Parliament making the railway companies liable for "culpable negligence" or "gross neglect" instead of, as at present, being only responsible for "wilful misconduct." The latter no one outside the railway is ever able to prove. Then I believe it is a universal opinion that a simple arbitration court to settle disputes, or, as Mr. Morgan Veitch so ably advocates, a simple procedure in the county or borough courts from which, in matters of litigation between a railway company and a trader, there shall be no appeal where the amount of dispute is under £20.

The sheer absurdity of judges and railway companies' contentions that traders must send at the higher or company's risk rates is apparent by simply stating that the difference between the two rates on seeds and plants is often as much as 100 per cent.—in the case of Tomatos it is more, viz., 42s. 6d. owner's rate London to Glasgow, while company's risk rate is 100s. per ton.

Railways are now more than ever before, owing to their joint committees, a gigantic monopoly, and it is the duty of Parliament to find a way out for the public—the trader. The Board of Trade is no good *William Cuthbertson.*

NOTICES OF BOOKS.

* "THE BOOK OF NATURE STUDY."

In the second volume of this work Mr. Oswald Latter continues his remarks of invertebrate animals. The present contribution includes a most interesting description of bees. Though concise, it affords a good knowledge of what goes on in a hive. Perhaps more might have been said with regard to the economic aspects of these creatures, and the same remark applies to the article on ants, which is the next subject dealt with. Gardeners will be especially interested in the chapters on plant-lice and gall-flies. The gnat is given as a type of aquatic insect which can be reared easily in captivity and kept under observation; and a water-bettle (*Dyticus*) is used as an illustration of the beetles.

If a brief space can only be given to well-known forms, it is not to be expected that much will be devoted to creatures which have hitherto attracted but little attention. This is regrettable, because some of those students who become interested enough to study natural history might, with advantage, turn their attention to neglected animals. As a matter of fact, many observations still remain to be made upon the centipedes and millipedes, and not quite three pages of the *Book of Nature Study* are devoted to them.

Spiders receive a little more attention, as do the snails, slugs, and fresh-water mussels. The carnivorous forms of so-called worm-eating slugs have a special interest to the gardener, in that they will do no harm to vegetation and may be useful in keeping down earthworms.

Little more than one-third of the volume is devoted to the consideration of the aquarium, as well as of fresh- and salt-water plants and animals that most easily accommodate themselves to a life in restricted conditions. Miss Marion Newbiggin is responsible for this contribution. Several aspects of the aquarium are pointed out:—By its use the teacher may keep creatures which can be utilised as the subjects of lessons; the habits of aquatic creatures may be studied in a way and to a degree which could not be accomplished if the creatures were in their natural surroundings; and, finally, the aquarium shows how plants and animals mutually depend upon one another.

Careful directions are given for starting aquaria, and suitable algæ and aquatic water plants are dealt with. Of the larger animals suitable for a fresh-water aquarium, the pond tortoise of South Europe and various amphibia and a few fish are mentioned, and afterwards molluscs, crustacea, and insects. In a similar manner marine forms are described, of which the invertebrate forms belong to the classes already mentioned. In addition, though, we have sea-urchins and star-fishes, and those very common inhabitants of the marine aquarium, the sea-anemones and their allies. The concluding chapter has been written by Professor Arthur Thomson, and serves to illustrate that, in nature study, the outlook should be a general one, and that observations should not be confined to the creatures themselves, nor to their habits merely, but should also include their surroundings and inter-relationships. The title chosen is "The Haunts of Animals." The habitats dealt with include the seashore, the open sea, with its free-swimming population, the depths of the ocean, where everything is dark, and silent, and cold, and where there are no plants. Rivers, lakes, and ponds are also considered in connection with their inhabitants; whilst on dry land, liuks and dunes, meadowland and woodland receive attention. Lastly are considered the dwellers of the air.

* *The Book of Nature Study*, Vol. II. Edited by J. Breland Farmer, D.Sc., F.R.S. The Caxton Publishing Co. Price 7s. 6d. net.

The contribution gives many useful hints and much valuable information for those who wish to carry on that outdoor, observational work which should be the keynote of all nature study.

Hints as to shore excursions follow, and Professor Thomson describes a typical one. To the open sea he gives less attention, and, as the subject of the abysses of the ocean is removed from the direct scope of nature study in school, he passes over this with little comment. We commend Professor Thomson's further remarks to the consideration of every earnest exponent of nature study.

As in the previous volume, particular attention has been paid to illustrations. The photographs of pools with which Miss Newbiggin illustrates her chapters are extremely good. Such creatures as slugs, centipedes and woodlice are not usually represented by photographs, but the pictures by Mr. Hugh Main show that there are considerable possibilities in this direction. Mr. Berridge's photograph of a millipede is also very good, and so are those of bees and ants by Mr. W. P. Westell.

We are promised in the third volume chapters on the germination of seeds and the growth of plants by Miss Charlotte Laurie; Dr. Lang will deal with common plants and their structure; while trees, Ferns, and children's gardens will form the topics to be considered next. *W. M. W.*

* ALPINE FLORA.

MONS. CORREYON is well known as an authority on Alpine plants, and those who have visited his garden at Floraire are well aware that he can also grow them successfully. We had every reason, then, to look forward with pleasure to the appearance of the *Flore Alpine* when it was advertised as amongst the forthcoming books on horticulture. The expectation is realised on opening the volume, though, perhaps, not quite in the form we anticipated. The book opens with a brief introduction, and to this succeed 100 coloured plates by Mons. Robert of some 180 plants. The reproduction is, in many cases, remarkably good, and the tinted background forms an effective feature in each study. The work is so excellent that it is difficult to signalise any particular plate for praise beyond another, and there is hardly one that fails to reproduce accurately and artistically the plant it portrays. Perhaps we may be allowed to regret that the *Soldanella* is represented as mauve rather than blue. We have seen plants of the former colour, but one generally associates a more pronounced shade of blue with the flower than is depicted on pl. 66.

The general introduction to the letterpress follows the plates, and contains a brief account of some of the famous rock-gardens of Europe, among which those of this country easily predominate. A fine picture of the "Matterhorn" in Sir Frank Crisp's garden strikingly recalls the great mountain itself. In connection with this plate, we might incidentally remark that the reference should be to p. 248, not to 234, as given in the legend.

The description, together with cultural notes, of a good representative collection of Alpine plants then follows, and the hints respecting some of them are such as to make one realise the defects of our own climate. *Eritrichium* is said to need a certain degree of care! Of *Androsace glacialis*, perhaps wisely, nothing of cultural advice is offered. Its habitat is given, and the paragraph ends in a verse.

The names of the plants are given in English as well as in foreign languages—an advantage to the tourist, who might well add Mons. Correyon's volume to his bag when making an expedition to the Alps. The only serious fault we have to find with the book is on account of its weight, but the delicacy of the plates could, perhaps, hardly have been secured except on a heavily-loaded paper.

* *Flore Alpine*, by H. Correyon and Ph. Robert. Illustrated with 100 coloured plates. Geneva, 1908. Price 18s.

ÆSCULUS PARVIFLORA.

THIS species (see fig. 53) differs from other members of the genus in having a shrubby habit and in producing its flowers in the month of August, a time when most other shrubs have finished their flowering. The plant is a native of South-Eastern United States, and is usually to be seen near rivulets in moist situations, where it forms large, spreading clumps or thickets. Under cultivation in this country *Æsculus parviflora* forms a large, spreading shrub, reaching 10 or 12 feet in height and as much as 20 feet in diameter. The bushes spread by means of suckers, which are produced near the main stem, so that the plant does not encroach very fast upon other shrubs or trees with which it may be associated. The pure white flowers are borne in long, terminal thyrsoid racemes, sometimes more than 1 foot in length. The petals, usually four, vary in number, there being sometimes as many as seven: the upper are slightly longer than the lower petals. The stamens, which are long and thread-like and often three times the length of the corolla, form the attractive part of the flower. Each filament is tipped with a conspicuous red anther. The foliage resembles that of the Horse Chestnut, but is somewhat smaller. The plant thrives in a moist soil and delights in an open, sunny position. It forms a fine subject for the shrubbery, border or lawn. On account of the white flowers, the plant shows best when in bloom against a background of trees or tall shrubs. C. P. R.

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

VEGETABLE COMPETITIONS AT SHREWSBURY.

—Competitors in the vegetable classes at the Shrewsbury show must have opened their eyes wide when they read their schedule of the classes at the ensuing show in August next. Those favoured classes which invariably brought great competition and the finest of vegetable products have entirely disappeared, and their places taken by small or single-dish classes for prizes offered by a Manchester and a Wordsley firm. It is stated—although whether correct or not I do not know—that this year the Shropshire Horticultural Society declined to accept any prizes lettered with conditions as to the sources from which seeds be obtained. If that is so, no one can complain. Nevertheless, its vegetable department, which has hitherto been such a popular one with exhibitors and visitors, must under the new arrangement materially suffer. That result, no doubt, the society has anticipated, and may have good reasons for the course it has taken. But there remains good cause to think that, in spite of the determination of the society to exclude special restrictions as to the source from which seeds are obtained, the conditions annexed to classes 109 to 116 and 117 to 126 rather override the society's intentions. In each of these classes the name is given of a variety which a particular firm has not only so named but of which it claims exclusive ownership. How are competitors to obtain these things, except from the firms in question, and is not that a method of compelling such purchases quite as bad as any methods or conditions which have previously prevailed? Assuming that any competitor showed Best of All or Scarlet Emperor as "New Exhibition Runner" Bean in Class 118, and this is quoted as an example, and a representative of the firm offering the prizes declares it should be disqualified, because not their "New Exhibition," specially on the ground that the competitor had purchased no seed from that firm, what would result? Would the judges be compelled to disqualify? Some authoritative statement should come from the society as to whether exhibitors in these classes are necessarily compelled to obtain seeds of the varieties from the firms offering the prizes or not. If the answer is yes, then the society's new conditions disappear. If it is no, then no competitor can be disqualified. *Vegetable.*

NITRO-BACTERINE.—The following experiments which I made during 1906 may be of interest:—The bacterium (*Pseudomonas radicola*) were obtained direct from the U.S.A. Department of Agriculture, and had been prepared on the cotton-wool system then in vogue. A field on which the usual rotation of farm crops had been grown was selected, and long beds, 1 foot wide and 50 feet long, were carefully prepared, each bed being afterwards sown with equal quantities of Clover seed. One bed was then watered with plain water and the other with bacterial culture. During the summer and following year the beds were constantly examined, but although the crops succeeded well, at no time could any difference be discovered either in the growth or amount of nodules on the roots between the two beds. The second experiment, on Sweet Peas, made at the same time and with the same culture, gave a different result. Ten new flower-pots were filled with a mixture consisting of equal parts cinder-ash and sand, which had been baked for an hour in a large furnace. Five of these pots were sown with 12 ordinary Sweet Pea seeds, the other five with 12 seeds, which had previously been soaked in the bacterial culture; all the pots were afterwards placed in a greenhouse and kept moist with rain-water from a tank inside. The uninoculated plants made very little progress, being dwarfed and appearing chlorotic, with very few flowers and no nodules

velopment of Apple scab such as seen last year was largely due to two successive rather cold and wet seasons that were far from being favourable to the production of good fruit out-of-doors. But now that through such climatic conditions scab seems to have got such a foothold is it wise to trust to a succession of warm, dry summers to check it, or should the trees be sprayed for that purpose? If any readers have had experience of home spraying, they may do well to let the world know the results. A. D.

MOISTURE-LOVING PLANTS.—Mr. Smith (p. 52) mentions a white form of *Astilbe Davidii* known as "grande," which he says is "worthy of extended planting." This white variety of *Astilbe*, so far, has not come under my notice, neither have I seen mention made of it before. There is, however, a species known as *Astilbe grandis* which differs in several particulars from *A. Davidii*. This is, indeed, a splendid plant for moist positions. The foliage is strong and vigorous, the individual leaves measuring often 2 feet in length. It grows to about 6 feet high, 2½ feet of which is composed of the erect slightly branching spike of white flowers. The inflorescence has not the plumose appearance of that of *A. Davidii*, and the plant has a stronger, holder habit than that species. Another addition to Mr. Smith's list might be *Artemisia lactiflora*, which also is a plant of recent introduction, and one specially adapted for half-



[Photograph by C. P. Raffill.]

FIG. 53.—ÆSCULUS PARVIFLORA FLOWERING IN THE ROYAL GARDENS, KEW.

on the roots, while the inoculated plants made rapid growth of a typical green colour nearly twice as high, and they produced many flowers at least a week earlier than the others. The roots carried a number of good-sized nodules. *Gurney Wilson.*

APPLE SCAB.—I saw during the early winter large quantities of Apples exposed for sale so affected by black scab as to be unfit for food. The sight of these fruits was all the more painful, because on sale with them were beautiful Colonial fruits absolutely free from fungal spots. At a Surrey gathering of agricultural co-operators recently, samples of Apples were submitted to me almost eaten up by the fungus. It would help in finding a remedy for this trouble if it were shown exactly under what conditions the trees were growing that produced such fruits, just as it would be interesting to learn from growers whose trees and fruits have been quite free from scab what forms of trees and methods of culture were adopted by them to secure immunity. It may be assumed that good culture has much to do with the absence of the fungus, and lack of culture, such as is sometimes seen in orchards, may account for its presence. Again, who has sprayed trees to protect them against this fungus? *We read so much about spraying, yet see so little of it.* Does it begin and end in a trial? It is fair to assume that the great de-

shady, moist positions. The foliage has no particular attraction; the great merit of the plant lies in the inflorescence which is borne on stems about 4 feet high, in a lax, graceful manner. The flowering period is the end of August and September. The plant may be readily increased by division or by cuttings. *Junc.*

HAMPTON COURT GARDENS.—At Hampton Court Palace gardens the long wall which extends from the main road to the Palace, and, again, some distance beyond it to the river Thames, presents a bare and uninviting aspect in winter. It is faced by a border some 7 feet in width only, which in summer-time is planted with a very great variety of flowering plants, some of them being 5 feet to 6 feet in height. Obviously, with such a narrow, crowded border, there is no opportunity for training plants against the wall. Were this long border made 20 to 30 feet in width, very fine effects might be obtained, and still leave ample room behind for the inclusion of wall climbers and shrubs. I would like to see, as an experiment, that portion of the wall from the garden entrance up to the high road specially planted with a view of making it a feature of attraction. The border in front should be planted with quite dwarf plants, such as would not in the least obscure the view of the plants on the wall. Flower gardening at this popular place of

resort has become somewhat stereotyped, and any break away from the present plan would be gladly welcomed. Along the wall, at intervals of 10 feet, are piers. These should be planted with a wide range of climbers, including the best varieties of climbing Roses. Some climbers might be planted for their handsome foliage only, but the range of selection is infinite. The intervening panels might be filled with plants, flat-trained to the wall, of Escalonia, Garryas, Ceanothuses, Cotoneasters, Cydonias, Forsythias, Magnolias, Viburnums, Fuchsias, Buddleias, Choisya ternata, Chimonanthus, and other shrubs. Flat-trained Heliotropes, Ivy-leaved Pelargoniums, Cassia corymbosa, and other tender plants, sunk in tubs, would greatly help in the scheme of decoration. A. D.

about August, and the plants put out sometimes in trenches, sometimes on the flat, but always earthed or moulded up. Naturally, in this country the seed would have to be sown earlier, and the crop requires much the same culture as Celery. "Finocchio" in Italy is eaten raw with salt, or cooked with butter and served up, as is the case here with Celery. Although this vegetable is not much known to English people, yet we have for some years supplied seed of it to those of our customers who have met with it when abroad. Sutton & Sons.

FINOCCHIO OR FLORENCE FENNEL (FENICULUM DULCE).—We have had no difficulty in growing this plant satisfactorily under ordinary garden cultivation. The edible part consists of the broad leaf-stalks, which, overlapping

so extensively used in Naples, and scarcely known in any other place, is referred by authors to *Feniculum piperitum*, D.C., a species very closely related to *F. officinale*. The plant is used while in the act of running to bloom, the stems, fresh and tender, are broken and served up raw, still enclosed in the expanded leaf-stalks. They are esteemed a great delicacy, and are obtained only from the end of March till June." J. Coult, Killerton Gardens, Exeter.

PINUS PINASTER.—In my article on this tree on p. 69, I appear to say, with reference to the collection of resin, that the pot receiving it continues to be moved up 3 feet at a time after a height of from 10 to 15 feet is reached. The pot is moved up 3 feet at a time until a height of 10 or 15 feet is reached, but not afterwards, for when that height has been attained a new groove is commenced. R. Stewart Lynch.

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

FEBRUARY 4.—*Committee present:* E. Ashworth, Esq. (chairman), and Messrs. R. Ashworth, F. W. Ashworth, J. C. Cowan, J. Cypher, W. Holmes, A. J. Keeling, C. Parker, J. E. Shill, F. K. Sander, H. Thorp, W. B. Upjohn, Z. A. Ward, A. Warburton, and P. Weathers (hon. secretary).

The number of exhibits were fewer than at the last few meetings.

H. J. BROMILOW, Esq., Rainhill (gr. Mr. Morgan), who has been a consistent exhibitor in the class for the Sander Cypripedium Cup, staged a splendid group of Cypripediums, for which a Silver-gilt Medal was awarded. Choice hybrids, including *C. × Victor*, *C. × aureum* var. *virginale*, and *C. × Mrs. W. Mostyn* were a feature of this display.

S. GRATRIX, Esq., Whalley Range (gr. Mr. Shill), exhibited Cypripedium *× Memoria Jerninghamia*, a distinct plant, the parentage of which was not recorded.

Mrs. S. GRATRIX received a First-class Certificate for Cypripedium *× Actæus* var. *Gratrixæ*, a very distinct variety with a pronounced green tinge throughout the flower and finely-marked dorsal sepal.

C. PARKER, Esq., Preston, was awarded a Bronze Medal for a small group of Cypripediums containing some distinct forms of *C. insignis*, in addition to several well-known hybrids.

Z. A. WARD, Esq., Northenden (gr. Mr. Weatherby), gained a Silver-gilt Medal for an exhibit of good *Odontoglossums*.

Mr. J. BIRCHENALL, Alderley Edge, exhibited *Scelochilus variegatus*, a botanical Orchid with very small flowers. *Zygo-Colar × Amesiana*, showed by the same exhibitor, received an Award of Merit.

Messrs. HUGH LOW & Co., Enfield, were awarded a Silver Medal for a group of choice plants, including several good hybrid Cypripediums. *Cymbidium × Wiganianum*, shown by Messrs. Low, gained an Award of Merit.

A. WARBURTON, Esq., Haslingden (gr. Mr. Dagleish), was awarded a Silver Medal for a group of Cypripediums, which included *C. × aureum* var. *Hyeannum*, *C. × aureum* Vine-House variety (Award of Merit), *C. × Evansianum*, and a good form of *C. Spicerianum*. Warburton's variety. *Odontoglossum × ardentissimum* var. *xanthotes* and *O. sceptrum* var. *Masereelianum* were also shown by Mr. Warburton.

Messrs. JAS. CYPHER & SONS, Cheltenham, staged a pleasing display of well-grown Cypripediums, for which a Silver Medal was awarded.

Messrs. KEELING & SONS, Bradford, were awarded a Bronze Medal for a group in which two plants, viz., Cypripedium *× Actæus*, Grangefield variety, and *C. × Leeannum* var. *Dorothy*, received Awards of Merit.

J. MCCARTNEY, Esq., Bolton (gr. Mr. Holmes), was awarded a Silver Medal for a miscellaneous group of plants, in which were some good varieties of *Lælia anceps*, *Cattleya Trianae* var. *Holmesii*, a flower of commendable form and with a richly-coloured lip, received an Award of Merit.



FIG. 54.—SPECIMEN OF FINOCCHIO BROUGHT FROM ITALY BY MESSRS. SUTTON AND SONS.

THE OLD DOUBLE PRIMULA.—Mr. Leonard Sutton tells me that a type of *Primula sinensis* formerly existed which was completely double and destitute of anthers. As it set no seed, it was propagated by cuttings exclusively. Can any readers of the *Gardeners' Chronicle* put me in the way of obtaining a specimen of this type? In connection with a study of the inheritance of doubleness, its properties would be well worth investigating. W. Bateson, Grantchester, Cambridge.

FINOCCHIO.—We have just returned from our annual visit amongst our seed crops in the south of Italy, and, remembering that, in a recent issue of the *Gardeners' Chronicle*, there appeared an article on "Finocchio," we brought back one or two specimens which were grown at Naples (see fig. 54). Large quantities of this "Finocchio" are grown around Naples. The seeds are sown

one another at the base of the stem, form an enlargement varying in size from that of a hen's egg to the size of a man's fist. The plant does not form tubers as *R. B.* (see p. 45) imagines. The edible portion should be used before the plant develops its inflorescence, which it does very soon. The first sowing may be made in April or May, followed by, say, two successional sowings in the summer. Sow in rows made 18 inches apart, and thin the seedlings to 9 inches between each other. During dry weather the plant should be well watered. If it is desired to blanch the stems, a little soil can be drawn about them 10 days before the vegetable is required for the table. Long Sweet Fennel (*Feniculum officinale*, All.) is sown in the autumn for a spring crop. The tender stems of this plant are eaten just as it runs to seed. Vilmorin, in his *Vegetable Garden*, says: "The famous 'Carosella,'

E. ROGERSON, Esq., Didsbury (gr. Mr. Price), received Awards of Merit for *Cypripedium* \times *Transvaal*, *Oakdene* variety, *C.* \times *Memoria* Lord Burton, and *C.* \times *Dicksonianum*.

H. ARTHUR, Esq., Blackburn, showed a small group of *Cypripediums*. (Bronze Medal.)

Other exhibitors were Messrs. ROBSON, Altrincham; SHACKLETON, Bradford; CRAVEN, Keighley; and BOLTON, Warrington.

COMMONS AND FOOTPATHS PRESERVATION.

FEBRUARY 5.—Lord Eversley presided over the monthly meeting of the Society held on this date at 25, Victoria Street, Westminster. The solicitors' report upon the provisions of Private Bills to be introduced into Parliament during the coming session, and under which Commons, Open Spaces and Rights of Way will be subject to interference, was presented. It was stated that while 31 Bills of this nature would come within the purview of the Society this year, the extent to which public rights would be interfered with was, on the whole, less than the average. The area of common land scheduled amounted to about 320 acres, the most serious proposal being that of the North-Eastern Railway to absorb 178 acres of Salt End Pasture on the banks of the River Humber at Preston. It was resolved to oppose this Bill. The Great Western Railway proposed to acquire portions of the Link Common, Malvern. Hungerford Common, Berks, and 9½ acres of Wormwood Scrubs, Hammersmith, but in each case the company had consented to add to the common an area equivalent to that to be abstracted. It was decided to make representations to the London County Council in order to provide that on the widening of the highway at Tavistock Square the Pine trees affected should not be cut down. The Society also determined to take steps to secure the reintroduction into Parliament of its Public Rights of Way Bill, the chairman stating that a number of members had undertaken to ballot for this measure. The final arrangements with regard to the amicable settlement of important footpath disputes being carried out by the Society in Herts. and Sussex were approved; and the recently-issued afforestation report was carefully considered. The general feeling was that, while in the case of some exceptionally large commons portions might possibly be devoted to afforestation without material injury to grazing rights, in the case of the less extensive open spaces an important class of small farmers and cottagers would be seriously affected if any portion was withdrawn for tree planting.

LEEDS PROFESSIONAL GARDENERS'.

FEBRUARY 8.—The members of this society held their annual dinner on this date. The chair was taken by the Rev. R. Warburton, M.A., and he was supported by the Grand Master of the Order of Oddfellows, Bro. G. Bamby.

The secretary, Mr. Geo. Carver, stated that the amount of sickness is 58 per cent. below the average. The official valuation showed the society to have a solvency of 20s. 3d. in the pound, with a surplus of £63.

It is suggested to devote the surplus funds of the lodge to the benefit of the aged and infirm members.

HORTICULTURAL CLUB. ANNUAL DINNER.

FEBRUARY 9.—As a fitting social pendant to the annual meeting of the Royal Horticultural Society, the Horticultural Club held its annual meeting and subsequent dinner at the Hotel Windsor on the above date, under the chairmanship of Mr. Harry J. Veitch.

The secretary's report of the progress of the Club was read at the annual meeting by Mr. E. T. Cook, and was highly satisfactory. The number of members has increased during the year, and there is a larger balance. A number of interesting papers and discussions have been read during the session, proving that the Club has its instructive as well as its social side. This has been steadily kept in view for many years past and it has added considerably to the attractiveness of the meetings.

About 80 members and guests, including ladies were present at the dinner. The

tables were beautifully decked with flowers, while a charming musical and vocal entertainment was provided by Sir Frank Crisp, who was present on the occasion and was heartily thanked for his kindness. Mr. George Paul proposed the toast of the Royal Horticultural Society in the place of Sir Albert Rollit, who had hoped to be present. The Rev. Joseph Jacob, M.A., responded in a brief but humorous speech.

The Chairman proposed that of the Horticultural Club, laying stress upon its educational utility, Mr. H. Morgan Veitch replying. The chairman's health was drunk with all the honours.

The visitors were welcomed by Mr. George Munro in an appropriate speech, Mr. P. Anderson Graham responding on behalf of the ladies and other guests.

The health of Mr. E. T. Cook, the honorary secretary, was next proposed, and, finally, that of Sir Frank Crisp, who had done so much on the present occasion to enhance the enjoyment of all present by engaging the services of Miss Emily Shepherd, Miss Carrie Herwin, and Mr. M. Fred Rome, Ernest Sewell, Samuel Masters, Charles Wreford, and Herbert Townsend, whose varied contributions of music, songs, humorous stories, experimental magic, and living marionettes served to delight the audience.

PERPETUAL-FLOWERING CARNATION.

(ANNUAL MEETING.)

FEBRUARY 10.—The annual meeting of the above society was held at the Hotel Windsor on this date. Mr. J. S. Brunton presided, about twenty members being present. The minutes of the previous meeting were read and confirmed. The hon. secretary, Mr. H. Mathias, read a letter from Lord Howard de Walden, president, regretting his inability to preside over the meeting. The chairman moved the adoption of the report, from which we extract the following paragraphs:

At the annual general meeting in 1908 the title of the Society was altered from "The Winter-Flowering Carnation Society" to "The Perpetual Flowering Carnation Society."

A scheme for the registration of the names of new varieties has been adopted. Nine new varieties have been registered during the year. A variety must gain at least 85 points to entitle it to a First-class Certificate, and 75 points to entitle it to an Award of Merit.

His Serene Highness Prince Francis of Teck has been graciously pleased to become a patron of the Society. The Right Hon. Lord Howard de Walden has accepted the post of president.

Two successful shows were held at the R.H.S. Hall, Vincent Square. The greatly increased competition in the amateur classes at the December show, and the high quality of the blooms in these classes have largely justified the policy of your committee in increasing the number and scope of classes for amateurs' exhibits.

As a means of helping amateurs, an expert grower was appointed to give an address on "The Cultivation of the Perpetual-flowering Carnation," in the lecture-room of the R.H.S. Hall, on the afternoon of the April show. On the occasion of the December show a question box was placed in the hall, and a number of visitors availed themselves of the opportunity of writing questions and placing them therein.

Your committee considered it desirable that the Society should be in a position to award medals of its own, and, after much deliberation, a drawing was approved, and a die cut. Donations to defray the cost of medals are earnestly invited, or if individual members will defray the cost of one or more medals and place them at the committee's disposal to be awarded as special prizes, they will be much appreciated.

Two cups have been presented to the Society, one by Lord Howard de Walden, and the other by the American Carnation Society. It has been decided that these two cups shall be held as challenge cups in perpetuity.

Your Honorary Secretary is in correspondence with Mr. Albert M. Herr, the Secretary of the American Carnation Society, on the subject of the compilation of a complete list of perpetual-flowering Carnations, with a view to the framing of a list of too-much-alike varieties.

The Society has lost seven members by resignation, 27 struck off for non-payment of subscriptions, and one by death, viz., Martin R. Smith, Esq., a vice-president of the Society. His loss is one that will be deeply felt, not only by the members of this Society, but also by every true lover of the Carnation. Fifty-one new members have joined during the year, and the total membership of the Society at December 31, 1908, was 173.

The resolution for adopting the report was seconded by Mr. L. J. Cook, and carried unanimously. A vote of thanks to the officers was proposed by the chairman, and special mention was made of the admirable manner in which the secretarial work was carried out by Mr. H. Mathias. Mr. E. F. Hawes as show superintendent and Mr. J. S. Brunton were also entitled to thanks. The vote was carried with acclamation. The adoption of the balance-sheet for the past year was moved by Mr. C. H. Curtis, one of the honorary auditors to the society,

who testified as to the able manner in which the accounts had been kept. It was resolved that the offices of hon. secretary and treasurer, which have previously been held by Mr. Mathias, should be held by separate persons. The following were elected to serve as officers of the society during the coming year: President, Lord Howard de Walden; treasurer, Mr. L. J. Cook; secretary, Mr. H. Mathias; exhibition superintendent, Mr. E. F. Hawes.

The retiring members of the committee were all re-elected, and the Rev. J. Jacob was also appointed on the committee. Messrs. C. H. Curtis and R. Pinches were re-elected auditors. It was decided to hold the annual dinner on the day of the spring exhibition, March 24, at 7.30 p.m., and Mr. Hawes was asked to undertake the arrangements.

BRITISH GARDENERS' ASSOCIATION. (LONDON BRANCH.)

FEBRUARY 11.—The monthly meeting of the London branch of the above Association took place on this date at Carr's Restaurant, Strand, W.C. There was a large attendance to hear Mr. Chas. H. Curtis lecture on "Kew Gardens." The lecturer gave a brief account of the history of these famous gardens, and described the more important features. The interiors of the Temperate House, the "North" Picture Gallery, the Museums, the Herbarium, the Lily House with the *Victoria Regia* in flower, and other interesting parts of the gardens were shown as lantern slides. At the close of the lecture Mr. Curtis, in answer to a question, stated the advantages offered to a young gardener who spends a period of two years at Kew. The opportunities for study and the experience to be gained were unobtainable elsewhere.

ROYAL GARDENERS' ORPHAN FUND.

FEBRUARY 12.—The twenty-second annual meeting of the supporters of this charity took place on the above date at Simpson's, Strand, London. Mr. Henry B. May, chairman of the Executive Committee, presided over a somewhat limited attendance. The secretary, Mr. Brian Wynne, read the minutes of the last meeting, and presented the report of the Executive Committee for 1908. This was as follows:—

REPORT OF THE EXECUTIVE COMMITTEE.

It is with great gratification and a deep sense of thankfulness that at the close of the twenty-first year of the existence of the Fund the Committee is enabled to present a Report which they believe will afford the liveliest satisfaction. The receipts from all sources in 1908 amounted to no less a sum than £2,694 1s. 9d. More than half of this amount was obtained by the appeal made at, and in connection with, the Coming-of-Age Festival held in May, which will be long remembered as an interesting event in the history of the Fund. The Committee acknowledges with deep gratitude their indebtedness to their noble President, the Duke of Bedford, for presiding on that occasion, for his Grace's sympathetic appreciation of the beneficent work which is being carried on, his eloquent commendation of the claims of the Fund to the generosity of all interested in gardeners and gardening, and for his munificent contribution of £250 to the Festival dinner list. To Mr. N. N. Sherwood and his sons, Mr. William and Mr. Edward Sherwood, whose practical sympathy with the objects of the Fund, from the day of its foundation, has helped materially in placing the charity in its present position, grateful thanks are accorded for their generous presentation of £391 Metropolitan Railway 3½ per cent. preference stock to endow the "Maybud Campbell Grant" of £15 per annum to an orphan girl selected to receive same under the Rules of the Fund. The appeal made on the initiative of Mr. H. J. Clayton, for a special Coming-of-Age gift to the Fund, to be raised by means of a shilling collection, resulted in the receipt of the handsome sum of £250, and the Committee tender their grateful thanks to all who assisted in bringing about such an appreciable addition to the Fund's exchequer.

The net result of the year's work is an increase in income over that of the previous year, amounting to £747 11s. 7d. This sum has enabled the Committee to increase the Allowances and Grants in Aid made to the poor children by the sum of £109 17s. 6d.; to add £506 7s. 7d. to the Reserve Fund, £85 to the deposit account, and to increase the balance carried forward by £77 9s. 2d.

At the commencement of 1908 there were 166 children receiving the full benefits of the Fund. Seventeen more were added to the roll at the annual meeting, held in February. At the close of December the number on the elected list was 104, whilst 21 of the candidates awaiting election, greatly being in need of assistance, were receiving compassionate allowances. The total sum distributed among the beneficiaries during the year was £1,621 7s. 6d., the highest total yet reached. The number of children elected to receive the benefits of the Fund since its foundation is 253, and the total

expenditure in weekly Allowances and Grants in Aid during the same period is £19,506.

The next Festival takes place on Thursday, May 6, at the Hotel Cecil, when his Grace the Duke of Rutland has most kindly consented to preside. The Committee make this announcement with extreme pleasure.

For some years past the Fund has greatly benefited by the exertions made on its behalf by the Committees of the Chesterfield and District Chrysanthemum Society, the Altrincham and District Gardeners' Mutual Improvement Society, the Chislehurst Gardeners' Mutual Improvement Society, the Bradford Chrysanthemum Society, and similar institutions. The Committee are glad to record the fact that during the year several additional societies of this character have caused their names to be enrolled among the regular contributors. To one and all who have helped the Fund in this way most cordial thanks are tendered. The Committee also again most gratefully acknowledge the valuable support accorded to the Fund by the owners of private gardens, who kindly open their establishments to the public from time to time in aid of this and other charities. In this connection special thanks are due to Mary Countess of Ilchester, Sir Frank Crisp, and Major John W. Dent, for valued contributions.

The Committee has again, unhappily, to deplore the loss the Fund has sustained by the hand of death. As former colleagues, the valued services of Mr. George Nicholson and Mr. C. E. Osman are gratefully remembered, as also are the active services rendered in the early days of the Fund by Mr. W. J. Brewer and Mr. Henry Hawkins; whilst in recent years Mr. W. Neild, Mr. R. Lye, and Mr. Joseph Lee, were all devoted adherents to the children's cause. The late Mr. J. Cawthra, of Bradford, and Mr. Benjamin Greaves, of Horsham, were annual contributors, and Legacies of £150, less duty, from the former gentleman, and £50 from Mr. Greaves, are thankfully acknowledged.

The members of the Committee who retire by rotation are Mr. W. Bates, Mr. G. L. Caselton, Mr. C. Dixon, Mr. H. B. May, Mr. J. W. Moorman, Mr. Whitpaine Nutting, Mr. G. Reynolds, and Mr. J. H. Witty. These members, being eligible, offer themselves for re-election.

To the Auditors, Mr. M. Rowan and Mr. P. Rudolph Barr, the Committee again tender their sincere thanks for the valuable services they render the Fund from year to year by their exhaustive examination of the accounts. The retiring auditor is Mr. Barr, and with great pleasure the Committee recommends his re-election.

In concluding this Report the Committee again appeal with confidence to the liberality of all those who recognise the legitimate claims of necessitous orphans. In the ranks of gardeners, as in those of most other callings, there are many distressing cases of premature death. The breadwinner is suddenly removed from the scene of his labours, whilst still young, and therefore before he has had time and opportunity to provide for those dependent upon his industry. The widow, being often left with several children of tender years, she is unable to use her capacity for earning a living, because her presence and care are needed at home. Surely the cry of the children is one that we have no right or desire to disregard!

The amount of good that follows the disbursement of small sums to children is out of all proportion to the sums contributed, and not only is this the case, but in helping the children by ensuring to them the

necessities of life, the heavy lot that oppresses the young widow is materially lightened.

The Committee, therefore, believe that, in the future, as in the past, the Royal Gardeners' Orphan Fund will receive such a measure of support as will enable it to continue the work it has faithfully discharged in the past twenty-one years.

The Chairman, in proposing the adoption of the Report and Balance-Sheet, stated that there was little for him to tell the meeting, owing to the comprehensive character of the printed Report, which was circulated in the room. He, however, called attention to the increased receipts during the Coming-of-Age year, which amounted to £747 11s. 7d. over the previous year. The number of children elected to receive the benefit of the Fund since its foundation was 253, and the total expenditure in weekly allowances and grants in aid during the same period was £19,506. He called attention to the useful work that several societies, mentioned in the Report, continue to do in the interest of the Fund, suggesting that other societies might help in a similar manner. The "shilling" subscription was adopted on the suggestion of Mr. H. J. Clayton to signalise the Coming-of-Age year, and this was the means of raising a sum of £250. The resolution was seconded by Mr. Wm. Marshall, late chairman of the Executive Committee, who said that the Report was entirely satisfactory. The resolution was adopted with unanimity.

Mr. R. Hooper Pearson proposed a vote of thanks to the President of the Fund, the Duke of Bedford, K.G., for presiding at the last Festival Dinner. He said that the gratifying successes which had attended the efforts of the committee to raise a record amount of money at the Coming-of-Age festival were partly due to the President's presence on that occasion and to his munificent gift of £250. The resolution was seconded by Mr. W. J. Cutbush, and carried unanimously.

On the proposition of Mr. W. Roupell, seconded by Mr. George Gordon, a vote of thanks was passed to Mr. Edward Sherwood for his duties as treasurer during the year, and he was re-elected to fill the position. Mr. Rudolph Barr was re-elected auditor on the proposition of Mr. W. Poupart, and seconded by Mr. W. Bates.

Mr. A. Dean proposed that the members of committee who retired by rotation and whose names were mentioned in the Report, should be re-elected. After the motion had been seconded by Mr. W. Bates, the resolution was carried.

The Chairman then rose to propose the re-election of Mr. Brian Wynne as secretary to the Fund, at a salary of £200 per year. He stated that Mr. Wynne would in future devote his whole time to the work of the Fund, and that a new office had been taken by the committee in Surrey Street, Strand. The Chairman paid a high tribute to the manner in which Mr. Wynne had discharged his duties as secretary during the 10 years he had held that position. After the resolution had been seconded by Mr. W. Bates, it was carried with acclamation.

Scrutineers having been appointed, the meeting was adjourned until 4.30. On reassembling, the following candidates were declared duly elected:—

RESULT OF THE BALLOT.

	Notes.
Muriel H. Lee	394
Reginald T. Dyer	272
Louisa Dyer	263
John F. Campbell	245
Richard J. Lavington	224
Phyllis M. Lee	220
Edith M. Campbell	211
Gertrude A. Stenning	211
Eva A. J. Tulett	201
Andrew Murray	188
Violet S. McCallum	162
Albert G. Moore	162
James F. Thomas	154
Florence A. Gregg	147
Ethel E. E. Smithers	136
Elsie F. Fulbrook	129
Arthur H. Warren	129
Eileen L. Lavington	107
Kate Tebutt	93
Albert E. Payne	90

Mr. Harry J. Veitch congratulated the committee upon the work of last year and on the number of candidates that had been elected. He said, however, that there were five who had been unsuccessful at the poll. Being unconnected with the management of the Fund, he did not know the exact resources at the command of the committee after the election that had taken place that day. But he appealed to the chairman to induce the committee to stretch a point in favour of the unsuccessful candidates. If this could be done, all present would be deeply grateful.

The Chairman stated that the committee had every confidence that the public would continue to assist the Fund. The circumstances of the disappointed candidates had been taken into consideration by the committee, and he thought that if it were the desire of that meeting that those candidates should be placed upon the Fund by resolution, the committee would not oppose the motion. In addition to those now before the meeting, there were nine fresh candidates on the list for next year. It looked, therefore, as if there would be a big list at the next anniversary meeting, and they must look to their friends for increased support if all the cases deserving of help were to be placed on the Fund. Mr. Veitch's motion was seconded by Mr. George Gordon, and carried unanimously.

The following candidates were therefore declared duly elected:—

Florence E. Ward	89
Edward G. W. Randall	86
Elsie Atkinson	83
Ann Laing	80
Hilda D. Whitlock	34

THE FRIENDLY SUPPER.

The same evening the committee and a few friends dined together at Simpson's. Mr. Henry B. May presided.

SCHEDULES RECEIVED.

National Sweet Pea Society's ninth annual exhibition to be held in the Royal Horticultural Society's Hall, Vincent Square, Westminster, on Friday, July 23, 1909. Hon. Secretary, Mr. C. H. Curtis, Adelaide Road, Brentford, Middlesex.

Midland Carnation and Picotee Society's nineteenth annual exhibition to be held on July 28 and 29, 1909.

CASH STATEMENT FOR THE YEAR ENDING DECEMBER 31, 1908.

RECEIPTS.		EXPENDITURE.	
	£ s. d.	£ s. d.	£ s. d.
To Subscriptions: General	254 12 0	By Allowances to Orphans	1,486 5 0
" " Local Secretaries	79 3 5	" Grants in Aid	122 2 6
" Donations: General	187 6 7	" "Emma Sherwood Memorial"	13 0 0
" " Local Secretaries	25 16 5	" Secretary's Salary	1,621 7 6
" Subscription List at Annual Dinner	1,141 17 6	" Printing & Posting List of Subscribers	135 0 0
" Less Expenses	210 9 5	" Rent, Insurance, &c.	41 3 6
" 1887-1908: Special Fund (raised by shilling Subscriptions)	250 0 0	" Printing & Stationery	39 8 11
" "Maybud Campbell Grant" (presented by Mr. N. N. Sherwood and his sons)	391 0 0	" Advertising	7 1 6
" Legacies: Mr. James Cawthra	135 0 0	" Annual General and Committee Meetings, &c.	25 0 5
" " Mr. Benjamin Greaves	50 0 0	" Postages	20 8 11
" Advertisements in List of Subscribers	185 0 0	" Bank Charges	2 15 6
" Dividends on Stock and Interest on Deposit	350 6 7	" Sundry Expenses (Petty Cash)	4 13 10
" Income Tax returned	5 8 2		140 12 7
" Balance last Account	2 614 1 9		1,937 14 2
	8,817 4 1	" Purchase of £242 19s. 8d. 2½ per cent. Consols	205 7 7
	£3,502 19 1	" Metropolitan Railway 3½ per cent. Pref. Stock	391 0 0
			596 7 7
		" Balances: Cash at Bank	582 10 6
		" Cash in hand	1 6 10
		" Cash on Deposit	385 0 0
			968 17 4
			£3,502 19 1

NOTE—INVESTMENTS.

3 per cent London and County Consolidated Stock	£7,240 15 10
3 per cent Canada Stock	2,000 0 0
L. & N.W. Railway 4 per cent. Preference Stock	340 0 0
Great Indian Peninsula Railway Guarantee 3 per cent. Stock	514 0 0
2½ per cent. Consols	1,000 0 0
"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.
M. ROWAN }

January 13, 1909.

MARKETS.

COVENT GARDEN, February 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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

s.d. s.d.	s.d. s.d.
Acacia (Mimosal), p. doz. bunches	9 0-12 0
Anemone fulgens, p. dz. bunches	1 6-2 6
— double pink, p. dozen bunches	1 6-2 6
Azalea, per dozen bunches	4 0-5 0
Bouvardia, per dz. bunches	6 0-8 0
Calla aethiopica, p. dozen	3 0-4 0
Camellias, per dozen	1 6-2 6
Carnations, per dozen blooms, best American various	2 6-3 6
— second size	1 0-2 0
— smaller, per doz. bunches	9 0-12 0
Catleyas, per doz. blooms	12 0-15 0
Chrysanthemums, specimen blooms p. doz. — smaller, per doz. bunches	2 0-3 0
Cypripediums, per dozen blooms	1 6-2 6
Daffodils, per doz. bunches	3 0-6 0
Dendrobium nobile, per dozen	2 6-3 0
Eucharis grandiflora, per doz. blooms	2 6-3 6
Freesias (white), p. doz. bunches	2 6-3 0
Gardenias, per doz. blooms	3 0-5 0
Hyacinths (Roman) per doz. bchs. — Dutch	9 0-12 0
Lilac (English), white, p. bunch — mauve	3 0-5 0
— (French), mauve	4 0-5 0
Lilium auratum, per bunch	2 0-3 0
— longiflorum	4 0-5 0
— lancifolium, rubrum	2 0-3 0
— album	2 6-3 0
Lily of the Valley, p. dz. bunches	9 0-10 0

Cut Foliage, &c.: Average Wholesale Prices.

s.d. s.d.	s.d. s.d.
Adiantum emea- tum, dz. bchs.	4 0-6 0
Agrostis, per doz. bunches	1 6-2 0
Asparagus plum- osus, long trails, per doz. — medm. bch.	8 0-12 0
— Sprengeri	1 0-2 0
Berberis, per doz. bunches	0 9-1 6
Croton leaves, per bunch	2 6-3 0
Cycas leaves, each	1 6-2 0
Daffodil foliage, p. doz. bunches	2 0-2 6
Ferns, per dozen bchs. (English)	2 0-3 0
— (French)	0 6-0 9

Plants in Pots, &c.: Average Wholesale Prices.

s.d. s.d.	s.d. s.d.
Ampelopsis Veit- chin, per dozen	6 0-8 0
Aralia Sieboldii, p. dozen	4 0-6 0
— larger speci- mens	9 0-12 0
— Moseri	4 0-6 0
Araucaria excelsa, per dozen	12 0-30 0
— large plants, each	3 6-5 0
Aspidistra, p. dz., green	15 0-24 0
— variegated	30 0-42 0
Asparagus plum- osus nanus, per dozen	12 0-18 0
— Sprengeri	9 0-12 0
— tenuissimus	9 0-12 0
Azalea (Indian), p. dozen	24 0-36 0
Begonia Gloire de Lorraine, p. dz.	12 0-18 0
Cinerarias, per dz.	8 0-12 0
Clematis, per doz.	8 0-9 0
Coccoloba Weddelli- ana, per dozen	18 0-30 0

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

s.d. s.d.	s.d. s.d.
Hardy flower roots, per dozen	1 0-2 0
Hyacinths, per dz. pots	8 0-10 0
Isoetes, per dozen	4 0-6 0
Kentia Belmonte- ana, per dozen	15 0-24 0
— Posteriaria, per dozen	18 0-30 0
Latama borbonica, per dozen	12 0-18 0
Lilium longi- forum, per dz.	18 0-24 0

Fruit: Average Wholesale Prices.

s.d. s.d.	s.d. s.d.
Apples Foreign	
— California	
— Newtown Pippin, per case, 4 tiers	8 0-8 6
— 4½ tiers (American), per barrel	7 0-7 6
— Baldwin	22 0-24 0
— Greening	25 0 —
— Newtown Pippin	25 0-27 0
— Oregon New- town Pippin, per case (150)	13 0 —
— Do. (126)	14 6 —
— Do. (88) (96) (80)	13 6 —
— (Nova Scotian), per barrel	
— Russet	19 0-20 0
— Baldwin	20 0-21 0
— Ben Davis	17 0 —
— Fallwater	21 0-24 0
— French Russet, per case	9 0-9 6
Bananas, bunch:	
— Doubles	9 0-10 0
— No. 1	6 6-8 0
— Extra	8 0-9 0
— Giant	10 0-12 0
— (Claret)	5 0-7 6
— Jamaica	5 0-5 6
— Loose, per dz.	0 6-1 0
Cape fruit, p. case:	
— Peaches	6 0-10 0
— Apricots	2 6-6 0
— Plums	2 6-6 0
— Nectarines	10 0-18 0
Cranberries, per case	16 0 —
Custard Apples	3 0-12 0
Dates (Tunis), per dozen boxes	4 3-4 6
Figs (Elleme), p. dz. — pulled, per dz.	4 3 — 5 0-7 6

Vegetables: Average Wholesale Prices.

s.d. s.d.	s.d. s.d.
Artichokes (Globe), per dozen	2 0-2 6
— white, p. bushel	2 0 —
— per cwt.	3 6 —
Asparagus, per bundle:	
— Sprue	0 8-0 9
— Paris Green	4 0-4 6
Beans—	
— (French), p. lb.	1 0-1 1
— (Guernsey), per lb.	2 6-3 0
— (Madeira), per basket	3 6 —
— Niggers	3 6-7 0
Beetroot, per bushel	1 0-1 6
Brussel Sprouts, ½ bushel	2 0-3 0
— bags	3 6-4 0
Cabbages, per tally	5 0-6 0
— per mat	3 6-4 0
— Greens, per bushel	3 6-4 0
Cardoon (French), per dozen	8 0-10 0
Carrots (English), dozen bunches	3 0-3 6
— washed, bag	2 6-3 6
— unwashed	1 6-1 9
— (French), p. pad	2 6-3 6
Caniflowers, per dozen	3 0-4 0
— St. Malo, crates (12 heads)	2 6-3 0
— Italian Heads, per basket	3 0-3 6
Celery, per dozen rolls	12 0-15 0
Celeriac, per doz.	1 6-2 6
Chicory, per lb.	0 3½-0 4
Cucumbers, per dz.	4 0-7 0
Endive, per dozen	1 6-2 0
Horseradish, foreign, per doz. bundles	10 0-12 0

REMARKS.—Tomatoes are very scarce and of poor quality. Vegetables generally are dearer, owing to the cold weather. Large quantities of Oranges continue to arrive; sound packages are realising similar prices to those of last week. The trade in Lemons and Bitter Oranges is very slow. Californian seedless and Jamaican Oranges are arriving in a splendid condition. Fruit from Cape Colony continues to sell readily except Plums, which are very plentiful and comparatively cheap. E. H. R., Covent Garden, Wednesday, February 17, 1909.

Potatoes.

Kents—	s.d. s.d.	Lincolns—	s.d. s.d.
Snowdrop	4 0-4 3	Sharpe's Express	3 0-3 3
Sharpe's Express	3 6-3 9	Evergood	2 6-3 0
Epicure	8 0-3 3	Bedfords—	
Up-to-Date	8 0-3 6	Up-to-Date	2 6-3 0
Lincolns		Blacklands	2 0-2 6
Royal Kidney	2 9-2 9	Dunbars—	
British Queen	3 0-3 3	Langworthy	4 9-5 0
Up-to-Date	3 0-3 6	Up-to-Date, red soil	3 9-4 0
Maincrop	3 6-3 9	" " grey soil	2 6-3 0

REMARKS.—Supplies are large and the demand small. The London markets contain heavy stocks of Potatoes. Edward J. Newborn, Covent Garden and St. Pancras, February 17, 1909.

COVENT GARDEN FLOWER MARKET.

Hardy flower roots are already on sale, but the return of frost has stopped the demand for them. There are also seen Roses, hardy climbers, Conifers, and evergreens. The cold weather has also affected business in pot plants, but it does not influence the cut-flower trade quite so much.

POT PLANTS.

Azaleas are still the most showy plants in the market, and supplies are over-abundant. Good Marguerites are plentiful, also well-flowered Cinerarias and Cyclamens, but Genistas are only moderate, and their inflorescences do not last long during the cold weather. Begonia Gloire de Lorraine is soon affected by cold, but well-flowered plants are seen. Hyacinths are good, and, in addition to pots containing three bulbs, large quantities are now grown singly in 3-inch pots. Cyclamens, Primulas, Ericas, &c., are also grown and flowered well in small pots. Plants of Erica Wilmoreana in 4½ and 5-inch pots are well flowered. Solanums are not quite finished, but the berries are setting over-ripe, and fall off, unless very carefully handled. Some well-berried plants of Aucuba vera are seen, and these last for a long time. Capsicums, with round berries, are very pretty.

Ferns are not very bright in the foliage, but the new fronds will soon be developing. Supplies of small Ferns are well sustained. Palms vary but little, except that the demand has been very limited. Aspidistras do not sell readily, and there has been very little trade in tender foliage plants; as soon as milder weather sets in we may expect an improvement in business.

CUT FLOWERS.

Daffodils are more abundant and cheaper. The variety Emperor is good, also Victoria, Princess, Golden Spur, and Sir Watkin. Princes is seen in large quantities, but this variety is lacking in quality. Narcissus ornatus from English growers, and also from the Scilly Islands, is abundant. Soleil d'Or, White Pearl (Scilly White) and Paper White are plentiful. Early forced Roses are seen in larger quantities. Richmond is undoubtedly the finest red Rose now in the market; it retains its colour well, but growers inform me that it is not so prolific in blooming as Liberty. Caroline Testout seems to be the best early pink variety. Joseph Lowe is another Rose that forces well. Carnations are plentiful, and, with increased sunlight, the colours are better; there is no improvement in their prices. Gardenias are very scarce, but Eucharis blooms are more plentiful. Violets, both from English nurseries and from France, are over-abundant. Lilium longiflorum is not of the best quality, but we may expect a better supply soon. L. speciosum is always known in the market as L. lancifolium; the variety rubrum is rather pale in colour.

At the first sale of Liliums for 1909 at Messrs. Protheroe & Morris' Rooms, on the 16th inst., the bulbs sold readily, there being a brisk competition, especially for the finest bulbs, which were in splendid condition. Large quantities of Japanese Irises were also disposed of at good prices. A. H., Covent Garden, Wednesday, February 17, 1909.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending February 17.

Another cold week.—The present cold period has now lasted 11 days. Except on one day during the past week the weather continued cold, both during the daytime and at night. On the coldest day the temperature in the thermometer screen at no time rose higher than 37°, and on the coldest night the exposed thermometer registered 14° of frost. The ground still remains cold, being 1° colder at 2 feet deep and 2° colder at 1 foot deep than is seasonable. Light rains fell on three days, but to the total depth of only about one-tenth of an inch. A few flakes of snow fell on two of those days. A few drops of rainwater still come each day through both percolating gauges. The sun shone on an average for 3½ hours a day, or for nearly an hour a day longer than is usual in February. The winds have been light during the week, and have come almost exclusively from some northerly point of the compass. The mean amount of moisture in the air at 8 o'clock in the afternoon fell short of a seasonable quantity for that hour by 7 per cent. The double Snowdrop came first into flower in my garden in the spot selected for its observation on the 15th, or 6 days later than its average date in the previous 29 years, but 3 days earlier than last year. E. M., Berkhamsted, February 17, 1909.

TRADE NOTICE.

WALLIS BROS. LTD., HARPENDEN.

This private company has been formed with a capital of £2,000, in 41 shares. The objects are to adopt an agreement between A. R. SEARLE (trading as WALLIS BROS., horticultural sundriesman) and Mrs. F. WALLIS, and to carry on the business of market gardeners, fruit growers and merchants, dealers in agricultural and horticultural seeds, plants, &c. Registered offices, Ecclesborne Villa, Amcunbury, Harpenden, Herts.

Obituary.

SIR GEORGE KING.—The death of Lieutenant-Colonel Sir George King, K.C.I.E., F.R.S., LL.D., occurred on the 13th instant at San Remo. Sir George King was born in 1840, and entered the Bengal Medical Service in 1865. He was appointed to the Chair of botany at the Medical College and Director of the Royal Botanical Gardens, Calcutta, in 1871. In 1891, he was appointed additional director of the Botanical Survey of India, retaining the management of the gardens. His retirement took place in 1898. We shall publish an article on his life and work in the next issue.

WILLIAM YATES GIBSON.—We regret to record the death of this Aberdeen seedsman on the 7th inst. at the residence of his nephew, Dr. T. Best-Gibson. The late Mr. Gibson was a native of Lonmay, and, when about 17 years of age, he entered the service of an Aberdeen grocer. Some three years later he became connected with the firm of Messrs. Benjamin Reid & Co., seedsmen and nurserymen. He had been retired from business for some short time before his death, which occurred in his 80th year.

DEBATING SOCIETIES.

DERBYSHIRE GARDENERS'.—At a meeting of this association, held on the 22nd ult. a lecture was given by Mr. A. Shambrook, of Sutton Hall, on "The Culture of Cyclamen." The lecturer stated that the compost he considered best for the final potting of these plants was a mixture of loam, leaf-mould, and sand, with dried cow manure rubbed fine and a sprinkling of broken charcoal. The soil should not be pressed tightly. The plants must never be allowed to become dry at the roots. After the flowering season is over, active growth should be encouraged. The finest blooms are secured from plants about 15 months old.

BRISTOL AND DISTRICT GARDENERS'.—Mr. S. Shaddick presided over a large attendance of the members of this association on Thursday, the 20th ult., when a representative of the Bath Gardeners' Debating Society, Mr. Stokes, of Trowbridge, gave a paper on "Rock and Alpine Plants." The lecturer stated that some of these plants are natives of cold climates, whilst others are found in tropical regions. This question of habitat must be taken into consideration when planting a rockery. If a stream of water can be conducted through the rock-garden so that it trickles down between the stones, moisture-loving plants may be included. In the case of a large rockery a few rambling Roses may be introduced at the back. Mr. Stokes showed photographs of some noted rock-gardens.

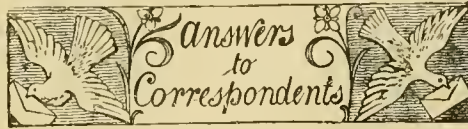
—At the meeting held on Thursday, February 11, Mr. Tunbridge, a representative of the Reading Association, gave a lecture on "Hardy Ferns." Mr. Tunbridge exhibited a collection consisting of fronds of more than one hundred varieties, with their correct names.

READING AND DISTRICT GARDENERS'.—A meeting of this association was held in the Abbey Hall, Reading, on Monday, the 25th ult. The chairman, Mr. A. F. Bailey, presided. The lecturer was Mr. J. W. Odell, of The Grove Gardens, Stanmore, his subject being "British Wild Flowers in the Garden." Mr. Odell illustrated his paper with a comprehensive and beautiful series of photographic slides. Many illustrations of hard-wooded plants were shown, including the Wild Cherry, Crab Apple, Plum, and Dog Rose. These were followed by pictures of native aquatic, bog, rock, woodland and climbing plants; the lecturer also dealt with British Orchids. He deplored the practice of robbing the hedgerows and woods of plants intended for sale by itinerant hawkers. Several new members were elected.

—On Monday, February 8, Mr. W. Shipway, of Messrs. Sutton & Sons' Nursery, gave a lecture on "Lawns and Lawn Grasses." Mr. Alderman F. B. Parfit, President of the Society, occupied the chair. A number of lantern slides were used by the lecturer to illustrate his remarks. The following points were dealt with by Mr. Shipway: situation and aspect, drainage, preparation of the soil, turfing and seeding, sowing seeds, varieties of lawn grasses, clover in lawns, treatment of a new lawn, mowing and rolling, manures, &c. Four new members were elected.

REDHILL, REIGATE AND DISTRICT GARDENERS'.—A meeting of this association was held on February 8. Mr. Bonnd presided over an attendance of about 70 of the members. A letter was read from the secretary of the Royal Horticultural Society concerning the Affiliated Societies Challenge Cup. Mr. Wells, Merstham, gave a lecture on the culture of Chrysanthemums. The chairman announced that at the next meeting Mr. Cooper, from Reading, would give a lecture on Orchids.

BIRMINGHAM GARDENERS'.—The first meeting of this association for 1909 took place on January 25 at the Athletic Institute, Birmingham. Mr. C. H. Herbert presided. Mr. Thos. Humphreys, curator of the Botanical Gardens, Edgbaston, delivered an essay on "The History and Cultivation of the Rose for Suburban Gardens." The speaker's remarks were illustrated by lantern slides.



BOOK: A. D. B. We do not know of any modern work on the Pineapple. *The Culture of the Pineapple*, by D. Thompson, is out of print, but you may be able to obtain a copy from the second-hand booksellers.

EELWORM INFESTING CARNATIONS ROOTS: S. B. These pests can be killed either by dressing the land with voparite or with gas-lime. As the area is 2½ acres, perhaps it would be cheaper to use the latter substance, although it is a most objectionable material to employ. Land dressed with gas-lime should remain fallow for some months afterwards, or be allowed to carry some crop that is not particularly valuable. In any case, do not plant Carnations on the ground for some time to come, and when removing the old plants, take care to burn them in the garden fire.

ELÆAGNUS DYING: C. R. The fact of both the plants dying within a year of each other suggests their having reached an unsuitable rooting medium. You will find an account of these shrubs in any good book on trees and shrubs.

EMPLOYMENT IN THE LONDON PARKS: W. D. H. In the case of those parks under the control of the London County Council, forms of application for employment as under-gardener or under-keeper may be obtained from the Chief Officer, Parks Department, No. 11, Regent Street, S.W. The age limits are from 25 to 40 in the case of under-gardeners, &c. Vacancies as gardeners are as far as possible filled by promotion, from the ranks of under-gardeners, of such men as pass the examination in practical horticulture held by the Royal Horticultural Society; and in the other ranks by promotion. Conditions of employment in the Royal Parks, London, can be obtained from the respective superintendents.

GRAPES DISEASED: A. D. The berries are affected by black rot, caused by a fungus—*Guignardia Bidwellii*. As a rule the disease first attacks the leaves. These should be sprayed with the Bordeaux mixture at half strength before the flowers appear. Spray the vines again when the fruit is set with eau céleste (ammoniacal copper carbonate).

HYACINTH GROWN IN WATER: F. C. K. The bulb is a good specimen, and appears to be constitutionally sound. The roots have been killed by some check such as frost. Have you placed the vases in which they are growing in an exposed window on frosty nights?

HYACINTHS: J. P. The bulbs appear to be free from disease, and two of them have succeeded satisfactorily. There is some amount of decay at the base of the third bulb. It is not advisable to mix road sweepings with soil intended for potting purposes, especially when it has been obtained from roads in suburban districts where motorcars are prevalent. We notice that where the roots are injured most they are nearest to the pot: this suggests injury by frost.

LIQUID MANURE FOR A VINE BORDER: Anxious. Your letter affords no clue as to the strength of the liquid manure which you have applied. The artificial manure you mention is a concentrated food, and this, in addition to the manure water, should prove ample in the way of feeding. We do not advise using the liquid manure at a great strength; a little and often is much better than applying big doses.

MANURES FOR IDENTIFICATION: Gardener, Wales. Send the specimens to one of the plant sundriesmen.

NAMES OF FRUITS: G. H. Fearn's Pippin.—F. D. Sandringham.

NAMES OF PLANTS: F. Lurani. Cytisus filipes.—J. M. Cupressus nootkatensis (Nootka Sound Cypress).—Hoyt. Lælia anceps.—A. H. A species of Dombeya, probably D. Dawei, but the specimen was too small and incomplete to name with certainty.—Hillfield. Epidendrum radicans, often named E. rhizophorum in gardens.—T. B. 1, Bambusa palmata; 2, Arundinaria japonica (Métaké); 3, A. nitida; 4, A. nobilis, known

sometimes in gardens as A. falcata; 5, Cineraria maritima; 6, Santolina incana. (Thanks for 1s. contribution to the R.G.O.F.)—A. C. H. *Cœlogyne Mayeriana*.—H. T. S. 1, *Odontoglossum pulchellum majus*; 2, *Oncidium pulvinatum*; 3, *Cypripedium villosum*; 4, *Selenipedium (Cypripedium) Sedenii*; 5, *Cypripedium venustum*; 6, *Pellea (Platyloma) flexuosa*.—I. Y. 1, *Aërides odoratum*; 2, *Brassia verrucosa*; 3, *Oncidium flexuosum*; 4, *Masdevallia nidifica*; 5, *Stelis micrantha*; 6, *Pleurothallis rubens*.—R. H. O. 1, *Selaginella Kraussiana*; 2, *Pteris longifolia*; 3, *P. hastata*; 4, *Adiantum assimile*; 5, *Pteris cretica*.—W. R. 1, *Blechnum occidentale*; 2, *Lomaria discolor*.—A. G. *Helixine Soleirolii*, a Corsican plant.—K. and B. Not recognised.—S. R. *Billbergia nutans*.

NARCISSUS FAILING TO FLOWER: W. G. S. The inflorescence is present in each case and some check has arrested their development. This may be due to either some cultural error or a constitutional defect in the bulbs.

PEA KAISER: P. W. To have this variety suitable for exhibition purposes during the second week of August, you require to sow the seeds on or about June 1.

PLUM BELGIAN PURPLE: R. M. This is a valuable culinary variety, sometimes classed as a dessert fruit, ripening about the middle of August. The fruits are of medium size and roundish. The skin is deep purple, covered with a blue bloom. It is certainly worthy of a place in your garden. The Victoria variety is one of the most prolific in bearing, and an exceedingly valuable kind, but it is later than Belgian Purple.

PRESSING ORCHID FLOWERS: J. M. Orchids are amongst the most difficult subjects to press and dry, because almost invariably the flowers turn black. The best plan is to dry them in heated sand, but in this case you would require cabinets for storing them. Try pressing them with a hot iron between pieces of blotting paper. In this way some of the colour may be preserved. We do not know of a special work on the subject.

PRUNING A NEWLY-PLANTED PRIVET HEDGE: Vanda. You may prune the hedge now, but do not do the work in frosty weather. If the growths are cut to within 2 feet of the ground the plants will make a more bushy habit, as the lower buds will be forced into growth.

RHUBARB AT EXHIBITIONS: W. H. F. The question whether Rhubarb is a vegetable or a fruit is a very old one, but it admits of a simple solution, if the true definition of a fruit—the ovary and other parts of the flower which undergo a change as a result of fertilisation—is regarded. Clearly the stalk of the leaf is no part of the flower. Although Rhubarb is not, strictly speaking, a fruit, it is used as such for culinary purposes, and the compilers of a flower-show schedule should be careful to state that the inclusion of Rhubarb in an exhibit of vegetables or of fruits either is or is not permissible, as they may direct. Your case is only another example showing the need for care in framing a schedule for a flower show.

TEMPERATURES BELOW ZERO: A. G. R. During the long frost of January and February, 1895, temperatures below zero were registered—by verified thermometers suspended 4 feet above the ground in "Stevenson" thermometer screens—at Braemar, in the east of Scotland; Durham, in the north-east of England; Ketton, in the Midland Counties; Drumranlig, in the west of Scotland; and Colebrooke, in the north of Ireland, as well as at other meteorological stations in some of the above districts.

VIOLETS DISEASED: Mid-Sussex. The plants are attacked by the fungus *Cercospora violæ*. The fungus is present in the soil, and the plants can only be freed from the pest by planting them for a season in the open ground, after the old soil has been shaken from the roots and the diseased leaves removed.

COMMUNICATIONS RECEIVED.—B. H. (the surplus stamps have been placed in the R.G.O.F. box).—W. F. B.—A. E. E.—Sir A. B. H.—H. W. W.—L. G.—J. G. W.—M. C. P.—C. T. D.—Roy. Meteorological Soc.—H. J.—G. H. H. W.—T. P.—J. R. J.—M. E. M.—M. B. Java.—P. A.—J. J. W.—de B. C.—J. D.—J. D. G.—W. B.—C. F.—R. A. R.—H. J. V.—C. D.—L. R. E.—T. J. H.—W. A. C.—P. A. Amsterdam.—E. H. K., Haarlem.—W. D.—W. J. B.—T. II.—Lord L.



THE
Gardeners' Chronicle

No. 1,157.—SATURDAY, February 27, 1909.

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MARGAM PARK.

(See figs. 55 and 56 and Supplementary Illustration.)

WALES abounds in places of interest to the garden lover as well as the historian and antiquarian. Such is Margam, a name derived from Morgan, the son of Caradoc ab Jestyn, and Lord of Glamorgan, who was a great benefactor, if not the actual founder, of the famous abbey, now in ruins.

The first name of the place was probably "Pendar," or "The Oak Summit," descriptive of the oak-wooded eminence 800 feet in height which forms its background. Though many centuries have passed, the same features remain, and the Oak to-day, in its monarchical stateliness, tranquilly surveys its modern, as it did its old-world, surroundings, and will witness the changes in the years to come.

About the middle of the 16th century a residence was built partly on the site of the old abbey by Sir Rice Mansel, Kt., who had purchased the property probably at the time of the Dissolution. The present mansion, however, a far more pretentious structure,

which took 14 years to erect, was completed in 1840 by the late C. R. Mansel Talbot, Esq., M.P., who, for many years before his death in 1890, was "Father of the House of Commons." A father to his own people also, both on his estates and over a wide encircling area. The whole county of Glamorgan benefited much—particularly its churches—by his beneficence.

It might be mentioned in passing that a bishopric was established at Margam at a very early date, probably by Morgan Mwynfawr—"Morgan the Courteous," son of the great King Arthur—but after several successions it was merged in that of Llandaff.

The Supplementary Illustration conveys an excellent impression of the mansion, but, unfortunately, does not include the pretty terrace garden, which occupies the space between the park wall and the house. Filled with masses of highly-coloured subjects of the usual summer-blooming varieties, at the time of our visit this garden was exceedingly

with great care from further decay by Miss Talbot, the present owner. A few years ago, seedling trees had taken possession of the crumbling portions of the walls, and had been allowed to grow to considerable size, but the masonry is now clear, and demolition from this cause has, consequently, been arrested.

The Margam Orange trees have a long history, and I therefore inspected one of the magnificent specimens with a feeling akin to reverence. The following quotation is from Lewis' *Topographical Dictionary of Wales*, 1833:—

"In the midst of the pleasure grounds is a splendid orangery, an unusual appendage to a gentleman's residence, but there is no record in existence showing the period of its establishment. According to tradition, this celebrated collection of Exotics was intended as a present from a Dutch merchant to Queen Mary, Consort of William III., but the vessel conveying it having been stranded on the coast here, the choice cargo was claimed as the property of the Lord, and a house 150 feet in length was built for



FIG. 55.—THE ORANGERY AT MARGAM PARK, GLAMORGANSHIRE.

gay. Distinctly-designed beds, in four large squares of Grass, surrounded by a still greater breadth of warmly-coloured gravel and relieved by erect plants of Irish Yews, form the arrangement of this garden. From the terrace, across the beautiful park, with its 500 head of deer, an uninterrupted view of the Bristol Channel is obtained, with the numerous passing craft which provide a constantly changing panorama; whilst landward, over a pretty undulated foreground, some of the local docks, with their forest of masts appear, and beyond is the curved outline of the lovely Swansea Bay, with the peninsula of Gower in the distance.

Descending by way of a broad, gravelled pathway and several flights of stone steps, the visitor comes upon the ruins of the ancient abbey, said to be the very earliest of the monastic houses set up in this part of the country. As a link with the past, and for their picturesque value in this spot, these ruins are most interesting, and are preserved

the reception of the plants. The late Mr. Talbot, in the year 1787, built a new greenhouse 327 feet in length, with a handsome Palladian front and a room at each end, and in 1800 a conservatory 150ft. long, with flues in the ground. There are about 110 trees in the greenhouse, all standards, planted in square boxes, and many of them 18ft. high; those in the conservatory, 40 in number, are traced against a trellis framing, where the fruit, which is usually abundant, attains its native size and flavour."

Two of the original trees still exist, and several others are certainly very old. The collection, by its vigorous health, testifies to the skilful care bestowed upon the trees. About 40 specimens, some of them 20 feet high, in large tubs, occupy in summer an ideal, greensward position encircling a water fountain. They are wintered in the large orangery, which is an exquisite piece of garden architecture (see fig. 55).

Tub gardening, now becoming more common, has long been practised at Margam,

and in the vicinity of the orangery may be seen beautiful and large plants of *Hydrangea hortensis*, *Brugmansia*, *Agapanthus*, *Citrus*, *Myrtle*, *Eugenia Ugni*; *Oleander*, *Lime*, *Camellia* and the lovely *Clethra arborea*, all in large tubs, with *Palms* and other foliage plants, making a distinct and admirable feature in harmony with, and indeed enhancing the architectural effect.

I quote again from Lewis' work as follows:—

"The evergreens cultivated in the grounds surrounding the orangery are healthy and luxuriant. Among these a Bay tree, supposed to be the largest in the world, sprouting from the ground in several branches, is the most remarkable, being upwards of 60ft. in height and 45ft. in diameter."

There are several fine "Bays," but the one above-mentioned is a giant, and now mea-

sure, a fine example of the Oak-leaf Beech and a good specimen of *Libocedrus decurrens*. I missed a veteran tree that had successfully withstood many a storm, for it had succumbed at last to a storm early in 1907. It was an old Chestnut, and was a landmark near the mansion.

Nestling between and protected by the fore-named trees, there is a wealth of good subjects, thriving in the utmost luxuriance. Hybrid *Rhododendron* and *Azaleas*, profusely flowered; *Hydrangeas* (most of them having flowers of the deepest of blue, and one of the plants measuring 20 feet across); *Olearia Haastii* and *O. macrodonta*, the latter species 18 feet through; *Rhus Cotinus*; *Arbutus Unedo*, and *A. Andrachne*; masses of *Phormium tenax*; *Halesia tetraptera*, 30 feet across; *Berberis vulgaris*, as large; and, on the wall of the church standing in the

grown, including *Arundinaria falcata*, *A. japonica* (syn. *Bambusa Métaké*), *A. nitida*, *Phyllostachys aurea* (syn. *Bambusa*), *P. nigra*, *Arundinaria Hindsii*, *Bambusa gracilis* and *B. palmata*. Mr. Milner informed me that these plants had been subjected to as much as 20 degrees of frost.

A Rose pergola garden has been developed within the last few years. The pergola spans a fairly wide Grass walk, and describes a semi-circle, the entrance being marked by a pair of Italian pillars. The wood-work is of Larch, stoutly built, but the arrangement suggests lightness. It is draped with *Roses* of the best colours, whilst at intervals are standards of the *Wichuraiana* and *Polyantha* varieties, sufficiently far from, but running the length of, the pergola on either side. The scheme produces a most pleasing effect, which is heightened by a background of the *Himalayan Briar Rose Leuchtstern* and other *Polyantha* sorts and species. Some Italian vases were prominent in a bed of tall Lilies, and there were beds of mixed *Larkspur* so placed as to complete a most artistic picture.

Space forbids me to dwell at length upon the other departments of the garden, or much might be written of the fruit trees in the kitchen garden, the cordon Pears and trained Peaches on walls, which invariably carry and furnish fine crops of delicious fruit, the *Roses* and herbaceous plants. About 800 plants of the best varieties of *Carnations* are cultivated; the display, when they are in bloom, can be easily imagined. A large number of plants of *Calanthe Veitchii* arrest attention, their health and vigour giving promise of good bloom later. In a back stove there are several big pots of *Eucharis grandiflora*, *Codiaeums* (*Crotons*), *Cordyline* (*Dracæna*) and the usual, useful, decorative plants. Orchids are represented by numbers of the more useful decorative species of *Cypripedium*, *Cælogyne*, *Dendrobium*, *Cattleya*, &c.; one house is devoted chiefly to *Odontoglossums*. Among *Anthuriums* I noticed one of the *Andreanum* type labelled "*Fletcherianum*," a large and very dark-coloured form. The indispensable *Begonia Gloire de Lorraine* is largely grown, also *B. Gloire de Sceaux*, the last-named forming specimens 7 feet in height (see fig. 50). The largest plant shown in the photograph (see fig. 56) was 5 feet high and 3 feet in diameter. The plants were raised from cuttings inserted in March, and they commenced to bloom in November, being then in 10-inch pots. One of the plants kept beautifully fresh, although placed in a dwelling room for a month. About 500 *Chrysanthemums* are grown in bush form, whilst about 200 others are cultivated expressly for large blooms. The cultivation of fruits under glass is attended with great success, and Mr. Milner ranks amongst leading fruit growers. *Madresfield Court Grapes* are produced of great size and perfect finish, as also are *Muscat of Alexandria*, *Black Hamburg*, *Black Alicante*, &c. *Indoor Peaches* and *Nectarines* are also of the best. The whole establishment is managed with that skill and forethought which commands success.

To such a generous patron of gardening as Miss Talbot, the splendid results achieved must indeed be gratifying. A. P. Rowler.



FIG. 56.—WINTER-FLOWERING BEGONIA GLOIRE DE SCEAUX AT MARGAM PARK. LARGEST PLANT 5 FEET HIGH AND 3 FEET IN DIAMETER.

sure 80 feet in height and 60 feet in diameter, a superbly-clothed pyramid. The following also, with their dimensions, are perhaps equally noteworthy:—*Picea Morinda* (syn. *Smithiana*), 95 feet; *Platanus orientalis* (*Oriental Plane*), with a spread of 90 feet; *Liriodendron tulipifera* (*Tulip tree*), 100 feet; *Sequoia gigantea*, 90 feet; *Quercus Ilex*, 65-70 feet high, and a diameter of 75 feet. Two grand Stone Pines (*Pinus Cembra*) occupy sites at either end of the orangery, and a specimen of *Pinus halepensis*, a Pine rarely seen in this country, 75-80 feet high, in capital condition, is also worthy of note.

Beside these are some veteran *Larch* and massive *Beech*, *Sycamore*, *Elm* and *Lime*

grounds, *Magnolias*, *Wistaria*, *Myrtle*, *Roses*, &c., seemed to fully appreciate their sacred privilege; I admired also *Clianthus puniceus* doing well against a wall.

THE BAMBOO GARDEN

is a modern institution, but here, at least, it is eminently successful. Mr. Milner, the head gardener, with true instinct, discovered both the spot and the treatment, and, aided by conditions of pure air and wind shelter, the progress made in six or seven years has been extraordinary. A plant of *Arundinaria falcata* is 18 feet or more in height, and 24 feet across; while a plant of *A. nitida* is scarcely less. About twenty-four varieties are

GARDEN VARIETIES OF ABUTILON.

THOUGH some of the original species of Abutilon have been long grown in this country, the garden varieties, which are now so numerous, are of recent production. The first stimulus to the raising of hybrid forms was the introduction from Brazil, in 1871, of the bronzy-red flowered *A. Darwinii*, which, in addition to its other desirable qualities, flowers very freely in a small state. A year after this, viz., in 1872, M. Lemoine, of Nancy, distributed the pure white-flowered variety, *Boule de Neige*, of whose origin I can learn nothing. At all events, this beautiful form soon became popular, and even to-day holds its own as one of the best of Abutilons with white blossoms.

The intercrossing of these two was taken in hand by many raisers, notably by Mr. George, of Putney, and MM. Lemoine and Delaux in France. A noticeable fact in connection with the union of these two varieties is the wide range of colour found in the progeny. In some of them, the original colour of one or other of the parents is completely eliminated. The same thing occurs in the now popular Javanese *Rhododendron*, for the union of the white-flowered *Rhododendron jasminiflorum* and the deep orange-coloured *R. javanicum* resulted in the production of the pink-flowered hybrid *Princess Royal*.

Returning to the Abutilons, it may be noted that it was not long before many garden varieties, with blossoms of varied tints, were put into commerce. By the early 'eighties, white, pink, yellow, purple, as well as different shades of red, were represented among them. A glance at the list of plants certificated by the Royal Horticultural Society serves to show that the whole of the seven varieties of this class that were so honoured, received the Certificate between 1875 and 1882. From that time Abutilons became very popular, and remained so for some years; then came a period when this section appeared to be somewhat overshadowed by the variegated-leaved forms, of which there are several in cultivation. Of late, however, there are signs of increasing interest in Abutilons as flowering plants, stimulated, perhaps, to a certain extent, by newer forms sent here from the Continent. Some of these are characterised by very large flowers, more or less semi-double in character, which, instead of being strictly drooping, as are most of the others, are disposed horizontally, or nearly so. Though distinct, they are, to my mind, less pleasing than the older kinds, but no doubt they are admired by some. One of this class, viz., *Triomphe*, with pink flowers, was noted in good condition at the last Holland Park Show. A second variety of this section, *Jour de Fête*, has straw-coloured blossoms. In both, the flower-stems are shorter and stouter than in the forms generally seen, and are therefore able to support the flowers in an almost horizontal position. There are many purposes for which Abutilons may be advantageously employed in gardens. They may be grown as bushes and used for the embellishment of the greenhouse or conservatory throughout the summer months. In this way the blooms are, from their pendulous character, not always seen to the best advantage. Hence they are, by some, grown as standards, and thus the flowers are brought more on a level with the eye. For furnishing the pillars or walls of a greenhouse many of the varieties are very suitable; but the finest position of all is, I think, when they are trained to clothe the roof of a glass structure, as may be seen in No. 4 greenhouse at Kew. Treated in this way they flower profusely, and produce a canopy of drooping, bell-shaped blossoms.

During the summer months Abutilons may be planted out-of-doors, and they are often used in mixed beds of flowering plants.

Of the numerous varieties in cultivation,

Boule de Neige is a good white, *Golden Fleece* a fine golden-yellow flower, *Sanglant* a rich red, and *rosæfforum* a silvery-rose variety.

Among variegated-leaved varieties are:—*Thompsonii*, an old and tall-growing form, whose lobed leaves are mottled with cream; *Souvenir de Bonn*, a form of *A. striatum*, in which the handsome, lobed leaves are broadly but irregularly edged with white; *Savitzii*, something like a less vigorous form of the preceding, but much more freely variegated; *Darwinii tessellatum*, whose leaves are curiously checkered with different shades of yellow and green; and a variegated-leaved form of the slender-growing *A. vexillarium*, often met with under the specific name of *megapotanicum*.

Of the original species may be especially mentioned *A. insigne*, *A. striatum*, *A. venosum*, and the just-mentioned *A. vexillarium*.

One of the best of all Abutilons is *A. vitifolium*, but to see this in perfection the south-west of this country, or some parts of Ireland, where it flourishes outdoors, must be visited; for under greenhouse treatment it is not, as a rule, a success. *W.*

TREES AND SHRUBS.

TREES AND SHRUBS FOR WINTER EFFECT.

TREES and shrubs that are decorative in the dull days of December and January can be purchased cheaply and cultivated easily, yet in many cases Laurels and Privet are the only subjects planted.

A winter-garden in the open may be easily formed. Its situation should be sheltered from the north and east winds, not that the plants require shelter, but because the plants can then be inspected with more comfort during cold weather. If shelter is not naturally afforded by the contour of the ground or by big trees, it can easily be secured by planting Austrian and Scotch Pines, the dark green of the former contrasting well with the glaucous foliage and brown trunks of the latter. These, with a clump or two of Birch, and perhaps a few Hollies, will soon be high enough to break the cold winds, and, in addition, be pleasing to the eye in winter. No tree is more beautiful in this country in winter than the Birch, with its silvery-white trunk and graceful, drooping branches. It thrives in poor, stony soils, and there are very few well-drained soils of any kind in which the Birch will not grow. Some of the Willows are particularly prominent in winter by reason of the colour of their leafless stems, but more especially *Salix vitellina* in its red- and yellow-stemmed varieties. *S. daphnoides* (the Violet Willow) with bluish-white bloom on its branches, and *S. triandra* with purplish-brown stems are both to be recommended. The Willows are most effective when growing near water, though they also do well on drier ground. The colour is more intense on the young stems, therefore the trees should be pruned hard just as growth is commencing, after which the young shoots will develop to a height of 6 feet or more by the following autumn and furnish a fine display of colour after the fall of the leaf. Some of the Cornels also have coloured stems in the winter, the bright-red of *Cornus alba* and *C. a. var. sibirica* being particularly showy. *C. stolonifera var. flaviramea* has yellow-coloured stems. These Cornels are the better for being cut down annually; the young growths reach a height of 3 feet to 4 feet. *Rubus biflorus* is a native of the Himalayan region. The intensely blue-white canes grow to a height of 8 feet or more; they give a touch of colour to the garden in winter; so also does *R. lasiostylus*, a comparatively scarce plant from China, which has bluish canes which grow rather shorter than those of *R. biflorus*. *Kerria japonica* has

bright-green stems suitable for winter effect, as also are shoots of the lesser-known *Stephanandra Tanakæ*. The latter is a low-growing, spreading plant, possessing very little ornamental value except for its winter effect. *Fraxinus excelsior var. aurea* (the Yellow-barked Ash) displays its golden branches to advantage during the winter; the weeping variety is also a desirable plant.

There are several shrubs which flower during the winter, of which the *Hamamelis* (*Wych Hazels*), with their twisted, golden-yellow petals; *Prunus Davidiana* in its white and pink forms; the rosy-pink *Erica mediterranea hybrida*, which blooms all through the winter; the February-blooming *Erica carnea*; and the red and white varieties of *Daphne Mezereum* can be recommended. The bright-yellow, trailing *Jasminum nudiflorum* can be trained informally on pillars or old tree stumps, and in a warm corner *Lonicera fragrantissima* and *Chimonanthus fragrans* will open their sweet-scented flowers. In the early spring *Spiræa Thunbergii* displays its tiny, white, star-like blossoms; the peat-loving *Andromeda floribunda* and *A. japonica* open their white, bell-shaped flowers; while *Viburnum Tinus*, the mauve-coloured *Rhododendron præcox* and the crimson *R. nobleanum* are all capable of brightening the garden at this season. *J. Clark, Bagshot, Surrey.*

NOTICES OF BOOKS.

* BRITISH BASIDIOMYCETES IN THE BRITISH MUSEUM.

THE series known as the British Museum Catalogues have justly attained to an important position in scientific literature. For the national collections are sufficiently extensive to enable a catalogue of any single series to rank as a monograph, and in the book before us we have an admirable volume thoroughly deserving of a high rank amongst those which have already been published. Mr. Worthington Smith is already well known to the readers of the *Gardeners' Chronicle*, and it is with special satisfaction that we greet his well-planned and well-executed book. Only those who have attempted something of the same kind are aware of the great labour involved in the preparation of such a monograph, and Mr. Smith is to be congratulated on the skill and thoroughness with which he has carried out his task. The book is, of course, one that will appeal to the specialist rather than to the general reader. Fungi, and especially the Basidiomycetes to which this volume is exclusively devoted, are often difficult to identify, even with the aid of a good description. This arises largely from the lack of constancy in their characters, and furthermore, from the fact that many of them change a good deal in colour and general appearance as they mature. Even the spores are not always trustworthy, and we think Mr. Smith has shown a wise discretion in omitting to give their measurements as a means of identification. In his fig. 8, portraying the basidia and spores of the Mushroom, he shows what great variation may obtain within the limits of a single individual in characters that *à priori* one would have been inclined to rely upon. We can, of our own experience, fully confirm the variation shown in this particular instance, and we recall the circumstance that the facts themselves were called in question by certain people, when they were stated some years ago.

Where we have been able to test the book, we have found it accurate and reliable, and the figures, of which there is a considerable number, are such as we should have anticipated from so skilled and careful an artist. *J. B. F.*

* *Synopsis of the British Basidiomycetes*, a descriptive catalogue of the drawings and specimens in the department of botany, British Museum. By Worthington George Smith, F.L.S. London: Printed by order of the Trustees of the British Museum, 1908. Price 10s.

NOTES FROM A "FRENCH" GARDEN.

WORK in the French garden now largely consists of preparing the hot-beds for the forcing of Cos Lettuces. A few years back Cos Lettuces early in the season were worth from 8d. to 10d. each, and special hot-beds containing three rows of cloches only were prepared for their culture. But this entailed much work, as the outsides of the beds required continual attention to keep them in position, owing to the constant treading when passing along the narrow paths. Of late years this system has been abandoned, and the bed made as for accommodating frames, the outside portions being carefully formed with long, strawy manure. Cos Lettuces require a very mild and constant heat, therefore the hot-bed should be formed of one-third fresh manure and two-thirds dry manure. The beds need not exceed 9 inches in height when finally trodden down. The necessary soil is placed on the beds in ridges until the adjoining bed is finished, and then a board is placed parallel to the path to enable the operator to level the soil. When this is finished short and broken manure is placed in the pathway to the level of the soil, to prevent the latter

the culture of Cos Lettuces may be allowed to last about a fortnight, so that when the crops from the first beds are marketed there will be a succession lasting three or four weeks.

We have sown our first batch of Endive for the season, using the variety La Parisienne. This is earlier, although smaller, than the variety La Rouennaise, which is grown in cold frames at the beginning of April or in the open at the end of that month. Early Endive requires a uniform amount of warmth when in the seedling stage, and light and frequent waterings when planted under a cloche. It must never be neglected in this latter respect, and for this reason Early Endive is only cultivated in those gardens where it is possible to give it regular attention.

HARDY FLOWER BORDER.

THE GREEN-FLOWERED HELLEBORES.

ONE of the most handsome plants in bloom here now (January 8) is *Helleborus corsicus*. Willd. (*H. argutifolius*, Viv.), a native of Cor-

capsules in profusion, showing their saturnine-red seeds, about Christmas time.

H. corsicus sows itself freely, even on the hard stone path, but a sharp look-out should be kept for the seedlings, as slugs are very partial to them. A few seedlings are now beginning to appear.

The native Bear's-Foot or Setterwort (*H. foetidus*) is also now at its best. This grows wild near here in rocky woods, and is something like a small edition of *H. corsicus*, being evergreen and bearing numerous close panicles of verdant green (*vert pré*) cup-shaped flowers tinged with dull purple, which stand out well above the pedately-divided leaves.

H. viridis, native or perhaps only a denizen, is later, but is now pushing up its few-flowered stems which appear before the digitate leaves. This species is entirely herbaceous, and has a few varieties which are worthy of a rocky corner in the wild garden.

All these Hellebores are easily grown in any rich deep soil in shady places, but it is as well to remind those who wish to raise seedlings that the seed should be sown as soon as ripe, since it quickly loses its germinating power if allowed to get at all dry. The seedlings generally flower when 2½ years old.

Hellebore flowers are very interesting to study. What appear to be green petals are really sepals, the petals consisting of numerous small green bodies, shaped like trumpets (nectaries) which soon fall off. One may compare with these flowers those of the Winter Aconite, whose arching stems are now forcing their way through the ground. Here again what appear to be yellow petals are really sepals, surrounding the true petals. *G. B. Milne-Redhead, Mil-lard's Hill, Frome.*

ORCHID NOTES AND GLEANINGS.

CYPRIPEDIUM T. B. HAYWOOD (DRURYI × SUPERBIENS).

A REMARKABLE instance of the long duration of the flowers of this hybrid has been noticed in the gardens of F. Menteith Ogilvie, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), where flowers which opened on October 10 last year are only now fading.

Instances of *Cypripedium* continuing for a long time in flower by means of a succession of blooms are not uncommon, but for individual flowers to remain in a good condition from October to February is remarkable.

ODONTOGLOSSUM ARDENTISSIMUM "PHEBE."

This hybrid was shown by Mr. Norman C. Cookson at the meeting of the Royal Horticultural Society on February 9, when it gained a First-class Certificate. The colour of the sepals and petals is claret-red, save for a band of white at the margins. The handsome colouring, combined with good form of segments and finely-developed and distinctly-marked lip, go to make the plant one of the best of the hybrids yet raised from *Odontoglossum ardentissimum*.

FINE PLANT OF ODONTOGLOSSUM CRISPO-HARRYANUM.

We have illustrated many examples of the excellent culture to be seen in the collection belonging to Colonel Holford, C.I.E., C.V.O., but rarely one that surpasses the specimen of *Odontoglossum crispo-Harryanum*, now shown at fig. 58. This plant was exhibited at the Royal Horticultural Society's meeting on February 9, and the Orchid Committee recognised the culture displayed by awarding the grower, Mr. H. G. Alexander, a Lindley Medal. One inflorescence alone bore 61 flowers, whilst the aggregate number on the plant was 125.



FIG. 57.—ODONTOGLOSSUM ARDENTISSIMUM "PHEBE"; COLOUR REDDISH-CLARET WITH WHITE MARGIN. AWARDED A FIRST-CLASS CERTIFICATE BY THE ROYAL HORTICULTURAL SOCIETY ON FEBRUARY 9.

from becoming displaced. Some persons make a broadcast sowing of "Bellot" carrots to form a successional crop to the Lettuces, but, owing to the constant removal of the cloches, the Carrots have not a favourable opportunity for proper development, and it needs a very experienced person to ensure success with them. The Lettuces should be planted as follows:—With a line, mark the position of the outside row of cloches which are placed at a distance of 1 inch apart. The next row of cloches alternates with the first, and so on until the end is reached. Three or four days after the cloches are placed in position and when the heat from the fermenting material has thoroughly warmed the soil, one Cos Lettuce, "Green Flat of Paris," is planted in the centre of the bell-glass, with three Cabbage Lettuces in a triangle around it. After these have been planted about seven to ten days another Cos Lettuce is planted in the angles of the cloches outside. A small aperture is made for admitting fresh air to the cloches by pressing the soil in one spot just under the rim of the glass with the closed fist. The preparation of hot-beds for

sica (see fig. in *Gardeners' Chronicle*, April 13, 1907, p. 232). One of the plants bearing 13 trusses of flowers, is about 30 inches high, and has smooth, leathery, trifid leaves, the leaflets being ovate-lanceolate, glaucous beneath and sharply-toothed. The flowers, with nearly flat, spreading sepals, are about 2 inches across, yellowish sap-green (*vert eau-de-Javelle*), nodding in panicles of about 18 to 24, overtopping the leaves.

H. corsicus is sometimes mistaken for the true *H. lividus*, Ait. (*Bot. Mag.*, t. 7903), a very scarce plant, which is a native of Majorca, and perhaps Corsica, but from a horticultural standpoint the plants are quite distinct. True *H. lividus* has dull purple-grey flowers, tinged with green, and it used to grow in the Botanic Garden of Trinity College, Dublin.

H. corsicus is a most useful plant for a north border. It is evergreen, and beginning to flower early in December, it continues until the end of February or March. Even then the persistent sepals give the plant a very handsome appearance. I grow it with a background of Butcher's Broom and the Gladwyn Iris, which latter bears

THE ROSARY.

NOTES ON CLIMBING VARIETIES.

MANY of the most beautiful climbing Roses lack the quality of perpetual flowering; it is to be hoped that during the next few years the raisers of new varieties will furnish some that show improvement in this respect.

As a help to those who are still desirous of planting for the coming season, I append the names of those sorts that I consider the best in this section. This late planting is now best delayed until March, as in January or February, even if the weather is open, the temperature of the soil is very low and an unestablished Rose feels the effects of frost at the roots most

"Climbing Devoniensis," "Climbing K. A. Victoria" (the blooms are identical with those of the type; unfortunately it is a poor climber, the shoots being insufficiently vigorous), "Climbing La France" (this also with me refuses to climb much), "Climbing Mrs. W. J. Grant" (another great acquisition to the climbing section, but not very vigorous), "Climbing Niphotos," "Climbing Papa Gontier," "Climbing Perle des Jardines" (succeeds best under glass), "Crimson Rambler," "Dorothy Perkins" (very rampant), "Conrad F. Meyer," "Dr. Rouges," "Dundee Rambler," "England's Glory" (a good Rose, very free in blooming and having an extra good Tea scent), "E. Veyrat Hermanos" (a shy bloomer till thoroughly established, when it is free enough, and is one of the most beautiful Roses I know), "François

SOME NEWER VARIETIES.

ARD'S RAMBLER (*Alex. Dickson & Sons, 1908*).—Judging from plants seen growing in quantity at the raiser's nursery, this variety is to be strongly recommended. The blooms are of enormous size, with great stiff petals, and are perfectly formed. The colour is a velvety orange-crimson, with the base of the petals shading to rosy-carmine. Like "Ard's Rover," it is deliciously and highly perfumed. Though not such a vigorous growth, it is sufficient for covering a house-side. The foliage, too, is very fine. It may be considered (in growth) intermediate between "Ard's Rover" and "Ard's Pillar." Planted in pots and grown under the same conditions as "Maréchal Niel" and kindred kinds, it has outdistanced them in growth. Should it prove as free a bloomer as



FIG. 58.—ODONTOGLOSSUM CRISPO-HARRYANUM FROM THE COLLECTION OF COLONEL G. L. HOLFORD, C.I.E., C.V.O. THE PLANT CARRIED 125 FLOWERS.

acutely. When planting is delayed until March, or even as late as April, prune "hard" at the time of planting:—

"Aglala," "Aimée Vibert," "Alister Stella Gray," "Ard's Rover" (the very best of its colour for a house-side or high wall and one of the sweetest-scented, rampant-growing (Roses), "Billiard et Barre," "Blairii No. 2" (the blooms are scented like a Honeysuckle), "Bennett's Seedling," "Blush Rambler" (very rampant in growth, producing blooms with a delicious scent), "Bouquet d'Or" (a very free grower; quite the best of the Dijon class, all of which have a pleasing Tea scent); "Carmine Pillar," "Climbing Caroline Testout" (this is a great acquisition in climbers, but be sure and get the true climbing type, because the first three plants I had refused to climb at all).

Crousse," "Gloire de Dijon," "Grüss an Tep-litz," "Hélène," "Hiawatha" (very rampant, and quite the best of the Wichuraiana Roses: the foliage is beautiful), "Lady Gay" (very like Dorothy Perkins, but with prettier foliage, and has the scent of the Sweet Briar), "La Marque" (needs a warm, dry situation), "Mme. Alfred Carrière" (deliciously fragrant), "Mme. Bérard" (the petals are a very beautiful shade of salmon-yellow and are set off by the handsome foliage), "Mme. Hector Leuilliot," "Mme. Jules Gravereaux," "Mme. Moreau," "Maréchal Niel," "Minnehaha" (a vigorous grower), "Mrs. F. W. Flight," "Rêve d'Or," "René André," "Reine Olga de Wurtemberg," "Tea Rambler," "Thalia," "The Garland," "The Wallflower," "Wm. Allen Richardson," and the "Yellow Banksian."

"Ard's Rover," it will be a valuable addition to red climbing Roses.

EVANGELINE (*Walsh, 1907*).—A hybrid Wichuraiana. The flowers are borne in large clusters, the petals being 2½ inches in diameter. They are white, with the tips carmine-pink. The foliage is large and of a coppery colour.

FLOWER OF FAIRFIELD (*Schulltheis, 1908*).—This variety is claimed to be a perpetual-flowering Crimson Rambler of the same habit of growth as the older variety.

GOLDFINCH (*Paul & Son, 1907*).—A Rose of beautiful deep golden-yellow colour in the bud, but when open of a pale orange, shaded with violet, changing later to lemon-white. The flowers are semi-double with orange-coloured stamens, and are produced in numerous large trusses.

This new Rambler is a seedling from "Helene," and a very rampant grower.

LADY WATERLOW (*Nabonard, 1902*).—Although scarcely new, I have included it in my notes, as it deserves to be better known. It is a Hybrid Tea variety, and is one of the most delicately-beautiful climbing Roses. The flowers are very thin, but freely produced. The colour is a clear salmon-pink, with large crimson, almost Picotee-edged petals. This is a beautiful Rose for table decoration.

MRS. O. G. ORPEN (*Benj. R. Cant & Sons, 1900*).—This Rose has become very popular for decorative purposes in dwelling-rooms. It is a climbing damask, and has the most beautiful flowers. They are large and single, and are produced in trusses. The colour is a bright rosy-pink, with golden anthers.

STARLIGHT (*Paul & Son, 1908*).—Another pretty addition to the single-flowered varieties. The blooms are large, the petals being of much substance. They are white, suffused with a velvety rose, contrasting well with the deep green foliage.

TAUSENSCHÖN (*Schwartz, 1906*).—I consider this the most beautiful of the new climbing Polyantha Roses. It is wonderfully free, and is of similar growth to Crimson Rambler. The ground colour is like the tint of Peach blossom, but it changes to a rosy-carmine and the blooms are sweetly scented. The inflorescences develop 10 to 15 blooms in a bunch. It promises to become a most popular Rose.

TRIER (*Lambert, 1904*).—This is a German-raised Rose, and is really perpetual in flowering. It produces large trusses of semi-double, pale fawn-white flowers. Being a climbing Polyantha Rose, it offers opportunity for raising other autumn-flowering Roses of its class.

WHITE DOROTHY (*Benj. R. Cant & Sons, 1908*).—This is a white sport of the well-known Dorothy Perkins variety. I have not yet seen it, but should imagine it to be a valuable addition to the climbing Wichuriana class.

SINICA ANEMONE (*F. Schmitt, 1895*).—On a south wall, with no protection given, I have a fine specimen of this lovely single-flowered Rose. The blooms are large and silvery-pink, shaded with rose colour. *Leonard Petrie, Gayton, Cheltenham.*

The Week's Work.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Angræcum, Aerides, Vanda, &c.—Such aerial-rooting Orchids as *Angræcum sesquipedale* and *A. eburneum* having just finished blooming for the season, the increasing light and warmth from the sun will induce the roots to start into growth. Before this takes place the plants may require attention. In cases where, through loss of leaves, they have become bare some distance up the stem, they must be let down lower in the pots. Clear out the old Sphagnum-moss and replace the drainage with clean crocks, covering these with fresh moss. Those plants which have not lost many leaves may be left undisturbed, merely resurfacing them with Sphagnum-moss; all long, rambling roots should be brought very carefully to the surface of the pot. The rare *A. Kotschy* appears to thrive best when fixed to blocks of wood, and suspended from the roof, where it can be sprayed several times daily. These *Angræcums* enjoy the warm, moist atmosphere of the East Indian house, or a shady corner of the plant stove, while most of the smaller-growing species, as *A. bilobum*, *A. articulatum*, *A. arcuatum*, *A. Sanderianum*, *A. citratum*, *A. hyaloides*, *A. fastuosum*, and *A. Ellisii*, prefer a warm, shady position in the Cattleya house. The scandent-growing *A. Scottianum* should be tied up to neat sticks or small teak rods. The present is also a good time to top-dress or repot *Aerides*, *Saccolabiums*, *Sarcanthus*, *Aracanthus*, *Vanderendium*, and the warm-growing *Vandas*, as *V. Sanderiana*, *V. cristata*, *V. coerulescens*, *V. Parishii*, *V. Roxburghii*, and *V. lamellata*. Remove all scale-insects and other pests before commencing to top-dress. The roots should be treated in every respect as is advised for the *Angræcums*. These epiphytic plants should be watered sufficiently frequently to in-

duce the Sphagnum-moss to grow over the surface. All the plants must be carefully protected from strong sunshine. *Vandas* of the suaviss and tricolor section should now receive plenty of water at the roots, as they will soon commence to throw up their flower-spikes from the axils of the leaves. A cool, shady end of the Cattleya or intermediate house is the best place for these *Vandas* at all seasons.

Shading.—The sun's rays are now becoming too powerful for some species of Orchids, particularly *Cypripediums*, *Odontoglossums*, *Phalænopsis*, *Aerides*, *Saccolabiums* and *Vandas*; also such plants that have recently been repotted. Therefore blinds or shadings should be at once fixed in their places.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Figs.—Fig trees generally succeed better in pots or in restricted borders under glass. At the same time there are, in favourable localities, many warm corners in the fruit garden where a Fig tree would repay for better cultivation than it usually receives. In some gardens may be seen trees which should bear good crops of fruit but which seldom do so. As a rule this result is due to the neglect of one or two important points in cultivation. Perhaps the most frequent reason for ill-success is the fact that the roots of the trees having nothing to restrict them, have found their way into rich, heavily-manured ground. This causes the trees to make a large quantity of strong growth which fails to mature. The growths are generally left too thickly together during the summer, and they are, therefore, severely injured by frosts in winter, or, failing this, they are severely pruned in spring. These conditions aggravate the evil, for they tend to produce growth in the following season even stronger than ever. In order to check such exuberant growth it is necessary to cut a deep trench at about 3 or 4 feet from the wall, severing all the roots with a sharp knife and searching for any tap roots that may be growing straight down into the subsoil. The roots can then be restricted to a small space by means of a wall, or, failing this, the trench may be filled with chalk and stony soil, which should be thoroughly rammed as the work proceeds. This will greatly check growth in the first season. Train the shoots thinly over the wall space, and the trees will then make short growths in the following season. These will thoroughly mature, and bear fruit in the ensuing year. When any young Fig trees have to be planted, select for them a south or south-west aspect, and if a narrow border extending by the side of a hard gravel walk or roadway is available, no further preparation will be necessary, otherwise the roots should be restricted in the manner I have already described. Ordinary garden soil is suitable, but if fresh soil has to be procured, do not employ a rich, loose compost, but instead a light soil. This should be well rammed. When the trees reach a fruiting condition, nutriment can be applied with advantage in the form of liquid manure, and in summer a mulch will be beneficial. The most suitable varieties for out-of-doors culture are: (1) Brown Turkey; (2) Brunswick; (3) White Marseilles.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Late-fruiting vines.—The Grapes in late houses have usually to hang on the vines for a much longer period than is the case with early or mid-season varieties. It is, therefore, the more important to perfectly clean the rods at this season, particularly if they have been affected with mealy bug. In the first place, give the house a thorough cleansing with soapy water, paying particular attention to any holes or crevices that would be likely to conceal the insects. This done, remove any loose bark from the rods and then scrub them with a stiff brush, using a solution of soft soap and sulphur at the rate of 2 ounces of soft soap and 2 ounces of sulphur to a gallon of water. The rods may be again washed just as the buds commence to break into growth. Before tying up the vines, let the whole of the trellis be painted with paraffin oil, which should be well worked into the holes. Lime-wash all the exposed brick-

work. Carefully fork over the borders and remove an inch deep of the old soil. Then apply a top-dressing of chopped loam with a liberal mixture of old mortar rubble, wood-ashes and a chemical vine manure. Should the borders be approaching to dryness, thoroughly soak them with clear water before starting the vines into growth. The date for starting them must depend to a great extent upon the locality. In order that they may keep well, the Grapes should be perfectly matured by the end of October. Appley Towers and Black Alicante do not require such a long season of growth as Lady Downe's Seedling or Gros Colmar. If these two latter varieties cannot be given a separate house they should be cultivated in the warmer part of the house containing the other varieties. Lady Downe's Seedling is, perhaps, the best late-keeping Grape.

Propagation by vine eyes.—The buds should be selected from well-ripened shoots of last season's growth. Leave about half-an-inch of wood both above and below the bud, and place the "eyes" in 3-inch pots filled with loamy soil, with a little fine brick rubble added. Press the wood into the soil so that the bud is level with the surface. Plunge the pots in a moderately warm hot-bed and lightly spray them two or three times each day. See that the soil is not allowed to become too wet before roots have formed and the bud has started into growth, otherwise the shoot will decay. As soon as the roots have reached the sides of the pots, shift the young plants into 5-inch pots, using a compost of fibrous loam, brick rubble, and a small quantity of crushed bones. The compost must be thoroughly warmed before being used. Plunge the pots again in a hot-bed, and give them rather more warmth and moisture than in the earlier stages.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Liliums.—If any *Lilium* bulbs have still to be planted, this should be done as soon as possible. They may be planted in the borders of herbaceous plants or in beds containing *Rhododendrons* or *Azaleas*. Rare or choice varieties may be provided with sheltered corners. *Liliums* succeed best in rich loamy soil with some decayed manure and sand mixed with it. Plant the bulbs from 4 to 6 inches deep according to their size. *L. tigrinum Fortunei* is perfectly lovely in the autumn, and if bulbs are planted now they may be expected to yield a bright display of flowers in September and October next. The growths reach 6 or even 8 feet in height, and some of the inflorescences develop as many as 26 flowers. *L. auratum* and its improved variety *L. a. platyphyllum*, also *L. a. vittatum*, *L. Brownii*, *L. pardalinum*, *L. testaceum*, *L. Kramerii*, *L. speciosum*, *L. s. var. Kretzeri*, and *L. s. var. Melpomene* all succeed out-of-doors.

The Alpine garden.—The Alpine garden should be overhauled: given a spring cleaning, so to speak. It will be necessary to treat the portions on which are the earliest plants first. Already *Narcissus minima* and *Anemone blanda* are observable. First clean the plants and ground from weeds and moss. Then top-dress the plants with some fine soil, prepared as recommended in a former calendar. Sprinkle it evenly over the surface, lifting up the plants with one hand and adjusting the soil about their stems. The *Androsaces* should be covered with small lights or squares of glass, for if they receive too much wet in rainy weather they may perish. *Cypripediums* may be planted if it is done immediately, choosing moist and shady positions for *C. acaule*, *C. calceolus*, *C. spectabile*, and *C. pubescens*. Plant them in a considerable depth of peat and leafmould, as the roots require a cool medium in the summer.

Bedding plants.—*Pelargoniums* rooted in boxes should now be transferred to small pots, using a moderately-rich soil mixed with sand and leafmould. When potted, place the plants near to the glass in heated frames, or on a shelf or stage in a greenhouse. The potting should be done moderately firmly, and the plants be kept in a rather close atmosphere for a week or two afterwards. Very little water will be needed until the roots ramify in the new soil. Any plants that have become drawn should have the points of their growing shoots pinched out in order to induce a bushy habit.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Freesias.—Do not neglect to afford generous treatment to plants which have passed out of flower. Manure water may be applied to the roots up to the time when the leaves turn yellow. On the first appearance of this yellowing of the leaves the water supply must be lessened, continuing the decrease until water can be safely withheld. At that time the plants should be exposed to full sunshine in order that the bulbs may thoroughly ripen.

Gloxinia and Achimene.—Shake the tubers out of the old soil and lay them closely in boxes containing a light compost in which an abundance of sand is mixed. Gloxinias require stove heat, but a slightly lower temperature will suffice for Achimenes. When the tubers have made growth an inch or so long, they should be placed in their flowering pots. Tuberous-rooted Begonias require similar treatment if we except the high temperature.

Humea elegans.—Do not allow plants of this species to become potbound until they are in their final pots. Humeas succeed best in a cool, well-ventilated house where the foliage may be kept dry, and waterings are not required frequently.

Lapageria.—Examine Lapageria plants frequently and take every means to prevent injury occurring to the succulent growths arising from the base. During the season of growth abundant supplies of water should be given to the roots, supplying it as cold as possible.

Gloriosa superba.—The tubers of this valuable stove twiner should now be repotted into large pots having ample drainage. A rich, loamy soil is most suitable. Apply copious waterings during summer.

Winter-flowering plants.—Such species as *Coleus thyrsoides*, *Jacobinias* (*Justicias*), *Reinwardtias*, and *Begonia Gloire de la Reine*, which have finished flowering, should be pruned and placed near to the glass in a warm house. They will then produce growths suitable for making the cuttings which are necessary for raising plants to flower next season.

Ferns.—Any necessary repotting or top-dressing should be carried out before the new fronds have so far developed as to be liable to injury during the process. As with Palms, so with Ferns, it is often wise to let well alone, remembering that in nature most Ferns thrive very well with but little soil about their roots. Nevertheless, repotting has to be done occasionally. Peat is usually recommended for Ferns, but it is not absolutely necessary if good pasture loam that is not too heavy is obtainable. Such loam, if mixed with leaf-mould, broken charcoal, and plenty of silver sand, will suffice well enough. Ferns which have rhizomatous roots must not have these completely buried in the soil. Such species thrive better when provided with perfect drainage and only a shallow rooting medium.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Vegetable Marrows.—Seeds should be sown singly in small "60" pots for early supplies and germinated in a gentle warmth. Endeavour to forward the development of the plants by planting them under portable frames on mild hotbeds, so that good crops may be cut from the middle of April onwards. When safe to do so, the frames could be removed and the plants top-dressed. These plants will be in full bearing when those of most persons are being planted, and will continue to furnish fruits until frost destroys them in the autumn. Good results may also be obtained by growing the plants in large pots, afterwards planting them in vacant spaces in a fairly light position of a fruit-house or similar structures and training the shoots to a trellis. Moore's Cream, Pen-y-Byd, The Sutton, and Perfection (a splendid green variety), are all suitable for this method of culture.

Potatos.—Advantage should be taken of the warmer part of the day to attend to the earthing-up of any Potatos under glass which are already showing above the soil. The compost used should be one consisting in equal parts of well-decayed leaf-mould and light loam free from wireworm. These materials must be thoroughly

mixed and warmed before they are applied. As the days lengthen and the sun gains in power, air may be admitted more freely, especially when the wind is from a warm quarter. Tilt the lights in the opposite direction when the wind is from the N. or N.E. Prepared sets may now be more largely planted, either in unheated frames or skeleton shelters, where ample protection can be afforded them against frost. Except in the warmest parts of the country, it is not advisable to plant Potatos in the open ground for at least another fortnight, unless one is prepared to take every precaution to afford protection from cold winds. It is time that the whole of the tubers intended for planting should be laid out thinly either on suitable trays or shelves. Keep them in a cool and light store to make sturdy shoots previous to planting.

Cucumbers.—Plants put out on well-prepared beds last month should now be coming into bearing. They will require constant attention as regards the stopping and training of the shoots. Avoid overcropping while the plants are young. A surface-dressing of well-prepared material should be frequently applied in small quantities. Maintain a brisk heat and moist atmosphere, damping the paths with manure water early in the afternoon. Seed for a successional crop should be sown singly in small pots and raised in a bottom heat.

Seed sowing.—Seed of Aubergines, commonly known as Egg Plants, should be sown immediately in considerable heat. Pot the seedlings off singly as soon as they are large enough to handle, and afterwards place them near the glass in a temperature of from 60° to 70° F. Brussels Sprouts, Early Broccoli, Cauliflowers, and further batches of Parsley and Celery should be sown under glass in boxes.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Paths and roadways.—These are best formed of good, binding gravel; but this material rapidly deteriorates, and, therefore, requires renewing frequently. The present is a suitable time for carrying out any renovating work that is necessary. The channels and gulleys by the roadside should be put in order, and the catchpits cleared out so that the surface water may readily pass away when heavy rains occur. Break up the surface of the old gravel, and apply a fresh layer of fine, recently-dug hoggin. If this is spread evenly, and then rolled with a heavy roller, the surface will remain smooth and firm during dry weather. Gravel is apt to lose much of its binding quality after long periods of wear and exposure to winds. Good binding gravel is not to be easily procured. If it contains much sand or small pebbles, it will not remain so solid during dry weather; whilst if it is clayey, it clings to the feet in wet weather. Mitcham and Croydon gravel has been largely used for path-making, especially in places on the south side of London, and Wheathampstead and Hertford gravel is much sought after in North London. Supplies even from these districts vary greatly in quality. Several methods have been adopted to keep the surface of paths smooth and firm during hot weather. Crushed cockle shells spread very thinly over the surface is beneficial, as is also finely-sifted sand. The frequent use of the water cart in dry weather is a necessity. The roller can be used to the best effect on mornings following rain. This will roll in the fine pebbles that become dislodged by constant traffic, and benefit the surface generally.

Forming new paths.—Where there is a considerable amount of traffic, the paths should be from 12 to 15 feet wide. Proper drainage is of great importance, and the necessary gulleys and gratings must be provided for at distances which will vary according to the nature of the ground, whether level or rising, and according whether the subsoil is of a retentive or porous nature. The ground should be excavated to a depth of 10 inches, and in the bottom of the trench should be placed a layer 6 inches deep of hard material, such as broken bricks, concrete, or clinkers. Over this hard core place 4 inches deep of gravel, putting the rougher at the bottom, and reserving the finer for binding on the surface. Consolidate the materials as the work proceeds by using a heavy roller.

Roads.—Ordinary pit flints of a medium size are suitable for repairing the surface of carriage roads. After breaking up the surface with a pickaxe and spreading the fresh flint, add a layer of about 1 inch of fresh hoggin or binding material, and then bring the roller into requisition to make the surface smooth, but the centre of the road should be slightly higher than the sides so that water may pass quickly away. New carriage roads should be made by excavating the soil to a depth of 17 inches, and placing in the bottom 12 inches of hard material, next 4 inches of flint, and then 1 inch of hoggin. The usual width for a carriage way in a public park is 25 feet. In large parks a small steam roller is of great service, and it can be well employed on the roads.

Drains.—Proper provision for the removal of the surface water is of the utmost importance. A 6-inch or 9-inch drain, according to circumstances, should be placed down the centre of the new roadway, with an easy fall to the outlet or main drain. The gulleys should be placed about 200 feet apart on level ground, but if there is much fall to the roadway they will require to be closer. Many roadways in the London parks are kerbed with stone pitchers, which vary in size, and may be obtained of granite, Purbeck, or York stone.

THE APIARY.

By CHLORIS.

Preparing frames and sections.—When frames are used in the hives, it is necessary to place either a portion, or a whole sheet, of foundation in each frame. If this is not done the bees will build their combs in any direction but that desired by the beekeeper. It is an advantage to use a strip of comb only as a starter when a swarm is newly placed in a hive, for the bees are then gorged with honey for comb-building, and if whole sheets are used, then no use is made of this supply. Further, if sections of drawn-out comb or shallow frames are placed above the queen-excluder zinc, then the bees are compelled to store in the supers, because there is no room in the brood chamber. Some may say then it will be an advantage to use "starters" at all times, because of the saving of foundation, but this is not so. When bees are transferred in the spring or autumn into bar frame hives, it is advantageous to use full sheets of foundation, otherwise the bees would fill a greater part of the remaining space below the starters with drone comb, whereas a swarm

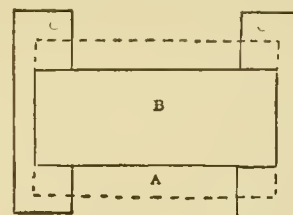


FIG. 59. APPLIANCE FOR FIXING COMB FOUNDATION IN FRAMES.

rarely builds drone comb during the first season. The best foundation on the market is that known as "weed" foundation. Always secure the foundation to the top bar. Too much care cannot be taken to make it quite fast. If no wiring be contemplated then that which weighs seven or eight sheets to the pound may be utilised, but when wiring is resorted to, then the thinner quality—that which is 9 or 10 sheets to the pound—may be used with safety. Some persons use a board when wiring foundation in a frame. Take a piece of wood (A in fig. 59) $\frac{3}{4}$ inch thick and cut it so that it will exactly fit inside a brood frame; then prepare another board (B) that will fit inside a shallow frame. Place these two pieces back to back, and between them place two strips of wood (C, C) about three-quarters of an inch thick, as in the figure. These will project at the top, bottom and sides. The dotted line in the illustration represents the larger board which is used for fixing the comb in brood frames, and the smaller one for shallow frames. In fixing up frames, never allow the foundation to reach to the bottom bar, but allow for stretching. For sections, use whole sheets of wax. If a little glue is put on the edge of the foundation it will make it secure.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

Appointments for March.

THURSDAY, MARCH 4—Linnean Soc. meet.

SATURDAY, MARCH 6—
Soc. Franç. d'Hort. de Londres meet.

MONDAY, MARCH 8—
Ann. Meet. United Hort. Ben. and Prov. Soc. at Hort. Hall, Westminster.

TUESDAY, MARCH 9—
Roy. Hort. Soc. Coms. meet. (Bulb Exh. in Hort. Hall, Westminster. Lecture at 3 p.m. by Mr. W. S. Murray, on "Bulb-growing in Holland"). British Gard. Assoc. Ex. Council meet.

THURSDAY, MARCH 11—
London Branch B.G.A. lecture on "Insect Pests."

WEDNESDAY, MARCH 17—
Roy. Meteorological Soc. meet.

THURSDAY, MARCH 18—Linnean Soc. meet.

TUESDAY, MARCH 23—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by Mr. K. Lloyd-Praeger, on "Rock Gardens").

WEDNESDAY, MARCH 24—
Perpetual-flowering Carnation Soc. Sh. at Hort. Hall, Westminster. Annual dinner in the evening.

THURSDAY, MARCH 25—Torquay Spring Fl. Sh.

TUESDAY, MARCH 30—
Cornwall Daffodil and Spring Fl. Soc. Exh. at Market Hall, Truro (2 days). Bournemouth Spring Fl. Sh. (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—40.5°.

ACTUAL TEMPERATURES:—
LONDON.—Wednesday, February 24 (6 P.M.): Max. 41°; Min. 30°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, February 25 (10 A.M.): Bar. 30.2; Temp. 38°; Weather—Overcast.

PROVINCES.—Wednesday, February 24 (6 P.M.): Max. 45° Ireland S.W.; Min. 34° Eogland E. coast.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—
Perennials, Lilliums, Azaleas, &c., at 12; Roses and Fruit Trees at 1.30, at 67 and 68, Cheapside, E.C., by Protheroe & Morris.

TUESDAY, WEDNESDAY, THURSDAY, FRIDAY—
Sale of First Portion Nursery Stock, at St. John's Nurseries, Worcester, by order of the Receiver for the Debenture Holders of R. Smith & Co., Ltd., in voluntary liquidation, at 11.30, by Protheroe & Morris.

WEDNESDAY—
Herbaceous Plants, Bulbs, &c., at 12; Roses and Fruit Trees at 1.30; Palms, Plants, &c., at 5, at 67 and 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—
Imported and Established Orchids, at 12.45, at 67 and 68, Cheapside, E.C., by Protheroe & Morris.

The problem of alternation of generations in plants, which is of great interest to morphological botanists, formed the subject of discussion at the meeting of the Linnean Society on the 18th inst. As most gardeners know, a Fern plant leads, as it were, a double life. In completing its life-cycle, it passes through the Fern stage and the prothallial stage. The Fern plant bears spores and is hence termed the Sporophyte. The spores, on germinating, give rise not to a new Fern plant, but to a simpler structure, the green, heart-shaped prothallus. Since the prothallus forms the male and female reproductive cells, or gametes, it is said to constitute the Gametophyte or sexual generation. Thus, in

the full life-cycle a Sporophyte generation alternates with a Gametophyte generation. Similar phenomena are presented in an almost equally striking manner by the Mosses and Liverworts. In these groups, as in the Ferns, two generations alternate with one another.

The Moss plant bears the male and female reproductive cells, and so, like the prothallus of a Fern, is to be regarded as the Gametophyte. As the result of fertilisation of the egg-cell, a type of structure entirely different from that of the Moss plant itself is produced. This structure grows out from the Moss plant as a capsule borne on a stalk. The capsule when ripe contains spores which germinate without fertilisation and give rise each to a Moss plant. Hence this peculiar structure, the capsule with its stalk is a Sporophyte, and takes a place in the life-cycle of the Moss similar to that taken by the Fern plant in the life-cycle of the Fern. It is noteworthy that, whereas in the Ferns the two generations are capable of independent existence, in the Mosses the capsule generation (Sporophyte) lives as a partial parasite on the Moss plant. But more noteworthy for our immediate purpose are the striking dissimilarities in form presented by the Sporophyte and Gametophyte.

During the 19th century it was proved that this alternation of generations is not confined to Mosses and Ferns, but occurs also in as precise, though less obvious, a manner in the higher plants. Among the flowering plants this remarkable alternation is disguised owing to the fact that the generation bearing the sexual cells—the Gametophyte—is attached to, and so dependent upon the flowering-plant itself—the Sporophyte—as to seem part and parcel of it. In more recent times this alternation of generation has been shown to occur also among the lower plants, such as the Algæ.

It would have been surprising indeed if such impressive and general phenomena had not engaged the attention of botanists and if the search for the meaning of alternation of generation had not led to considerable controversy. Much attention has, in fact, been given by botanists to this question and much controversy has arisen. Long ago the botanists engaged in the study of alternation formed themselves into two opposing camps. In the one camp were those who held the antithetic hypothesis, in the other those who maintained that of the homologous nature of the alternating generations. According to the antithetic hypothesis, the two generations—Sporophyte and Gametophyte—are not comparable; the Sporophyte is something which did not occur originally in the life history of the forerunners of plants now possessing it, but which has been intercalated. On this view no strict comparison can be instituted between the members (leaves, &c.) of the one generation and those of the other. According to the homologous theory, the two generations are comparable. If we omit various considerations based on recent discoveries bearing on the minute structure of the nuclei of the two generations, we may perhaps fairly say that but for one other hypothesis this was the position of affairs which the botanists met to discuss. The other hypothesis just referred to is that put forward by Professor Bower, who has championed with great ability the antithetic

theory. The suggestion put forward by Bower was that the kind of alternation now exhibited by Liverworts, Mosses and Ferns came about, or assumed its present proportions, as a consequence of the adoption of a land habit by plants which previously had been denizens of the water. In the circumstances in which the newcomers to the land found themselves they were able, or were constrained, to make provision for their wide and economical distribution. This was effected by spores: minute, cheaply-produced, reproductive cells, which do not require to be fertilised, but which are capable of independent growth. The more efficient the spore production the greater the power of the plant to increase and multiply and occupy the earth. The Fern plant and the Moss capsule represent successful devices evolved for the purpose of copious spore production.

This view, though, of course, hypothetical, had the merit of conferring on the antithetic hypothesis a precision as to ways and means which was lacking from the opposed, homologous hypothesis. The latter hypothesis appeared to content itself with the affirmation that the two generations, though they look so different, are, nevertheless, comparable, with respect to their several members, one with the other. The holders of this view were able to bring forward much evidence in support of their contention. They could, for example, point to the discoveries of Farlow, Lang, and others in apospory and apogamy. In some Ferns the fronds of the Sporophyte may fail to bear spores and give rise to that which, on the antithetic theory, they ought to be incapable of producing, viz., a prothallus. Conversely, a Fern prothallus may, in certain circumstances, give rise, without preliminary fertilisation of an egg-cell, to a Fern plant, a Sporophyte.

Recognising, apparently, that the homologous theory, though supported by strong evidence, was, after all, in a sense a negative theory, that is, that it did not offer a clear suggestion as to how the Sporophyte has its remarkable and distinguishing properties, Dr. Lang, who opened the discussion at the Linnean Society, made a valuable and, as it would seem, a probable suggestion.

Dr. Lang's hypothesis is that the different forms of the two generations are due, not to any essential differences in the specific cell from which each of these two generations springs, but to the different environmental influences which operate on these initial cells. Thus, in the Fern, whereas the spore develops on moist earth, free from all association with the Fern plant which formed it, the egg-cell develops within the tissues of the prothallus enclosed, and is provided with food material from the prothallus. These different environments suffice, according to Dr. Lang, to induce in the Sporophyte and Gametophyte of the Fern the differences of development which lead the fertilised egg-cell to become a Fern plant and the spore to become a prothallus.

The introductory paper by Dr. Lang was admirably lucid. The discussion which followed was opened by Professor Bower, who paid a warm and well-deserved tribute to Dr. Lang's work, admitted that he was prepared to modify his well-known views on the antithetic nature of alternation, but maintained that an intercalation of Sporophyte had occurred in the history of plants which show alterna-

tion and that the origin and course of this occurrence must be determined before the antithetic theory can be discarded.

Dr. Scott pointed out that Lang's hypothesis does not supersede the homologous hypothesis, and that it is a theory not of origin but of cause. He welcomed the suggestions of Dr. Lang as helpful in suggesting an explanation of the great differences between Sporophyte and Gametophyte in the Mosses and Ferns.

Dr. Farmer made the important point that the evidence of the behaviour of the nucleus in what is termed the reduction division must not be counted on in support of theories of alternation; reduction of chromosomes being a phenomenon common to animals and plants and thus of even wider generality than alternation.

Both Professor Oliver and Mr. Tansley made valuable contributions to a discussion which was conducted in so charming a manner as to disappoint those who expected that opposing views on abstract, scientific subjects would lead to acrimony. Dr. Prain, in a few felicitous words, brought the meeting to a conclusion.

LINNEAN SOCIETY.—At a meeting to be held on March 4, at 8 p.m., a paper on "The Montane Flora of Fiji" will be read by Miss L. S. GIBBS.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—At a largely attended meeting of the committee held on February 23, under the presidency of Mr. HARRY J. VEITCH, and including Mr. W. A. BILNEY, the honorary solicitor, it was unanimously resolved that, in view of amendments to the Old Age Pensions Act which will probably be proposed by the Government during the present session of Parliament, no immediate steps should be taken for the alteration of annuities payable by the institution. At the same meeting £45 was voted from the Good Samaritan Fund in several sums to six gardeners and two widows of gardeners who were in distressed circumstances and in urgent need of assistance.

PRESENTATION TO A GARDENER.—Mr. W. H. BAILEY, on leaving Bevendean Gardens, Oxshott, was recently presented with a clock by the members of the Oxshott Cricket Club in acknowledgement of his services as honorary secretary.

A GARDENER'S GOLDEN WEDDING.—Mr. and Mrs. ALFRED COLE, of Pant-y-fynon, Llandudno, celebrated their golden wedding on the 20th inst. Mr. COLE is a son of the late WILLIAM COLE, Senr., late of Fog Lane Nurseries, Withington, near Manchester, and well remembered as one of the celebrated plant-growers of thirty years ago. Mr. ALFRED COLE was gardener for some years to the late JOSEPH BROOME, of Wood Lawn, Didsbury, and Sunny Hill, Llandudno. At Llandudno he proved himself to be not only a clever Orchid grower, but a good all-round gardener.

"THE DAHLIA NEWS."—This little monthly journal, the organ of the New England Dahlia Society of Boston, Mass., U.S.A., still continues to flourish. We have just received No. 11 of Vol. 2 for January, 1909, and find its contents, limited as they must necessarily be, just as varied and interesting to the grower as ever. The contributors are by no means confined to America, and articles appear at intervals from Dahlia specialists in England, France, Germany and elsewhere.

MR. M. MOODY, gardener to F. D. GODMAN, Esq., F.R.S., South Lodge, Horsham, will retire at the end of March. Mr. MOODY, who will continue to reside in Horsham, has had the charge of this garden for 31 years, 27 of which have been spent in the service of F. D. GODMAN, Esq. A successor has been found in Mr. T. H. SLADE, late of Poltimore Gardens, Exeter.

LADY GARDENERS.—The first annual dinner given to lady farmers and gardeners by the Women's Agricultural and Horticultural International Union took place recently at the Criterion Restaurant. Mrs. CHARLES CHAPMAN, hon. treasurer of the union, presided over a large attendance. Miss L. DUNINGTON, in proposing the health of "The Guests," stated that the union sought to improve the industrial conditions under which women worked in agriculture and horticulture, to obtain and maintain an adequate rate of payment for work done, to endeavour to provide employment, and to establish a high standard of perfection.

FRENCH GARDENERS IN LONDON.—On the occasion of the annual dinner of the Société Française d'Horticulture de Londres, recently held at the Café Royal, under the chairmanship of Sir ALBERT K. ROLLIT, Officer of the Legion of Honour, a telegram in the name of the company present was despatched to M. FALLIÈRES, the President of the French Republic, offering the cordial and respectful salutations of the meeting. In reply, Sir ALBERT ROLLIT has received a very cordial message from the Palais de l'Élysée, thanking him as chairman, Mr. G. SCHNEIDER, and Mr. HARMAN PAYNE and the members of the society for their kind salutations.

EFFECTS OF FROST.—From reports which have reached us, it appears only too probable that the severe frosts this season have caused considerable damage to garden and nursery stock. Tea Roses especially have suffered greatly, and some reports even indicate that a very large percentage of the standard Tea Roses throughout the country have been killed outright. The usual vagaries are noticed in respect to shrubs, whilst some that are not reputedly tender have been killed, others that might have been expected to succumb, have so far escaped injury. Mr. FIELDER, of North Mymms Park Gardens, Hertfordshire, states that whilst *Olearia Guianiana* and other species are killed, the greenhouse plant of former years *Choisya ternata* is perfectly healthy. Mr. HUDSON, of Gunnersbury House Gardens, Middlesex, states that he finds that frost is more injurious to Bamboos if the roots are rather dry than when they are growing in a moist situation. This is interesting, because the reverse is the case with most other plants. There is some satisfaction in the knowledge that during periods of frost the damage to vegetation frequently appears greater than it really is. We hope that such is the case now, and that when the season of growth begins it will be found that many plants survive for which but little hope is at present entertained.

JUBILEE FLOWER SHOW, HAARLEM, 1910.—The complete schedule for this event has now been published in a volume of 80 pages in the Dutch language. It may be remarked that the competition is open only to Dutch exhibitors, and that it is expected that many additional special prizes will be given by patrons and societies, &c. The prizes in the schedule are 75 gold medals and about 2,500 other prizes. The judges will be chosen from among the horticulturists of all nations. The permanent show in the open (from March 23 till May 16) will consist of 200 classes for beds and groups of Hyacinths, Tulips, Narcissi, Crocuses, and other bulbous

plants, herbaceous perennials, rockeries, Conifers, Aucuba, Azalea and Rhododendrons, Buxus, Ilex, Prunus, and other shrubs. The first special show (March 23 to 31) contains 275 classes, principally for Hyacinths, Tulips, Narcissi, Crocuses, Amaryllis, and other bulbous plants in pots. A special feature will be the class for bulbs and plants, retarded in ice. There are classes for *Azalea mollis* and Rhododendrons, Roses, Lilacs, and other forced shrubs, stove and greenhouse plants, and cut flowers. The second special show (April 15 to 27) will have 300 classes of the same general character as those of the first show, but the third special show (May 7 to 12) will not afford an opportunity for showing Hyacinths, but will probably have the character of a special show of Orchids and decorative floral art. The regular meetings of the committee for judging new bulbous plants will be held in the show buildings every week. The permanent exhibition in the open will have the greatest interest for foreign visitors, and although the artistic and suitable arrangement of bulbous plants is a rather difficult matter, there is every prospect that a good effect will be obtained, for already four local exhibitions of the same nature have been organised in the bulb district. The Noordwijk section of the Bulb Growers' Society has done so already, the Sassenheim section quite recently, and the Hillegom section is even this season preparing a local show, which may be considered as a valuable trial for the Jubilee Flower Show to be held next year.

SEED FOR THE TROPICS.—The question of the advisability of drying seed for export to tropical countries is considered in a brief note by Mr. MAIN in a recent number of the *Agricultural Bulletin of the Straits and Federated Malay States* (12, vii., 108). Mr. MAIN, who is the Superintendent of the Government Plantations, Perak, states that, according to his experience, it is quite unnecessary to subject flower and vegetable seeds to a special drying process before despatching them from England to tropical countries. He has compared the germination capacity of seeds from ordinary paper packets which had been packed in brown-paper parcels with that of seeds which had been specially dried and packed in hermetically-sealed tins. Mr. MAIN found that whereas the former showed a germination of 85 per cent., the latter did not exceed 55 per cent. Unfortunately, Mr. MAIN does not state with what kinds of seeds his experiments which gave these results were made. Our readers will recollect that we have more than once drawn attention to this subject. The method of drying, when carried out with proper precautions, does not in such cases as those of which we ourselves have had experience lead to any material reduction in the germination capacity; though it does lead to a somewhat slower rate of germination. It would be interesting to know the result of a carefully-planned experiment, in which samples of seeds of known histories and germination capacities were exported at various seasons, some specially dried and enclosed in sealed tins, others undried and packed merely in paper. Mr. WATSON in sending seeds to tropical climates from Kew, has not found it necessary to dry and enclose them in sealed tins (see *Gardeners' Chronicle*, January 13, 1906, p. 20).

PUBLICATIONS RECEIVED.—*Handbook on Pruning Roses*. (Second edition). (The National Rose Society).—*Trees and Shrubs of the British Isles*, by C. S. Cooper and W. Percival Westell, F.L.S. Sixteen full-page coloured plates and 70 full-page black and white plates drawn direct from Nature, by C. F. Newall. (London: Dent & Co.) Price 1s.; Part I.—*The Estate Magazine*. (February). Price 6d.—*The Cross-Breeding of Farm Plants*. Extracts from Press opinions of Messrs Gartons' experiments and results.—*The Life of Philibert Commerson*, by Pasfield Oliver. (London: John Murray). Price 10s. 6d. net.

THE LATE SIR GEORGE KING.

THE death of Lieut.-Colonel Sir George King, K.C.I.E., LL.D., F.R.S., F.L.S., M.B., &c., was briefly announced on p. 128. All who had the pleasure of knowing him personally will regret the loss of an amiable and modest friend. Yet this regret will be tempered by the knowledge that the deceased had little pleasure in life during the last two or three years, and death came as a relief from much suffering.

Sir George King was a native of Scotland, and was born on April 12, 1840. He was educated at the Aberdeen Grammar School and University, where he took the degree of M.B. In 1865 he entered the Bengal Medical Service, and was for some years house surgeon of the hospital attached to the Medical College in Calcutta. From early years botany was his favourite study, and he was appointed to the chair of Botany at the Medical College in 1871, and the same year became superintendent of the Royal Botanic Garden, Sibpur, Calcutta. Some years elapsed before King became an active contributor to botanical literature. Probably his numerous duties and delicate health—for he was never very robust—prevented him; but the following extract from a 1902 edition of the guide to the Calcutta garden is an appreciation of his qualities as a gardener and a botanist: "When he assumed charge, the garden was still suffering from the effects of the devastation caused by the two great cyclones of 1864 and 1867; so much so, that, as a scientific institution, it was necessary largely to remodel it, and, as a place of public resort, practically to remake the whole. The tireless energy of the new superintendent, combined with his genius for landscape gardening, in a few years completely altered the aspect of the place, increasing incalculably its value as a scientific centre, and bestowing on it all the charms that, as a pleasure ground, it now possesses. The herbarium, which had only begun to recover from the effects of the depletion advised and effected by Wallich, during Dr. King's incumbency again attained to a rank commensurate with the needs of a garden of such importance, and, whether for the quantity or the arrangement of its contents, is now of a value undreamed of when the Wallichian distribution took place."

Subsequently King was made superintendent of the Cinchona Plantations in Sikkim, and in 1876 he published *A Manual of Cinchona Cultivation in India*. His work in connection with this establishment was enormous for one on whom so many other duties devolved. The cultivation of Cinchona, with the preparation of quinine, is now one of the most important Government industries in India, and it has brought this valuable drug within reach of the poorest of the vast numbers of the poor in that country.

In 1891 King was appointed Director of the Botanical Survey of India, in addition to his other offices. If he published little during the first 20 years of his life in India, he made up for it afterwards, and one marvels how he found time for so much. Some account of his more important publications may be of general interest.

Sir George was the founder of and by far the largest contributor to the *Annals of the Royal Botanic Garden, Calcutta*, a large quarto serial. The first volume appeared in 1888, and it has now reached the tenth volume. But that gives no idea of the extent of this great work, illustrative of the flora of India, as the so-called parts are equal in size to ordinary volumes. The first volume, for example, consists of two such parts and an appendix; the whole devoted to a monograph of the species of *Ficus* of the Indo-Malayan and Chinese countries. There are about 200 pages of letterpress and 232 plates. Sir George made a special study of this genus, he also elaborated the species of *Ficus* for Hooker's *Flora of British India*, and wrote several papers on the physi-

ology of the genus. The second volume contains monographs by the same author of the Indian species of *Artocarpus*, *Quercus* and *Castanopsis*. Of *Quercus* alone 82 species are described and figured, comprising many of the handsomest trees of India. The eighth volume of the *Annals* is of special interest to horticulturists. It is the joint work of King and R. Pantling, and consists of four thick parts, illustrating the Orchids of Sikkim by 448 coloured plates. In this connection it may be mentioned that Part I. of the fifth volume of the *Annals* contains "A Century of Indian Orchids," by Sir Joseph Hooker, with 101 coloured plates; and Part II. of the ninth volume contains "The Orchids of the North-Western Himalaya," by Mr. J. F. Duthie. These number 173 species, belong to 45 genera, and they are represented in 151 partially-coloured plates. It is true that there is a little repetition, but the Orchid flora of India is perhaps the richest in the world, area for area, probably exceeding 1,200 species, outnumbering those of any other family.

Concurrently with the *Annals*, King published his "Materials for a Flora of the Malayan Peninsula" by instalments, which first appeared in the *Journal of the Asiatic Society of Bengal*, and were afterwards issued separately. The first in-



THE LATE SIR GEORGE KING.

stalment is in the 58th volume of the *Journal*, dated 1890, and the last in the 74th volume in 1907.

The classification is the same as in Bentham and Hooker's *Genera Plantarum*, and, with the co-operation of some other botanists, the work has been brought down to the end of the Labiatae, forming four octavo volumes bearing both the original and a consecutive pagination.

Several collectors were engaged in gathering and preparing specimens for this work, which reveals the immense wealth of the arboreal element in the vegetation of the peninsula. A very large number of new species are described, many of them valuable timber trees. Taking a family remarkable for its timber trees, the Dipterocarpaceae, for example, 62 species belonging to 11 genera are described, two-thirds of which were previously unknown. Such is a sample of the kind of work to which Sir George devoted what one may truthfully designate every minute of his spare time. Doubtless he worked too hard, but he has left his mark on all that he touched, especially the now beautiful Calcutta garden. The late Dr. Otto Kunze, who was a keen critic, in his *Um die Erde*, says "the herbarium and library were rich and a pattern of what they should be; the gardens tastefully laid out and more like a pleasure ground than a botanic garden."

LAW NOTES.

THE POISONS AND PHARMACY ACT, 1908.

DRAFT REGULATIONS.

The Privy Council has now approved of the draft Regulations which it is proposed to bring into force with reference to the working of the new Poisons and Pharmacy Act, and unless the Privy Council should see fit to alter its decision in the interval, these Regulations may be made effective at any time after March 28 next, that is to say, 40 days after the draft Regulations were first promulgated.

It is encouraging to find that amongst the Regulations it is proposed to adopt, the following special provision is made in favour of the horticultural trade.

"In granting licenses for the sale of poisonous substances for use exclusively in horticulture, preference shall be given to nurserymen, florists, seedsmen, and other persons whose business is specially connected with horticulture."

It will also be observed that in addition to the power possessed by His Majesty in Council to vary the Regulations themselves from time to time as may be deemed necessary, the Regulations also reserve the right to revoke or suspend a license. Subject to this power, licenses will remain in force for one year, so that application will have to be made for renewal of a license annually. The fee payable on the granting of a license is £1 1s., and for renewal of license 2s. 6d. Various forms are appended to the draft Regulations, but it will be sufficient for present purposes to give the form of application only. The Regulations themselves are as follow:—

REGULATIONS REFERRED TO IN THE FOREGOING ORDER IN COUNCIL.

1. A license shall not be granted to any person unless the local authority are satisfied that he is fit to be entrusted with the sale of the poisonous substances.
2. In granting licenses for the sale of poisonous substances for use exclusively in horticulture, preference shall be given to nurserymen, florists, seedsmen, and other persons whose business is specially connected with horticulture.
3. Applications for licenses and renewals of licenses shall be in the forms set forth in Schedule A to these Regulations, and shall be sent to the local authority at such time as the local authority may direct.
4. A license and a renewal of a license shall be in the forms set forth in Schedule B to these Regulations.
5. A license shall continue in force for one year, but may be renewed from time to time for one year at a time, subject to the same provisions as in the case of a grant of a license.
6. A license may be revoked or suspended for such term as the local authority think fit, if the local authority are satisfied that the licensee has failed to comply with the requirements of these Regulations or of the Poisons Acts, or that the licensee is not a fit person to be entrusted with the sale of poisons.
7. A licensee shall, on being required to do so by any officer of the local authority or any police officer, produce his license, and any renewal thereof.
8. The fees charged in respect of the grant and renewal of a license shall be such as the local authority may determine, not exceeding in the case of a grant of a license, 21s., and in the case of the renewal of a license, 2s. 6d.
9. A license shall not authorize the licensee to sell or keep open shop for the sale of poisonous substances except from or on any premises within the area of the local authority which granted it, and for the purpose of these Regulations, a municipal borough the council of which is a local authority for those purposes shall not be treated as forming part of any county.
10. Every local authority shall keep a register of the licenses granted by them for the time being in force, and any person shall, at all reasonable times, upon payment of such reasonable fees as may be fixed by the local authority, be entitled to inspect and to make copies of, or take extracts from, the register.
11. All poisonous substances shall be kept in a separate store or cupboard apart from any other goods, and poisonous substances shall not

be sold at the same counter as articles of food for human consumption.

12. A poisonous substance shall not be sold except in an enclosed vessel or receptacle as received from the manufacturer, distinctly labelled with the word "Poisonous," the name of the poison, the name and address of the seller, and a notice of the special purpose for which it has been prepared.

13. Liquid preparations shall be sold only in bottles or tins, easily distinguishable from ordinary bottles or tins, and the word "Poisonous" shall be indelibly marked on each bottle or tin.

14. Solid preparations shall be securely packed in such a manner as to avoid, so far as possible, the risk of breaking or leakage from transport, and the package shall contain a notice that it must be destroyed when empty.

15. For the purposes of these Regulations the expression "poisonous substances" means the poisonous substances to which Section 2 of the Poisons and Pharmacy Act, 1908, applies for the time being.

FORM OF APPLICATION FOR LICENSE.

THE POISONS AND PHARMACY ACT, 1908.

I, _____ of _____, carrying on the trade of _____ at _____, hereby apply for a license to sell and keep open shop for the sale of the poisonous substances to which Section 2 of the Poisons and Pharmacy Act, 1908, applies for use exclusively in connection with*

I undertake to comply with the provisions of the Arsenic Act, 1851, the Pharmacy Act, 1868, and the Regulations made by order in Council under the Poisons and Pharmacy Act, 1908.

(Signed)

Date.

*Here insert either "agriculture" or "horticulture" or "agriculture and horticulture." H. M. V.

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

THE NEW R.H.S. CLASSIFICATION OF DAFFODILS.—Mr. Engleheart's letter of protest and criticism, page 116, regarding the new R.H.S. classification of Daffodils is welcome in that it voices with authority the dissatisfaction of many who feel that their opinion is of too little weight to warrant their giving expression to it. In the notes contributed a few weeks ago, being under the impression that the list was published with the full authority and concurrence of the Narcissus Committee of the R.H.S., I assumed that there was nothing to do but accept it and hope that the inconsistencies and deficiencies, some of which I alluded to, and which, as Mr. Engleheart says, are obvious, would be removed by future alterations and additions. It appears, however, that the Narcissus Committee as a whole was not consulted before the publication of the report of the Special Committee, and that neither Mr. P. R. Barr nor Mr. Engleheart were represented on that committee. That being the case, the authority attached to the present classification list is very much weakened, and we may, therefore, hope that it may be altogether recast. For exhibition purposes (and by that I do not mean from the point of view of the experts or judges, but in the interests of the managers of shows and of competitive exhibitors) some principle of classification according to measurements is inevitable, for the public, and even the judges, are always more or less influenced by size. Indeed, it is quite reasonable that flowers of the short trumpet type, such as *Giant Incomparabilis* and *Leedsii*, should not be expected to compete either with pure *Ajax* on the one hand or with the *Incomparabilis* and *Leedsii* varieties on the other. The principle of classification by measurements does form a part of the old arrangement, but, as Mr. Engleheart says, it could and ought to be combined with more consideration for the natural divisions and affinities, and more account should be taken

of colour distinctions. No one will ignore the difficulties of the task, which have been greatly increased by secondary crosses in varying degrees and by the introduction of distinct species, such as *N. triandrus* and *N. cyclamineus*. Though some degree of arbitrariness cannot be avoided, it need not, I think, be so glaring as, for instance, is displayed in the case of *Triandrus* hybrids and in Division 7 of the new classification. Whatever system be adopted, I strongly agree with Mr. Engleheart that the pure species should be kept in separate divisions, and not mixed with the hybrids. A. J. Bliss.

FREESIAS.—I am enclosing some spikes of this flower, each inflorescence having 12 blooms, with a corresponding number on the side sprays. We have had as many as 13 blooms on the main stalk, with eight and five flowers respectively on the lateral sprays from the same flower stem. Our plants, which exceed 2 feet in height, are potted in 5 and 6-inch pots. G. Elwood, *Swanmore Park Gardens*.

Our plants have not produced more than nine flowers on an inflorescence, but this season the majority of bulbs developed side shoots that flowered, there being a total of from 30 to 35 flowers per bulb. This I attributed to a liberal feeding with manure water after the plants had flowered. The manure enables the new bulbs to develop, and to gradually but thoroughly ripen. H. Juniper, *Dyrham Park Gardens, Barnet*. [Some excellent spikes of *Freesia* accompanied this note.—Eds.]

EXPERIMENTS WITH NITRO-BACTERINE.—Since Professor Bottomley's article on experiments with Nitro-Bacterine (*Gardeners' Chronicle*, February 6) contains several statements liable to mislead the general reader, it would seem desirable that these statements should be taken as they occur and examined more closely. Firstly, although in the Wisley trials four of the plots were dressed with lime in addition to sulphate of potash and superphosphate of lime, while in the Reading trials the soil was a calcareous loam, Prof. Bottomley still maintains that the application of these mineral manures would tend to increase the acidity of the soil. It is also stated by Prof. Bottomley that these fertilisers appear to have an injurious action on the introduced bacteria themselves, and statements contained in the *U.S.A. Farmers' Bulletin*, 240, are cited; he claims that it is there "specifically stated that the action of these concentrated fertilisers on inoculated seed is injurious." As a matter of fact, reference to the above bulletin will show that the remarks in question concern the method of sowing the seed, and read as follows:—"The action of concentrated fertilisers drilled with inoculated seed is injurious; this is especially true if the seeds should be still moist after treating with liquid culture." How this injurious action is "fully confirmed" by the Reading and Wisley trials is not easy to perceive, since these unfavourable conditions were not present in those trials. Further, in the discussion of the beneficial results obtained by the application of lime to Plots XIX. and XX., it is pointed out that, in order to demonstrate the fixation of nitrogen in laboratory-cultures by the nitrogen-assimilating organisms, the presence of carbonate of lime is absolutely necessary. This is true as far as it goes, but for some reason or other, Prof. Bottomley considers it politic not to mention that potash and phosphates are equally indispensable. In using the very general term nitrogen-assimilating organisms, he includes a large number of bacteria differing greatly in their physiological and morphological characters. Whilst the addition of carbonate of lime is necessary to the growth of such organisms as *Azotobacter* and *Clostridium*, it has been shown by several investigators that many organisms are able to fix nitrogen equally well in the absence of carbonate of lime; the nodule organism is one of these. Would it not have been better for Prof. Bottomley to confine his attention to the nodule organism as related to the Wisley and Reading experiments instead of indulging in a dissertation on the requisite conditions for the culture of organisms not at present concerned? As regards the culture of the nodule organism itself, various American and German bacteriologists have advocated the addition of acid potassium phosphate or even of

free organic acids to the culture solutions and jellies; hence it will be seen how very slightly Prof. Bottomley's remarks on carbonate of lime and its use in laboratory cultures bear upon the consideration of the Wisley trials. In addition, his statement that "the same proportion of lime applied as a mixture of lime, potash and superphosphate would be fatal to the organisms" is very vague and quite as irrelevant as his foregoing one. Again, in his consideration of the Wisley trials, we are presented with a specially-compiled table of results, which, he states, shows that the seed-inoculated, unmanured plot gave a greater yield of produce than any of those receiving various forms of manure. This, at first glance, would seem to indicate a decided increase to be due to inoculation, and a decrease due to the use of potassic, phosphatic and nitrogenous manures, as far as the fallowed land is concerned. If, however, we tabulate the yields of the corresponding plots on the cultivated land, we find that the seed-inoculated plot produced the smallest crop in the series of six plots.

PLOT.	Weight of Peas.	
	Weight of pods, grams.	Weight of Peas, grams.
Soil and seed untreated	25.540	10.303
Seed inoculated	19.507	8.179
Manure, 10 tons per acre	23.674	9.653
Lime, 40 bushels per acre	24.559	9.681
Superphosphate and potash	27.017	10.788
Calcium cyanamide	25.692	9.696

This table is given, not to demonstrate the futility of inoculation, but to indicate to the general reader how inaccurate and useless it is to compare yields from plots in absolutely different series as was done by Prof. Bottomley in the case of the Wisley and Reading results. An explanation of these very erratic yields will, no doubt, be found in Mr. Chittenden's report (p. 238), in which he says: "One point was particularly noticeable on the fallowed ground; the soil there was appreciably deeper at the northern end, the bottom of the slope, than at the southern end, owing to the washing down of the finer particles of soil during the heavy autumn and winter rains of 1907-8, and this had a marked effect upon the yield of the fallowed land." This, in itself, would seem to account for the abnormally high yields of the untreated plots and for the gradually decreasing yields of the two rows of plots (cultivated and fallowed land) taken from the lower to the higher numbers. If, further, we take into consideration the disposition of the two plots in each series of experiments, we shall find that, irrespective of soil- or seed-inoculation, the plot nearest the lower or northern end of the experimental field gave, in the majority of cases, the heavier crop. All the plots, 1-2, 7-22 (with the exception of 13 and 14) conform to this rule, constituting as they do two-thirds of the total number of plots. This is shown in the following table:—

Cultivated land,	Northern plot.	Weight of Peas in grams.	
		Northern	Southern
7 and 8	9	10.050	9.681
" " 9 and 10	11	10.788	9.067
" " 11 and 12	15	10.620	9.697
Fallowed land, 15 and 16	17	7.963	7.093
" " 17 and 18	19	7.686	6.513
" " 19 and 20	22	4.702	4.182

As this point has not been brought to the notice of the reader in any of the reviews on Mr. Chittenden's report, it seems desirable that it should be mentioned in this article. H. B. Hutchinson, *Rothamsted Experimental Station, Harpenden*.

VEGETABLE PRIZES AT SHREWSBURY.—

I was pleased to see the letter by *Vegetable* in your last issue. If the committee had contemplated the change they have made I think they should have given the trade notice at the last exhibition, or have sent a deputation to the largest prize donors to ask their opinions. The trade has liberally supported Shrewsbury, and to a great extent made it the show it is. I feel sure it would soon fall to pieces as a horticultural show were the trade support or exhibits withheld. The committee said they would accept no prizes with any stipulations, and yet they have accepted prizes from certain firms, allowing them to stipulate their own fancy names. In offering prizes at Shrewsbury and other places, I have done it to encourage the gardeners to do their best in friendly

competition and have their exhibits judged by impartial judges. I fail to see what is the difference in my offering prizes for vegetables or Sweet Peas grown from my seeds or in stipulating on particular names. Suppose, for instance, I offered prizes for Sweet Peas under the name of "Sydenham's Sky Blue," and so on, and they were found to be nothing more than old standard varieties under new names, what would the public say? The committee have been badly advised when they say they will only give a limited number of awards to the non-competitive exhibits. These exhibits have been a great feature at Shrewsbury. The trade have gone to enormous expense to bring their very best. Now the committee as good as tell them they do not appreciate this help: they would rather favour only the competitive exhibits by giving them, what I think, unnecessarily large prizes, thereby encouraging the covetous man to come and win all the money he can, whereas the unselfish man, who often makes a ten times more interesting exhibit, is to have the cold shoulder. I shall watch with considerable interest how these new regulations are carried out, feeling sure there will be considerable trouble, which will be most unfortunate, if not disastrous, to the former good and liberal reputation of the society. *Robert Sydenham, Birmingham*

Our attention has been called to a letter in your last issue under the nom de plume of *Vegetable*, which we think it advisable to answer to prevent any disputes arising hereafter. On reference to paragraph 4 on page 4 of the schedule your readers will find it stated "that no condition shall be expressed in the schedule as to the seeds, &c., being purchased from the donors of prizes." The committee had no intention of preventing these donors specifying any particular varieties of vegetables or flowers to which such should be confined, but they declined to permit any restrictions to appear stating the seeds must necessarily be purchased from such donors. By way of obviating any compulsion on the part of intending exhibitors to purchase their seeds from these donors, we may mention that such exhibitors will not necessarily be debarred from competing in these trade classes through not ordering seeds direct from them, as it is presumed the donors supply the trade with their produce for sale in the usual way, and consequently any exhibitor can procure such through his own seedsmen without running any risk of disqualification when the judges make their awards. We imagine it will be the duty of these donors to see that the competitors in their respective classes have complied with their requirements. We take this opportunity to call the attention of your readers to a printer's error on page 29 of the schedule in the third line of notes, viz., "No trade cards will be allowed on any of the exhibits in Classes 134 to 165," which should read Classes 131 to 165. *The Hon. Secretaries.*

THE LINDLEY LIBRARY.—From the report which was printed on p. 105 of the proceedings at the Annual Meeting of the Royal Horticultural Society, held on the 9th inst., it appears that a discussion took place respecting the ownership of the Lindley Library. The report says: "It was pointed out that the library does not belong to the Society, but to trustees, and that, therefore, any money spent by the Society in the purchase of books is, in fact, a presentation to the trustees." This suggestion is so calculated to mislead ordinary readers and to do serious mischief, that it ought not to be allowed to pass without notice. Trustees are not trustees for themselves, but for other persons; and, although the legal ownership of property held in trust is in the trustees, the beneficial ownership is in the persons for whom they hold it. The instrument declaring the trust will show for whom and for what purposes the property is held, and any gift to the trustees is a gift to them only as custodians for the benefit of others. The botanical library of the late Dr. Lindley was, to the best of my recollection, sold by his executors to, and was paid for by or for, the Royal Horticultural Society, and was vested in trustees for that Society. The instrument declaring the trust ought to be held by the trustees, or by their solicitor; and a copy of it ought to be in the possession of the Society, or of their solicitor. I do

not remember having ever seen this document; but it is incredible that it should be so drawn up as to render a gift of books to the trustees a gift to them, except for the benefit of the Society. A gift of money or of books by the Society to the trustees for the library can hardly be a misapplication of the Society's property. It seems a legitimate dedication of its property for a particular purpose for its own benefit. Moreover, the mere fact that persons who are not Fellows of the Society may be allowed to use the library, can hardly prevent it from being the property of the Society. But in order to set the question at rest the trust deed should be submitted to some competent lawyer. *Lindley, East Carleton, Norwich.*

THE INFERTILE DOUBLE PRIMULA SINENSIS.

—Professor Bateson can no doubt obtain from Messrs. Cannell & Sons, Swanley, plants of the old *alba plena*, Marchioness of Exeter, Annie Hillier, King of the Purples, and others all absolutely double, and such as have been in commerce for many years past. These plants have to be increased by severing side growths and rooting them in small pots as cuttings, or, as some growers do, heap up sandy soil about the plants in the pots. Others again layer the side growths to induce them to root, and then remove them from the parent plants and pot them up separately. A few years ago wonderfully fine specimens of these double Chinese Primroses were grown about Leatherhead, Mr. Mease, at Downside, having had plants, 18 inches across, carrying large heads of bloom. These Primulas, like double Primroses of the *Acanthis* section, are pure doubles. They are all products of thrum-eyed flowers, that is, those which have as singles their clusters of anthers or pollen cases prominent. These anthers have developed into petals, and hence the flowers are barren. All these doubles originated from single flowers, which gradually sported and became thus florally demoralised. *A. D.*

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 23.—An exceptionally fine display of flowers and fruits was made at the meeting held on Tuesday last in the Society's Hall, Westminster. The building was filled with groups of early bulbous plants, forced trees, and shrubs, Orchids, Carnations, Roses, hardy flowers, and other subjects. The attendance was large, the building at times being crowded with visitors.

The FLORAL COMMITTEE granted an Award of Merit to a rose-coloured variety of Freesia; the ORCHID COMMITTEE conferred three First-class Certificates and six Awards of Merit; and the FRUIT AND VEGETABLE COMMITTEE recommended a First-class Certificate to the well-known Apple Barnack Beauty.

At the afternoon meeting in the lecture-room 67 new Fellows were elected, and a lecture on "A Camping Tour through Syria to Petra in Arabia" was delivered by Mr. Arthur W. Sutton. The room was crowded with an appreciative audience. It will be remembered that Mr. Sutton gave this lecture to a meeting at the Horticultural Club (see *Gardeners' Chronicle*, October 26, 1907).

Floral Committee.

Present: W. Marshall, Esq. (Chairman), and Messrs. H. B. May, Jno. Green, T. W. Turner, G. Reuthe, Arthur Turner, F. Page Roberts, Chas. E. Shea, W. Cuthbertson, W. P. Thomson, W. J. James, E. H. Jenkins, E. A. Bowles, W. A. Bilney, R. C. Notcutt, J. F. McLeod, W. Howe, C. R. Fielder, Herbert J. Cutbush, W. J. Bean, R. Hooper Pearson, A. Kingsmill, J. T. Bennett-Poë, Chas. Dixon, Jas. Douglas, R. W. Wallace, Walter T. Ware, J. Jennings, C. Blick, George Paul and W. G. Baker.

A group of remarkably fine plants of *Richardia Elliottiana* was shown by Mrs. LESCHALLAS, Highams, Windlesham, Surrey (gr. Mr. W. Farmer). The spathes were not only of extra large size, but were of the richest yellow colour. (Silver-gilt Flora Medal.)

Messrs. HUGH LOW & Co., Bush Hill Park, Enfield, displayed Ghent Azaleas in variety, the

plants, although of small size, being crowded with blossoms. They also showed *Acacia ovata*, *A. cordata*, *Erica codonodes Veitchii*, *Daphne indica rubra*, and a collection of Carnations of the perpetual-blooming type. The Carnations made a pretty display, some being suspended in baskets hanging from slender arches. (Silver Flora Medal.)

Messrs. H. B. MAY & SONS, The Nurseries, Upper Edmonton, showed an assortment of decorative Ferns, batches of *Primula obconica* and *P. kewensis* ×, and standard plants of the scented-leaved *Pelargonium Clorinda*. (Silver Flora Medal.)

Messrs. JAMES VEITCH & SONS, King's Road, Chelsea, showed a batch of hardy Rhododendrons in bloom, the plants having been lifted from the open garden early in January and developed under glass. The varieties were *The Countess* (white, slightly tinted with rose), *R. arboreum Wellsianum*, and *Handsworth Early Red*. At the back of the Rhododendrons was a row of forced Lilacs. Messrs. VEITCH also exhibited a batch of greenhouse flowering plants, including *Kalanchoë Dyeri*, *Crowea angustifolia*, *Coleus thyrsoides*, *Begonia*, &c., whilst on the table they usually furnish with greenhouse plants were large groups of *Cyclamen latifolium* and *Primula sinensis*. The Cyclamen especially were remarkable for their wealth of blooms and general good culture. (Silver-gilt Flora Medal.)

Messrs. R. & G. CUTHBERT, Southgate, exhibited a large group, consisting of forced hardy plants of many species of deciduous Magnolias, inclusive of *M. Lenné*, *M. speciosa*, and *M. alba superba*; also numerous plants of *Azalea sinensis* in variety, *Forsythias*, *Pyrus*, *Prunus*, *Syringas*, both single and double-flowered, and *Staphylea colchica*. All the plants were in splendid bloom. (Silver-gilt Flora Medal.)

Messrs. W. CUTBUSH & SON, Highbury, London, N., showed a collection of forced flowering trees and shrubs, another of perpetual-blooming Carnations, also a variety of Alpine and early-flowering hardy plants arranged as a rock-garden exhibit. The Carnations were very attractively displayed, there being large bunches of all the popular kinds in tall and short receptacles arranged with greenery. The forced plants included Lilacs, Azaleas, *Boronias*, *Prunus triloba*, Magnolias, *Staphylea colchica*, *Nanthoceras sorbifolia*, &c., set in Ferns and small Palms. The Alpine plants included early-flowering, bulbous, and other plants, Irises being a feature, especially *I. reticulata* in variety and *I. orchioides*. We also noticed the dwarf-blooming *Tulipa pulchella*, with pretty carmine-rose-coloured flowers. (Silver-gilt Flora Medal.)

Mr. W. H. PAGE, Tangley Nursery, Hampton, again made a very fine display with Carnations and Liliums, not so large as the exhibit he staged at the last meeting, but, though smaller, of equally fine quality and arrangement, the group being one of the most artistic and brightest in the building. (Silver Flora Medal.)

Mr. H. BURNETT, Guernsey, again demonstrated his skill in the culture of the perpetual-blooming Carnation by a display of choice blooms of this popular flower. The colours in the numerous varieties exhibited in this group were remarkably well developed, and the size of the blooms and substance of petal were also good. (Silver Flora Medal.)

Mr. L. R. RUSSELL, Richmond, Surrey, exhibited a group of Lilacs in flower. The exhibit was arranged as a semi-circle on the floor of the building, and, in addition to the Lilacs, were small specimens of *Clematis indivisa* and *Prunus sinensis alba plena*. The inclusion of graceful Bamboos gave a pleasing touch of greenery to the display. (Silver Flora Medal.)

Messrs. H. CANNELL & SONS, Swanley, Kent, showed Primulas of the ordinary florist's and the star or stellata types. Nearly all were of named varieties, the best of the stellata varieties being *Red Rover*, *Scarlet Gem*, *Lady Emily* (white), *Countess of Radnor* (a fine deep red), *Unique* (white with a yellowish eye, surrounded by a zone of pink), *Blue Lady*, and *White Spray*. Amongst the older type were some of the *Queen Alexandra* variety with exceptionally large blooms, *Mrs. C. F. Raphael* (pink), *Moonlight* (white), *Mrs. Marlow* (rosy-carmine), *Mrs. Kennard* (rosy-purple), and *The Czar* (almost heliotrope). (Silver Banksian Medal.)

Messrs. SUTTON & SONS, Reading, showed *Primula sinensis* "The Duchess" of the normal type, and a variety in which the foliage partakes of the Ivy-leaf type.

Mr. G. MOUNT, Nurseryman, Canterbury, showed, as at the last meeting, the hybrid Tea Roses Liberty, Richmond, and Joseph Lowe. (Silver Banksian Medal.)

Messrs. J. PEED & SON, Nurserymen, West Norwood, showed a rockery decorated with various lowly Alpines, such as *Ericas* of hardy species, Cacti, Snowdrops, *Helleborus*, *Primula* × *kewensis* finely flowered, various *Saxifragas*, *Lachenalias*, including a variety named Ruby. (Silver Banksian Medal.)

Mr. A. CHAPMAN, Rye, showed *Cyclamen ibericum* seedlings; also examples of *Iris Danfordia*.

The GUILDFORD HARDY PLANT CO. showed examples of *Hedera minima*, *H. conglomerata*, *Saxifraga valdensis*, *S. burseriana*, *Adonis aureus*, hybrids of *Helleborus orientalis*, *H. caucasicus*, and *Shortia galacifolia*.

Mr. GEO. REUTHE, Keston, Kent, again showed rare and interesting shrubs; also bulbous plants, coloured Primroses, Snowdrops, Hepaticas, Primulas, and other early-blooming plants. (Bronze Banksian Medal.)

Messrs. THOS. S. WARE, LTD., Ware's Nursery, Feltham, displayed rock-garden plants arranged on an improvised rockery composed of real stones. (Silver Banksian Medal.)

Messrs. BARR & SONS, King Street, Covent Garden, London, displayed an assortment of bulbous flowers, some as cut blooms and others as pot plants.

The Misses HOPKINS, Mere Gardens, Shepperton, again displayed a rock-garden exhibit, as at the last two meetings.

Messrs. G. & A. CLARK, The Nurseries, Dover, showed a garden rockery, similar to the one they displayed at the last meeting, and planted with Irises, Trumpet Daffodils, hardy Primroses, both single and double-flowered, small Conifers, *Taxus* of species, and *Thymus* of low, creeping habit.

Messrs. EGGETT & SON, Nurserymen, Thame, showed a few hardy Ferns arranged in a rock-work exhibit.

Miss ALICE SMITH, The Bungalow, Bognor, showed a small-sized garden rockery planted with suitable species of plants.

Water-colour drawings and studies depicting scenes in Kentish gardens and sketches in colours of flowers were shown by Miss JOSEPHINE GUNDRY, Foot's Cray. (Silver-Gilt Flora Medal.)

Miss COX, The Cottage, Rose Hill, Dorking, also showed several studies in water-colours of flowers excellent in colouring and pose.

AWARD OF MERIT.

Freesia Rose Queen.—A variety of *Freesia*, with considerable rose colour in the flowers, was shown by Messrs. BARR & SONS, and received an Award of Merit.

Orchid Committee.

Present: Harry J. Veitch, Esq. (in the Chair), and Messrs. Jas. O'Brien (hon. sec.), de B. Crawshaw, W. Boxall, G. F. Moore, J. Forster Alcock, W. Thompson, F. Sander, F. M. Ogilvie, R. G. Thwaites, J. Charlesworth, A. A. McBean, W. H. Hatcher, W. P. Bound, J. Cypher, W. H. White, H. G. Alexander, A. Dye, C. H. Curtis, H. A. Tracy, H. Ballantine, Gurney Wilson, W. Bolton, C. J. Lucas, N. C. Cookson, Stuart Low, and F. J. Hanbury.

The premier award, a Silver-Gilt Flora Medal, was given to Messrs. SANDER & SONS, St. Albans, for a varied group, in which rare hybrid *Odontoglossums* were conspicuous. The finest of these included the large and handsomely-blotched *O. crispo-Harryanum* Brugense, raised by Messrs. SANDER at Bruges. Other handsome *Odontoglossums* were *O. Irene* (*O. triumphans* × *O. Kegeljanii*), a good yellow flower blotched and barred with reddish-brown; *O. Helenus* (*O. Harvengtense* × *O. Coradinei*), a distinct and pretty variety; *O. gemmatum* (*O. triumphans* × *O. elegans*), curiously showing the colour and form of *O. triumphans* in an intermediate shape; *O. Vuylstekei*, of a distinct type; *O. Nysa* (*O. Hunnewellianum* × *O. triumphans*), coloured yellow with brown markings; *O. Vulcan* (*O. crispum* × *O. Vuylstekei*), a well-formed and richly-coloured flower; and *O. Hellemense* (*O. harvengtense nobilior* × *O.*

crispum, blotched variety). At one end of the group were some magnificent plants of *Phalaenopsis Schilleriana*, one having eight spikes bearing together about 100 flowers. Other notable plants were *Cattleya Trianae* Rajah; *Cypripedium villosum*, Sanders' variety, large, with much blackish-purple in the dorsal sepal; *Calanthe hololeuca*, pure white; *Oncidium splendendum*, and others.

Messrs. CHARLESWORTH & CO., Haywards Heath, were awarded a Silver Flora Medal for a fine group rich in *Odontiodas*, for two of the best of which see "Awards." Among the rarer hybrids were *Brasso-Laelio-Cattleya Cooksonii*, with pretty, yellow flowers, veined and tinged with bronzy-rose; a good selection of hybrid *Odontoglossums*, including several forms of *O. Ossulstonii*, *O. crispo-Harryanum*, and *O. amabile*. Among the *Cattleyas* was a distinct form of *C. Trianae*, with light-coloured flowers; and with the *Cypripediums* the pretty *C. Rossettii*, many varieties of *C. aureum*, and other rare forms.

Monsieur MERTENS, Ghent, was voted a Silver Banksian Medal for a select group of hybrid and seedling Orchids. Among others were good forms of *O. laudatum*, *O. amabile*, and *O. Vuylstekei*.

Messrs. CYPHER & SONS, Cheltenham, secured a Silver Banksian Medal for a group of rare *Cypripediums*, which included the best varieties of *C. aureum*, *C. vill-exul*, and *C. Beekmannii*. With them were *Miltonia Bleuana*, *Dendrobium Melpomene*, *D. Leechianum*, *Masdevallia macrura*, &c.

Sir JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier), staged an interesting little group, in which *Bulbophyllum comosum* bore five spikes of white flowers; *Cirrhopetalum Mastersianum*, a pretty umbel of copper-red blooms; *C. retusiusculum*, several reddish heads of bloom; *Dendrobium Mortii*, an Australian species of the *D. teretifolium* class, many slender, white flowers. Among the hybrids were a dark *Zygo-Colax* near to *Z. leopardinus* and the latest new Gatton hybrid, *Dendrobium Lady Colman* (see Awards).

Colonel G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. H. G. Alexander), sent *Laelio-Cattleya Pizarro*, Westonbirt variety (*L. Jongheana* × *C. Dowiana aurea*), a rose-coloured flower with gold veining and disc to the lip; and the handsome *Cattleya Trianae Mooreana* (see Awards).

Messrs. J. & A. A. McBEAN, Cooksbridge, staged a select group, principally *Odontoglossums*, among which were a handsome, large-flowered, spotted *O. crispum*; a large, yellow *Odontoglossum* blotched with brown, raised from *O. Wilkeanum* × *O. crispum*; and a good form of the white *O. ardentissimum*.

Messrs. HUGH LOW & CO., Bush Hill Park, Enfield, sent the handsome bluish-white *Cattleya Trianae Lowia*; *Odontoglossum crispum* Carmania, *Dendrobium chesingtonense*, and *Cypripedium chrysotoxum* Victor.

R. G. THWAITES, Esq., Streatham (gr. Mr. Black), sent *Dendrobium chesingtonense* "Buttercup," yellow with dark eye; *D. c. Kingcup*, buff-orange with maroon centre, and the singular hybrid *D. atro-Brymerianum*. (See Awards.)

Mr. H. A. TRACY, Amyand Park Road, Twickenham, showed *Odontoglossum crispum* Jamesianum, an effectively blotched variety; *Cypripedium Eurybel* (*Euryades* × *bellatulum*), and an elegant form of *Cycnoches peruvianum* with five flower-spikes.

G. F. MOORE, Esq., Chardwar, Bourton-on-the-Water (gr. Mr. Page), showed *Cypripedium* Gracæ "W. F. Page" with several pretty white flowers marked with purple; two very dissimilar hybrids of *C. Beekmannii*, and *C. Bridgei magnificum* (see Awards).

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), sent his dark-coloured *Odontoglossum* Queen Alexandra var. *Theodora*, *O. Zena*, and other interesting *Odontoglossums*.

Mr. F. McBEAN, Plumpton, showed *Cattleya Trianae* "F. McBean," a bluish-white flower with very broad petals and fine lip-coloured purplish-rose in front.

W. WATERS BUTLER, Esq., Southfield, Edgbaston (gr. Mr. Jones), sent *Cattleya Trianae*, *C. Enid magnifica*, *Dendrobium Wardianum album*, and *Odontoglossum Pescatorei album*, all of good quality, well-grown and distinguished as Southfield varieties.

J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis), showed the handsome *Odontoglossum Smithii* (*Rossii rubescens* × *crispo-Harryanum*), illustrated in the *Gardeners' Chronicle*, December, 1905, p. 427, in fine condition.

AWARDS.

FIRST-CLASS CERTIFICATE.

Cattleya Trianae Mooreana, from Col. G. L. HOLFORD, C.I.E., C.V.O., Westonbirt (gr. Mr. H. G. Alexander). A remarkable variety, large, of fine shape, and unique in colour. The sepals and broad petals are silver-white tinged with rose, the petals being the darker and having a claret-purple band on the tips. The front of the lip is deep claret-purple; the disc is pale yellow.

Laelio-Cattleya Pizarro, Westonbirt variety (*L. Jongheana* × *C. Dowiana aurea*), from Col. G. L. HOLFORD. A charming hybrid with large rose-coloured flowers with gold veining on the lip.

Odontioda Lutetia (*O. luteo-purpureum* × *C. Noezliana*) from Messrs. CHARLESWORTH & CO. This, in the variety shown, proves to be a very handsome hybrid with flowers as large as those of *O. luteo-purpureum* and of a yellowish ground colour, tinged and blotched with cinnamon-scarlet.

AWARD OF MERIT.

Odontioda Keightleyensis (*O. cirrhosum* × *C. Noezliana*), from Messrs. CHARLESWORTH & CO. A very elegant hybrid with slender-branched spikes of blood-red flowers showing the influence of *O. cirrhosum* very distinctly.

Cycnoches peruvianum Tracy's variety, from Mr. H. A. TRACY, Twickenham. Flowers greenish-white, sparsely spotted with purple; the rayed lip white. Inflorescence more dense than in the type. The plant bore five spikes.

Cymbidium Woodhamsianum *Orchidhurst* variety (*Lowianum* × *eburneo-Lowianum*), from Messrs. ARMSTRONG & BROWN. Flowers larger than in *C. eburneo-Lowianum*, greenish-white with red-brown markings on the lip.

Dendrobium Lady Colman (*Artemis* × *Findlayanum*), from Sir JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier). One of the largest and most beautiful *Dendrobiums* yet raised, the blooms rivalling the best forms of *D. Wardianum*. The ground colour is white with the outer halves of the segments rose-pink. The lip has a deep maroon disc with a white band in front, the apex being rose colour.

Cypripedium Bridgei magnificum (*Godseffianum* × *Argus Moensii*), from G. F. MOORE, Esq. (gr. Mr. Page). Dorsal sepal blackish on green ground, with a narrow white margin; petals broad, deep rose on the outer halves.

Cypripedium Curt-mannii (*Mons. de Curte* × *Beekmannii*), from G. F. MOORE, Esq. A very fine flower with large dorsal sepal, green at the base and white above, distantly spotted with purple. Petals broad and shining, mahogany brown on the upper sides, lighter below with a few dark spots. Lip yellow tinged with brown.

BOTANICAL CERTIFICATE.

Odontoglossum cariniferum, from DE B. CRAWSHAY, Esq. A rather rare species, originally introduced from Central America in 1848. It bears a branched inflorescence. The flowers have brownish lanceolate sepals and petals keeled at the back, and whitish labellum.

CERTIFICATE OF APPRECIATION.

Dendrobium atro-Brymerianum (*atro-violaceum* × *Brymerianum*), from R. G. THWAITES, Esq. (gr. Mr. Black). A very interesting hybrid, the habit of the plant being intermediate between the two parents, but the flowers are nearer to those of *D. atro-violaceum* and show little of *D. Brymerianum*, even the fringed lip of which gives no indication. Flowers greenish with small purple spots, and dark purple veining on the lip.

Fruit and Vegetable Committee.

Present: J. Cheal, Esq. (in the Chair), and Messrs. W. Bates, A. R. Allan, E. Beckett, A. Dean, G. Hobday, H. Parr, J. Vert, J. Davis, P. D. Tuckett, J. McIndoe, O. Thomas, H. S. Rivers, W. Barnes, H. Markham, W. Poupart, and C. G. A. Nix.

Mr. A. POUPART, Twickenham Green, sent a fine sample of Barnack Beauty Apple (see Awards). Mr. POUPART also sent a superb

sample of blanched Seakale, for which a Cultural Commendation was awarded.

A sample of home-made Orange jelly, exhibited by Mrs. MILLER, Marlow, was highly commended. A Silver Banksian Medal was given to this lady for a collection of preserves in bottles.

A collection of bottled fruits sent by Mr. POUPART, jun., Twickenham, was one of the best exhibits of preserves ever displayed in the Hall by an amateur. The fruits represented varieties of Plums, Apricots, Peaches, Nectarines, Raspberries, Currants, Morella and Sweet Cherries, and Blackberries. (Silver-gilt Knightian Medal.)

O. P. SEROCOLD, Esq., Taplow (gr. Mr. R. Bullock), sent a collection of well-kept Apples in about 40 varieties. Amongst the best varieties were Baxter's Pearmain, Melon Apple, Tower of Glamis, Cox's Orange Pippin, Ribston Pippin, Adams's Pearmain, Dumelow's Seedling, Cox's Pomona, Newton Wonder, and Dutch Mignonne. (Silver Knightian Medal.)

Messrs. W. SEABROOK & Co., Chelmsford, displayed a collection of some 36 dishes of Apples, many of the samples being exceptionally good. The more noteworthy were Dutch Mignonne (specially good, as it was in several other exhibits), The Queen, Blenheim Pippin, Barnack Beauty, Beauty of Kent, Gloria Mundi,

Orchard, Hershaw, was awarded the 1st prize for Claygate Pearmain; 2nd, Mr. H. G. WADLOW, Peterborough, for Cox's Orange Pippin. The other variety was Duke of Devonshire.

In the class for six dishes (open to trade growers only) two exhibits were staged. Messrs. JAS. VEITCH & SONS, Chelsea, were well 1st with fine fruits of Sturmer Pippin, Northern Sky, Dutch Mignonne, Lord Hindlip, King of Tompkin's County, and Reinette du Canada; 2nd, Messrs. W. SEABROOK & Co.

FIRST-CLASS CERTIFICATE.

Apple Barnack Beauty (see fig. 61).—This variety is a good late market Apple, and it received an Award of Merit on March 14, 1899. The Committee raised the Award to a First-class Certificate on this occasion, believing that the variety is not so well known as its worth merits. The fruit is of medium size, greenish-yellow in colour, with red on the side next to the sun. The flesh is yellowish.

Scientific Committee.

FEBRUARY 9.—Present: E. A. Bowles, Esq., M.A., F.L.S., F.E.S. (in the Chair); Messrs. C. T. Druery, H. T. Güssow, G. S. Saunders, A. Worsley, J. T. Bennett-Poë, W. Hales, F. J.

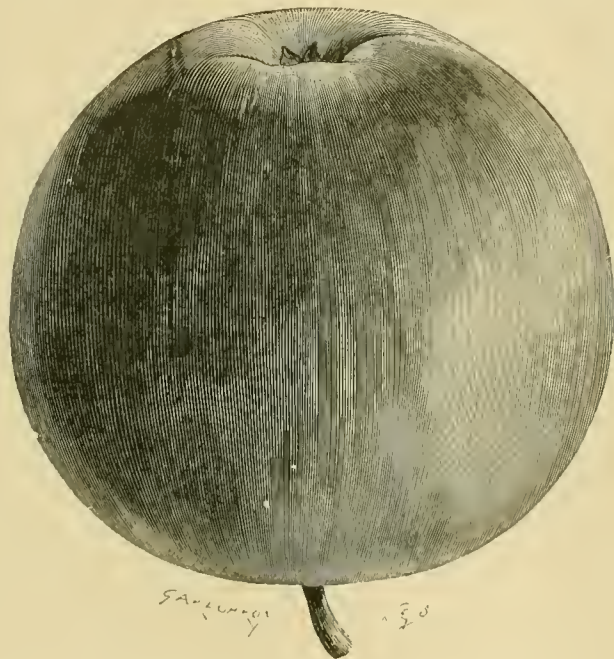


FIG. 61.—APPLE BARNACK BEAUTY, AWARDED A FIRST-CLASS CERTIFICATE BY THE R.H.S. ON TUESDAY LAST.

Bismarck, Schoolmaster, and Bramley's Seedling. (Silver Knightian Medal.)

Messrs. T. RIVERS & SONS, Sawbridgeworth, exhibited a large group of Orange trees and gathered fruits, the whole forming a very attractive exhibit. The Oranges included Achilles, Seville, White, Silver, Egg, and Brown's Navel. There were also Imperial Lemon, Shaddock, and Citrons, in all a remarkable collection of the Citrus family. (Silver-gilt Knightian Medal.)

COMPETITIVE CLASS FOR DESSERT APPLES.

Contrary to expectation, the amateur class for four dishes brought 11 collections for the two prizes that were offered. Some of the fruits shown, whilst well-kept examples, were not regarded as late varieties. Mr. MARKHAM, Wrotham Park Gardens, Barnet, was awarded the 1st prize for medium-sized but well-coloured fruits of May Queen, King of the Pippins, Cox's Orange Pippin, and Baumann's Reinette; 2nd, Col. BORTON, Cheveney, Hinton, Kent (gr. Mr. J. W. Whittle), with Calville Rouge, Christmas Pearmain, Barnack Beauty, and Melon Apple. The judgments were for appearance rather than for table quality, and russet varieties were not favoured.

Only three dishes were staged in the single-dish class. Mr. J. WATKINS, Dairy Farm

Chittenden (hon. secretary), and Gurney Wilson (visitor).

Malformed Orchids.—Mr. SAUNDERS reported that the flower of *Cattleya Trianae* referred to him from the last meeting showed three perfect stamens surrounding the pistil, three very short and regular petals, and three sepals shorter still. Mr. SAUNDERS showed drawings illustrating these points.

Albinism in Orchids.—Mr. GURNEY WILSON exhibited specimens in illustration of the inheritance of albinism in *Dendrobiums*. He found that *Dendrobium Murrinianum* crossed with *D. Ballianum*, the former not a pure albino, though pale, the latter nearly white, gave seedlings almost exactly like typical *D. nobile*. *D. nobile alba* (virginale) which, when selfed, gives quite white seedlings, when crossed with *D. Findlay-anum* gives *D. "Cybele,"* all the seedlings being alike, and no light forms among them. Similarly, *Dendrobium Wardianum album* crossed with *D. nobile alba* gives all coloured flowers. These "reversions" to coloured forms confirm the results that have been obtained in crossing Sweet Peas and Stocks.

Floral proliferation in Cyclamen.—Mr. L. Lawrence (gr. to R. GREGORY, Esq., of Shoreham) exhibited a plant of *Cyclamen*

showing floral proliferation. The seed was from Lowe's *Cyclamen Salmon Queen*, and this was the only plant which had produced such flowers. All the flowers on the plant were alike, and every one had five perfect flowers arising from within the calyx, probably axillary to the sepals, though apparently alternating with them, and surrounding the central corolla, &c.

Hippocastrum pardinum.—Mr. A. WORSLEY exhibited flowers of a form which he regarded as belonging to this species. He considered the species to be a variable one, and the form figured in the *Botanical Magazine*, v., t. 5645, not to be the one most commonly met with.

Notonia Grantii.—This interesting Composite with bright-red heads of flowers and Kalanchoë-like in habit, about 3 feet in height, a native of Uganda, was exhibited by Messrs. J. VEITCH. It was recommended that a Botanical Certificate be awarded to it. It is figured in the *Botanical Magazine*, t. 7691.

GHEENT HORTICULTURAL.

FEBRUARY 7.—A monthly meeting of the *Chambre Syndicale des Horticulteurs Belges* and *Société Royale d'Agriculture et de Botanique de Gand* was held on Sunday, February 7.

Certificates of Merit were awarded to Mons. TH. PAUWELS for *Cypripedium aureum vertumé*, *Miltoniopsis Pauwelsianum* (M. Roezlii × *vexillaria Leopoldii*), *Cypripedium "Ville de Paris,"* and *Cattleya Trianae* var.; to Mons. M. F. LAMBEAU for *Cypripedium Queen of Italy*, *Miltonia Bleuana* var. *splendissima*, *Cypripedium aureum Bruxellense*, *Lælia anceps Sanderiana*, *Lycaste Skinneri* var. *Bellemense*, *Miltonia Bleuana* var. *Prince Charles*, *Cypripedium aureum "Surprise,"* *C. aureum "Pomone,"* *Lælio-Cattleya Warneri-Digbyana*, and *L.-C. Digbyano-Mossiae* var. *Queen Alexandra*, to Mons. EM. PRAET for *Cattleya Trianae* var. and *Cypripedium Lecanum Clinkaberryanum*; to Mons. VERDONCK for *Dendrobium nobile virginale*; to Messrs. DUCHESNE & LANTHOINE for *Odontioda Watermaelensii*; to Mons. H. DE CONINCK for *Cattleya Percivaliana splendida*; to Mons. V. HEURSEL for *Cestrum Smithii* and *Libonia igani*; to LOUIS VAN HOUTTE, PERE, LTD., for *Bilbergia Forgetiana* and *Sansevieria Laurentii*; to Mons. AUG. HAERENS for *Azalea Mme. Aug. Haerens*, *Azalea President Alexis Callier*, and *Azalea Brillanta belgica*; to Mons. LOUIS DE SMET for *Anthurium Rothschildianum rotundiflorum perfectum*; to Messrs. HAERENS & WILLE for *Azalea Christmas Cheer* × *Mme. John Haerens*; and to M. OCT. VANDER CRUYSSSEN for a seedling *Azalea* known as *President Arthur De Smet*.

NATIONAL CHRYSANTHEMUM.

FEBRUARY 15.—A meeting of the Executive Committee was held on this date at Carr's Restaurant, Strand, Mr. T. Bevan occupying the chair.

The Hindhead Chrysanthemum Society was admitted in affiliation. The secretary placed before the committee an interim financial statement, and the relations with the Crystal Palace Co. were fully discussed. It was resolved that all the medals awarded at the Society's shows be handed to the exhibitors, and that 10s. in the pound of the prize money be also paid, with an intimation that the committee hoped to pay the balance if and when the debt due by the Crystal Palace Co. be paid.

The question of the 1909 shows was then discussed, and, under the altered state of affairs, it was considered advisable to hold only one, instead of three, the prospective receipts for the year not justifying a greater expenditure. Upon the motion of Mr. Curtis, it was resolved that a show and conference of early-flowering varieties be held. Subject to arrangements being concluded, the show will take place some time about the middle of October, either at the Horticultural Hall or Earl's Court.

One-third of the Floral Committee retiring by rotation, the following gentlemen were elected to fill the vacant places:—Messrs. P. A. Cragg, Moorman, J. B. Riding, W. Wells, Seabrook, and W. Newton. The Finance, Schedule, and Publications Committees were re-elected as at present constituted.

ROYAL SOCIETY FOR THE PROTECTION OF BIRDS.

FEBRUARY 16.—A largely-attended annual meeting of the Royal Society for the Protection of Birds was held at the Westminster Palace Hotel on the above date. The proceedings included the presentation of the Society's Gold Medal to Mr. A. Holte Macpherson, F.Z.S., as winner in the Society's international competition for an essay on "Comparative Legislation on Bird Protection."

Sir William Anson referred to the excellent educational effect of the Bird and Tree Challenge Shield Competitions in elementary schools, of which he has knowledge in his own county. Other speakers included Julia Lady Tweeddale, the Earl of Stamford, Captain Tailby, Mr. Meade-Waldo, Mr. Trevor Battye, Mr. Montagu Sharpe (chairman of council), and Mr. Champion B. Russell; and among those also present were Lady Forester, the Hon. Mrs. Arthur Henniker, the Hon. Mrs. Boyle ("E.V.B."), Mr. Dresser, Dr. Penrose, Mrs. Sturge, Mr. W. L. Fisher, and Mr. Ernest Bell.

DEBATING SOCIETIES.

CARDIFF GARDENERS.—A meeting of the above association was held at St. John's Schools, Cardiff, on February 9. Mr. H. R. Farmer presided. A lecture was given by Mr. M. Toy, Foreman, Castle Gardens, Cardiff, on "Perpetual-flowering and 'Malmesbury' Carnations."

At the meeting of the society held on February 16, Mr. H. A. Gerhold, chemist, Penarth, delivered a lecture on "The Cultivation of Sweet Peas."

SALISBURY AND DISTRICT GARDENERS.—A meeting of this society was held on February 3, Mr. S. W. Tucker presiding. The meeting was devoted to a debate on various subjects, including the origin of the florists' Cyclamen and the best mode of cultivating it; the advent and growth of the Sweet Pea and the best method of culture; the cultivation and exhibition of Turnips; the cultivation of Cinerarias; and the best methods of growing herbaceous Calceolarias.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending February 24.

The most sunny February day for 10 years.—The present cold period has now lasted 18 days. During the past week, however, the low temperatures have been at night, the mid-day readings being nearly all more or less above the average. Consequently the daily range of temperature has been unusually large for a winter month.

MARKETS.

COVENT GARDEN, February 24.

[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.—Eo.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices. Columns include flower name, quantity, and price (s.d. s.d.).

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage items and their prices. Columns include item name, quantity, and price (s.d. s.d.).

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various potted plants and their prices. Columns include plant name, quantity, and price (s.d. s.d.).

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

Table listing various potted plants and their prices (continued). Columns include plant name, quantity, and price (s.d. s.d.).

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices. Columns include fruit name, quantity, and price (s.d. s.d.).

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices. Columns include vegetable name, quantity, and price (s.d. s.d.).

REMARKS.—Nectarines are arriving from the Cape in a splendid condition and are making good prices, but this week will probably see the last consignment for the season. The Grape trade generally is quiet; best Black Alicantes are in demand. There is a good trade in Canary Tomatoes, especially those selected in handle baskets; they are averaging 5s. per dozen lbs. Prices for vegetables are slightly firmer owing to the very cold weather. Oranges continue to arrive in large quantities, and meet with a good demand. E. H. R., Covent Garden, Wednesday, February 24, 1909.

Potatos.		Lincolns—		s.d. s.d.	
Kents—	s.d. s.d.	Sharpe's Express	...	3 0-	3 3
Snowdrop	... 4 0-	Evergood	...	2 6-	3 0
Sharpe's Express	... 3 6-	King Edward	...	60	65 0
Epicure	... 3 0-	Bedfords—			
Up-to-Date	... 3 0-	Up-to-Date	...	2 6-	3 0
		Blacklands	...	2 0-	2 6
		Dunbars—			
Lincolns—		Langworthy, red soil	...	4 9-	5 0
Royal Kidney	... 2 3-	Up-to-Date, red soil	...	3 9-	4 0
British Queen	... 3 0-	" grey soil	...	2 6-	3 0
Up-to-Date	... 3 0-				
Maincrop	... 3 6-				

REMARKS.—Trade is still slow. There are large stocks of cheap varieties in London, but best quality tubers of Up-to-Date and Maincrop varieties are not over plentiful. Edward J. Newborn, Covent Garden and St. Pancras, February 24, 1909.

COVENT GARDEN FLOWER MARKET.

The cold weather has had a bad effect upon trade in all departments, but especially the trade in plants. Hardy flower roots such as Sweet William, Wallflower, Carnation, Primrose, Hollyhock, Digitalis, Aquilegia, Arabis, Pæonia, Delphiniums, and other common border plants are seen in large quantities. When the weather changes there should be a good trade in these plants. Trees, shrubs, and a variety of other hardy subjects, including Rhubarb roots, Cabbage plants, &c., are procurable. Before the enlargement of the market most of the hardy produce was sold outside the flower market, but now accommodation is available inside, except during the busy spring season.

CUT FLOWERS.

Daffodils are the leading feature amongst cut flowers: they are over-abundant, but supplies may not continue to be so great, as the outside crops may not be in time to succeed those grown under glass. Golden Spur is the leading yellow variety; Emperor is very good, but the colour is not quite so bright as Golden Spur. Horsfieldii is a popular bicolor, but Victoria is the better of the two, and it comes in at a useful time. The variety Queen of the West, shown by Mr. W. T. Ware on Tuesday, should claim the attention of market growers. It is a pure lemon yellow flower of the King Alfred type, having a giant golden spur. The various sorts of Narcissus are supplied in large quantities. N. ornatus is down to the lowest prices, but when the first early supplies are over they may be more valuable. Best blooms of Liliun longiflorum have not been over-plentiful, and have made advanced prices. Blooms of L. lancifolium rubrum are now a better colour. Callas are abundant and are offered at low prices. Camellias are slightly dearer. Carnations are seen in large quantities, generally they are very good. Enchantress seems to have fallen in favour, the newer Mrs. H. Burnett variety and others of a deeper shade taking its place. Lilac is good, both the coloured and white varieties. Though we have many new varieties the old Charles X. is extensively grown. Large supplies of Violets arrive from various provincial growers, and also from abroad. We have seen the last of Chrysanthemums for the season. Roses improve week by week. Richmond, if not so prolific in blooming, is certainly a finer Rose than Liberty. Joseph Lowe must become a popular market Rose, for it forces well, and blooms recently seen in the market have been of a very good colour. Early-flowering Tulips are nearly finished.

POT PLANTS.

Bulbs are the leading feature. Hyacinths of various colours are of the best quality. Tulips also are good; the double varieties grown in pots command good prices. Daffodils are over-abundant, and to clear the stocks must be offered very cheaply. Cyclamen are well-flowered, and Chinese Primulas are better in this respect than the first plants; P. obconica is also good. Erica persoluta alba is seen in well-flowered plants. Mignonette, Intermediate Stocks, Cinerarias, Genistas, Rhododendrons, and Azalea mollis are all prominent on the stands. Whilst the cold weather continues there will be but little trade in foliage plants. A. H., Covent Garden, Wednesday, February 24, 1909.

NEW INVENTIONS.

AN ADAPTABLE HOE.

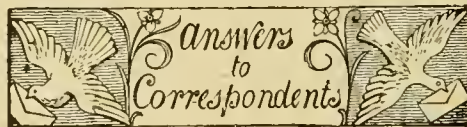
MR. M. O. WHITEHORN has secured patent rights for a hoe which can be used either as a Dutch or drag hoe by adjusting the same blade. The change is effected by means of a lever, which withdraws a stud that holds the blade in position, whether straight, as in the Dutch hoe, or at an angle, as in the drag hoe. In order that soil shall not clog the working parts, the socket is seamless, and the stud fits closely. The tool is made in three sizes, with 4-inch, 6-inch, and 8-inch blades. Either can be used in the one socket and handle.

A LAWN-MOWER CARRIER.

THIS very simple device is intended for attaching a lawn-mower to a truck or hand cart when conveying it from place to place. An iron rod is bent in the shape of a double "S," and one part is hooked over the axle, whilst the rollers are placed on the other. The machine is then slung up and attached to the barrow handles or iron stays at the side. For suburban and jobbing gardeners the device should prove useful. It will, at the least, be a gain to suburban residents if these machines are conveyed from garden to garden noiselessly, for the dragging of them through the streets is a minor public nuisance. The inventor is Mr. W. COVILL, Cheltenham.

Obituary.

MRS. ROBT. WARD.—We regret to record the death of this lady at the Botanic Garden, Georgetown, British Guiana, on January 6, 1909. The late Mrs. Ward was known to many Kewites as Miss Jessie Newsham, having been one of the lady gardeners employed at Kew, which place she left in August, 1900. She married Mr. Ward, an old Kew gardener, in April, 1908, and soon after returned with him to British Guiana. She gave birth to a son on January 2, four days before she died. Before going to Kew she studied at Swanley for two and a half years, having gained a Kent County Council scholarship. She made many friends, and both at Kew and Swanley her early death is deeply regretted.



A GARDENER'S NOTICE: C. S. C. You are right in thinking that it has been judicially decided that a head gardener is entitled by custom to one month's notice. There is, however, no reported decision with regard to anyone in your particular position, and it is purely a question of custom for the judge to decide. Under the peculiar circumstances of the case your employer would probably accept a week's notice, but to be quite on the safe side we should advise you to give a month's notice if there is no reason for any haste. By so doing it would also put you in a better position if in your next situation you wished to insist on receiving a month's notice.

ASSESSMENT FOR RATES: S. F. Glasshouses are rated as buildings and not as agricultural land, and where any property consists partly of agricultural land and partly of buildings the gross estimated rental of the buildings is to be calculated on the rent at which they would be expected to let to a tenant from year to year. As you have a 21 years lease, it does not follow that the assessment should be equal to the rent you pay. If you are dissatisfied with the valuation, you should apply to the assessment committee for your district.

MUSHROOMS: L. G. The house you mention may be converted into a profitable Mushroom house. You should obtain the requisite quantity of manure from stables in which the horses are mainly, if not entirely, fed on hay and corn. Shake the long straw out and retain only the short straw and droppings for forming the Mushroom bed. Turn this material over every day for a few days to allow some of the volatile gases to escape. This must be done until all danger of violent fermentation is past. Then place the manure in your house in sufficient quantity to form a bed on the floor 18 inches in depth after it has been trodden well together all over. This done, insert two or three ground-thermometers at short intervals on the bed to ascertain the degree of heat. These should be examined daily after the bed has been formed two or three days, and when the heat has declined to 80° Fahr., with no prospect of its rising again, the bed will be ready for spawning. You can obtain good spawn from any of the nurserymen or sundriesmen whose names appear in our advertising columns. Break each brick of spawn into six or seven pieces and insert these pieces separately about 8 inches apart underneath the surface of the bed, drawing the manure back with one hand and pressing the individual pieces of spawn into the openings with the other. The rough side of the spawn should be placed downwards and the smooth side barely underneath the surface of the bed, pressing the displaced manure over and about the several pieces of spawn. The bed should then be covered over to the thickness of between 1 and 2 inches with sifted garden or field soil. It should be

sufficiently moist to allow of a firm, smooth surface being presented after beating with the back of the spade. The whole should then be covered with 12 or 15 inches thickness of litter—that which has been rejected when preparing the manure will answer well. The surface of the bed should be kept moist. Treated in this manner, it should begin to yield Mushrooms in eight or ten weeks from the time of inserting the spawn. The sooner you make the necessary preparations the better. We would rather not estimate the amount of crop you are likely to take per week from your house—so much depends upon circumstances.

NAMES OF FRUITS: A. E. E. Mannington's Pearmain.

NAMES OF PLANTS: H. Hibernia. The Codiaëums or Crotons are as follow: 1, Laingii; 2, variegatum; 3, Johannis; 4, Davisii; 5, interruptum; 6, this is Cordyline (Dracæna) Cooperi.—W. F. B. Photinia serrulata.—A. E. E. 1, Cupressus Lawsoniana; 2, Thuja occidentalis.—W. F. B. 1, Abies balsamea; 2, A. numidica; 3, Cupressus species in a juvenile stage and, therefore, impossible to determine; 4, Berberis japonica (B. Bealei is a synonym of B. japonica).—D. H. Sparmannia africana, an excellent plant for conservatories, and one which grows and flowers well in a dwelling house.—O. R. 1, Oncidium pubes; 2, Odontoglossum hastilabium; 3, Brassia brachiata; 4, Oncidium ornithorhynchum.—Knowledge. 1, Cypripedium Calypso (Boxallii x Spicerianum); 2, C. villosum.—G. H. 1, Cedrus deodara; 2, Cryptomeria japonica; 3, Viburnum Tinus; 4, Berberis aquifolium; 5, Choisya ternata; 6, Abies nobilis.—A. S. Ornithogalum lacteum.—W. J. F. 1, Begonia metallica; 2, Abutilon Savitzi; 3, Begonia Gloire de Sceaux; 4, Oncidium flexuosum.—E. C. B. 1 and 2, Carex tristachya (syn. japonica), the type and variegated variety; 3, Cyrtomium Fortunei.

POTATO SCAB: Potato, Oxon. The tubers are affected with Dry Scab, caused by Stemphylium atrovirens, better known as Phellomyces. Diseased tubers should not be used for "seed," and the land in which they were grown will be infected. It should be well limed, and not used for planting Potatoes or root crops, except Turnips, for some years to come.

PURCHASING A NURSERY: G. H. W. There is still opportunity for the energetic man to be successful in a market nursery business. But competition is keen, and every method must be adopted to so fit in the cropping of both the land and the houses that no sooner is one crop finished than another is ready to take its place. It is essential that a good market shall be near at hand, or payment of freights will take a large proportion of the profits. Kent and Middlesex are both great fruit-producing counties, the supplies from these parts being mainly sent to the London markets. Although, as you state, much foreign produce is sold in this country, it is generally at a time when our own fruits and vegetables are out of season. The demand for home produce is always good.

SNOWDROPS: J. McC. The plants are affected with the Snowdrop mildew—Sclerotinia galanthina. The plants should be destroyed and the ground treated with lime.

TRADE PAPER: Nurseryman. The Horticultural Trades Journal is published by the Horticultural Printing Co., Junction Street, Burnley.

VINE ROOTS UNHEALTHY: J. C. M. There is no disease present in the roots you send. The trouble is due to some cultural defect or an unsuitable rooting medium. Overhaul the border, cut away the dead portions of the roots, and encourage the formation of new ones near the surface by placing some fresh loam, enriched with suitable manurial properties, on the border. At the same time see that there is proper provision for drainage.

COMMUNICATIONS RECEIVED.—F. C. E.—H. R. G.—Linnean Soc.—J. V.—F. J. L.—J. J. W.—J. S.—C. T. D.—M. & Co.—H. R. R., Chicago.—T. P.—D. B. C.—G. H. H. W.—A. J. L.—W. A. C.—H. C.—W.—C. H.—H. P.—H. W.—A. D.—F. M.—W. F. V.—E. G.—F. K. D.—C. C.—P. A.—C. F. B.—T. S.—C. D., Bienenzög.—G. H. J.—J. C.—C. S. & Co.—H. S.—T. S., Battersea.—J. R.—W. A.—H. & Son.—H. G. S.—H. N. H.—G. F.



MARGAM PARK, GLAMORGANSHIRE.



THE
Gardeners' Chronicle

No. 1,158.—SATURDAY, March 6, 1909.

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LEAF-SPOT OF ODONTOGLOSSUM URO-SKINNERI.

FOR some time past my attention has been directed to the occurrence of numerous black spots on the lower surface of the leaves of *Odontoglossum Uro-Skinneri*. The appearance presented by these diseased leaves is, I believe, well known to growers of the species in this country, and is commonly attributed to unsuitable cultivation. The material which I have investigated was kindly supplied to me by Mr. Norman C. Cookson, to whom I am also indebted for observations upon the effect produced by a change in cultural conditions.

The spots (fig. 62) are found chiefly on the older leaves, the younger leaves being almost, if not entirely, unaffected. They are often crowded together, and vary greatly in size, the smallest being barely visible to the naked eye, while the largest, elliptical in shape, may attain a longer diameter of half a centimetre. In this latter condition the spot is slightly raised above the surface of the leaf, and presents the appearance of a blister. Each spot is surrounded by a translucent border, and all stages in the de-

velopment of the spots may be found on the same leaf.

The anatomical structure of the leaf presents xerophytic characters (fig. 63). The outer cell-wall of both the upper and lower epidermis is thickened, and possesses a well-defined cuticle. The stomata, which are entirely confined to the lower surface, are sunk in pits, with the formation of a pronounced outer cavity (fig. 64). The cells of the mesophyll gradually increase in size from the lower to the upper surface, where they constitute a large-celled aqueous tissue.

Transverse sections through the region of the spots show an accumulation of a brown mucilaginous or gummy substance beneath the lower epidermis. In the initial stages this substance is present only in the respiratory cavities of the stomata, from which it exudes into the



FIG. 62.—LEAF-SPOT OF ODONTOGLOSSUM URO-SKINNERI. (NAT. SIZE.)

stomatal openings (fig. 64). In more advanced stages it collects in large masses, spreading through the hypodermal cells and into the internal tissues of the leaf (fig. 63). In the interior of the leaf this mucilage is colourless, and may be traced as a white, glistening substance, filling the intercellular spaces. Towards the epidermis it gradually becomes a deep brown, at the same time becoming harder, and this gradual fading away of the brown colour towards the centre of the leaf may indicate that it is the result of oxidation.

The gum appears to be excreted from the cells into the intercellular spaces, and thence it gradually accumulates beneath the stomata. It is this accumulation which raises the epidermis and forms the blister-like structure.

In no case were wounds of any kind to be found upon either the upper or lower epidermis, and all idea of the disease being due to an initial injury may be dismissed.

Where the gum is present, the intercellular spaces are much enlarged by the separation of the cells along the middle lamella (fig. 65), but otherwise the cell-walls appear to be quite normal. The cell-contents are greatly disorganised, and there is a partial or complete disappearance of the protoplasm, nucleus, and chloroplasts. A marked alteration takes place in the chloroplasts. They lose their regular outline, increase greatly in size, split into a number of smaller bodies, and finally disappear. Hence in an advanced stage of the disease the cells are found without any trace of chlorophyll, the protoplasm and nucleus are also completely disorganised and the cells become empty, presenting a strong contrast to those of the normal healthy portion of the leaf.

In the *Annals of Botany*, vol. ix., 1895, Massee describes a "spot" disease of Orchids in which the characteristic is the plasmolysis of the cells, the complete disappearance of the chloroplasts, and the formation of highly-refracting, hyaline spheres. These spheres were found to be rich in tannin, and, contemporaneously with their formation, the cytoplasm becomes turbid and the primordial utricle tinged with brown. Massee also shows how this "spot" can be produced when drops of water were allowed to rest on the leaves and the temperature was suddenly lowered. He finds no trace of fungi or bacteria, and concludes that the Orchid disease known as "spot" is of non-parasitic origin, the initial cause being the presence of minute drops of water on the surface of the leaves at a time when the temperature is exceptionally low and the roots copiously supplied with water.

The leaf-spot of *Odontoglossum Uro-Skinneri* differs in many respects from that described by Massee. There are no pits formed in the leaf, but, on the contrary, the epidermis is raised above the surface of the leaf, and the spots appear only on the lower side. The sections bear no general resemblance to tissues invaded by *Plasmodiophora*, and the enlarged vacuolated spheres are not produced. Again, the accumulation of gum in the intercellular spaces, which is a pronounced characteristic of this disease of *O. Uro-Skinneri*, is not noted by Massee.

The nature of the gum is difficult to determine. It is very insoluble; it reacts to many of the aniline stains, and, colouring red with phloroglucin and yellow with thallin sulphate, suggests that it is a substance of the nature of vanillin. Gums or mucilages are frequently met with in plant-tissues, but always as the result of some pathological condition. The first process in the healing of wounds is the sealing up of the exposed surface by a gummy substance, which prevents the too rapid loss of water. These wound gums appear to be formed as an excretory product in the natural process of healing, but little is definitely known as to their origin. Many gums which appear to be of much the same chemical composition are also formed in the plant as the result of fungal or bacterial action. The production of Gum Arabic, for instance, has been traced to the action of certain bacteria, and numerous well-known diseases of plants in which gum is produced, such as the Red-string of the Sugar-cane, the Gummosis of the Beet-root, the Black-rot of the Turnip and Swede, &c., have been proved to be due to a similar cause. The common gum flux of the *Amygdaleæ* has been attributed to the action of a *Coryneum*.

In the leaf-spot of *Odontoglossum* there was no sign of any fungus to be found. But special

staining and examination under a high power of the microscope revealed the presence of numerous bacteria (fig. 65). These occupied notably the cells surrounding the tissues in the initial stages of gum formation, and could be seen almost filling the cavity of the cells. Although the subject requires further investigation, it is probable that these bacteria have some

lence in the first place. This Orchid, in its native habitat, Guatemala, exists at a high elevation, in cool, shady places. Cultivation in too moist and, possibly, too heated an atmosphere produces conditions which are inimical to the health of the plant. *M. C. Potter, M.A., F.L.S., Botanical Laboratory, Armstrong College, Newcastle-upon-Tyne.*

The lip is oblong, three-quarters covered with brown in the horseshoe form seen in a good flower of *O. triumphans*, and showing the small blade and apex and crest of that species. The column is that of *O. triumphans*, with brown wings and anther cap. *de B. Crawshay.* [This description was received a week or so before Messrs. Sander & Son exhibited a plant from the same cross at the R.H.S. meeting on February 23.—EDS.]

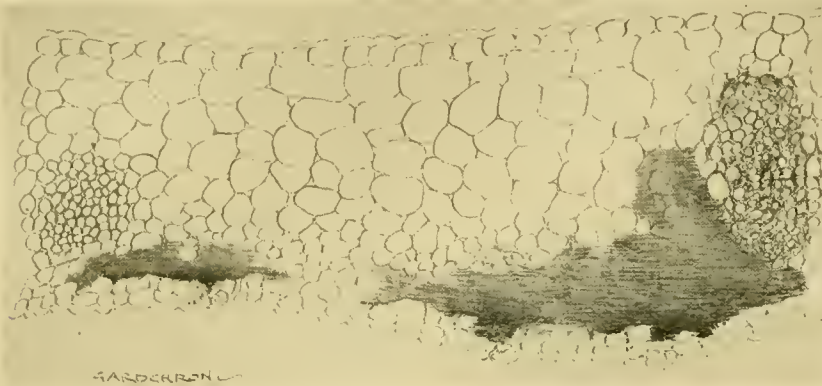


FIG. 63.—TRANSVERSE SECTION THROUGH REGION OF SPOTS, SHOWING GENERAL STRUCTURE OF LEAF AND ACCUMULATION OF GUM UNDER LOWER EPIDERMIS AND EXTENDING INTO THE INTERNAL TISSUES.

destructive action upon the protoplasts, and that from this action result the escape of the cell-contents and their conversion into the gummy substance, filling up the intercellular spaces. According to the researches of Greig Smith, Gum Arabic is not derived from the cellulose, but is due to the action of *Bacterium acaciæ* upon such carbohydrates as levulose, saccharose, maltose, or mannite. In the present case there is no softening or swelling of the cell-walls, and, doubtless, certain carbohydrates present in the cell-contents may provide the material from which the gum is derived, under the influence of the invading organisms.

Attempts made to induce the disease upon healthy plants by inoculation with bacteria isolated from the diseased leaves have been unsuccessful. It must be remembered, however, that infection is often very critical and uncertain, and depends upon conditions sometimes difficult to approximate.

It has been noted that the spot is more prevalent when the plant is grown in a very moist or almost saturated atmosphere, and in such conditions it is very liable to spread. In a dry atmosphere, on the contrary, the spot does not increase, and if a plant affected with it is re-

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM HUNIADES (*O. HUNNEWELLIANUM* × *O. SCEPTRUM*).

THE hybrid, as represented by the first plant to bloom, can hardly be called interesting, except for the fact that it has proved the smaller species to be the stronger. In form and colouring it is almost a duplicate of *O. Hunnewellianum*, the lip alone showing a form somewhat more like *O. sceptorum* than the remainder of the flower. It was raised by Mr. Sander at Bruges. *de B. Crawshay.*

ODONTOGLOSSUM LANDOLPHUS (*O. ANDERSONIANUM* × *O. ROLFEÆ*).

THIS hybrid was also raised by Mr. Sander. The first one to flower is rather a pleasing and interesting plant. The sepals and petals are clear, bright yellow, the sepals having one brown spot almost at the apex, and the petals being unspotted and having a median area of lighter yellow, so often present in the unspotted forms of the female parent.

The lip is unspotted, somewhat orbicular, with the right-angled shoulders of *O. Andersonianum*, and likewise the colouring in the channel. The column is white. The influence of the smaller-flowered parent is dominant, and the entire blotching of *Rolfeæ* is suppressed, except the spot in the sepals, which is almost always present like an island in a sea in that hybrid.

Analogous in the suppression of the spotting is *O. Rolfeæ Fathleen*, lately in Mr. Bradshaw's, now in Mr. Butler's collection. Doubtless some of the plants will show more influence of *O. Rolfeæ.* *de B. Crawshay.*

ODONTOGLOSSUM POLYPHEMUS (*O. KEGELJANII* × *O. TRIUMPHANS*).

IN raising hybrids of *O. Kegeljanii*, many people may say I wasted time, but, in effect, they have a different character to all others, and eventually the later generations may prove good acquisitions.

This one bloomed a month ago, and, as might be expected, it has rounded and filled up the form of the female parent, retaining the rich yellow ground just shaded by green in the centre of the sepals. The sepals have two bars and a great apical blotch of rich glossy brown, like *O. Kegeljanii*, almost covering their surface.

The petals are of similar yellow colour, with reddish-brown basal markings and a large blotch beyond.

FLORISTS' FLOWERS.

THE AURICULA.

THE hon. secretary of the National Auricula Society (Southern Section) stated at the annual meeting held recently in London that the list of members belonging to that special society was larger than at any previous time in the society's existence. This is very satisfactory, and is evidence that this charming, old-fashioned garden flower is increasing in favour with those who value flowers for their intrinsic worth, as well as for their historical associations. One sometimes hears comments on the difficulty in cultivating Auriculas. I have frequently received complaints of plants not succeeding, but, on investigation, the cause was found to be due either to ignorance of the ordinary rules of culture, or to neglect. If *Pelargoniums* or any other garden plants are attacked by green fly, and no means are taken to destroy the pest, there will soon be an end of the *Pelargonium*. The Auricula also is liable to be attacked by aphid, and this must be destroyed by fumigations. The woolly aphid, which lives and thrives on the stem and roots, can be destroyed by frequent fumigations with XL-All compound, or, if the roots are carefully examined at the time of repotting, the aphid can be effectually brushed off.

Auriculas should be overhauled before the end of February to ascertain that the roots are in a good condition and provision for drainage perfect. When this has been done a clean flower pot of similar size should be ready in which to replace the plant. Those who possess a heated house for Auriculas should place their plants in it now. If it is intended that the



FIG. 64.—A STOMA WITH GUM IN RESPIRATORY CAVITY AND EXUDING INTO STOMATAL OPENING.

moved to a drier atmosphere, the spot already developed is checked, and instead of the epidermis being raised as a blister, it may even begin to sink at the larger spots.

Clearly bacteria play a considerable part in the development of the disease and the formation of the gum, but unsuitable cultural conditions are also largely responsible for its preva-



FIG. 65.—INTERCELLULAR SPACES FILLED WITH THE GUM, AND BACTERIA INSIDE THE CELL.

plants should all be in flower at the same time, the edged flowers should be placed in heat before the selfs, although a few of the edged flowers, such as *Acme*, will come into flower with the selfs under similar treatment. Some care is necessary in watering the plants, for as the season advances the growth is very rapid, and the plants suffer if they are allowed to

become at all dry at the roots. Too much moisture will be equally bad and cause the plants to become drawn and the leaves flabby. Those who possess garden frames only should see that the glass is covered at night-time with thick mats. Careful attention must also be given to proper ventilation of the frames; the lights, when opened, should always be tilted in a manner that will protect the plants as much as possible from cold winds. Rooted offsets should now be removed carefully from the parent plants, placing two or three around the edge of a small flower pot filled with fine, sandy soil. They may be placed in hand-lights, where they will soon become established. The offsets which were put in small pots about September should be repotted: they will, with good treatment, form strong plants and flower well next year. By keeping insect pests from the plants and giving careful attention to ventilation early in the morning in fine weather, satisfactory results will be obtained. *J. Douglas.*

THE ROSARY.

CULTURAL NOTES FOR MARCH.

PRUNING will require attention towards the end of this month. Roses that have been injured by the frost should be pruned to the first dormant bud. Hardy climbing Roses on walls, arches, fences or pergolas should be first attended to. Prune the bushes moderately and cut out any unripe or weakly shoots, and, where they are crowded, thin out the weaker and nail or tie the remaining shoots to the walls or trellis-work. The following varieties growing in a sheltered position on a south aspect or against a wall may also be pruned lightly during the present month. Leave all the long, ripened shoots their full length, and only shorten the points of the shoots if they are soft and unripened:—Cheshunt Hybrid, Gloire de Dijon, Carmine Pillar, Madame Berard, Climbing Caroline Testout and Aimée Vibert. There will be a difference of several weeks between northern and southern districts for practising pruning. The work must be regulated, not only in accordance with the local conditions, but also with the type of Rose. The Moss, Provence, China, Hybrid China, Austrian Briar, Sweet Briar and other summer-blooming Roses may also be pruned early during March, but their principal stopping and thinning should have been done after they had flowered last summer. What is required now is to cut away late-developed and unripened shoots, and also any suckers. The shortening within reasonable limits of long rampant shoots should also be done. After these are pruned, varieties of the hybrid perpetual type should be given attention. In order to obtain a succession of blooms some of the bushes should be trimmed 10 or 12 days in advance of others. Vigorous-growing shoots should be shortened to one-third of their length, or even more severely, according to the variety; the weaker-growing kinds should be cut most severely, leaving only four or six buds. Pillar Roses should be cut hard back, but in this case it is only the old-flowering wood which must be shortened, for the shoots of last season's growth must be left intact. Many persons prune Roses by rule of thumb, and deal with all types on similar lines, but the need of each class is different, and calls for special treatment.

Standard briars that have suffered damage by frost should be cut back to uninjured wood and the surface mulching on the beds made good. If the presence of manure on the beds is objectionable, a light layer of soil can be spread over it.

The seed beds wherein are planted briar seeds should be examined occasionally, as the seeds will begin to germinate at the end of this month. A little fine sandy soil scattered over

the drills will be of benefit to the young seedlings. Syringing will also be an advantage.

Hot-beds made during the latter part of February for the raising of Roses from cuttings will now be in a suitable condition for inserting the shoots. There is an abundance of suitable wood for the making of cuttings. Place one cutting, or not more than two, in a small pot filled with sandy loam and leaf-mould and surfaced with white sand. make the cuttings firm in the soil and water with tepid water. The heat of the bed should be about 75° when the pots are plunged. It is advisable to place a layer of cocoanut fibre or clean sawdust in the frame in order to absorb excessive moisture which may arise from the bed. If this does not suffice, a little ventilation must be given at the back of the frame for a few hours in the middle of the day, but not such as would perceptibly lower the temperature. The frames should be covered with mats or litter during the night. The cuttings will not require much water until after the second or third week of planting. Then the atmosphere of the frame will become much dryer and shading from direct sunlight must be practised during the daytime.

Roses planted out in houses should be kept dryer at their roots after the blooms are cut, but an occasional syringing after pruning will assist them to form the new growths on which the later crop of flowers will be produced. This advice refers specially to Noisette, Tea and Hybrid-Tea Roses. It is only certain kinds of Hybrid-Perpetual Roses that can be depended upon to produce a second crop of flowers in a glasshouse, therefore it is not advisable to plant Roses of that description.

Rose cuttings in the open are liable to become loosened in frosty weather; they should, therefore, be carefully examined after the frost has disappeared and the soil about them made firm by treading.

The treatment of pot Roses is now of a routine character, proper conditions of ventilation and moisture, according to external conditions, being the chief requirements. An occasional sprinkling of some suitable fertiliser, alternated with weak liquid manure, will assist the plants when they are forming their flower-buds, give increased vigour to the foliage, and additional substance to the petals. The application of manurial stimulants must be discontinued when the blooms begin to show colour.

Grafted Roses may still be repotted. Place the plants near to the glass and do not neglect to fumigate them when necessary. Water must be sparingly applied until the new roots begin to ramify in the soil. *J. D. G.*

NOTICES OF BOOKS.

* ROCK-GARDENING.

THE opportunities for foreign travel, formerly the privilege of the few, have rapidly been abundantly extended to the many, and a profitable industry—that of the manufacture of guide-books—has been thereby called into existence. Guide-books vary much in quality. At the one end of the scale are those written by authors who thoroughly know their subject, curt, to the point, compressing the maximum of serviceable information within the narrowest limits of space. At the other end we encounter the innumerable stories of rather aimless wanderings told by discursive and not over-critical ramblers.

Similar conditions, *mutatis mutandis*, occur in other pursuits which engage the interest of a large and heterogeneous public. In amateur gardening the cult of the rockery is now well to the fore, and the publishers, who presumably know their public, are busily catering for all sorts and conditions of aspirants.

No doubt the volume before us will appeal to a particular class of readers, though they will

* *That Rock-Garden of Ours*, by F. Edward Hulme, F.L.S., F.S.A., with 50 illustrations by the Author. T. Fisher Unwin. Price 10s. 6d. net.

probably not be drawn from the ranks of people who call themselves rock-gardeners. In fact, it is a little difficult to justify the title of the book at all, except, perhaps, that in the first chapter Mr. Hulme gives a few directions as to their relative positions to be occupied by the soil and the stones. For the rest, the book rather reminds us of Ruskin's treatise on sheepfolds, which excited a not inconsiderable, though wholly temporary, interest in agricultural circles.

Indeed, Mr. Hulme uses the term mainly, as it seems to us, to indicate a rather remarkable wild garden, wherein are to flourish all the wild plants that have already made themselves prominent in these islands. But, however beautiful Coltsfoot, Cinquefoil, and many other plants of the same sort may be, they are hardly in place except in the wildest of wild gardens. Even the author himself seems to recognise this, for he hints at their devastating powers of reproduction and extension. Few cultural directions are given—nor, indeed, are they, for the most part, necessary—for the denizens of such a rock-garden as Mr. Hulme had in his mind, and he is thus able to devote the greater part of his pages to the antiquarian and other lore that attaches to the objects of his admiration.

The text is illustrated by 50 plates, partly in colour and partly in half-tone. They are of uneven character; some are good, but others are blurred and indistinct. Incidentally, we might remark that the figure of a Daffodil, referred to on p. 56, is not to be found on Plate 1., as stated, but on Plate XXIV.

It might, perhaps, be gathered from the foregoing, that we think but poorly of Mr. Hulme's book. This is by no means entirely the case; but we do think that the title conveys a mistaken impression, which is fair neither to the reviewer nor to the general reader. If the author had called his book a gossip about common plants we could have found no fault with him. *J. B. F.*

* LIFE HISTORIES OF FAMILIAR PLANTS.

THIS book is not addressed to the professed botanist but to "that large and growing class of Nature-investigators who derive pleasure from seeking the why and the wherefore of details in plant structure and the relationship of these details to animal life."

While acknowledging his indebtedness to distinguished observers in the past in the same field of work, the author puts forward in each chapter his own suggestions as to the solution of various plant problems.

Some of these invite criticism, if not from the Nature-investigator, certainly from the botanist.

The Cowslip flowers rather later than does the common Primrose, but that this fact is directly due to the delay caused by the growth of the thick stalk on which the umbel of flowers is borne seems at best doubtful, nor can we readily agree that the larger size of the Primrose flower is directly associated with the larger supply of nutritive material available owing to the absence of such a stalk. The Cowslip, again, is not by any means confined to low-lying pastures, but occurs in great abundance on the slopes of downs and in similar situations. It seems unlikely, moreover, that the spotted Orchis has been aided in the struggle for existence by the fact that its mottled leaves have any resemblance to the spotted body of an adder.

It may well be that browsing animals are more familiar than is man with the "snake in the grass," and with the frog and his like, but this theory of immunity from grazing animals, secured to the Orchis by virtue of its spotted leaves, demands stronger evidence than is forthcoming here. The leaves of the common Arum are similarly spotted, but are of very different size and shape, and could hardly be mistaken by any browsing animal for a viper.

The book is extremely well illustrated with 86 plates, reproduced from photographs and microphotographs.

* *Life Histories of Familiar Plants*, by John J. Ward. Cassell & Co. Price 6s.

NURSERY NOTES.

THE READING PRIMULAS.

It scarcely needed a visit to Reading to show that the Chinese Primula is as popular a greenhouse plant as ever. It blooms at a time when dwarf-flowering plants are few, and there is no sign that any other species is likely to oust it from its present high position as a decorative plant. Every florist knows how suitable Primulas are for furnishing vases in dwelling-rooms, and how their qualities in this respect have been improved since crossings have been made with the star or stellata section.

But if these facts were sufficiently well known, a visit to Reading served, nevertheless, to show that Messrs. Sutton & Sons are in no way relaxing their efforts to improve and develop their strains. Thus they are, so to speak, assisting the plant, as best they can, to maintain its hold on the public. When it is remembered that their collection includes about 14,000 flowering specimens, that there are 300 to 400 distinct stocks, and yet that only 60 sorts are catalogued, it can be better imagined what an immense amount of detail has to be recorded and studied merely for the sake of keeping the stocks true. But more than this is necessary. The strains have not only to be maintained at the present high merit, but, where possible, this must be increased. Cross-fertilisation between varieties in themselves cross-bred, goes on every year; it is by this method that most of the novelties are obtained. Cross-fertilisation, however, is but one step—a step that leads often to bewildering variation. At this point the process of selection commences. Not the old process of attempting to "fix" characters by continued selection from a batch, but selection of individuals, which, being pure dominants or recessives, will be certain to come true from seeds if the flowers are self-fertilised. As Messrs. Sutton do not catalogue any novelty that cannot be perpetuated by seeds, nor any of which a considerable quantity of seeds cannot be obtained at one time, it follows that many novelties appear in the collection from time to time which are never introduced to commerce. Some of them are sterile. Others, again, produce seed, but have not the property of coming true from seed, and if these were to be perpetuated, it could only be done by layers or side growths, as in the case of the old *alba plena* and other varieties with perfectly double flowers. Such an instance is found in *Giant Lavender*, which, being incapable of breeding true from seed, is what is described as a heterozygote; there are others of the same class, including some of the seedlings obtained from the *Duchess* strain crossed with *Crimson King*.

In previous notices of the Reading Primulas, we have referred to the attempts that are made to apply the principles of heredity, commonly expressed in the term Mendelism, to the cross-breeding experiments. The plants form excellent material for demonstrating these principles, and for proving some of the elementary truths which Mendel first discovered. On our recent visit we were shown in one house batches of plants representing first crosses, such, for instance, as from *Crimson King*, and *Snowdon*. Being the first seedlings after the cross, they are termed the F_1 generation, and, in most cases, all the plants were similar to each other, and intermediate in their characters between the parents. This is what we should expect; but when a plant from the F_1 generation is self-fertilised, the seedlings (F_2 generation) vary in a constant proportion, some being pure "dominants," others recessives, and still other impure dominants. When the pure dominants and pure recessives are again "selfed," they reproduce themselves true from seeds as often as the process is repeated. They are, therefore, "fixed," but not in exactly the manner that gardeners have been in the habit of meaning by that term. It would be more correct to say that they are *pure*. The impure domi-

nants, upon selfing again, split up, and so on. These things are the same, of course, in all plants; the Primulas are merely convenient plants to illustrate hereditary principles that apply to cross-breeding in plants and animals alike. Occasionally the sum does not work out as it should do, and, for reasons that at present are unexplainable, except by the somewhat unsatisfactory assumption that the operator must have made a mistake in making his records. It is always—or nearly always—in regard to colour that unexpected results are obtained, and it has to be remembered that some of the colours are not pure in themselves, but combinations of several colours, therefore the results of crossing are the less certain. In the characters which have to do with the habit of the plant, or with the foliage, and even colour of stem, the proportions in the F_2 generation are Mendelian. The Fern leaf, for instance, is a recessive character in Primulas, and can always be depended upon to breed pure when a cross between a Palm and a Fern-leaved variety is self-fertilised.

much the same manner. All these and other circumstances are of the greatest value to the student. The work of the practical breeder furnishes facts from which the scientist is often able to deduce principles that, in their turn, are valuable to the breeder. It may be said that at present horticulturists have not benefited to the extent they might reasonably expect from Mendel's principles, but at the very least Mendelism has shown them the value of the F_1 generation. In days gone by practical men have often destroyed their seedlings of florists' flowers because, after the first cross, they failed to exhibit any superiority over the parents; now they know that even when this is the case one plant should be selfed in order to see what it is capable of producing in the F_2 generation. In this matter alone the waste of effort there has been is beyond estimation. A second point is the uselessness of attempting to "fix" by selecting from a batch. De Vries' experiments have conclusively shown that selection should be from individuals. In these two matters gardeners have no longer

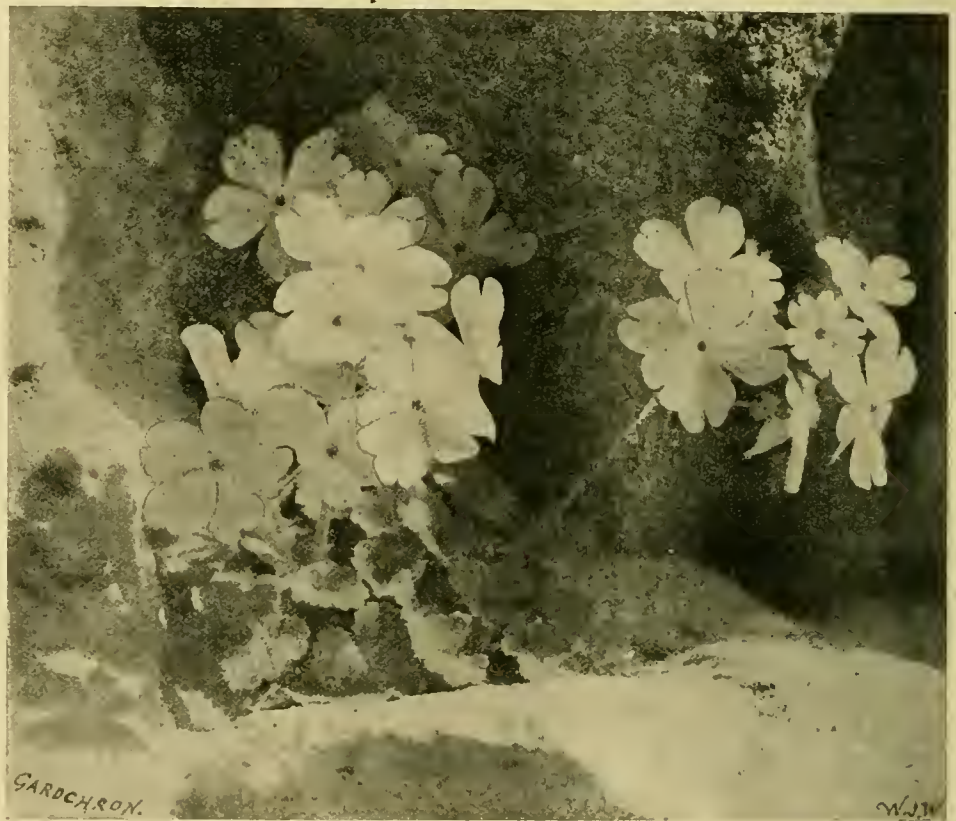


FIG. 66.—PRIMULA SINENSIS GROWING ON THE ROCKS AT PING-SHAN-PAI, WESTERN CHINA. (NAT. SIZE.)

Among the most interesting results in crossing are some which have reference to what is termed correlation. In most plants there are certain characteristics which are so opposite to each other that they seldom develop in the same plant; whilst there are others that are almost always to be found when certain others are present with which they correlate. A few Primulas shown by Messrs. Sutton at the last meeting of the Royal Horticultural Society illustrated this point. The moss-like foliage of the old variety *Magnifica* has been united with almost all the colours in Primulas, but, nevertheless, it has so far been found impossible to get the *Duchess* strain to take on this type of leaf, although repeated trials have been made. As a rule, the result of such a cross has been to produce a kind of Ivy-like leaf, perfectly distinct from the other types of leaf, but not in itself decorative. This type of foliage is usually correlated with star-like flowers of poor quality, as judged by the florist. But the plants exhibited at the meeting had long lobes to the leaves, and correlated with this character were the lobes of the flowers themselves lengthened in

any excuse for working by the old, wasteful and comparatively ineffective method.

To refer to some of the many noteworthy varieties:—*Giant Crimson* is a variety which represents as well or better than any other the development of the Reading strains. Of good habit, the plant bears strong, erect spikes of flowers which measure from 2 inches to 2½ inches in diameter. The colour has been much improved in the past few years, and it is now intensely vivid and full. We were informed of a curious circumstance in the history of this variety. One of its parents, nine or ten years ago, had "Primula blue" flowers. In subsequent breeding it never produced a plant with blue flowers until last year, but it has repeated the effort again this season. It is worth while pointing out here that a name is often retained for a fresh and improved stock. Whilst particular stocks of *Crimson King*, *Snowdrift*, or *Rosy Queen* are catalogued for sale, other stocks varying but little from these, but always on the better side, are in course of development, and, when these latter stocks are large enough, they

are substituted for the earlier ones, usually without any change in the name. It is this procedure that explains why "Blue Fern-leaved" is a better plant to-day than it was five years ago.

In regard to cultivation, there is nothing beyond the resources of the Reading establishment. The excellent houses are filled with plants of such perfect development, no writer can easily exaggerate the high culture exhibited. We were impressed with the effect of the proper temperature treatment in the development of colour in the well-known variety, "Czar." Certain plants had been cultivated in as cool conditions as could safely be imposed, and the flowers in their rich violet-blue and magnificent zone were so superior as to be distinguished from others at the merest glance. We do not intend to retail to the reader a list of the varieties cultivated at Reading: their names and characteristics are already catalogued. It is sufficient to say that almost all colours are obtainable, either with Fern, Palm, or Moss-like foliage; that the Giant type is so true that even when cultivated in 2½-inch pots the flowers are still 2 inches or more in diameter, and that the stellata section is variously coloured and capable of producing such perfect plants as the specimen illustrated at fig. 67.

We invite the reader to compare the figure just mentioned with fig. 66, which portrays a native specimen of *P. sinensis* growing in a very restricted district in China. The illustration is reproduced from a photograph taken by Mr. E. H. Wilson, and is probably the best yet published of the species in its natural home. It may be pointed out that the plant shows considerable difference from a plant now in the Reading collection, which is believed to be of the same species, and interesting in the fact that the flowers are perfectly free from a trace of "eye" or zone.

Only a concluding word can be said of the Cyclamens. The view reproduced in fig. 68 will serve to show the wealth of the collection. The seed is sown in October in pans, and the seedlings are pricked out singly into 2½-inch pots as soon as they are ready for the change. They flower, therefore, when about 14 or 15 months old. The strains are excellent in every way, as is the culture afforded the plants. Efforts are being made to develop a large-flowered type with scented flowers. "Scented Rose" is a considerable step in this direction.

THE TRAINING OF FRUIT TREES:

It is common belief that the management of wall trees is less perfect than in former years. Certain it is that some young men of the present time have little skill in training fruit trees, having never been taught how to nail shoots straight nor to place them at the correct angle. I believe there are some persons who consider that nothing is gained by being particular in arranging the shoots of fruit trees, though a slight consideration will show that to be an error of judgment. When all the shoots of a fruit tree are disposed at regular distances from each other there is no overcrowding in one part of the tree and waste of space in another. Further, each branch receives as much of the sun's rays as another, and the young growths of the current year have ample room to develop without encroaching on the old or fruit-bearing portions. This is an important consideration, which was the objective of a former race of gardeners by whom the training of hardy fruit trees was attended to with the greatest care. It is true that none of the earliest writers on gardening had a very clear conception of the importance of training and pruning, and well into the eighteenth century advice on the subject is occasionally encountered which shows how long a time it took to break down old prejudices. Hitt, whose work was published in 1755, is supposed by some to have been the first to treat

seriously of pruning and training, but as early as 1717 a gentleman named Collins published a small treatise by the name of *Paradise Retriev'd*, in which the subject is treated in the most enlightened manner. But one gathers that the writer was rather more intent in proving other authorities of the period to be wrong in their methods than in publishing his own, which were right. Earlier still, that accomplished gardener, John Reid, of Rosehaugh, a place still famous for fruit, wrote on this subject. He demonstrated, though in a rather confused manner—not to be unexpected in a man whose acquaintance with English was at best but slight—how wall trees should be managed to give the best results. This was in 1688, 34 years previous to the first English writer who approaches the subject from the true standpoint. It is not to be denied that Hitt carried his training to extremes, just as Forsyth did later, and

sun's rays reach the bricks and warm them; another, that none but vigorous shoots are permitted on the trees; these being capable of producing quite as large a crop of fruits as is able to mature. B.

AQUILEGIAS.

THERE are few flowers more decorative or refining in their effect on our herbaceous borders than the comparatively neglected Aquilegias. Their period of flowering is not quite so prolonged as that of the *Viola*, yet in many instances, as in that of *A. chrysantha*, the "Golden Columbine," it has lasted in flower in my garden for nearly three months. The Aquilegias have come to us from various regions; from the Altai Mountains in Siberia, from the Alps and the Pyrenees, from Guatemala in



FIG. 67.—A SPECIMEN OF MESSRS. SUTTONS' STELLATA TYPE OF CHINESE PRIMULA.

later still other gardeners whose pet theories are to be found in the pages of the contemporary gardening Press. Fundamentally, these old practitioners operated on correct lines, though at an enormous waste of energy, and, no doubt, not always successfully, because all else was made subservient to pruning and training. No one would now be so injudicious as to appraise these at more than their true value. One of the most remarkable improvements of Collins—considering the fact that his contemporaries plashed the shoots of fruit trees one over the other, and that Bradley, at the same period, imagined he was making an advance in allowing a space of 4 inches between the shoots of Apple trees—was that he regulated the shoots of stone fruits at 4 to 5 inches apart. One of the benefits resulting from training the shoots far apart is that the

South America, from Canada, from California, and from the Rocky Mountains.

One of the finest of the Aquilegias, and most graceful in habit, is *A. cœrulea hybrida*, "divinely tall, and most divinely fair," as Tennyson sings of Helen of Troy. The original colours of this beautiful Columbine were blue and white, but when crossed with *A. chrysantha*, it became suffused with yellow and invested with spurs of greater length. *Aquilegia californica hybrida* is a remarkable combination of deep orange and bright scarlet; though, in virtue of its peculiarly pendulous tendency, in which respect it resembles several notable Roses, its beauty is half concealed. *Aquilegia canadensis*, whose colours somewhat resemble those of *A. californica*, is extremely effective in certain situations; so also is the uniquely-coloured

A. Skinneri, which has delicate green sepals and yellow petals, with strongly contrasting spurs of brightest orange-red. It is a native of the northern regions of South America. *Aquilegia glandulosa*, whose colours are white and blue, is a species which is easily increased by careful division of the fibrous root-stock. It is of closely-tufted habit, and does not grow to any great height, forming in this respect a contrast to such commanding forms as *A. californica* and *A. coerulea hybrida*, which, when in flower, can be seen and admired from any part of the garden. A derivative from this variety called *A. Wittmaniana*, though possessing considerable fascination, is not equal in beauty or graceful formation to the parent flower. The late Dr. Stuart, of Chirnside, in Berwickshire, the distinguished originator of the "Violetta" race of rayless miniature *Violas*, raised the grandest of all *Aquilegias*, which bears his name. He used to assure me that *Aquilegia Stuartii* could not be grown successfully except by earnest cultivators, since it requires very careful attention in its earlier stages, and a deep, fertile soil. I have been informed by Messrs. Cocker, of Aberdeen, who introduced the variety to commerce, that it was the result of a cross between *A. coerulea* and *A. glandulosa*, though others have attributed part of its origin to *A. Wittmaniana*.

After cultivating *Aquilegias* for many years with even more pleasure and success than I anticipated, I have come to the conclusion that, whether we consider the length of time during which it blooms with such splendid profusion, its utter indifference to atmospheric conditions, its strikingly beautiful formation, or its lustrous golden hue, *A. chrysantha*, if not so varied or highly artistic in its aspect as *A. californica* or *A. coerulea hybrida*, is the most valuable, and assuredly the most enduring, of them all. Nothing in my garden is more impressive in early summer than long lines of *A. chrysantha*, with innumerable flowers of the brightest Primrose hue glittering beneath the blossoms of overshadowing Apple trees.

Though less refulgent than the Eastern Lily, the Carnation, or the Rose, the *Aquilegia* has a dainty beauty of its own, and is, as this contribution, I hope, sufficiently proves, of much value for garden decoration. *David R. Williamson, Manse of Kirkmaiden, Wigtownshire, N.B.*

The Week's Work.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Late planting.—Where circumstances have arisen to so far prevent the planting of fruit trees, the work may still be done. The chief advantage of autumn planting is that the roots form new growths before the very cold weather sets in, and thus they become partially established before winter, and are better able to withstand drying winds and hot weather during the succeeding summer. When planting is left until the spring extra care is needed to enable the trees to get a good start. The ground should have been previously prepared as advised in a former Calendar, and a dry day selected for the planting. The soil should be in a proper condition for working—neither too wet nor too dry; on no account plant when it is in a wet condition. After the planting is completed mulch the trees with some light manure, that from a spent Mushroom bed being suitable. If the weather continues dry, watering may become necessary; the trees may also be syringed early in the afternoons in dry weather, as this will assist in keeping the wood plump and fresh.

Orchards.—In improperly tended fruit plantations the trees are never pruned, whilst spraying with an insecticide or dressing them with lime is never thought of. Though rather late for the work, the trees may still be overhauled, and it will be better to do this now than to wait till next winter. Cut out all the dead or badly-

placed shoots, and thin the remainder sufficiently to allow the sunshine and air to penetrate to all parts of the tree. Old orchard trees are often dense thickets of shoots, producing only inferior fruits. By a system of proper treatment these trees may be made to bear good marketable crops. When the shoots have been thinned choose a calm day for spraying the trees with an alkali wash, and, if time permits, give them a second spraying after an interval of a week or two. Any grass growing immediately beneath the trees, and for at least a yard beyond the spread of the branches, should be dug in. After this a good dressing of lime should be applied, followed by a mulching of farmyard manure. The trees will derive benefit from this treatment the first season.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Onions.—On a fine day, when the ground is sufficiently dry and the soil in a workable condition, advantage should be taken to prepare and sow the principal bed of Onions. First make the ground thoroughly firm, and rake the surface level; then sow the seed thinly in shallow drills drawn at distances of 10 to 12 inches apart. Apply a dressing of soot and wood-ashes. Then carefully cover the seeds and again rake the surface finely. Onions raised in heat early in the year should still be grown in a temperature of from 50° to 55° F., being placed as near to the glass as possible. Any surplus plants which have not been pricked off may, if thoroughly hardened, be planted out in a sheltered position on ground of a fine tilth, in rows 1 foot apart, and the plants at distances of 6 inches from each other. Under this treatment Onions invariably make serviceable bulbs, and no amount of cold after this date will injure them, provided they have been properly prepared for exposure. Any selected bulbs intended for seeding should be planted in a sunny position sheltered from cold winds. Plant the bulbs 18 inches apart in the rows, and make the rows at distances of 2 feet.

Green crops.—February has been an exceptionally dry month in this locality. There have been no rains, but a continuance of dry, frosty weather, which has had the effect of injuring most of the green crops. Whole breadths of Sprouting Broccoli, especially the earlier varieties, have been completely destroyed, also many of the white Broccoli. Of this latter vegetable, Late Queen and Model have proved to be the hardier with us, and amongst Borecoles or Kales the least injured have been the Scotch, Cottager's, Labrador, and Chou de Russie varieties. The last-named sort received a First-class Certificate from the Royal Horticultural Society in April, 1907, after trial at Wisley. Late plantings of Brussels Sprouts have also been affected by frost. Ground that has been dug or trenched has benefited from recent weather, especially in gardens where the soil is heavy.

Seakale.—This has proved to be especially valuable now that green vegetables are scarce. Care should be taken to provide for a continuous supply by introducing successional batches into the Mushroom house or other suitable structure for forcing. Seakale may be also forced in the open should circumstances require this method to be adopted. The cuttings intended for cultivation next season should be grown gently in a cold frame. They will be ready for planting by the end of March or early in April, but care must be taken not to force them in the slightest degree.

Spinach raised last autumn has in many cases withstood the cold weather remarkably well. As soon as the conditions are favourable the ground about the plants should be weeded, hoed and given a dressing of soot, repeating these operations about every ten days. Make an early sowing of this vegetable on a south border, planting the seeds in drills drawn one foot apart. Early Spinach may also be grown on a very mild hot-bed in frames: it is surprising what a large quantity of this valuable green vegetable can be produced from an ordinary three-light frame.

Celery and Chicory.—The latest varieties should now be lifted and stored in sand or ashes under a north wall. The heads will remain in a good condition for a much longer period if stored in this way than when left in

the ground. Chicory may also be taken up and treated in the same way as advised for Celery.

Parsnips are much better when allowed to remain a considerable time in the ground, but they should now be lifted and stored in sand in a cool place.

The herb garden.—Examine the plants carefully with a view to replacing any which are becoming exhausted. Some will need to be propagated from cuttings, others by division. The herb border is an interesting feature in a garden, and it is the more interesting when it contains a large number of varieties.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

The propagating department.—Many of the stock plants intended for furnishing a supply of cuttings will now be in such a condition that the work may be commenced. There will be a plentiful supply of cuttings of such plants as *Agelatum*, *Lobelia* and *Koniga* (*Alyssum*). Zonal *Pelargoniums* that have been wintered in store pots, and are now potted singly in smaller pots, should be given warmer conditions so that they may grow rapidly and form strong plants by the time they must be hardened. Some of the autumn-rooted plants of Ivy-leaved *Pelargonium* should be allowed to develop three or four shoots and be trained as pyramids. Others may grow naturally for pegging down as a groundwork to such plants as *Fuchsias*. The pyramids will be useful as "dot" plants over a carpeting of *Violas*, *Harrison's Musk* (*Mimulus*), *Verbena*, *Phlox Drummondii*, and similar dwarf-growing subjects. Old *Fuchsias* should be started into growth and repotted.

Flower seeds.—Many flowering plants can be easily raised from seeds, and they are especially valuable when cuttings of other plants have failed to survive the winter. Tuberous-rooted *Begonias* will form good plants in the one season from seeds sown at the present time, whilst those of the *semperflorens* type are invaluable for summer bedding. Prick off the seedlings in suitably-prepared pans or boxes as soon as they are large enough for transplanting and give them a further shift into small pots when they are ready. *Petunias*, *Verbenas*, *Ageratums* and *Lobelias* can all be raised from seeds. Sweet Peas should be sown in 5-inch pots, placing five or six seeds in each pot. Germinate them in a cool house, and when the shoots are 6 or 9 inches in length, pinch out the tops in order to induce a bushy growth. It may be advisable to shift them into 6-inch pots before they are planted in rich, deeply-dug soil in the open. *Schizanthus wisetonensis* and *Nemesia strumosa* are suitable annuals for planting in the flower-beds. They should be raised in a cool house and planted out at the end of May.

Sub-tropical garden.—Some of the most suitable plants for the sub-tropical garden are *Grevillea*, *Acacia*, *Ficus*, *Canna*, *Eucalyptus*, *Musa*, *Solanum*, *Wigandia*, *Ricinus*, *Nicotiana*, *Palms* and *Ferns*. *Acacia Lophantha* is easily propagated from seeds. *Abutilons* may also be readily raised from seeds, but the most suitable plants are those about 2 to 3 feet tall, and these are best grown from cuttings, inserted during the previous summer. Two good *Abutilons* for the sub-tropical garden are *A. Thompsonii* variegata and *A. Savitzii*. The leaves of *A. Savitzii* are blotched with silver. The *Cannas* also furnish a wealth of material in their numerous varieties both foliage and flowering. Those with bronze-coloured stems and leaves are effective when intermixed with free-flowering plants such as *Petunias* or *Fuchsias*. They may also be massed for their floral effect. The best method of increasing *Cannas* is by division of the root-stock in early spring. There are several species of *Eucalypti* suitable for the sub-tropical garden. One of the best is *E. Globulus* (the Blue-gum tree). Others are *E. citriodora*, *E. Gunnii*, and *E. cordata*. All the *Eucalypti* may be readily raised from seed. The Castor-oil plant (*Ricinus*) forms a handsome subject in its beautiful foliage, especially when planted by the side of a rivulet or in the foreground of a shrubbery. It grows very quickly from seed. Those with green foliage, of which *R. zanzibarensis* is the best, are the most hardy, but they are not so pretty as the coloured varieties, of which *R. Gibsonii* is a good example.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Masdevallia.—The present is a suitable time to break up old plants, or to afford increased root room to the Chimera type of *Masdevallias*, which consists of such species as *M. Chimera*, *M. bella*, *M. Backhousiana*, *M. Wallisii*, *M. Carderi*, and *M. Chestertonii*. These plants should be grown in shallow, teak-wood baskets, as their flowers are produced from descending stems similar to those of a *Stanhopea*. No crocks are required for drainage, and only a moderate quantity of fibrous peat and Sphagnum-moss for a rooting medium, which must not be too lightly compressed. These *Masdevallias* are very liable to attacks of red spider, but this pest may be prevented by frequently spraying and sponging the under-sides of the leaves. Afford the plants the same atmospheric temperature as advised for *M. tovarensis*. Any plants of *Masdevallias* which require a cooler treatment, such as *M. Harryana*, *M. Lindenii*, *M. Veitchii*, *M. ignea*, &c., that have deteriorated through loss of roots and foliage, may be repotted at this season. It is not advisable to disturb strong, healthy plants of these species at present, but to pot them at the end of August or the beginning of September. All plants that are repotted should be kept well shaded from direct sunshine, and any flower-spikes that appear should be pinched off immediately they are perceptible.

Calogyne.—Plants of the warm-growing *Calogyne asperata* (Lowii) and *C. pandurata* may now be safely potted should they require more root room. *C. asperata* thrives well in a mixture of good fibrous loam, *Osmunda* fibre and Sphagnum-moss in equal parts, and plenty of small crocks. The fibre and moss should be cut up rather small and incorporated with the loam. *C. pandurata* grows well in the *Osmunda* and *Polypodium* mixture. When repotting the plant, it is not advisable to pot up more than two bulbs behind the leading growth. Give it plenty of room to grow, as the rhizome will extend itself several inches each year. The flower-spikes will soon be pushing up in the centre of the growths, therefore good supplies of water must be given until the new pseudo-bulbs are completed. The flower-spikes of the rare *Calogyne Sanderae*, which for many weeks have appeared to be in a stationary condition, will soon begin to develop their flower-buds. Keep the plant well up to the roof glass of the intermediate house, where it will not be exposed to the least sunshine. When the flower-buds advance afford the plant frequent waterings at the root.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. Ford, Pencarrow, Cornwall.

Ipomoea.—Such species as *I. hederacea* and its varieties, and *I. rubro-cœrulea*, are useful greenhouse twining plants. Seeds should be sown in heat, and the young seedlings potted into light, rich soil, keeping them for a time in a warm atmosphere. When they are repotted into their final pots a heavier soil may be used, and the potting should be done firmly.

Coleus.—Cuttings may now be taken from the plants retained from last year. Insert them in sandy soil in the propagating house, and keep them shaded until they have made roots. A good percentage of desirable varieties may be raised from seeds, but the plants which appear first are almost invariably of coarse growth and poorly marked. Hence they should be rejected.

Canna.—Plants flowering in the greenhouse should now be repotted, using a rich soil. The choice varieties may easily be increased by root division, but it is necessary that each piece of severed root-stock should possess a bud and a few roots.

Tree Ferns.—During their season of active growth, Tree Ferns are benefited by a slight increase in temperature. Even when they have attained to a large size repotting is not often necessary. Should the soil in which they are growing be exhausted, and it should not be considered advisable to use larger receptacles, much of the exhausted soil may, in the case of *Dicksonias*, be removed, and the plant repotted in the same tub; the work should be done just before the new growth commences. When grown in a warm house *Cyathea*s quickly make

tall stems. When these become too tall they may be cut off to a convenient length and be placed into pots containing a few inches of soil. Such work should be done now, and these large cuttings, as they may be termed, will quickly form roots and produce surprisingly large fronds. The lower portion of the stem may be utilised for planting on it *Davallias*, *Selaginellas* and similar plants. When Tree Ferns are actively growing abundant moisture in the atmosphere is necessary, and the fronds must not be exposed to direct sunlight. Tree Ferns growing in a conservatory or other place where the surroundings cannot be kept sufficiently moist, should have their stems frequently damped during hot, dry days.

Forced shrubs.—As soon as these have finished flowering they should be removed to a warm house to complete their growth. Pick off the old flowers and any seed vessels that may have formed and prune any plants that require it, remembering that the shoots should never be cut so severely as in the case of similar species growing out-of-doors. Afford the shrubs a liberal treatment in the matter of manuring, &c., as success or otherwise in flowering next spring will depend largely on the quality of the growth made now.

Blinds.—These should be overhauled and fixed at an early date on those houses where they are needed. The sun for a few hours in the middle of the day is very powerful, even early in this season.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Early pot vines.—After the flowering is over and the young berries are swelling freely, the vines can be forced rather harder than hitherto, as both the roots and the upper portion of the vine will be in active growth. Keep a moist atmosphere by constantly spraying all available spaces in the house, also damp the paths with liquid manure when the ventilators are closed. This will assist in keeping down red spider, and be otherwise beneficial to the foliage. The roots must be liberally fed with diluted liquid manure, alternated with some approved fertiliser, given two or three times a week. Take care not to overcrop the vines or the quality of the fruits will be impaired. Six to eight bunches of Grapes on each rod will yield an ample crop. Attend to the stopping of the laterals as often as they require it, and cut out those shoots which are not wanted. The temperature of theinery at night-time may be raised to 70°. During the daytime it may reach 85° or 90° if the top ventilators are opened a little. Close the house early in the afternoon after charging the atmosphere with moisture.

Early vines in borders.—As soon as it is determined which are the best bunches, all those not required should be removed. Thinning the berries should be commenced when they are about the size of Peas. This operation requires great care and the characteristics of each particular variety need to be studied when the bunches are thinned. Black Hamburgh, although a free-setting Grape, does not need so severe thinning as *Madresfield Court* or *Foster's Seedling*. After the bunches are thinned, the borders should receive a good dressing of well-seasoned farmyard manure, the properties from which should be thoroughly washed into the soil with tepid water.

Mid-season vines.—Attend to the disbudding of these. First remove the weak, useless growths, and when it has been determined which are the strongest and best shoots, the final thinning may be done, but sufficient shoots should be left to properly furnish the trellis with foliage. Borders that are full of healthy roots should have liberal and frequent applications of stimulating manures.

Melons.—Plants which were raised at the beginning of the year should be stopped when their shoots are about half-way up the trellis. This will encourage the development of the lateral shoots and hasten the plants into flower. Do not attempt to pollinate the flowers till three or four are open on each plant, otherwise the crop will be uneven and disappointing. Pinch the laterals below the trellis at the first joint. Those which are showing fruit may be stopped at the second leaf beyond the fruit. Make fresh sowings as often as necessary. At this time

of the year ripe fruit can be had in about 12 weeks from the time of sowing. The hot-bed, which was necessary for Melon culture at the beginning of the season, can be dispensed with.

Strawberries in pots.—The earliest plants, having passed their flowering stage, must be given more liberal treatment with regard to moisture, both at the roots and in the atmosphere. Thin out the fruits to six or eight upon a truss, and securely stake and tie each truss to prevent their stems being broken. Stakes, for this purpose are furnished every season by the prunings from outdoor fruit trees. Syringe the plants two or three times every day with tepid rain water and damp the floor of the house frequently. Close the house early in the afternoon and syringe the plants at the same time. Apply liquid or artificial manure at every alternate watering. It is a good plan to have a large batch coming on slowly in a cool house. From this batch the strongest plants may be selected when they commence to develop their flower-spikes, removing them to a warmer house as required. Before removing any plants from out-of-doors, clean all dead leaves from them, and, after laying the plants on their sides, thoroughly syringe them with a solution of soft soap and sulphur in water.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir Edmund G. Loder, Bart., Leonardslee, Sussex.

Delphinium.—Young plants raised from seed sown last season may now be planted out in the borders. Slugs are fond of the young shoots, therefore care must be taken to protect them from these pests. Seeds may be sown for raising plants to furnish successional flowers. *D. nudicaule*, sown now, will produce its rich, orange-scarlet flowers in August and September. Others that will flower by the end of the summer, if sown now, are *D. cardinale*, *D. Brunoniaum*, *D. grandiflorum*, *D. sulphureum*, and *D. formosum*. It is a good plan to plant the large-growing *Delphiniums* in a nursery or reserve garden during the first season, as those with the best flowers can be selected for planting in the permanent borders.

Pyrethrum.—These hardy border plants are valuable alike for the flower garden or for furnishing cut blooms. They should now be planted where they are intended to flower.

Pansies and Violas.—Sow the seeds in shallow boxes and place them in a frame with a little bottom heat. The seeds should be sown thinly, as the seedlings are liable to damping. As soon as they are large enough, prick out the seedlings into other boxes and afford them cold treatment. Later they should be planted in the open on well-manured ground, where they will furnish a display of flowers during the summer months. Plants that were put out in the autumn for spring flowering should be examined and have any decayed leaves removed. If birds are troublesome, sprinkle the plants with water in which a little paraffin has been placed: the sprinkling should be repeated at frequent intervals.

Wallflowers.—Any blanks should be filled with fresh plants. Take care to preserve plenty of soil about the roots in transplanting, and do this work without delay, making the soil quite firm. Any of the spring-bedding plants that have failed may also be made good from the reserve garden.

Clematis.—The plants should now be pruned and made tidy. Shorten the shoots somewhat severely, and top-dress the soil as may be necessary. Mice are very destructive to *Clematis*, and it may be necessary to place traps for these pests. Among the large-flowering varieties notable kinds are *Fairy Queen*, *Gipsy Queen*, *Ville de Lyon*, *Madame Van Houtte*, *Belle of Woking*, *Alba Magna*, *La France*, *Mrs. Hope*, and *Queen Alexandra*. The free-flowering *C. montana* and its rose-coloured variety are excellent climbing plants for a variety of purposes.

Planting shrubs.—This work should be proceeded with as soon as the conditions admit. In the case of impoverished soils, some fresh material should be afforded, such as leaf-mould, road scrapings, or cow manure. The border itself should be given a top-dressing of manure. Lilacs especially enjoy this manurial assistance, and the result is seen in the superior blooms and increased growth. Conifers may still be planted.

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Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MARCH 8—
Ann. Meet. United Hort. Ben. and Prov. Soc. at Hort. Hall, Westminster.

TUESDAY, MARCH 9—
Roy. Hort. Soc. Coms. meet. (Bulb Exh. in Hort. Hall, Westminster. Lecture at 8 p.m. by Mr. W. S. Murray, on "Bulb-growing in Holland"). British Gard. Assoc. Ex. Council meet. Hort. Club meet.

THURSDAY, MARCH 11—
British Gardeners' Association (London Branch) meet, at Carr's Restaurant, Strand. Lecture on "Insect Pests."

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—41°0'.

ACTUAL TEMPERATURES:—
LONDON.—Wednesday, March 3 (6 P.M.): Max. 33°; Min. 23°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, March 4 (10 A.M.): Bar. 29.3; Temp. 36°; Weather—Bright.

PROVINCES.—Wednesday, March 3 (6 P.M.): Max. 38° Ireland S.W.; Min. 29° Yorkshire.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—
Perennials, Border Plants, Spring-flowering Bulbs and Tubers, Azaleas, &c., at 12; Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside.

WEDNESDAY—
Herbaceous and Border Plants, Lilliums, Bulbs, and Tubers, at 12; Roses and Fruit Trees, at 1.30; Palms and Plants, at 5; Miscellaneous Bulbs, Palm Seeds, &c., at 11.30; Japanese Lilliums, at 1.30; at 67 and 68, Cheapside, E.C., by Protheroe & Morris.

It will be of interest to recall the circumstances under which the volume (see *Gardeners' Chronicle*, December 12, 1908) entitled *The Methods and Scope of Genetics* made its appearance. About a year ago the University of Cambridge received from an anonymous source an offer to endow, for the space of five years, a professorship in biology. The offer was accompanied by a suggestion that the professorship, if founded, should, in bearing the title "The Darwin Professorship," serve to commemorate Darwin's unique services to biology.

The University, whilst accepting the generous gift, decided wisely that it could not attach the name of Darwin to a professorship the endowment of which was not permanent. But it took the step most calculated to ensure this permanency by inviting Mr. Bateson to occupy the chair. Ancient custom, which finds yet an abiding place within the venerable walls of our older Universities, decrees that a newly-elected professor shall, on assuming his office, deliver before the members of the University an inaugural lecture. To a stranger coming from some distant seat of learning, such an occasion, invested with the chill decorum which reigns in academic

spheres, might seem a distasteful, almost barbarous, relic of the method of trial by ordeal. But to Professor Bateson, at home in Cambridge and known as one of the most distinguished of her men of science, the occasion had, we imagine, no such sinister import and but served him as an opportunity for informing the world in general of recent progress in the experimental study of evolution.

Bateson's ordeal was in the years which are passed, during the patient time when, alone, and heedless of the talking Darwinians, he pursued the only way of experimental enquiry into the problems of Variation and Heredity which Darwin himself had first shown to be within the range of experimental science. The volume, embodying the substance of Bateson's inaugural lecture, must, we think, convince all who read it that the new modes of research comprehended in the term "Genetics" mark the most important and fruitful departure from the conventional methods of enquiry which has occurred in recent times. It justifies the high claims put forward not so long ago by Bateson himself on behalf of the discoveries associated with the name of Mendel; and it is a splendid record of the work which we owe to Bateson and his colleagues—Mr. Punnett, Miss Saunders, Mr. Doncaster, Miss Durham—as well as to other workers, such as Mr. Hurst and Professor Biffin in this country, and de Vries, Correns, Tschermak, and other investigators in foreign lands.

The term Genetics was proposed, as our readers are aware, by Bateson himself as a more comprehensive substitute for the older descriptive phrase, "hybridisation and plant-breeding." To quote his own words used during an earlier inaugural address, namely that given at the opening of the Third Conference on Hybridisation and Plant Breeding, called by the Royal Horticultural Society in 1906:—"The study of hybridisation and plant-breeding . . . has become a developed science, destined, as we believe, not merely to add new regions to man's knowledge, but also to absorb and modify profoundly large tracts of the older sciences . . . the science itself is still nameless, and we can only describe our pursuit by cumbrous and often misleading periphrasis. To meet this difficulty I suggest . . . the term Genetics, which sufficiently indicates that our labours are devoted to the elucidation of the phenomena of heredity and variation: in other words, to the physiology of descent."

The new name was well chosen. It has stood the test of time and has passed not only into our language but into the languages of the civilised world. The new name was wanted, for it marked the introduction of a new method.

The new method was discovered by Mendel, whose work, forgotten for a time, was brought to light again by de Vries and other investigators. To no one more than to Bateson is it due that the work of Mendel has served as a model and an inspiration for modern research in Genetics.

There is no need, in this place, to describe the discoveries which Mendel made. They have been recounted with characteristic vigour by Professor Bateson and by his pupils. One aspect of Mendel's work deserves, however, more prominence than, as far as we can remember, it has yet received.

Judged by his experiments and by the theory of segregation which he built on the results of his experiments, Mendel was a genius among men. But he showed his genius most by beginning at the beginning. His predecessors had grown grey and weary in the endeavour to discover how the almost infinite complexity of one organism, the offspring, compares with the equal complexities of the parents. The task was superhuman. They failed. Mendel, recognising intuitively that the complex of characters—whose sum is the individual—is made up of a series of simple characters, fixed his gaze on those individual, simple characters. His genius manufactured common sense. By the study of the simple characters individually he showed that law and order reign in inheritance. Into the eager hands of Bateson came the Mendelian key. He and his pupils and co-workers first verified the results of Mendel's experiments and then set themselves to solve the more complex cases which, unsolved, seemed to limit the application and use of the new knowledge.

What striking success has followed upon their efforts readers of the *Evolution Reports* and of the inaugural lecture may learn. Foremost in interest from a horticultural standpoint is the discovery of the meaning of reversion. Tall Sweet Peas breed true. Of dwarf Sweet Peas both "Cupids" and "Bush" breed true. Now Cupid crossed with Bush gives Tall. The explanation is of the simplest, Cupid is tall minus something; "Bush" is tall minus something else. In other words Cupid, in sporting out of tall, did so by losing a certain factor which made for height. Bush, in arising from Tall, did so by losing another factor, which also made for height. When Cupid and Bush are mated together each supplies one of the missing links of tallness and both necessary factors for tall are thus present in the offspring, which are therefore Tall.

Similar results have been obtained by Bateson and Punnett in the case of flower-colour of Sweet Peas. Two white plants, though breeding true when selfed, may give, when crossed, purple-flowered offspring. The albinos each lack one of the two necessary factors for colour: one albino lacks one, the other the other colour factor. Coming together they supplement each other's deficiencies and colour results "by reversion." As shown by Hurst in a recent issue of this *Journal*, the facts are substantially the same in albino Orchids. The mysteries which have so long enshrouded the mode of inheritance of colour in flowers are slowly disappearing and the laws of such inheritance are discovering themselves.

When a theory admits of the replacement of vague and indefinite ideas by precise and definite conceptions—and this is what the Mendelian theory does in the case of reversion—it proves its value as an instrument of thought. Those who refuse to profit by the aid of such vindicated theories must be content to remain behind in the march of progress. Though we have devoted considerable space to the subject of reversion because of its horticultural interest, it must not be supposed that this is the only or chief matter dealt with in the pages of the volume on Genetics. A theory of the nature and inheritance of sex, based on Mendelian studies and

supported by weighty evidence, is brought forward, and evidence of the dependence of structure on chemical constitution is offered. For an account of these and other subjects of equal interest we must refer our readers to the work itself.

It is unnecessary to say that the most careful perusal of "The Method and Aims of Genetics" will repay all who are concerned with the work of hybridisation and of plant-breeding. Those, too, who are interested in the wider aspects of the science of Genetics will find much which will compel their careful thought, for Professor Bateson does not shrink from indicating that this new knowledge obtained by breeding experiments with plants and animals has bearings of the most profound importance on the welfare of the race and on the treatment of social problems.

Horticulturists, more perhaps than any others, have the right to congratulate Professor Bateson on the constant care and success with which he has ministered to the growth and education of his god-son Genetics.

ROYAL HORTICULTURAL SOCIETY.—The next meeting will be held on Tuesday, March 9. At 3 o'clock a lecture on "Tulips and the Tulip Mania" will be delivered in the lecture room by Mr. W. S. MURRAY.

HORTICULTURAL CLUB.—The next House dinner of the Club will take place on Tuesday, March 9, at 6 p.m., at the Hotel Windsor. Professor BOTTOMLEY will further discuss the question of "Soil Inoculation," in reply to Mr. CHITTENDEN's criticisms in the *Journal of the Royal Horticultural Society* based on the Wisley experiments. Mr. CHITTENDEN will be present and take part in the discussion.

THE ROYAL SOCIETY.—Among the 15 names of gentlemen nominated by the Council of the Royal Society for election to the Fellowship of the Society are those of Mr. A. D. HALL, Director of the Rothamstead Experimental Station, and Dr. A. B. RENDLE, Keeper of the Department of Botany, British Museum.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY.—The annual meeting of this Society will be held at the Horticultural Hall, Vincent Square, S.W., on Monday, March 8, at 8 p.m.

THE NATIONAL HORTICULTURAL SOCIETY OF FRANCE has recently held its annual election of officers and committees. We understand that Mr. HARMAN PAYNE has the unique distinction for a foreigner of being appointed a member of the Floral Committee of the society's Chrysanthemum section.

WEED-KILLERS.—Under the title "Weed-Killers and their Application," Mr. F. PILKINGTON SERGEANT publishes, in the *Pharmaceutical Journal and Pharmacist* for February 20, the first of a series of articles on "Horticultural Preparations." Mr. SERGEANT classifies the weed-killers in general use into the highly poisonous arsenical compounds and the so-called non-poisonous compounds. He gives recipes for the preparation of the more serviceable arsenical weed-killers from which we give the following details:—Arsenious oxide, 1 lb.; sodium hydroxide, 1 lb.; water, six pints. The mixture is boiled till clear, diluted to one gallon, and then to it is added any suitable aniline dye to serve as a warning colour to the user. This concentrated solution is diluted, before use, with 98 per cent. of water. A gallon

of the diluted liquid suffices for four square yards of path. It is recommended that (1) the paths should be sprayed with the preparation during dry weather, preferably on a warm, sunny afternoon; (2) during the spraying, the borders of the paths should be protected; (3) the paths so treated should be swept on the following morning in order to avoid disastrous consequences to birds, &c. This precaution has the additional advantage that thereby the worms, which have died on the surface, are removed. Of the so-called non-poisonous weed-killers, those in most frequent use include crude hydrochloric acid diluted with 40 parts of water; 4 per cent. of sulphuric acid; and 1 per cent. sodium hydroxide. These substances are, of course, poisonous, and should not be used by anyone not conversant with their properties. Rock salt and lime powdered and sprinkled on the paths are effective, but have the drawback of disfiguring the paths temporarily. Among other materials mentioned are lime and sulphur in the proportions of 8 ounces sulphur, 8 ounces lime, and one gallon of water; the mixture to stand for 24 hours and to be diluted with one gallon of water. This mixture is very effective on cinder paths, but is apt to discolour porous tiles and paths dressed with red-sandstone gravel. As will be seen from the foregoing, Mr. SERGEANT'S article is very valuable, and may be commended to all who have the care of considerable areas of paths. It insists, very properly, on the danger of the indiscriminate use of the highly poisonous arsenical compounds. At the risk of repetition, we would point out that those desirous of using any of these poisonous substances should first inform themselves of the properties of the substances and of the precaution to be adopted in their use.

BOARD OF AGRICULTURE LEAFLETS.—These are now issued in sectional form, the pamphlets relating to kindred subjects being bound together in separate volumes. That on "Fungi Injurious to Farm and Garden Crops" contains a very complete description of the American Gooseberry-mildew disease, and is illustrated with coloured pictures showing the disease in its various stages. Others of the greatest use to the gardener are those entitled as follows:—"Fungi Injurious to Fruit and Fruit Trees," "Insect and Other Pests Injurious to Fruit Trees and Bushes," "Insect and Other Pests Injurious to Farm and Garden Crops," "Forest Trees and Their Diseases," "Manures and Feeding Stuffs," and "Cultivation of Fruit Trees and Farm and Garden Crops." The cost of each volume is one penny, and they can be had post free from the Secretary, Board of Agriculture and Fisheries, 4, Whitehall Place, London, S.W.

EXHIBITION OF BULBS AT HILLEGOM, HOLLAND.—In April next an open-ground flower show will be held at Hillegom, Holland. This kind of show was a great success last year at Sassenheim. The principal idea is to show how to obtain the best results from planting Dutch bulbs in small and large gardens, in borders, terraces, and lawns, and to make the most effective combinations in beds and groups, combined with evergreen and early-flowering shrubs. The show ground occupies more than three acres and is divided into two parts. One part will be a French garden and the other part an old Dutch garden. In the centre of the old Dutch garden is the town hall, an interesting, old-fashioned building, just opposite which is the church situated on a hill near a small brook (old Dutch "gom"—hence the name Hillegom). The church was erected in the fifteenth or sixteenth century. A draining mill which can be seen from the show ground is used to pump the water from the low land into the leading canal. There is a beauti-

ful view from the steps of the town hall over the bulb fields in this drained land into the low-lying, green, peasant lands of the old Haarlem Lake. The show will be divided into a permanent exhibition in the open, and temporary shows in large tents—the latter being intended for cut flowers and forced plants. Cultivators of Rhododendrons, Lilacs, and clipped plants (Forms), &c., will also exhibit their best products, so that the show will be interesting for florists and nurserymen as well as for amateurs. The opening date is fixed for April 8, and the exhibition will close at the end of the first week in May. The great international exhibition of bulbs will be held next year at Haarlem.

DISEASE RESISTANT COFFEE.—For many years past the existence of *Coffea arabica* has been menaced by the disease, due to the fungus, *Hemileia vastatrix*. No effective cure or prevention of the disease has as yet been discovered, and, mainly for this reason, the Coffee plantations of Ceylon have almost totally given place to Tea culture, whilst plantations of Java and Madagascar yield less produce each year. Liberian Coffee (*Coffea liberica*) is better able to withstand the malady, but its market value is less than that of *C. arabica*, and, therefore, the planters have not adopted it to any great extent. Hybrids of the two species have so far failed to yield any useful results. A new species, discovered growing wild on the shores of the Oubanghi, Central Africa, by M. DYBOWSKI, and named *C. congensis*, which has been grown since 1903 in the botanical garden at Ivoloïna, has so far remained free from disease. Its market value is stated to be fully equal to that of the best qualities of Arabian Coffee. Whilst the present crop of *C. congensis* has not suffered from the disease, *C. arabica*, planted at the same time, has been entirely destroyed.

FRUITS FROM CAPE COLONY.—The Government of this colony has instituted a scheme for the inspection of fruits intended for export, and those consignments that satisfy the requirements are branded "Passed by Government Inspector." The Trades Commissioner for the Cape of Good Hope has been informed from Cape Town that shippers of fruit who have not agreed to the conditions of the Government inspection scheme are branding their boxes with the words "Extra Selected" and "Selected," which are the terms used to indicate the grades of fruit shipped under that scheme. The Trades Commissioner desires to point out that any Cape fruit so branded upon which do not also appear the Government inspector's stamp with the Arms of the Government of the Cape of Good Hope and the words "Passed by Government Inspector" is not shipped under Government inspection.

THE "RETROSPECTIVE" CHRYSANTHEMUM SHOW IN PARIS.—This exhibition was a great success, and the credit of its organisation must be accorded to M. GEORGE GIBault, the able and learned librarian of the National Horticultural Society of France, assisted by his deputy, M. LE TEXNIER, and several other members of the society. As this was the first retrospective flower show ever held, it has been asked to what will the next one be devoted. Another dealing with some other flower is sure to follow. In the meantime we have heard the question asked: A retrospective Chrysanthemum show cannot be held in England? As a souvenir of the show, the National Horticultural Society of France decided to strike a special commemorative plaque d'honneur to be awarded to the two principal exhibitors, M. RENÉ MOMMÉJA and Mr. HARMAN PAYNE.

"LE CHRYSANTHEME."—This interesting publication, the official organ of the French National Chrysanthemum Society, has reached its 110th number. It contains an article on "Le Chrysanthème, Fleur du Japon" (illustrated) by M. MOMMÉJA, notes on the Chrysanthemum "retrospective" show at Paris by M. NONIN, an account of the Paris show (illustrated) by M. G. CLEMENT, a continuation of the report of the congress at Tours, and other matter.

HORTICULTURE AT THE WHITE CITY.—Mr. W. H. ADSETT has been appointed hon. secretary to the horticultural and agricultural section of the Imperial International Exhibition to be held at Shepherd's Bush. It is intended to hold two international flower shows during the season. Several of the leading continental firms are arranging to provide specimens of their bedding-out, and it is hoped to secure an adequate British representation. Full details may be forwarded by the hon. secretary, Administrative Offices, London, W.

HORTICULTURAL SHOW AT SOUTHPORT.—The Royal Lancashire Agricultural Society will again hold a horticultural exhibition, owing to the success which attended the show at Manchester last year. The exhibition will be held at Southport, and Mr. PETER BLAIR has been appointed manager.

PUBLICATIONS RECEIVED.—*Kew Bulletin of Miscellaneous Information.* (No. 1, 1909). (London: Wyman & Sons, Ltd.) Price 2d.—*The Queensland Agricultural Journal.* (January). (Brisbane: Anthony J. Cumming, Acting Government Printer).—*The Transvaal Agricultural Journal.* (January). (Pretoria: Government Printing and Stationery Office).—*The Darwin-Wallace Celebration,* held on Thursday, July 1, 1908, by the Linnean Society of London. (London: The Linnean Society).—*The Fertilisation of Tea,* by George A. Cowie, M.A., B.Sc. (London: Tropical Life Publishing Department).—*Beautiful Flowers and How to Grow Them* (Part VIII.), by Horace J. and Walter P. Wright. (London: T. C. and E. C. Jack.) Price 1s.—*The Orchid Stud-Book,* by Robert Allen Rolfe, A.L.S., and Charles Chamberlain Hurst, F.L.S. (Kew: Frank Leslie & Co., 12, Lawn Crescent).—*One and All Gardening, 1909,* edited by Edward Owen Greening. (London: Agricultural and Horticultural Association). Price 2d.—*Agricultural Experiment Station, University of Illinois.* Circular No. 123: The Status of Soil Fertility Investigations, Circular No. 124: Chemical Principles of Soil Fertility, by Cyril G. Hopkins. Bulletin No. 129: Market Classes and Grades of Sheep, by W. C. Coffey. U.S.A.: Urbana, Illinois).—*The American Apple Orchard,* by F. A. Waugh. (London: Kegan Paul, Trench Trubner & Co., Ltd.) Price 5s. net.—*Eliza Brightwen.* The Life and Thoughts of a Naturalist, edited by W. H. Chesson, with an Introduction by Edmund Gosse. (London: T. Fisher Unwin, Adelphi Terrace).—*Botanical Magazine.* (March). (London: Lovell Reeve & Co., Ltd., 6, Henrietta Street, Covent Garden, W.C.).—*Chrysanthemums for Garden and Greenhouse,* by D. B. Crane. (Second Edition). (London: W. H. & L. Collingridge, 148 & 149, Aldersgate Street, E.C.).—*Journal of Botany,* edited by James Britten, F.L.S. (London: West, Newman & Co., 54, Hatton Garden, E.C.).

VEGETABLES.

SCARCITY OF GOOD WINTER VEGETABLES.

OWING to the severe frosts the green crops have been much damaged, and prices for all green vegetables are, in consequence, much above the average. Leeks appear to have gone off badly, doubtless owing to the mild season of last year causing the growth to be soft. I do not consider sufficient use is

made of such vegetables as Celeriac. This should be sown early, like Celery, and when lifted, packed in soil or sand in a cold store that is just frost-proof. Celeriac is a delicious vegetable in season from November to the end of April, and it is not only valuable as a cooked vegetable, but also, like Beetroot, for salads. Frequently, in a severe winter, Celery is badly injured by the cold, and then Celeriac is doubly valuable. Chicory is not often used as a green vegetable, but it is by no means an inferior one. It should be forced so that the top growth is compact and somewhat like Seakale before it opens out. Chicory grows so readily, that it is worth a trial. The Witloof or Brussels variety gives the largest crown growths, but too much heat should not be employed in forcing, otherwise the top growth is weakened. Cooked as is Seakale, and served with melted butter, it is an excellent winter vegetable, and may be had at a small cost from December to May. The Cardoon is worthy of more attention as a winter green vegetable. Although, to obtain extra fine heads, special culture is necessary, good Cardoons may be had at a small cost by sowing the seed in small pots in frames and planting the seedlings out in trenches, afterwards blanching and finally lifting them in November, or at the approach of frost. They will remain good for a considerable time if lifted carefully and placed where frost cannot injure them. Excellent roots may be had by sowing in the open in trenches in light soil, or on the flat in the case of heavy land, late in April or early in May. A distance of 18 inches from plant to plant and 3 feet between the rows will allow of the growth of stalks sufficiently long for any purpose, and these I find are more hardy than the larger ones started under glass. The Cardoon is a gross feeder and requires plenty of moisture. I recently saw French-grown Cardoons in Covent Garden Market, and these, at wholesale price, realised 10s. per dozen. Endive, such as the large, round-leaved Batavian, grown in quantity for winter supplies, makes a splendid green vegetable, and though by no means hardy, with timely shelter or lifting into a cold house, will give variety. For cooking purposes it should not be blanched, but grown as hardy as possible, and it is surprising what a lot of good edible material a well-grown plant contains.

For years I have advocated growing the distinct varieties of Winter Cabbage. These I have always found hardy, as having a short leg or stem they better escape damage by frost. Such kinds as Christmas Drumhead, St. John's Day and Little Gem are most valuable in seasons like this. They are somewhat like a small Drumhead Cabbage, the hearts being remarkably firm and of excellent edible quality. Those sown in the summer for winter use are most valuable, because they have few waste leaves and the hearts are much protected.

Spinach Beet, sown on a well-drained border in August, will give a good supply of green leafage, and though liable to be damaged by frost, I have found a little loose litter sufficient to protect them and to preserve the winter supply. The plant is much hardier than many people imagine.

Roots enter largely into the winter supply, and Scorzonera and Salsafy are both valuable. Scorzonera is not grown so extensively as Salsafy, but both are useful winter roots, as they furnish a supply from November to April. Their cultural requirements are simple, and they may be grown in a not over-rich soil. The yellow-fleshed Turnip is of greater value than the white in such seasons as this, being more solid and a better keeper. As regards Potatoes, those who have room for the Black Congo and the Fir Apple varieties would find them a welcome addition at this season, as they give variety. The small but delicious Stachys tuberifera or Japanese Artichoke is excellent fried in butter and served on toast. The White Artichoke should not be overlooked, being a good winter vegetable. *G. Wythes.*

NELUMBium SPECIOSUM VAR. OSIRIS.

(See Supplementary Illustration.)

THIS very beautiful variety of the Lotus family flowered in Gunnersbury House Gardens during last summer. I had previously cultivated several varieties of *Nelumbium speciosum*, but the opportunity was taken to make a fresh trial with some of the best. Upon the previous occasion I attempted to acclimatise them in a heated tank out-of-doors during the summer months. I tried this with all possible care for three seasons, but the rhizomes gradually became weaker and weaker, and I had to give up the attempt. The plants produced strong, healthy foliage, but rarely a flower of good quality. Last year the plants were cultivated under glass, and the results were much more satisfactory. The varieties of *N. speciosum* are truly noble plants, both in foliage and in flower, being quite a feature during the season. There are, in all, some 15 varieties of *N. speciosum* described in the French and German catalogues. These vary in colour from pure white to rose and crimson shades, some having double and some single flowers. The best six, in my opinion, are *N. speciosum* var. *Osiris* (the illustration shows the flower natural size); *N. s. album* (pure white); *N. s. album plenum*; *N. s. Shiroman*; *N. s. japonicum roseum* (rosy-lilac with white base); *N. s. Pekinense rubrum*, perhaps the finest red; and *N. s. roseum plenum*, with large double, deep pink flowers.

Our plants are grown in tubs of from 24 to 28 inches in diameter and about 10 inches in depth. The tubs are first crocked as for any other plant and then a layer of turfy loam is put on, which, with a thin layer of finer soil, some under and some upon the rhizomes, is all that is needed. The finer soil might contain with advantage a small proportion of leaf-mould and some coarse sand or shingle. The plants were cultivated in a house heated much the same as a stove during the season of growth, but a little more air was admitted when the foliage had matured. By having a hole at the side of the base of each tub the water could be changed occasionally; afterwards the tubs were filled again to the rims.

Each flower will last from four to six days, but the buds are also very beautiful. A free use of the syringe is sufficient to prevent red spider, which appears to be the only insect-pest to trouble them. Only three rhizomes were placed in each tub and this number is ample. So far, they have not been examined since they were stored in a temperate house last autumn, but I think I shall take them out and replant them before they start into growth.

During a holiday last summer I saw a pool of the type (*N. speciosum*) luxuriating in a sunny position in the garden of one of the largest hotels at Lugano. This was early in August, and the flowers were then coming on; I counted some fifteen or sixteen that in a few days would make a fine display. I have seen them out-of-doors at the Villa Carlotta on the Lake of Como. Last year also I saw cut flowers of the same (*N. speciosum*) in the florists' shops at St. Moritz. These had evidently been cut in the bud stage, and by so doing it is possible to keep the flowers fresh much longer. The supply of the cut flowers is from Italy, as I was informed by Mr. Leopold de Rothschild, who takes a great interest in these plants.

The essential is a very warm and sunny position, such as prevailed where I saw them growing out-of-doors. In this country we can hardly expect to succeed with *Nelumbiums* except in the most favoured conditions, or under the protection of glass.

First-class Certificates have been awarded by the Royal Horticultural Society to *N. s. album plenum* (shown as *N. s. Shiroman*), August 27, 1901, and *N. s. Osiris*, July 21, 1908. In each case flowers were exhibited from these gardens. *Jas. Hudson, Gunnersbury House Gardens, Middlesex.*

FORESTRY.

TREATMENT OF PLANTATIONS WITHOUT REGULAR THINNING.

We have from time to time published notes from our correspondent Capt. Henry Rogers on this subject. The system of treating plantations without regular thinning was adopted by him in 1857, and in 1894 we published a note on the subject. Since then Mr. Rogers has kept us informed of the results, contributions on the subject having appeared in our issues of June 17, 1905, p. 386, and December 8, 1906, p. 388.

Mr. Rogers now writes:—"The last cuts, 20 feet wide leaving 80 feet of trees unthinned, were made in May, 1895. These cuts were planted with three rows of trees, 6 feet between each row. The centre row was formed of Silver Fir, there being a distance of 12 feet between

high. I intend, ultimately, to have the Larch which remain among the Douglas Fir cut out, and I hope that the Firs will develop without side branches. This season we have planted 50 trees of the Douglas Fir to fill vacancies caused by the death of trees planted in previous years. The young Douglas Fir trees have a tendency to form more than one head. We are careful to remove these in the month of May."

NOTES FROM A "FRENCH" GARDEN.

Work in the French garden has been greatly interfered with by the cold weather, but the making of the hot-beds can be proceeded with in frosty weather, especially if all the materials have been prepared beforehand. During cold mornings the manure should be brought into the frame ground and placed about the frame to keep up the temperature therein. It is

heat should be too great and destroy their germinating powers.

Cauliflowers sown early in February are growing well. They must receive abundance of ventilation whenever the weather permits, for every effort must be made to have them sturdy. We do not intend to plant Melons under cloches this year, as the results are not always satisfactory. Instead we shall use the bell-glasses for a crop of Tomatos, which will be planted early in May. The seeds have already been sown on a mild bed, originally prepared for our first sowing of Lettuces in January. The manure of this bed has been turned over, and some fresh material added. We have sown 50 seeds under each cloche in a rich loam. The seedlings will be pricked off in the middle of March in frames that have previously housed a batch of Lettuces, which will have been harvested by that time.

Melons to succeed Passion Lettuce grown in cold frames should now be raised from seeds. The frames will be at liberty for the



FIG. 68.—VIEW OF THE CYCLAMENS AT READING. (See p. 149.)

each tree; the other two rows were Beech, at 6 feet apart. In May, 1905, I thinned the Larch trees in the thick parts to 8 feet apart, felling any that had scars on them in case they should be affected with the Larch disease. On November 20 I planted 400 Douglas Fir, that were 2 feet to 2½ feet high. There was some delay in receiving the trees, caused in their transit, and the roots suffered, resulting in the death of some of the trees. In 1887, when this plantation was 30 years old, a Douglas Fir was planted among old Oak and young Larch trees. This Fir grew up amongst the other trees without any large branches, and became, in 1907, as high and as large as the Larch near it which had been planted 30 years before. This induced me to plant Douglas Fir at distances of 6 feet from any other tree and 6 feet from each other. In November, 1906, I planted 493 trees of Douglas Fir from 2 feet to 2½ feet

not advisable to allow the mats to remain on the lights after 8.30 a.m., even though frost is present, because the plants would become drawn in the dark. The crop of Lettuces under the lights are growing well; they should have any of the outer decayed leaves removed as soon as opportunity permits.

We have sown our first batch of Endive on a very hot bed, composed of three-quarters fresh manure and one quarter old. We generally sow a pinch of seeds when the heat has reached the top of the bed in order to test if the conditions are suitable. If the seeds germinate well within 48 hours, the conditions are favourable for sowing, and the seed should be scattered very thinly. The manure around the frames outside must be changed every week. The mats are kept over the lights until the seeds germinate. Some do not place the seeds below the soil, but on the surface, in case the

Melons early in April. They are set on a bed of manure 2 feet high after treading, and sufficient is placed to accommodate one light. The manure is made level, and mats are placed around the beds to shelter the frames from the wind. A layer of soil is placed in the frames, and the seeds are sown 1 inch apart either way in the centre of the frame. The glass is covered with mats until the seeds germinate. As soon as the seedlings appear they should receive as much light as possible, and, in the middle of the day, whatever the weather may be, a little ventilation on the side opposite to that from which the wind is blowing. This is necessary to change the atmosphere in the frame as well as to harden the young plants.

Next week we shall sow our main batch of early Celery, using the variety Chemin. For a winter crop we use Green of Paris. *P. Aquaticus.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

THE R.H.S. DAFFODIL CLASSIFICATION.—I would like to make a few remarks on Mr. Engleheart's article on the R.H.S. Daffodil Classification which appeared in your issue of February 20 last. First, his opening paragraph about the constitution and procedure of the special committee is misleading. I have a copy of the minute of the Council before me, and the name of Mr. P. R. Barr was not included. Probably, remembering the services of Mr. W. Barr at the time of the last Daffodil Conference, they chose him instead of his brother, as both of them are recognised by all Daffodil people as high authorities. Secondly, Mr. Engleheart ignores that part of the introductory remarks appended to the classification, in which it is distinctly stated, "If the principle involved in the present list should find acceptance, it is intended in a future edition not only to correct and modify the arrangement according to further experience, but also to indicate which varieties are considered to be self-yellow and self-white, large and small trumpets, &c., &c." This surely fully answers his remarks, and also those of Mr. Bliss (see p. 139) about Division 7, and the making of a special class for pure Poeticus varieties. Every division can be subdivided very easily, almost to any extent. To me the practical and, of necessity, debatable point will be how far such subdivision is to be carried. Thirdly, I cannot follow Mr. Engleheart in his comparison of the present classification of the R.H.S. with the botanical one of Mr. Baker, and the semi-botanical one of Mr. Peter Barr. He might as well compare the purely florist classification of Tulips with that of the same Mr. Baker published in the *Journal of the Linnean Society* (vol. xiv., p. 275). I would rather compare it with the colour classification of the Sweet Pea Society. It does not profess to be in any way natural or botanical, and so I think it will avoid many possible pitfalls. "It is for garden and show purposes." Personally, I regard it as one-seventh garden and six-sevenths show. Fourthly, some such authorised list of flowers was badly wanted. There is no recognised standard or classification in existence; and I would ask Mr. Bliss and Mr. Engleheart whether Peach should be shown as a "Medio" or a "Parvi," or whether Mr. Goodwin's Arnold Rogers is a "Magni" or a "Medio," and then, when they have answered according to their lights, why the exact opposite should not be held by myself? There is no National Daffodil Society, and I hold that the R.H.S. ought to take the lead, and that, in doing as it has done, it has done a great service to those who exhibit flowers. The classification is not complete, and it will take time to arrive at anything approaching perfection. Rome was not built in a day; neither can anyone conversant with the difficulties of pigeon-holing the huge number of old and new Daffodils expect it to be done at once. The issuing of some list which, to give it its lowest value, may be taken as a basis on which to build up a more perfect scheme is in itself the best thing that could have happened. Had the R.H.S. waited until a more complete list had been made, it is highly probable that Daffodil shows might be a thing of the past before it ever saw light. *Joseph Jacob.*

VEGETABLE PRIZES AT SHREWSBURY.—The esteemed secretaries are evidently under a misapprehension as to the rules of the seed trade in relation to the selections and names adopted by a particular firm. They conclude that any seedsman will have in stock any of the seeds named in the Schedule Classes 109 to 126, but I do not know of any seedsman in the kingdom other than the firms named in the schedule who has them. If I apply to my seedsman for seed, from such firms as named, of "Moneymaker" Tomato or of "New Standard" Carrot, he will tell me that he does not stock varieties under those names, but that he has superior sorts with other names. If I ask him to obtain from the said firms the varieties as named in the schedule he will probably decline to do business in that way. But if he does so, it is obvious that he must obtain the seeds from these firms, and whether I get them directly or indirectly

through my seedsman, the principle of compulsion is there plainly enough, and the new conditions of the society are essentially violated. Mr. E. Murrell, in his classes, makes no conditions. His offers are most honourable. Will Messrs. Pritchard & Sons and Mr. John Wilson say whether "Selected Champion Onion," and "Excelsior" are other than selected globular forms of Ailsa Craig? I do not know whether all of Messrs. Baker's Sweet Peas are in commerce. As to the Eckford Peas, they are all in commerce. *Vegetable.*

—Instead of being censured and criticised for the alterations in this schedule, which I consider undoubted improvements, the committee and hon. secretaries are to be congratulated. By their action they have come into line with the Royal Horticultural Society and the Royal Caledonian Horticultural Society. I have often wondered why they did not do it years ago! *William Cuthbertson.*

—I am well aware, from personal experience of the inner workings of a horticultural society, that flower shows often owe much to the trade. The officials are usually ready to acknowledge that help, whether it be in the form of subscriptions or exhibits. Until enlightened by Mr. Sydenham's letter in your last issue, I was of the opinion that the object of the trade was to secure a good advertisement for their wares, but it seems that they are actuated by the benevolent object of "encouraging gardeners to do their best in friendly competition!" *A. C. Bartlett.*

STOKING GARDEN FURNACES (see pp. 379, 417, vol. xlv.).—By smothering a fire with coal, a great quantity of the combustible gases escape without being consumed. On one occasion I was stoking a crucifix boiler, and the damper had been shut rather close, so that the coal had not burnt through. When I broke the coal which had coated together on the top, the flame caused an explosion of gas, which had accumulated in the top chamber of the boiler, and I was blown against the stoke-hole wall. In stoking, much depends upon the kind of fuel that is used. Small coal, such as is employed in the North of England, is the most difficult to regulate. Anthracite coal gives no trouble if there is a good draught in the furnace, but when all the advantages are considered, coke is one of the most satisfactory fuels. I agree with Mr. Jenkins (p. 417, December 12, 1908), that different boilers require different treatment, but neither Mr. Jenkins nor the writer (on p. 379) mentions the most essential points in stoking. The heating capacity of the boiler must be first considered. Some years ago trials were made to ascertain the number of feet of 4-inch pipes a boiler was capable of heating, but the trials were made in comparatively warm weather, and the flues of the boiler were quite clean. The same boiler would not heat on a frosty night more than half the cubic space that the trial credited it with, especially if the flues, tubes, &c., were not clean. Herein lies the great advantage of the upright tubular boiler, for there is no chance of the tubes becoming coated with soot. Notwithstanding this, I do not agree with Mr. Jenkins as to their superiority over horizontal boilers. I have stoked two of the largest upright tubular boilers made by the Thames Bank Iron Company. They required a large amount of fuel, and were eventually replaced by horizontal, terminal saddle boilers, with the result that there was a great saving of fuel. The heating power of these upright "tubulars" was very great. On one frosty morning I started big fires under them at about 4 a.m., and after attending to the other fires I found two boiling fountains; the 2-inch safety pipes through the roof were throwing out boiling water at a tremendous rate. In stoking, the first thing is to keep all parts of the boiler thoroughly clean, and if this is entrusted to an ordinary labourer or stoker, it is a matter of chance whether it is done properly. An inexperienced man was sent to clean out a boiler and the flues, and after he had finished I cleared out nearly as much soot and ashes from the side flues as he had taken out. The great secret of an efficient boiler is in the setting. The flowpipe should have a good rise and a sufficient fall for the return, so as to set up a pressure of cold water at the bottom of the boiler. The pipes through the houses need have

no more rise than is sufficient to prevent an accumulation of air at the joints. When the water in a boiler or pipes begins to "kick" or "jump," it is a sign of faulty arrangement. In regard to "feeding" a furnace, I was taught, in the case of a saddle boiler, to push the burning fuel to the back and to fill up the front, but sufficient fuel should be left on the bars to cause combustion. If treated as recommended at p. 379, there would be a danger of getting an air space at the back, and this should be avoided at both the front and the back. The most economical method of stoking is to well fill the furnace and leave the damper out to the fullest extent until the fuel has burnt bright, then shut off the draught below and put the damper in, leaving sufficient space only for the smoke to escape. A most successful cultivator once said that by doing his own stoking he saved more than he could make by giving his attention to the plants. Now that fuel is so much dearer, it is of great importance that stoking should be done economically. *A. H.*

TÉLEMLY SWEET PEA FOR WINTER FLOWERING.—These charming flowers are useful for decorative purposes at a time of the year when other flowers are scarce. The seeds should be sown in pots early in September, and the plants placed in a fairly cool greenhouse before the advent of frost. They will yield a wealth of flowers from the end of January onwards. Care must be taken not to give them too much artificial warmth, or the dropping of the flower-buds before expanding will be the result. *L. E. Walker, The Gardens, Barton Hall, Bury St. Edmunds.*

EUPHORBIA JACQUINIÆFLORA.—The excellent plants of this species staged by Mr. Prime at the meeting of the Royal Horticultural Society on January 26, were admired greatly by all who saw them. The plants were not only remarkable for their brilliant inflorescences, but also for the vigour and wealth of the foliage which was present on the stems down to the soil—ample testimony that they had received proper cultural treatment. The cuttings from which the plants were raised were not inserted until June, thus proving that a long succession of flowering may be maintained by successional propagation. This is, of course, widely practised in the case of *E. pulcherrima*, with this difference, that while late propagation of the latter species invariably means loss of stature and, usually, size of the coloured bracts, the plants of the subject of our note were not affected in these respects. Those who cultivate this plant for winter blooming cannot too often be reminded that no class of soil, nor admixture of soils, can possibly counteract the mischief caused by over-watering. What constitutes over-watering will, of course, depend upon the subject itself, but the soil in which sparse-rooting laticiferous plants such as this *Euphorbia*, are grown, should always be on the dry rather than the moist side. One frequently notices peat soil used for this plant, but a far greater degree of vigour may be secured by the use of a rather strong loam, freely interspersed with finely-pulverised old plaster. When such has not been available I have used with much success burnt clay finely broken up, adding sand freely and a little leaf-mould. Firm potting is necessary, and so is ample provision for drainage. So impatient are these shrubby *Euphorbias* of much root moisture that applications twice weekly during the growing season will often suffice. The best cuttings for propagation are obtained from planted-out specimens that have had no moisture at the roots for a month or six weeks at least. Where pot-grown plants have to be relied upon for cuttings, a similar period of rest in a dry, warm house should be afforded, the plants being cut back in each case below the region of flowering. Much the best cuttings are those taken from the leaf axils, cutting them out with a heel attached, by means of a sharp knife, plunging the bleeding base into dry silver sand, and inserting them forthwith. Cuttings produced from the tops of branches, or young shoots, and, in particular, such as are produced in great heat and moisture, often damp off quickly. Sand, loam, and finely-powdered brick-rubble in equal parts is a suitable mixture for the cuttings which, if inserted under a bell-glass and placed in a bottom heat of 75°, will form roots within a month. *E. H. J.*

APPLE SCAB (see p. 123).—Our trees have been sprayed for several years, and people remark how clean they appear. The amount of "scab" on the fruits is reduced the first year after spraying, and this pest can eventually be got rid of altogether if the treatment is continued. I advise the spraying to be done in November or December, and again in February, using an alkali wash. The spray should be fine and thoroughly applied; a fine sprayer attached to a length of hose is the best means of securing an even distribution of the fluid. It will need one man or a boy to work the pump whilst another man manipulates the hose. In this manner a large number of trees can be treated in a few days. *W. A. Cook, Leonardslee Gardens.*

A WARNING TO ROSE BUYERS.—On the 24th ult. at Tywyford, Berkshire, there were three men hawking pot plants and Rose trees. Being a rosarian, I looked at the trees, all named, tied, and the roots nicely packed. Seeing so many labels, I wondered what varieties they had; amongst the many names I saw John Hopper, Crimson Rambler, Dorothy Perkins, Gloire de Dijon, Marechal Niel, and many other well-known Rose names. On examination they were, without a doubt, all "Rosa arvensis," one of the many Dog Roses. Surely a stop should be put to such dishonest hawking! *Elisha J. Hicks.*

POLYSTICHUM ACULEATUM GRACILLIMUM DRUERYI.—In the note accompanying the figure of this Fern (see p. 98), we are vouchsafed the interesting information that another plant, from the same sowing and the same parent, is also possessed of no fewer than four names, i.e., *Polystichum aculeatum pulcherrimum Drueryi*, three being the same as in the sister plant. The fact that both plants received a First-class Certificate from the Royal Horticultural Society brings us to the pertinent question what the Floral Committee was thinking of when it allowed this violation of Article 29 of the Vienna Code of International Rules of Botanical Nomenclature. We are further informed that a third plant, distinct from its two sisters, remains to be exhibited, and it is not without some curiosity that we look forward to its appellation. We might also ask by what process of reasoning a sport can be said to revert to an allied species, a feat performed—we are assured—by several plants from the same batch? *Tyro.*

LAW NOTES.

ACTION FOR WAGES.

JOHN LOCK, gardener, recently sued Mrs. W. H. Bright, in the Bath County Court, for £4 8s. wages, alleged to be due to him. Defendant paid the sum of £2 4s. into Court, but denied liability. Plaintiff declared that he was employed by Mrs. Bright as a gardener. He stayed there for about 16 months, when his employer dismissed him, paying him a week's wages in lieu of notice. In the absence of any agreement he claimed he was entitled to a month's notice or a month's salary in lieu of notice. Lock admitted that in addition to his gardening work he looked after a couple of cows and did a little work in the house. He was engaged as a gardener, however, and was always called "Gardener." His Honour held that a gardener was entitled to a month's notice, and gave judgment for plaintiff. Mr. Long applied for leave to appeal, but his Honour refused, remarking that he did not think a poor man ought to be put to the expense of providing litigation in the House of Lords.

TRADE NAME DISPUTE.

THE action brought by Messrs. Alexander Dickson & Sons, Ltd., Royal Irish Nurseries, Newtownards, County Down, seedsmen, nurserymen, and florists, claiming an injunction to restrain the defendants, Alexander Dickson, Joseph Dickson, and Alexander Dickson, jun., from selling any Roses or seeds not grown or propagated by the plaintiffs as "Dickson's," or from carrying on the business of nurserymen or seedsmen under the name of "Alexander Dickson & Sons" or "Alex. Dickson & Sons," has been finally settled by the Court of Appeal.

The Lord Chancellor, in giving judgment, said that the plaintiffs for over half a century traded under the name of Alex. Dickson & Sons. They carried on business as horticulturists, principally in Newtownards, but also at Ledbury, in Herefordshire, and they had a seed business in Royal Avenue, Belfast. On December 5, 1900, they were incorporated under the name of Alex. Dickson & Sons, Ltd. In 1901 they opened a shop in Dawson Street, Dublin, and in 1906 they bought a tract of 17 acres at Blackrock and established a nursery there. They had a valuable trade name. The defendant came to Dublin about 1875, and he opened a shop in Capel Street some 12 years ago under the name of the Ashbourne Agricultural Company, and he also put the name "Alex. Dickson" on the sign-board. He carried on the seed business, and did not raise or grow Roses or carry on horticultural business. After the plaintiffs opened the shop in Dawson Street it occurred to the defendant that it would be desirable to go into the nursery business in order to compete with his new Dublin rivals, and accordingly in 1905 he bought for £1,000 the site of a nursery at Woodlawn, Dundrum, which he subsequently called "The Home of the Rose." All this was perfectly legitimate; but in February, 1907, there was a tender for seeds advertised by the Department of Agriculture, and plaintiffs and defendant both competed for it. The plaintiffs got the contract, and immediately the defendant advertised himself as Alex. Dickson & Sons, Woodlawn Nurseries, Dundrum. Thus the defendant literally adopted the old and valued trade name of the plaintiffs expressly for the same business which had made the name famous, and the question which the Court had to consider was whether this act was lawful. The Master of the Rolls had granted an injunction against its use. Upon the whole case, he was of opinion that the judgment of the Master of the Rolls was right, and that the appeal must be dismissed, the costs to be paid by the appellants.

Lord Justice FitzGibbon and Lord Justice Holmes concurred.

Accordingly the appeal was dismissed with costs, but the form of the injunction was altered restraining the defendant from carrying on the business of nurseryman or seedsman either in the name of Alexander Dickson & Sons or Alex. Dickson & Sons, or in any name or any manner so as to mislead or deceive the public.

NEW INVENTIONS.

A POTATO PLANTER.

THIS contrivance is used for making holes in the ground when planting Potatoes and bulbs. At one end is a pair of steel jaws, and each jaw is connected with a separate handle. When they are closed and the handles apart, a wedge is formed that is pressed into the soil by the foot. By closing the handles, the two sides forming the wedge are parted, displacing the soil. The tool is claimed to be a saver of labour and a useful implement at bedding-out time. It is made by the "Veriquic" Planter Co., 51, Week Street, Maidstone.

TOOL FOR LAYERING CARNATIONS

THIS appliance has a formidable appearance, having butt, nozzle and trigger as in a revolver. But it is intended for increasing not destroying. The trigger, when released, sends forward a knife or knives, which partly severs the shoot as in layering. In course of time roots are emitted from the region of the cut without any further trouble, and when they have developed sufficiently, the layer is potted in the ordinary way. A great deal of ingenuity has been expended in producing an article to do work that the more clumsy pocket-knife might accomplish. The makers are Messrs. Cumming and Sanders, 118, Camden Road, London.

SOCIETIES.

ROYAL HORTICULTURAL

Scientific Committee.

FEBRUARY 23.—*Present:* Mr. E. A. Bowles, M.A., F.L.S., F.R.S. (in the Chair); Sir J. T. D. Llewelyn, Dr. A. B. Rendle, Rev. W. Wilks, Messrs. J. L. Arkwright, J. W. Odell, W. Hales, R. Hooper Pearson, A. Worsley, E. M. Holmes, W. Fawcett, F. J. Baker, A. W. Sutton, R. A. Rolfe, G. S. Saunders, J. T. Bennett-Poë, W. Cuthbertson, G. Massee, and F. J. Chittenden (hon. secretary).

Diseased Parsnips.—A report was received from Mr. Güssow concerning the Parsnips with scabby spots shown at the last meeting, from Mr. GREGORY. They were attacked by the fungus *Plasmopara nivea*, which appears first on the leaves. This fungus also attacks Carrots and Parsley.

Malformations in Orchids.—MR. GURNEY WILSON, F.L.S., sent the apical portion of a pseudo-bulb of *Dendrobium nobile* bearing a shoot from which roots had grown as in a vegetative shoot, and a flower, the lateral petals of which were coloured like the labellum. He also sent a dimerous flower of *D. nobile*, with the lip suppressed and the two lateral sepals coherent. A *Cypripedium* from Sir JEREMIAH COLMAN having two dorsal sepals was also shown.

Mendelism in Orchids.—MR. R. A. ROLFE showed flowers the result of crossing *Epidendrum evectum* and *E. xanthinum*. The former of these is purplish in colour, the latter yellow. The first cross gives *E. x kewense*, and flowers of this hybrid were shown. Seedlings had been raised from *E. x kewense* after self-fertilisation, and of these, one which flowered earlier was practically a reproduction of *E. x kewense*, while of two others (flowers of which were shown) one showed partial reversion towards the purple *E. evectum*, the other toward the yellow *E. xanthinum*. He also showed the result of re-crossing *E. x kewense* with the original parent *E. evectum*, the resulting plant having a purple flower not quite so dark as the parent. Mr. ROLFE said that *E. x kewense* re-crossed with *E. xanthinum* gave a yellow flower. Other plants of the crosses were yet to flower.

Colour changes in Carrots.—DR. C. B. FLOWRIGHT sent the following note concerning the colour changes occurring in Carrots, together with illustrative specimens. The portion of a Carrot sent is interesting as showing the condition common last year, viz., the longitudinal splitting of the root from the crown downwards, exposing the medullary portion, which shows no tendency to cleave. The exposed portion shows a tendency to development of chlorophyll. On the edges of the cortical portion no chlorophyll is seen, but minute specks, tending to become confluent, of a red colouring matter (carotin) have been freely developed. The specimen sent is of an ordinary garden Carrot, the fissuring of the out portion is thought to be due to dryness at the time of growth. In the smaller specimen different colour changes have taken place. The exterior has freely developed a green tint mottled with patches of purple. The roots have been exposed on the surface of the ground all the winter. The purple is quite superficial. It is interesting to note that this brilliant change has taken place in the least coloured variety, for these small ones are, as a section shows, of the pale variety grown for cattle, and popularly known as "stock Carrots." Incipient colours are often shown in the exposed roots of other plants, for example, blue discoloration, as wood root-stocks are frequently mottled with blue stains when they are pulled and left exposed to the light and air.

Potato tuber diseased.—MR. G. MASSEE showed a Potato tuber having a black patch (dry scab) about 2 inches square, the result of the attack of the fungus *Stemphylium (Phellomyces) atrovirens*. This disease has been very prevalent in Scotland this season, and considerable damage has been done to the crop. The present example came from Oxford. The spores are known to remain alive in the soil, and capable of infecting Potatoes for several years. Diseased tubers should, therefore, not be used for "seed," nor should Potatoes be grown on the

same land as that on which the diseased crop was grown.

Apple containing germinating seed.—Mr. F. J. BAKER showed an Apple containing germinating seed, and made some remarks upon the result of allowing seed to dry thoroughly before sowing. He considered that seed of many plants which had been allowed to remain as long as possible within the fruit gave better results than seed removed early and kept for some time before sowing.

Variation in Primula sinensis.—Mr. A. W. SUTTON showed a number of plants of *Primula sinensis* having leaves of a shape approaching those of Ivy. He said that occasionally such plants were observed, but they had not until last year set any seed. Seeds had, however, been obtained from three plants last year, and this had given a considerable number of plants with leaves of the form of the parents, and with petals of a very similar form, the form of the latter being apparently correlated with that of the former.

Cinerarias dying.—Mr. W. J. JAMES sent a plant of *Cineraria*, one of about 150 which had died out of some 3,000. It was found that the base of the plant had been attacked by the bulb mite, *Rhizoglyphus echinopus*, in great numbers, and that these had caused the death of the plant.

DUMFRIESHIRE AND GALLOWAY HORTICULTURAL.

FEBRUARY 20.—The annual general meeting of this society was held in the committee room of the Dumfries Town Hall on this date. There was a moderate attendance, presided over by Provost Nicholson, Maxwelltown, chairman of the directors. The secretary and treasurer, Mr. Robert G. Mann, submitted the annual report, which showed that the income for the past year, including a balance of about £22 from the previous year, had amounted to £252 5s. The expenditure had been £246 6s. 4d., leaving a credit balance of £5 18s. 8d.

The Chairman intimated that he did not desire re-election, and suggested Provost Lennox, of Dumfries, to succeed himself. This was agreed to, and the following other directors were appointed:—Messrs. Jas. Henderson, F. W. Malloch, Jas. McLeod, J. M. Haining, J. M. Stewart, C. Murray, R. A. Gignor, and Taylor. Mr. R. G. Mann, "Herald" Offices, Dumfries, was re-appointed secretary and treasurer.

ROYAL METEOROLOGICAL.

FEBRUARY 17.—On this date Mr. E. Mawley read his "Report on the Phenological Observations for 1908." The most noteworthy features of the weather of the Phenological year ending November, 1908, were the severe frosts early in January, the exceptionally heavy fall of snow and remarkably low temperatures in the latter part of April, and the marked periods of unusually wet and dry weather during the summer. In February and March wild plants came into blossom in advance of their usual time, but throughout the rest of the flowering season were more or less behind their average dates. Such early spring migrants as the swallow, cuckoo and nightingale made their appearance very late. The only deficient farm crop was that of Barley. The yield of Wheat, Oats and Beans was rather above the average, that of Peas and Hay very good, while the crops of Turnips, Mangolds and Potatos, taken together, were the most abundant for many years. The yield of Apples was under average, and that of Pears and Plums much under average. On the other hand, the crops of Currants, Gooseberries, and Strawberries were almost everywhere unusually good. As regards the farm crops, this was the third good year in succession, although, compared with 1906 and 1907, the yields in 1908, except in the case of Turnips, Mangolds and Potatos, were very inferior to those of either of those years.

Mr. W. Marriott read a paper on "The Cold Spell at the End of December, 1908." The weather during December was generally mild until Christmas Day, when a considerable change took place in the distribution of barometric pressure, and the weather assumed a wintry character. Gales occurred in many places, and snow fell more or less over the British Isles during the following week. The

most remarkable feature, however, was the intense cold which prevailed over the central and south-eastern portion of England from the 28th to the 31st. The temperature on the 28th did not rise above 25° over a considerable portion of the Midlands, while on the 29th it remained below 25° over practically the whole of England (except the south-western counties) up to within about 20 miles of the coast. On the 28th, 29th and 30th, over the greater part of the country, the minimum thermometer fell below 20°, while over a considerable area it fell below 10° on the 29th and 30th. At several places the lowest temperature recorded was about zero. At Berkhamsted the thermograph showed that the temperature remained below 25° for a period of 58 hours—a most unusual occurrence. Mr. Marriott stated that the isobaric charts indicated that during this period there was a ridge or wedge of high pressure between two cyclonic systems, and that the conditions were thus favourable for the production of great cold. For the month of December the cold was very exceptional, as the only instances in the neighbourhood of London or at Greenwich, in which the maximum temperature was below 25.5° for the day, were the following: 1796, 25th, 19.5°; 1798, 28th, 19.5°; 1816, 22nd, 24.0°; 1830, 24th, 22.0°; 1855, 21st, 23.2°; 1874, 31st, 24.5°; 1890, 22nd, 23.7°; and 1908, 29th, 25.4°, and 30th, 23.3°.

CATALOGUES RECEIVED.

SEEDS.

JAMES COCKER & SONS, 130, Union Street, Aberdeen.
MR. JOHN A. McCULLOCH, Castletown, Isle of Man.
H. N. ELLISON, 5 & 7, Bull Street, West Bromwich.
WILLIAM WATT, Cupit, Fife.
JOHN BURKITT & Co., 1, Underbank, Stockport.
GARTONS, LTD., Watlington.
DOBIE AND MASON, 22, Oak Street, Manchester.
SUTTON & SONS, Reading (Farm seeds).
WM. BAYLOR HARTLAND & SONS, 33, Patrick Street, Cork.
WARNER, WRIGHT & SONS, 69, Market Place, Leicester.
YARDE & Co., Northampton.

MISCELLANEOUS.

W. J. ROBERTSON, Cowleigh Road, Malvern—Manures.
JOHN FORBES, Royal Nurseries, Hawick, N.B.—Hardy plants.
WILLIAM COOPER, LTD., 751, Old Kent Road, London, S.E.—Greenhouses and garden requisites.
FLORA, Eglington Vicarage, near Leighton Buzzard—Plants.
BARR & SONS, King Street, Covent Garden, London, W.C.—Bulbous and tuberous garden plants.
JAMES VEITCH & SONS, LTD., King's Road, Chelsea—Perpetual-flowering Carnations.
LIVERPOOL ORCHID AND NURSERY Co., Gateacre, near Liverpool—Orchids; also trees, shrubs, Roses, &c.
RANSOMES, SIMS & JEFFERIES, LTD., Orwell Works, Ipswich—Lawn mowers.
W. H. HUDSON & Co., 218, Goldhawk Road, London, W.—Japanese Lilliums and other bulbous plants.
H. J. JONES, LTD., Ryecroft, Hither Green, Lewisham—Chrysanthemums, Asters, Begonias, Dahlias; also flower and vegetable seeds.
W. DRUMMOND & SONS, LTD., Stirling and Dublin—Farm seeds.
J. NICHOLS, Whiteball, Bideford, Devon—Trays for propagating purposes.
R. WALLACE & Co., Kilfield Gardens, Colchester—Bulbous and other garden plants.
R. H. BATH, LTD., Floral Farms, Wisbech—Plants and seeds.
J. W. CROSS, Old Grammar School, Wisbech—Seeds and "Seed" Potatos.
WM. WATSON & SONS, LTD., Clontarf Nurseries, Dublin—Garden plants.
MESSINGER & Co., LTD., Engineers, Loughborough, Leicestershire—Garden seats and wood lath blinds.
KENT & BRYDON, Darlington—Farm seeds.
WM. THOMPSON & Co., LTD., Londonderry—Farm seeds.
COOPER, TABER & Co., 90 & 92, Southwark Street, London, S.E.—Farm seeds (wholesale).
JAMES CARTER & Co., 237/8 and 97, High Holborn, London—Farm seeds.
THOS. S. WARE ('02), LTD., Ware's Nurseries, Feltham, Middlesex—Herbaceous, alpine, water and bog plants.

COLONIAL.

DUPUY & FERGUSON, 38, Jacques-Cartier Square, Montreal—Seeds, plants, bulbs, &c.

FOREIGN.

ANT. ROOZEN & SON, Overveen, near Haarlem, Holland (AGENTS: MERTENS & Co., 3, Cross Lane, St. Mary-at-Hill, London, E.C.)—Bulbs and seeds.
H. CORREYON, Floraire, Chêne-Bourg, Geneva—Seeds.
R. & J. FARQUHAR & Co., 6 & 7, South Market Street, Boston, Mass.—Seeds.
VILMORIN-ANDRIEU ET CIE, 4, Quai de la Mégisserie, Paris—Chrysanthemums.
B. MULLERKLEIN, Karlstadt a. Main, Bayern, Germany—Fruit trees, ornamental shrubs and trees, hardy flowering plants, &c.
FRANÇOIS GRÉBEAUX, 21, Rue de Cronstadt, Nancy, France—Novelties in plants.
F. HENKEL, Darmstadt, Germany—Aquatic and Bog Plants.
C. L. KLISSING SOHN, Barth, Pommern, Germany—Caladiums.
WILHELM PRITZER, Stuttgart, Militärstrasse 74—Seeds and plants.
PAUL LÉCOLIER, Celle-Saint-Cloud, Paris—Trees, shrubs, fruit trees, Roses, &c.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending February 27, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The weather.—During the early days of the week the sky was nearly cloudless over a large part of England and Scotland, but subsequently there was a good deal of cloud, and later in the period nearly all districts in Britain experienced snow or sleet, and Ireland sleet or rain.

The temperature was a little above the average in Ireland and Scotland, and below it in England, the deficit being greatest (more than 5°) in England S.E. The highest of the maxima occurred on the 21st or 22nd at nearly all stations, and ranged from 57° in England N.W. and 56° in Scotland E. to 52° in England S.E. Late in the week the maxima were generally low, no higher than 36° in many English localities and below it at some stations. The lowest of the minima, which were recorded on irregular dates, varied from 14° in England S.E. and S.W., and 15° in the Midland Counties to 26° in Ireland N. and to 31° in the English Channel. The lowest grass readings reported were 2° at Llangamarch Wells, 9° at Birmingham, 11° at Oxford, Greenwich, and Kew, 12° at Hereford, and between 14° and 20° in most other places.

The mean temperature of the sea.—On many parts of the coast the water had a very similar temperature to that during the corresponding week in 1908, but at Kirkwall it was more than 4° in excess, and at Eastbourne more than 4° colder. The actual values ranged from 47.3° at Plymouth, and nearly 47° on the south-west coast of Ireland, to about 40° or below on the east and north-east coasts of England, and at Eastbourne.

The rainfall was much below the average generally; at a few places in England and Wales and also at Douglas (Isle of Man) there was no measurable quantity. At Armagh on Wednesday morning the rain in the gauge and in pools on the ground was observed to be very black.

The bright sunshine exceeded the normal in England and also in Scotland N., but was below it in Ireland and the west and east of Scotland. The percentage of the possible duration ranged from 52 in the English Channel, and 43 in England S.W. and S.E., to 20 in the east and west of Scotland, and to only 10 in the north of Ireland.

THE WEATHER IN WEST HERTS.

Week ending March 3.

The fourth week in succession of cold weather.—The present cold spell has now lasted nearly a month, and the past week has been the coldest of that period. At no time during the week did the temperature in the thermometer screen rise above 37°, and on the coldest night the exposed thermometer registered 15° of frost. The ground is at the present time 4° colder at 2 feet deep, and 5° colder at 1 foot deep, than is seasonable. Snow fell on 3 days, and on 1 day the ground was covered for a short time to the average depth of 2 inches. There has now been no measurable percolation through either of the soil gauges for nearly 6 weeks. The sun shone on an average for 1½ hours a day, which is only half the average duration for the end of February. Calms and light airs have alone prevailed during the week. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by 5 per cent.

FEBRUARY.

Exceptionally cold, dry, sunny, and calm.—This was an exceptionally cold February, but the mean temperature was not nearly as low as in the same month in 1895, when it was as much as 8° lower. There occurred a few days of warm weather at the beginning of the month, but during the rest of it there was only 1 day when the mean temperature rose above the average. On the warmest day the highest temperature in the thermometer screen was 55°, which is a high extreme maximum for the month. On the coldest night the exposed thermometer indicated 20° of frost, which is rather a low extreme minimum for February. Taking the month as a whole the nights were much more unseasonably cold than the days. Rain or snow fell on only 8 days, and to the total depth of less than half an inch, the average for the month being 2 inches. It is now 13 years since there has been here such a dry February. On one day the snow lay for a short time to the depth of 2 inches. Throughout the month there was no measurable percolation through either of the percolation soil gauges. The sun shone on an average for 3 hours a day, or for 40 minutes a day in excess of the average—making this the sunniest February for 10 years. It was the calmest February for 7 years. During the windiest hour the mean velocity reached 20 miles—direction W.N.W. The average amount of moisture in the air at 3 o'clock in the afternoon was 5 per cent. less than a seasonable quantity for that hour. In only two previous Februaries in the last 24 years has the air been as dry at that hour as it was on 2 days towards the end of the month.

THE WINTER.

Rather cold and sunny and remarkably dry.—Taking the winter as a whole, it was rather a cold one. December proved of about average temperature, while January was rather warm, and February exceptionally cold. On the warmest day the temperature in the thermometer screen rose to 55°, and on the coldest night the exposed thermometer registered a temperature only 1° above zero, which is, with three exceptions, the lowest extreme minimum for any winter during the past 24 years. The total rainfall amounted to only about half the average quantity for the season, which was principally due to the exceptional dryness of January and February. The heaviest fall of snow occurred on December 29, when the snow lay to the average depth of 5½ inches. The sun shone on an average for 1 hour 56 minutes a day, or for a quarter of an hour a day longer than is seasonable.

OUR UNDERGROUND WATER SUPPLY.

Since the winter half of the drainage year began in October, the total rainfall has been 6½ inches, which is just half the average quantity for the same 5 months in the previous 53 years—equivalent to a loss in rainfall on each acre in this district of 145,000 gallons. At the same time last year there were 25,790 gallons per acre in excess of the average amount. E. M., Berkhamsted, March 3, 1909.

MARKETS.

COVENT GARDEN, March 3.

[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 saesmen, 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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices, including Acacia, Anemone fulgens, Azalea, Bonvardia, Calla aethiopica, Camellias, Carnations, Cattleyas, Cypripediums, Daffodils, Dendrobium nobile, Encarnas, Freesias, Gardenias, Hyacinths, Lilacs, Lilies, and Tulips.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage and their prices, including Alantums, Agrostis, Asparagus plumosus, Berberis, Croton leaves, Daffodil foliage, Ferns, Galax leaves, Hardy foliage, and Ivy-leaves.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various potted plants and their prices, including Ampelopsis Veitchii, Aralia Sieboldii, Begonia Gloire de Lorraine, Cinerarias, Clematis, Cocos Weddelliana, and Grevilleas.

Plants in Pots, &c.: Average Wholesale Prices (Cont'd.).

Table listing various potted plants and their prices, including Hardy flower roots, Hyacinths, Isoplepis, Kentia Belmoreana, Latauia borbonica, Lilium longiflorum, and Tulips.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices, including Apples (Foreign and Domestic), Bananas, Grape Fruit, Grapes, Lemons, Limes, Nuts, Oranges, Pears, Pineapples, and Tangerines.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices, including Artichokes, Asparagus, Beans, Beetroot, Brussels Sprouts, Cabbages, Carrots, Cauliflowers, Celery, Cucumber, and Lettuce.

REMARKS.—Californian Apples are dearer, but Oranges from the same country are selling slowly. Supplies of French Apples are shorter, but their prices are about the same as those of last week. Bitter Oranges are cheaper. Lemons have slightly advanced in value. English forced Rhubarb has a poor demand, accounted for by the cold weather. Foreign Tomatoes are arriving in a better condition, and are cheaper. Trade generally is quiet. E. H. R., Covent Garden, Wednesday, March 3, 1909.

Table listing various plants and their prices, including Kents, Snowdrop, Sharpe's Express, Epicure, and various Lincolns and Dunbards.

REMARKS.—Trade is moderate; there is an increased demand for best samples of Up-to-Date variety. The wintry weather has checked supplies, and there is a prospect of the large stocks in London becoming considerably reduced. Edward J. Newbourn, Covent Garden and St. Pancras, March 3, 1909.

COVENT GARDEN FLOWER MARKET.

It is stated that the floral decorations used in connection with Court functions last week represented a value of £1,000; but the market was not greatly affected, save in the cases of Roses and Carnations of special quality. The average price for good Roses is 5s. to 9s. per dozen blooms. Some extra fine blooms have sold for 15s. per dozen. Carnations need to be very choice to sell for more than 2s. 6d. per dozen blooms. All kinds of Narcissus are abundant, and prices are lower than they may be a week or more later. Those from the Scilly Islands arrive in large quantities and are sold very cheaply. Best blooms of Golden Spur, Horsfieldii and Emperor are worth not more than 5s. per dozen bunches. Encharis has been more plentiful, but Gardenias are scarce. Lilies vary; flowers of the best quality have a tendency to increase in value. Blooms of L. auratum are rather small. Some of L. longiflorum are good, but others are of indifferent merit. L. lancifolium blooms are also smaller than usual. Callas are exceedingly plentiful. Violets from English growers have been down to the lowest prices, owing to the large supplies received from France. Acacia dealbata (Mimosa) is very good. Several varieties of Acacia are imported during the season; just now it is the true A. dealbata that is seen.

POT PLANTS.

The cold weather has caused trade to be dull, yet some things have sold fairly well. Azaleas are still plentiful; also Daffodils in various sorts. Tulips and Hyacinths are well supplied in pots and in boxes. Ericas are good, especially E. persoluta alba and E. Wilmoreana. Marguerites have a better demand, but some of the forced Spiraeas are rather "thin"; others are very good. Rhododendrons are well flowered. Cyclamen and Primulas are both of better quality than is usual at this season. All foliage plants are plentiful, but the demand is poor. A buyer complained to me that Ferns bought in the market soon faded; this is not surprising, for though they do not show any damage whilst they are exposed to the cold, the fronds turn black as soon as the plants are put into warmth. Trade in hardy plant roots has been very slow; also in trees, shrubs, climbers, &c. A. H., Covent Garden, Wednesday, March 3, 1909.

DEBATING SOCIETIES.

BATH AND DISTRICT GARDENERS'.—A meeting of the above society was held in the Foresters' Hall on February 8, Mr. T. Parrott presiding. Mr. Garnish, of the Bristol Association, read a paper on "Bulbs for Pots." The culture of bulbs in pots, especially those for spring-flowering, was ably dealt with by the lecturer. A meeting of this society was held on February 22, under the presidency of Mr. T. Parrott. Mr. Mowbray A. Green gave a lecture, illustrated with limelight views, on "Garden Cities." The lecturer dealt at length with such noted garden cities as Bourville, Port Sunlight, and Letchworth.

BRISTOL AND DISTRICT GARDENERS'.—A meeting of this association was held on Thursday, February 25, Mr. A. O. Shelton presided over a good attendance of the members. A lecture upon "Barren Soils" was given by Mr. Arnold, gardener to Earl Bathurst, Cirencester House. The lecturer described the best methods of successfully working various soils. Shallow soils resting on a stony or brashy subsoil should have a layer of manure placed at the bottom when trenching; they should also be liberally top-dressed and mulched with manure. Deep soil with a subsoil of gravel is generally deficient in potash and lime. Stable manure and wood ashes were recommended in this case. A deep loam, with a clay subsoil, often requires draining. In the case of a heavy soil with a sandy subsoil, deep cultivation is necessary. Heavy clay lands should be thoroughly drained and the surface burned to a depth of 12 inches. Such lands are improved by the addition of sand, grit, builders' rubbish, and lime.

CHESTER PAXTON.—The third of a series of lectures by Mr. N. F. Barnes, Eaton Hall Gardens, was given at the meeting held on February 20. The subject on this occasion was "A Visit to the Centenary Exhibition at Ghent, with notes by the way." Mr. Barnes' remarks were illustrated by a number of lantern slides. The lecturer gave an account of the town of Ghent, and a description of the exhibition. Special reference was made to the collections of Hippeastrums shown by Major Holford, and by Messrs. Ker & Sons, of Liverpool. The collection of Orchids staged by Major Holford was the finest and most representative display of Orchids in the show.

The meeting held on Saturday, February 27, was the last of the session. The Curator of the Grosvenor Museum, Mr. Alfred Newstead, contributed a paper, illustrated by lantern slides, on "Familiar Wild Birds in relation to Gardens and Orchards." The lecturer not only described the habits and life history of these birds, but also dealt with the economic aspect of the subject. He explained minutely the nature of their food, and showed which birds are beneficial to the horticulturist and agriculturist, mentioning that some species are wholly insectivorous, whilst others feed partly on insects and partly on fruits, grain, &c. He instanced the results of Prof. Newstead's post-mortem analysis of the stomach contents of some birds in his report recently published by the Board of Agriculture.

GROYDON & DISTRICT HORTICULTURAL.

The ninth annual dinner of this association was held on Wednesday, February 10. Some eighty members and friends were present. Mr. J. J. Reid (President) was in the chair, and Mr. E. H. Jenkins (President of the Kingston Gardeners' Association) occupied the vice-chair.

A meeting of this society was held on Tuesday, February 16. The evening was devoted to a lecture and demonstration on "Table Decorations." The lecturer was Mr. R. Edwards, Beechey Lees Gardens, Sevenoaks. The lecturer stated that harmony of colour was essential in a table decorated with flowers, for whatever flowers be brought into requisition they must be of shades unopposed to each other. The decoration should be appropriate to the season. When Iceland or Shirley Poppies are used it is a good plan to put the cut stems in boiling water or just burn the ends with a lighted candle or match. Where flowers are required to be preserved for several days the water should be changed daily, and a little sugar may be added with beneficial results. Flowers for travelling are best cut overnight when dry and the stems immersed in water.

DORCHESTER GARDENERS.—An address on "Lawns and Lawn Grasses" was delivered on Monday, February 22, to the members of this association by Mr. Shipway, of Messrs. Sutton & Sons, Reading. The lecturer dealt with the formation and upkeep of lawns, bowling greens, tennis grounds, &c. The lecture was illustrated with lantern slides. Mr. Shipway stated that beautiful lawns, in the great majority of cases, are much more easily and cheaply obtained from seeds than from turves.

READING AND DISTRICT GARDENERS.

A lecture was given before the members of this association by Dr. Keeble, of the University College, Reading, in the Abbey Hall, on Monday, February 22, the subject being "Applied Mendelism." The president, Mr. Alderman F. B. Parfitt, occupied the chair. Dr. Keeble stated that comparatively little was yet known regarding Mendelism or the abstruse laws governing heredity, which had puzzled scientists for many ages. The fact that like produces like was correct only in a degree, for in the course of experiment under Mendelian Laws it was frequently found that the hybridisation of two flowers would result in blooms of quite a different shade and character to those of either parent. For example: two white Sweet Peas crossed produced a purple; this was due to latent characters which could only manifest themselves when in conjunction with other complementary characters which came together as a result of hybridisation. Hybrids always embodied the colour, habit, and constitution of both parents, though one only might be evident, but the influence of the recessive qualities came out in the second generation. Thus if tall Peas were crossed with dwarf Peas the result would be tall Peas only; but the second generation produced by self-fertilising these hybrid plants would give 25 per cent. dwarf and 75 per cent. tall, proving that the characters of the dwarf parent had been carried through a generation without visibly showing. At the close of his lecture Dr. Keeble answered many questions.

REDHILL, REIGATE AND DISTRICT GARDENERS.—Mr. W. P. Bound presided over the fortnightly meeting of this association, held at the Penrhyn Hall, on Monday, February 22. A lecture was given by Mr. Cooper, of St. Albans, on the "Culture of Orchids." The next meeting of the society will be on March 8, when Mr. Daisley, of Worth, will lecture on "Vegetables for Exhibition."

WARGRAVE AND DISTRICT GARDENERS.

At the usual fortnightly meeting of this association, Mr. T. Haskett, of Hennerton Gardens, read a paper on "The Cultivation of the Florists' Cyclamen." The lecturer gave details for seed sowing, and the best compost to use. He recommended the sowing of freshly-gathered seed in preference to that which was a few months old. An equable temperature was necessary for the young plants, because sudden changes were detrimental to their well-being. The method of potting the young plants was carefully described, as well as watering, ventilation, shading, &c. Insect pests were referred to, and the best methods of destroying them were given.

SCHEDULES RECEIVED.

Perpetual-Flowering Carnation Society's sixth exhibition, to be held in the Royal Horticultural Hall, Westminster, on Wednesday, March 24. Show superintendent, Mr. E. F. Hawes, Royal Botanic Gardens, Regent's Park, London.

Royal Caledonian Horticultural Society's spring flower show, to be held on April 7 and 8 and centenary exhibition on September 8 and 9. Both shows will be held in the Waverley Market, Edinburgh. Secretary, Donald Mackenzie, 23, Rutland Square, Edinburgh.

Durham, Northumberland, and Newcastle-on-Tyne Botanical and Horticultural Society's summer show, to be held in the Recreation Ground, North Road, Newcastle-on-Tyne, on Wednesday, Thursday, and Friday, July 28, 29, 30. Secretary, Mr. J. Wilfrid Pace, Emerson Clamber, Blackett Street, Newcastle.

Royal Ulster Agricultural Society's horticultural show, to be held on the society's premises, Balmoral, Belfast, on Thursday and Friday, July 22, 23. Secretary, Mr. Kenneth MacRae, Balmoral, Belfast.

Clevedon Horticultural Society's 33rd annual flower show, to be held on Tuesday and Wednesday, August 3 and 4, in the Clevedon Hall Paddock; also Clevedon Chrysanthemum show, to be held in the Public Hall, Clevedon, on Tuesday and Wednesday, November 9 and 10. Hon. secretary, Mr. Frank Leckington, Branch Hill, Clevedon.

Huntingdonshire Daffodil and Spring Flower Society's show, to be held on Tuesday, April 27. Hon. secretary, Miss L. L. Linton, Stirlloe House, Buckden, Huntingdon.

Sandway and District Horticultural Society's fourth annual exhibition, to be held at Sandway, on Monday, August 2. Hon. secretary, Mr. W. May, Sandway Lodge Gardens, near Northwich.

ANSWERS TO CORRESPONDENTS.**ALPINE PLANTS FROM ITALY OR NAPLES: F. S.**

It is not advisable to send them by rail, because the freight is considerable, and much damage is done to plants at the various depots on the frontiers, where they may be overhauled. The journey by rail occupies about 48 hours. Your better plan is to consign them from Naples by steamer. Ascertain from the London agents the date of call, and have them ready for shipment direct to England. Packed tightly in boxes, with plenty of soil and moss about their roots, they should travel safely, but the safest way to send them is in Wardian cases.

BOTTLING PEAS: C. C. To bottle green Peas, shell the Peas, put them into dry, wide-mouthed bottles and shake them together so that they may lie in as little space as possible. Cork the bottles closely and seal the corks. Bury the bottles in the driest part of the garden and take them up as they are wanted. They ought to keep good for some months. Or, try this recipe. Choose Peas which are large and fully grown, though not old. Put them into perfectly dry, wide-mouthed bottles; shake them down, cork securely, and cover the cork with bladder. Tie a wisp of hay round the lower part of the bottles to prevent their knocking against each other in the pan, put them side by side in a large saucepan, and pour into it as much cold water as will reach the necks of the bottles. Put the saucepan on the fire, and let the bottles remain standing for two hours after it has reached boiling point, then take the saucepan off, but do not remove the bottles until the water is cold. Seal the corks and store in a cool, dry place.

CARNATIONS: H. W., Sussex. The plants are infested with rust disease—*Puccinia Arenariae*. Spray them with a rose-red solution of permanganate of potash.

CYCLAMEN: W. L. The plants are attacked by a mite similar to that which infests Begonias and Gloxinias. Dip the foliage in tobacco-water, repeating the operation at intervals.

FLOWERING SHRUBS IN WINTER: D. M. You will find all the information you require in the article by Mr. Osborne, on "Hardy Trees and Shrubs Suitable for Forcing," published in the *Gardeners' Chronicle*, December 12, 19, and 26, 1908.

HYACINTH BULB ROTTEN: H. & S. The interior of the bulb is full of a bacterial rot. The bacteria may have been present in the bulb from last season, or may have entered from the soil when planted last autumn, through some bruised spot.

IVY-LEAVED PELARGONIUMS: J. R. and H. S. There is no disease present in the shoots. The injury has been caused by some insect-pest such as green-fly or red-spider.

MANURE FOR POTATOS: Sussex. You may use the manures you mention, but it would be advisable to supplement them with a manure containing potash. A good stimulant for Potatos is composed of superphosphate two parts, and one part each of sulphate of ammonia and sulphate of potash. The compound should be applied at the rate of about 10 cwt. per acre.

NAMES OF FLOWERS, FRUITS AND PLANTS.—We are anxious to oblige correspondents as far as we consistently can, but they must bear in mind that it is no part of our duty to our subscribers to name either flowers or fruits. Such work entails considerable outlay, both of time and money, and cannot be allowed to disorganise the preparations for the weekly issue, or to encroach upon time required for the conduct of the paper. Correspondents should never send more than six plants or fruits at one time: they should be very careful to pack and label them properly, to give every information as to the county the fruits are grown in, and to send ripe, or nearly ripe, specimens which show the character of the variety. By neglecting these precautions correspondents add greatly to our labour, and run the risk of delay and incorrect determinations. *Correspondents not answered in one issue are requested to be so good as to consult the following numbers.*

FRUITS: C., Peterboro. The Apple you have sent us is a very fine specimen. We have compared it with the variety Annie Elizabeth and fail to find the least difference between them. The description of this variety in the *Fruit Manual* exactly fits your fruit.

PLANTS: F. K. 1, *Cœlia Baueriana*; 2, *Epidendrum vitellinum*; 3, *Lælia bapophylla*; 4, *Pleurothallis Barberiana*.—*F. C. P.* 1, *Bulbophyllum cupreum*; 2 and 3, *B. Pechei*.—*Filices.* 1, *Peris umbrosa*; 2, *P. cretica*; 3, *P. serrulata cristata*; 4, *P. serrulata*; 5, *Adiantum Capillus-veneris*.—*A. J. W.* *Saccolabium giganteum*.—*Anxious.* *Schaueria calicotricha*.—*J. M. S.* *Schaueria calicotricha* (syn. *Justicia flavicoma*).

NECTARINE LORD NAPIER: Anxious. The failure of the trees to produce flowers cannot be attributed to early forcing, as the flower buds are formed in the autumn of the previous year. The trouble may be due to the wood being insufficiently ripened last autumn. The damaging of the foliage by soot in August may have been the cause, as this would entail a check to the tree at the time the foliage was about to put into the stem and buds much reserve food. Other reasons for non-flowering may be advanced, such as a too vigorous development of wood growth, indicating the need for root pruning, or an unsatisfactory rooting medium.

PLANTS FOR A WINDOW-BOX IN LONDON: B. S. In addition to the plants you mention, you can use Marguerites, Fuchsias, Begonias—both the semperflorens and the tuberous-rooting kinds; Nasturtiums, Campanulas (especially the varieties of *C. isophylla*), Petunias, Heliotropium, Mimulus (Musk), Ericas and Sedums. The small polyantha Roses of the Mme. N. Levassieur type are very pleasing for this kind of gardening. The front of the box should be draped with Lobelia, Zebrina, Lysimachia Nummularia (Creeping Jenny) or similar plants. We have also noticed Asparagus Sprengeri doing well in London window-boxes.

POTATOS WITH SCABBED SKINS: S. & Co. There is no disease present in the tubers. The injury is due to some mechanical irritant in the soil, such as would be caused by ashes in the manure, or sand.

RECREATION GROUND: H. R. G. To keep the recreation ground in first-class order would take five men. If the paths are made of gravel they will require frequent and constant attention. The area of the ground does not allow of much being devoted to sports, therefore all the Grass plots will require frequent mowings, and the verges to the paths and beds will need to be kept in a neat condition. The beds and borders will require considerable work to maintain them in a proper condition, and, if the district is a populous one and there are many children, some time of each day will be taken up in keeping order and clearing up waste paper and other refuse. Recreation grounds are usually open seven days in each week, and they are allowed to remain open each day from early morning until sunset, which far exceeds an ordinary working day. In calculating the strength required therefore, all such details are taken in consideration.

TULIPS FAILING TO FLOWER: Gardener. The failure of your bulbs to flower is probably due to one of two causes; either the bulbs were not sufficiently matured last autumn, or they were started in too much warmth.

VIOLETS: T. V. The plants are attacked by a fungus—*Cercospora violæ*. Burn the affected plants and spray the others with dilute Bordeaux mixture. Do not plant Violets in the same soil for several seasons.

WINTER-DRESSING FOR VINES: E. G. The loose bark should be first removed from the rods, and especially about the neighbourhood of the spurs. Afterwards coat the vines with the following mixture: Coal tar one part and clay six parts; dry the clay so that it will readily pass through a fine sieve. Work the clay and tar thoroughly together, adding sufficient boiling water to make the mixture of the consistency of paint. In applying the preparation avoid coating the buds. Keep the mixture well stirred during the process of application.

COMMUNICATIONS RECEIVED.—C. C. (thanks for six stamps, which have been placed in the R.G.O.F. box.)—H. I. W.—W. E. B.—H. R. G.—G. H.—F. C.—S. M. C.—F. W.—P. A.—L. F.—T. S.—W. B.—J. D. G.—T. L.—E. W. B.—H. M. V.—J. R. J.—A. H.—A. D.—F. W. S.—W. W.—K.—H.—Darmstadt—F. W. C.—C. F.—Miss M. R.—J. C.—Linnean Soc.—S. S.—C. H. S.—J. G. (photograph)—Nemo—P. Aquatias—G. T.



NELUMBIUM SPECIOSUM, VAR. OSIRIS; FLOWERS, ROSE COLOUR WITH WHITE AT THE BASE OF THE PETALS.

FROM A SKETCH BY MR. WORTHINGTON SMITH.



THE
Gardeners' Chronicle

No. 1,159.—SATURDAY, March 13, 1909.

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A MARKET FRUIT GROWER'S YEAR.

FEBRUARY of the present year has been remarkable alike for dryness, extraordinary abundance of bright sunshine, and the occurrence of frost nearly every night. At my own station less than a quarter of an inch of rain has been registered. The frosts, for the most part, have been slight or moderate, but approaching the severe type in the last week. Even the slight frosts, however, have sufficed to render the ground hard nearly every morning, until thawed by the sun's rays.

The persistence of night frosts must be regarded as highly propitious to the outlook for the fruit crops, as they, probably assisted by the dryness of the soil, have so effectually checked the development of buds on all kinds of fruit trees and bushes that these, being much more backward than usual, are the less likely to suffer damage from late frosts. With respect to Gooseberries and Plums, this backwardness is also a safeguard against bud-eating by birds, as, when the buds are late in swelling, there is more food of other kinds available for these feathered destroyers. Long before this stage last season, nearly all the buds of choice

varieties of Plums in my home orchard had been picked off, and Gooseberry buds, also near the homestead, had been attacked, necessitating spraying to protect them. At present not a bud has been taken off a Gooseberry bush, so far as has been noticed in many inspections, and only a few Plum buds from two trees close to the sleeping quarters of a great number of sparrows. A year ago the pruning of Gooseberry bushes, always deferred until the buds are on the point of bursting, was in full swing, but this season it has not yet commenced. Apart from the fact that birds cannot disbud the bushes so easily before pruning as after that operation is done, the work can be carried out best when any damage of this kind has been completed, as then, and not before, disbudded portions of shoots can be trimmed off.

With respect to one Gooseberry plantation, there is a special reason this season for late pruning. Last year a great many of the bushes were badly attacked by the fungus Botrytis, which caused the leaves to turn white at the tips and die prematurely, resulting in the berries developing merely to half size. Some of these diseased bushes are now dead, and portions of others. What to cut away, therefore, cannot be seen easily until the healthy buds have swollen almost to the point of bursting. The bushes in this field had borne great crops since they were planted in the autumn of 1902, or, at least, from 1904 onwards, and, in spite of artificial manuring two or three times, some of them have apparently been injured by the strain by cropping. They were heavily manured in January with kainit and basic slag, and will be given two dressings of nitrate of soda later in the season in the hope that their vigour may be restored. It is worth notice that on the experimental plots at Hadlow, Kent, managed by Dr. Dyer and Mr. Shrivell, Gooseberry bushes that have never had any potash supplied to them, like those on adjoining plots which had received potassic manures, were found last summer to be badly affected with Botrytis.

The principal kinds of work carried on in February have been the forking over of fruit and nursery stock plantations, the planting of fruit stocks for grafting or budding, the pruning of Apples and Plums, and the winter spraying of Apples and a few choice Plums. With respect to the first-named operation, it may be said that, in consequence of repeated hoeings having been rendered almost useless by the frequent rainfall of last spring and summer, the plantations were more thickly covered with weeds, chiefly Grass, than in any previous year. The oldest Apple plantation, indeed, resembled a meadow by the end of the autumn, and does so still, for, as the Black Currants have been dug out of it, and the trees are sufficiently mature, it is to be left in Grass, which will be cut twice in the season, and left to rot and form a mulch on the ground. As the trees have grown out too much for horse cultivation, and it would cost at least £5 an acre to have the land dug and hoed sufficiently to keep it free from weeds, a trial of the effect of leaving it in Grass, to save expense, is to be made. The soil of this field, it may be explained, is of so fine a texture that even a slight shower after hoeing is sufficient to set weeds chopped

up growing afresh. This accounts for the great expense necessary to keep it clean, which, indeed, is almost impossible in a showery season. Possibly White Clover will be sown on the land, and at any rate, manures calculated to cause indigenous Clovers to grow have been, and will hereafter be, sown, while farmyard manure will be placed around the trees in some seasons.

The most distressing work of the month has been the necessary treatment of King of the Pippins and Potts's Seedling Apples, both badly cankered, in spite of their having had cankered spots cut out and tarred from the first appearance of the disease, and badly-affected branches cut off and burned later. By persistent treatment Potts's Seedling has been greatly improved, but King of the Pippins is hopeless, as the canker breaks out at intervals right up the branches, and on young shoots and fruit spurs. Some of the trees have been cut nearly to the ground for grafting, and those least affected have had Plums planted between them, so that they may be dug up in a season or two. Neither of these two varieties should ever be recommended to market growers, although they are to be seen in most selected lists of varieties. There are 90 of one variety and 120 of the other, very fine trees apart from the pestilent malady from which they suffer.

The winter wash used consists of 20 lbs. of freshly-burned quicklime, 20 lbs. of flowers of sulphur, and 12 lbs. of caustic potash to 100 gallons of water. The sulphur is first beaten up well into a stiff paste to mash all the lumps, and then diluted and poured over the lime, so that the former will be boiled by the slaking action of the latter. After being well stirred, the mixture is covered with sacks for half an hour, and then well stirred again. When the boiling action is nearly finished the caustic potash is added and well stirred in, causing a fresh boiling action. Sufficiently diluted, this mixture is strained into a water barrel, and made up to 100 gallons for conveyance to the tubs in the plantation that is to be sprayed. This wash, applied very freely, so as to cover trunks and branches completely, has been used for Apples, and will be used shortly for Gooseberries, without the caustic potash, which might do damage to well-swollen buds. It has been used twice on choice Plums, which now look as if they had been thickly white-washed, the object being that of preventing birds from repeating the destruction they worked last season. This wash is supposed to have some effect in preventing scab, even when applied to dormant trees. For this purpose copper sulphate alone, 4 lbs. to 100 gallons, is better, and this has been applied to young Apple trees liable to scab, particularly Cox's Orange, which showed scab on the wood to some extent, though young shoots thus affected were cut off and burned. But for comparatively old trees the mixture named above is preferred, because it cleanses the trees of Moss and Lichen, and possibly does a little good in destroying hibernating insects and eggs. Both washes, of course, are to be used only on dormant trees, but lime and sulphur, without the caustic potash, have been applied successfully to Peaches and Apples in foliage in two seasons by the Bureau of Plant Industry in the United States. *A Southern Grower, February 25.*

NEW OR NOTEWORTHY PLANTS.

A NEW GENUS OF CACTACEÆ.

THIS is the title of a joint paper by Drs. N. L. Britton and J. N. Rose in the *Journal of the New York Botanical Garden*, vol. ix., pp. 185-188, plates 48-51. The paper, which is most interesting, is illustrative and descriptive of the home of the plant hitherto known as *Cereus giganteus*, therein described as a new genus under the name of *Carnegiea gigantea*. Whether this change will meet with general acceptance is doubtful, especially as the authors do not indicate the characters upon which their genus is based. Without differential descriptions it is impossible for anybody except an expert to form an opinion. Few botanists possess so wide a knowledge of the North American flora as the gentlemen responsible for this change, and fewer still, perhaps, take so restricted a view of generic limits, judging from their treatment of the species formerly referred to the genera *Sedum* and *Cotyledon*. The Cactus in question is one of the most interesting of the family, and some particulars of it, with a landscape in which it appears as the most conspicuous feature, are to be found in this journal, vol. xx., 1883, p. 264, the illustration being now reproduced at fig. 69. Later, in 1890, Kew imported a stem, which on its arrival had no roots and weighed 12 hundredweight. This flowered in July, 1891, when the stem was 14 feet high, and it was figured in the *Botanical Magazine*, t. 7222.

According to Britton and Rose, *Cereus giganteus*, as we shall continue to call it for the present, known in its home by the name *Sahuaro*, is the most remarkable and striking plant in the desert vegetation of the South-West. It grows on hillsides in Southern Arizona and South-eastern California, and Northern and Central Sonora, sometimes reaching a height of 60 feet, branching at from 12 to 20 feet above the ground. *Carnegiea* is dedicated to Mr. Andrew Carnegie, the founder of the Carnegie Institution of Washington, which possesses a laboratory at Tucson, Arizona, "surrounded by typical specimens of this unique plant."

Dr. Britton describes (*Studies of West Indian Plants*, No. 2, p. 561) another new genus of Cactaceæ, under the name *Harrisia*, in honour of William Harris, superintendent of Public Gardens and Plantations of Jamaica. To this he refers the old *Cereus eriophorus*, *C. gracilis* and *C. undatus*, together with five new species. In this instance, again, the essential characters of the genus are not indicated, although doubtless embodied in the description. They are night-flowering Cacti, with slender, erect, cylindrical stems bearing fluted branches. Plates 22 and 23 of Pfeiffer and Otto's *Abbildungen und Beschreibungen Blühender Cacteen* represent two of the species of this proposed new genus. W. B. H.

LOMATIA OBLIQUA.

AMONG the seeds collected in Chili in 1902 and brought home by Mr. H. J. Elwes were some of a Proteaceous plant which he gave to Kew, where plants were raised from them. They were at first thought to be a strange species of *Embothrium*, but subsequent comparison with dried specimens in the herbarium proved their identity with *Lomatia obliqua*—a common shrub in Chili, Peru, &c. Mr. Elwes found the plant between Quilon and Junin, at an altitude of from 3,000 to 4,000 feet. Its flowers were collected in the valleys of the Andes in Chili by Bridges, who noted it as being from 10 to 20 feet high; he also found it in Valdivia and Chiloe, where it is known as "Raral," and grows from 20 to 40 feet high. Hartweg found this species in abundance between Cunebu and Lima, in Peru, where it forms a small tree, known as "Garoo," and is appreciated for the variegated appearance of its wood when polished. At high elevations it is a shrub 6 feet or so high, with short branches and small leaves. Some of the plants raised at Kew were distributed, and a few were planted in a border outside the temperate house. Here they have grown well, the largest being now a sturdy bush over 6 feet high, with erect branches crowded with perfectly healthy leaves, notwithstanding the try-

ing character of the weather this winter, which has injured many plants known as hardy. We may, therefore, assume that this *Lomatia* is sufficiently hardy to be grown outside in the warmer parts of the British Islands, and as such it is a really interesting addition to hardy evergreens. It has the habit of *Embothrium coccineum*, but the branches are sturdier; the stout, leathery, smooth, bright green leaves are distinctly ovate, with crenate margins, the largest being 4 inches by 2½ inches, the smallest only

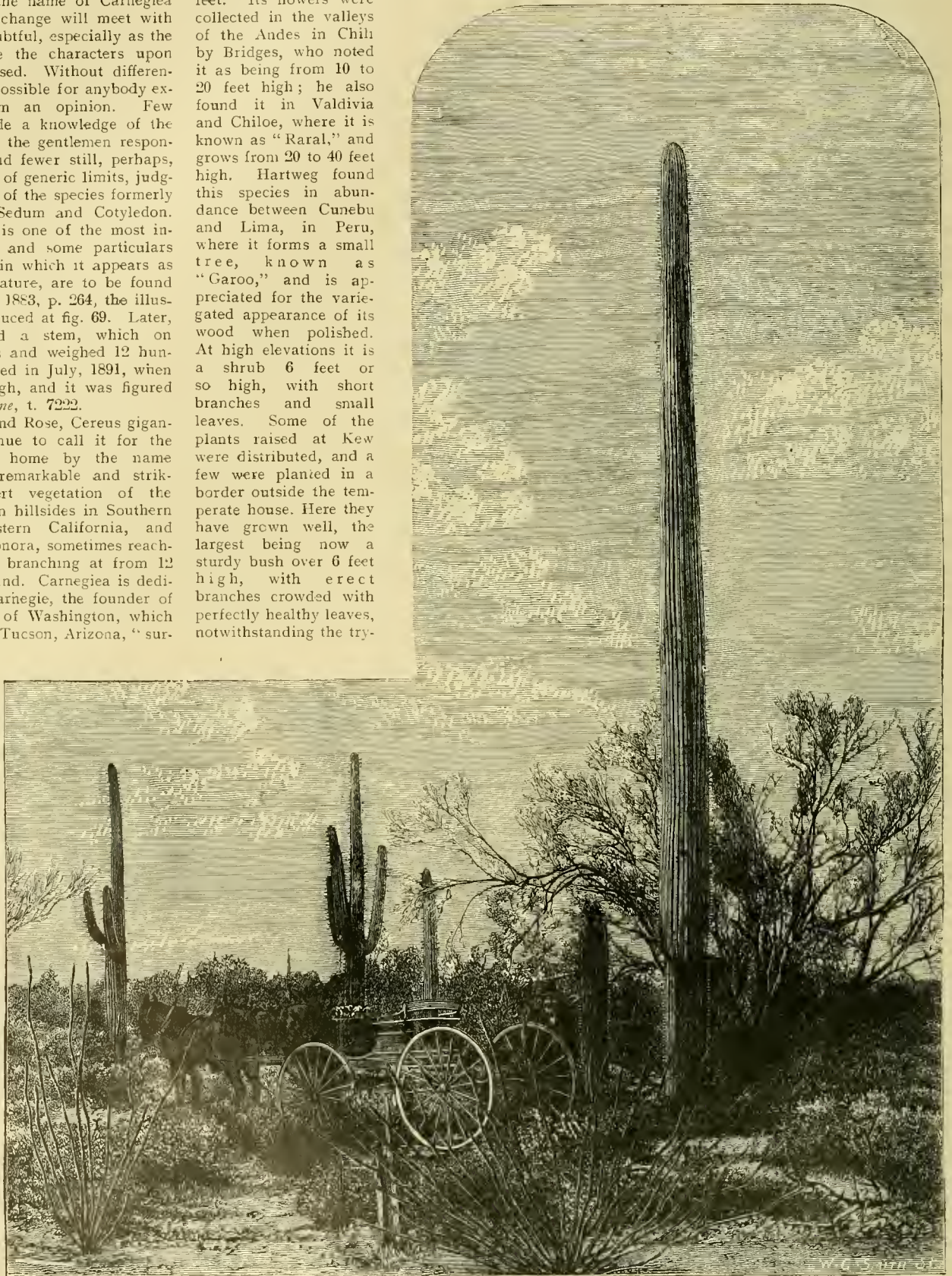


FIG. 69.—CEREUS GIGANTEUS GROWING IN ARIZONA.

about one-fourth that size; the petioles are coloured brown. Flowers have not yet been produced by cultivated plants, but judging by herbarium specimens they are of the same character as those of the cultivated *Lomatias* of which *L. ferruginea*, also Chilian, is by far the best. This has decomposed leaves and racemes of bright red flowers. It is best known through the grand example at Castlewellan, where it has proved not only a handsome, hardy evergreen, but also a beautiful summer-flowering shrub. This species may be quite as hardy in England as *L. obliqua*, but, so far as I know, it is grown only as a greenhouse plant. H. H.

FRUIT REGISTER.

LATE DESSERT APPLES.

It was somewhat of a surprise to find at the competition for dessert Apples at the Royal Horticultural Society's meeting on February 23 that such autumn and early-winter varieties as Cox's Orange Pippin, King of the Pippins, and Baumann's Red Reinette were exhibited as dessert Apples. Certainly the conditions of the schedule left the season of any variety quite open, but it was very natural that competitors should assume that preference at this late period of the winter would be given to the latest-maturing Apples, and it may be imagined that the particular competition was instituted specially for such varieties. It is expressly laid down as one of the conditions governing these competitions on page 37 of the Society's *Book of Arrangements* that "in all cases flavour and quality will have the chief consideration, and judges will have the option of tasting." In the case in question not one of the fruits was tasted for flavour or quality, the judges doubtless demurring to taste as many as 48 fruits. But it may well be asked how could flavour and quality be tested except by tasting? The way out evidently was to ignore flavour and consider only colour and appearance; hence, early-winter-maturing Apples having bright colour and, therefore, more pleasing appearance, were placed before varieties that are reputedly of the highest excellence in late winter, though not highly coloured or of such attractive appearance.

In the first prize collection of six dishes from trade growers there were such late dessert Apples as Sturmer Pippin, Northern Spy, Dutch Mignonne, Lord Hindlip, Reinette de Canada, and King of Tompkins County. Not one of these excellent but somewhat sombre-coloured varieties were seen in the two prize collections in the class for four dishes. Naturally, such judgments bother competitors very much.

Some kind of consistency, as well as unanimity of decision, is badly needed in judging dessert Apples in late winter. Which is most desirable, to make awards to varieties ever so highly coloured and beautiful, yet much past their best, or to others less coloured or beautiful, but full of crispness, juiciness and flavour? That is a point which it seems needful to satisfactorily determine. I do not complain if judges think colour and beauty the dominating features of dessert Apples. It is a question of taste, but such features seem more to befet an Apple competition in the autumn than in late winter, when table excellence should be the dominating quality.

The late competition should serve to bring out the keeping qualities of Apples, and I could wish that the competition might be repeated in April for that purpose. Of good late keepers, Adams's Pearmain, Sturmer Pippin, Claygate Pearmain, Lord Hindlip, Boston Pearmain, Brownlee's Russet, Cockle's Pippin, Dutch Mignonne, Braddick's Nonpareil, Manning's Pearmain, King of Tompkins County, Barnack Beauty, and Scarlet Nonpareil make a baker's dozen hard to beat. 7

ORCHID NOTES AND GLEANINGS.

CATLEYA TRIANÆ COURTAULDIANA.

In the report of the Ghent Quinquennial Show in the *Gardeners' Chronicle*, April 21, 1888, is the following passage: "Perhaps the greatest interest centred in any one object was created by a cut three-flowered spike of a grand form of *Catleya Trianæ*, superb in form and size, and with the additional attraction of a bright crimson marbling on the sepals, and a similar broad feather of crimson spots up the wide and conspicuous petals. All agreed that such had never arrived before, or anything like it, and it was suggested to call it *C. Trianæ* var. *Courtauldiana*, as it was brought from that gentleman's collection by Mr. O'Brien."

The plant which flowered in the collection of the late Sydney Courtauld, Bocking Place, Braintree, for the first time on the occasion cited, gave flowers perfectly normal in every respect, and yet it seems to have failed to produce the ornate crimson spotting afterwards, or, at least, there is no record of it. At the present time it is in flower in the Orchid nurseries of Mr. H. A. Tracy, Amyand Park Road, Twickenham, who obtained a very small plant of the variety at the dispersal of the Courtauld collection. The flower is of fine form and shape, and the sepals and petals of a light rose-pink, the petals showing a disposition to produce a coloured band, but in a very slight degree. The lip is of good shape, the front being purplish-crimson, with a pale lilac, crimped margin, and some broad gold lines from the base. It would be interesting to know whether anyone has flowered it in its original form.

AMERICAN NOTES.

ORCHID SHOW AT BOSTON.

THE Massachusetts Horticultural Society expects to have a good Orchid show at Boston in May, 1910. The Society hopes to attract some, at least, of the European growers, and offers in one class a gold medal and 1,000 dollars in cash as a first prize. Many other large money prizes and medals are offered. Special attention will be given to plants of rarity and value, as well as trees and herbaceous subjects likely to prove hardy in the Bay State.

CARNATIONS.

Yellow Carnations are not as popular in the United States as in England, and although this may be in part due to the fact that there are few really good kinds that are profitable to grow commercially as cut flowers, yet the fact remains that growers generally are shy of them. The new variety, J. Whitcomb Riley, was well shown both at Chicago and at the Indianapolis Convention of the American Carnation Society, and is a very beautiful flower, as well as a fine grower and free flowerer. The raisers are said to have received an offer from a British firm for the whole of the stock, in which case it would not, of course, be sent out here. More than one prominent grower has told the writer that no yellow variety will ever be taken up with any spirit in America.

It is singular that the gold medal of the above Society should have been awarded to a "variegated" variety, as the flaked kinds are called here, for such sorts are not really popular. Bay State, the variety so honoured, is a bold flower, and will doubtless be largely grown. Pink Carnations, although their name is legion, are not in many cases satisfactory. There is a dullness about the tints that is not pleasing, and many that came out with a flourish will be discarded. Rose Pink Enchantress is being thrown out in one, at least, of the very largest of the Chicago establishments, and, strange as it may seem, the old Mrs. T. W. Lawson is being more largely planted on account of its fine shipping qualities and its excellence as a

mid-winter bloomer. Winona is very highly spoken of, the colour being clear and good. It has probably come to stay. In red flowers, Victory seems to have slightly the advantage over Beacon. Robt. Craig has probably seen its best days, while growers are buying the new O. P. Bassett in enormous quantities.

ANTIRRHINUMS.

are among the most pleasing of the spring flowers offered here other than Roses, Carnations, and bulbous stock. Some of the soft yellow or light chrome tints of pure self colour are very beautiful now among the earliest ones, while later in the season the deep reds are popular. The plants are raised from seed or cuttings in summer and autumn, the earliest being benched in September or thereabouts, and, as these frequently come in at a time when Roses are scarce, they prove a paying crop, as they need but little heat. H. R. R.

THE ROSARY.

NOTES ON PRUNING ROSES.

As the month of March comes round one of the most important operations, namely, the proper pruning of Roses, has to be undertaken. Never be in too great a hurry to commence the work, especially in the case of newly-planted Roses. By pruning too early the result is thin, sickly growths, which never give satisfaction. Whereas, if patience is exercised, the work deferred till the sap is running freely, and the shoots pruned to plump, healthy eyes, the result is blooms nearly as early, and, given other proper attentions, stout, healthy growths, with correspondingly fine flowers. Where unable to make a clean cut with a sharp knife, use secateurs—those with a drawing action of the blades are the best for the purpose. When using a knife always hold the plant firmly with the hand, otherwise there is a danger of loosening the roots, and this is easily done in the case of newly-planted Roses. Wear an old glove on the hand that is not used for the knife. Look over the plants daily, planning where the knife shall go, and at the same time rub off any pushing buds that will not be wanted. Scratch these off neatly with the thumb-nail. Whenever on cutting the pith appears brown, cut lower if possible to where the pith is white. Remove altogether dead, weak and overcrowded shoots to the base from where they start. Speaking generally, three or four growths are quite sufficient to retain. It is always best to do any necessary thinning-out in October, as the wood left for the following season is then better able to ripen. Each year one can generally cut away old shoots from most varieties; try and discard all wood more than two years old, thereby making room for younger shoots from the base, as by this means the youthfulness of the plant is maintained. Always cut to an outward bud, having in mind at the same time the future shape of the plant. Standards may be pruned in the same manner as dwarfs, excepting only that, if of weak growth, they may, in some cases, be cut a little less severely. With climbing and rambling Roses it is best to get rid of as much old wood as possible in October, so that now, speaking generally, there will be only a little dead wood to remove here and there. In their first season of planting, these Roses should be cut back to about 2 feet from the ground. Newly-planted dwarf and standard varieties are better if they are cut back to within three or four eyes from the base their first season. Any that are planted in the spring instead of autumn should be pruned before being planted. March is the best month for spring planting of Roses. In dealing with established plants, shoots must still be cut back severely, if exhibition blooms are required. For ordinary garden decoration the shoots may be left longer; for forming bushes or hedges, still longer; whilst for furnishing pergolas, pillars, &c., thinning

and removing the dead wood, also old wood where it can be spared, is all that is necessary. Then also the idiosyncrasies of the various sorts have to be considered, and as it would require too much space to deal fully with this question, I must refer readers to the excellent work published by the National Rose Society entitled *Handbook on Pruning Roses*.

Vigorous, medium, and moderate growers of the different hybrids and species all need different treatment. For example, Pom-poms only require their old flower-stems removing and a little thinning. Tea Roses, which should be pruned the last of all—the second week in April being quite early enough—are often damaged by frost. Any injured wood must be cut away to where the shoot is sound and the pith white, the more vigorous sorts, except where the wood is damaged, being very sparingly pruned. In ninety-nine out of every hundred gardens where Roses are grown the plants are pruned ignorantly. It is nearly always a case of "spare the knife and spoil the Rose," though in some cases many sorts are spoiled by cutting away the flowering wood. It is essential that the growth and character of the individual Rose be studied, remembering, though, that all, by being pruned severely the first season after planting, have thereby the foundation laid of a sound and healthy plant.

Finally, when all the Roses are pruned and the prunings cleared away, remove gradually the soil heaped up around those which have been protected from frost in this manner. Next fork in a very light top-dressing of well-rotted cow-dung: a small handful of soot may be dusted around each plant, or a dressing of some artificial manure. But in all cases use stimulants sparingly, and do not apply any artificial fertilisers to newly-planted Roses. After the pruning is done, when buds are breaking in places where they are not wanted, i.e., where the shoots would crowd too much, grow inwards, or cross one another, scratch them off neatly with the thumb-nail. *Leonard Petrie, Gayton, Cheltenham.*

FORCING BY CLOCHES.

THE cloche is, perhaps, better known in gardens in this country by the name of bell-glass, and although its use is not so extensive as in France, most gardeners are more or less acquainted with its value for forcing purposes. Those who have read the weekly articles by Mr. P. Aquatias on the "French" garden in these columns, will recognise the great part the cloche plays in this system of intensive culture. Such a garden is necessarily restricted to a relatively small area, mainly because of the great cost of the manure; therefore everything must be done to make the fullest possible use of the cloches and frames, and to have another crop ready to occupy the hot-beds directly one has been harvested. The diagrams shown in fig. 70 represent the methods of arranging the cloches so as to obtain the best results in forcing Lettuces. The top portion of the diagram shows the cloches placed over four Lettuces, the central one being of the large Cos type, whilst the three around it are Cabbage Lettuces. In the angles between the bell-glasses and *outside* the latter, Cos Lettuces are also planted. The three Cabbage Lettuces are removed after about a fortnight, and the Cos variety occupies the whole of the cloche, where it develops into a large specimen. As soon as this is cut, at the end of April, the cloches are rearranged so that half those previously growing outside are now covered. This will be readily understood by noticing the direction of the arrows.

There is still a batch uncovered, and this remains so until about the middle of May, when the second batch is harvested. The third figure of the diagram shows the final stage, with the cloches placed over the third batch.

NOTICES OF BOOKS.

*** PLANTS AND THEIR WAYS.**

THE subject-matter in this book is arranged in the form of short lessons, describing the structure and functions of plant organs. Each lesson is accompanied by practical work of an experimental kind to be carried out by the class—a feature specially to be commended.

A few errors, such as "syneigidæ" for "synergidæ," have been left uncorrected, but they are not numerous.

† NATURE STUDY.

PROFESSOR DAVIS describes his book on nature study as a "reader for the higher classes

The range of the book is remarkable, including, as it does, both botanical and zoological sections, and, although the information is necessarily much condensed, it is always clear, and the wider point of view, so often absent from books intended for use in schools, is not lost sight of.

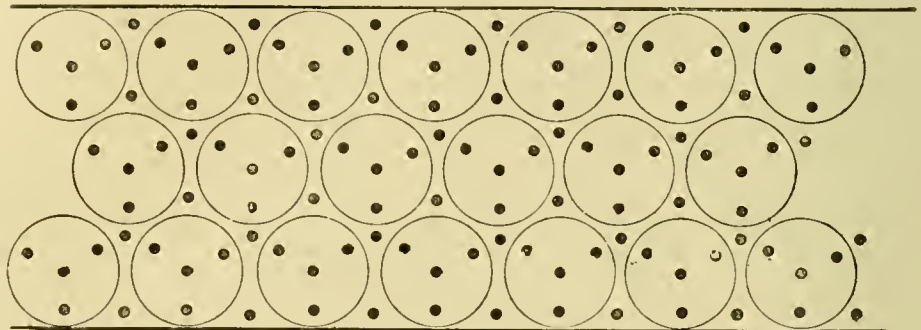
The illustrations, from original photographs, are well selected and reproduced.

THE MEMORIAL VOLUME OF THE DARWIN-WALLACE CELEBRATION.

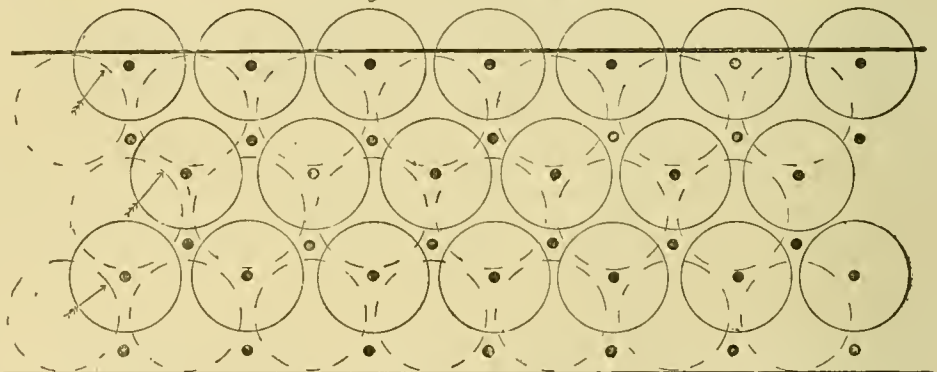
THIS volume issued by the Linnean Society is a memento of a memorable occasion.

On July 1, 1858, the Society held the most important meeting recorded in its long and

Young of Cos Lettuces - Dis-Arrangement of the Cloches in Position



Dis-Arrangement of the Cloches in Position



Dis-Arrangement of the Cloches in Position

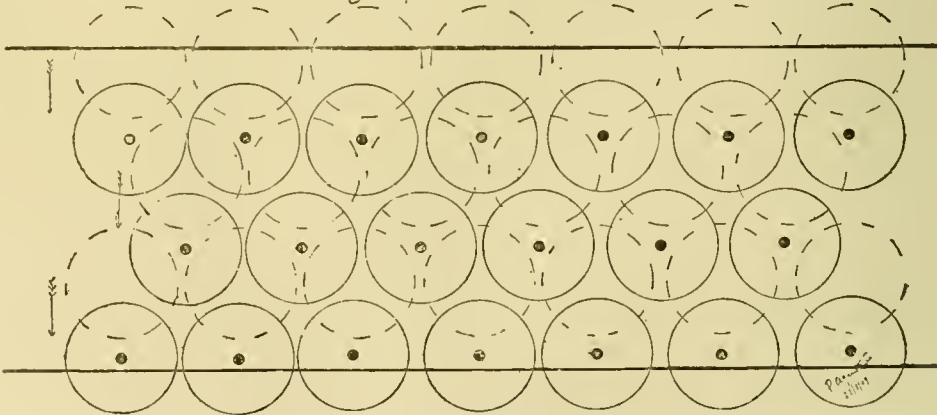


FIG. 70.—ARRANGEMENT OF CLOCHES IN FRENCH GARDEN.

of schools," and it should prove extremely useful to teachers, not only as an aid to class work, but also for reference out of school.

The needs of the teacher in town schools—often dependent, to some extent at least, on museums and natural history collections—have evidently been considered, and much useful and accurate information concerning members of both plant and animal kingdoms has been brought together.

* By Ernest Evans. (Dent & Co.)

† By J. R. Ainsworth Davis, M.A., F.C.P. (Dent & Co.)

distinguished career, for it was on that date that the joint paper by Darwin and Wallace "On the Tendency of Species to form Varieties; and on the Perpetuation of Varieties and Species by Means of Selection" was communicated to the Society by Sir Charles Lyell and Sir Joseph Hooker.

On July 1, 1908, the fiftieth anniversary of that event was celebrated in a manner worthy of the event and of the Society.

The memorial volume, giving a full record of the proceedings is not only a valuable souvenir

to the members of the Linnean Society who were present at the celebration, but also a document of importance to the historian of biology.

As our readers will remember, the Society, in order to celebrate the fiftieth anniversary of the reading of the paper, presented Darwin-Wallace medals, struck in honour of the occasion, to men eminent in biology both in this country and abroad: to Dr. Wallace, Sir Joseph Hooker, Dr. Francis Galton, and Sir E. Ray Lankester as representing British biologists who have contributed, by their advocacy and by their investigations, to the wider acceptance of Darwin's work; to Professors Haeckel, Weismann and Strasburger as representatives of the great band of foreign naturalists who count themselves among Darwin's followers.

A full report of the admirable series of speeches made by the president of the Linnean Society, Dr. D. H. Scott, by the recipients of the medals and by representatives of the universities and other learned bodies, is given in the

portraits, with which the volume is adorned. The place of honour, at the beginning of the volume, is occupied by a reproduction of Flamung's well-known engraving of Darwin; whilst at the end are a series of portraits of Wallace, Hooker, Haeckel, Weismann, Strasburger, Galton, and Lankester.

On the cover, which is not attractive, are figures of the Darwin-Wallace medal, bearing on the one side an effigy of Darwin and on the other one of Wallace.

The Linnean Society is to be congratulated on the dignified and adequate way in which it has recorded the jubilee of a great event.

DYNEVOR CASTLE.

DYNEVOR CASTLE, the residence of Lord Dynevor, is situated near to the picturesque town of Llandilo, on an eminence from which the upper reaches of the Towy Valley and, be-

notable trees. An Ash, in particular, is of an immense size; its old branches are carefully braced, and the decayed parts filled in to prevent further rotting.

The old castle of Dynevor, now in ruins, was originally erected as a Royal palace by Roderic the Great, Sovereign of all Wales, and for centuries was the seat of the government for South Wales. Overlooking the fertile Vale of Towy, and the meandering river of the same name which washes the foot of the wooded hills hundreds of feet below, and on one side standing on the verge of a sheer and deep precipice, its position in the days of primitive warfare, all but impregnable, would be of great strategic importance. The walls of the old quadrangle are in good preservation, and, after centuries of opening and closing, an oaken door remains still solid and apparently fit for further centuries of service.

I noticed a Rose garden, the ground of the beds being clothed with common Musk. This



FIG. 71.—DYNEVOR CASTLE, CARMARTHENSHIRE.

volume. A perusal of these speeches, particularly those of Sir Joseph Hooker, Francis Galton, Sir William Thiselton Dyer and Francis Darwin, will convince the younger school of biologists—if conviction be needed—of the high scientific worth and of the fine character of the naturalists of the past generation.

It is unfortunate that by some error of binding pp. 17 to 32 appear twice in the volume; though these pages are indeed fit to survive, it scarcely enhances their value to survive twice.

In addition to the record of the meeting at which the Darwin-Wallace medals were presented, the memorial volume contains the programme of the proceedings at the reception by the President and Council in the evening of July 1; a reprint of the papers by Charles Darwin and Alfred Russel Wallace, read before the Linnean Society on July 1, 1858; and selections from Malthus's "Essay on Population," which suggested the idea of natural selection.

No less valuable than the letterpress are the

yond, the Carmarthenshire beacons offer a landscape of great extent and beauty. The castle is a somewhat modern, quadrangular structure (see fig. 71), crowned at each of the angles with a cupola. The family of Dynevor has a most interesting genealogy, and the members of this ancient Welsh house still sacredly maintain many of the old customs and traditions of Gwalia. The family name is "Rice," a corruption of "Rhys," from the famous knight, Sir Rhys Ab Thomas, who supported King Henry VII., and whose prowess long continued to be sung by the bards of Wales.

There is a herd of old Welsh white and black cattle in the park, and the tinkling of tiny bells from the necks of these animals is reminiscent of Swiss pastures.

In all parts of the grounds are stately trees. On the north side of the castle is a group of Oak, Beech, and Spanish Chestnut of great age, forming a dense canopy; and in the direction of the old castle ruins are many other

Rose garden is composed of a series of circles, with Grass intersections.

Camellias do well out-of-doors at Dynevor, so do the Himalayan species of Rhododendron, as, indeed, they do in many parts of Wales. The same remark applies to Kalmias, which deserve to be more generally cultivated. I noticed a plant of *Kalmia latifolia* 20 feet broad and 12 feet high. The flower garden is most informal in design, and appears to have been evolved from what at one time were vegetable, fruit, and, possibly, flower gardens combined; some of the old fruit trees still remain. A tree of the Golden Hedgehog Holly, of considerable dimensions, a deciduous Cypress, and a tree of *Cryptomeria japonica*, 60 feet high, were all of interest. I noticed several fine trees of Scotch Fir, and a notable specimen of *Liriodendron*, the Tulip Tree.

Overlooking the deer park on the north side of the mansion is a formal flower garden, the design being worked out in Box. The colour of

the flowers used in this garden is almost exclusively scarlet.

The kitchen garden and greenhouses are situated nearly a mile from the castle. There is an old vinery, heated with a flue. The greenhouses accommodate plants that are useful for decorative purposes in the mansion, and there are fruit houses planted with Peach, Nectarine, and other fruit trees. It is not an easy matter in this locality to grow good fruits out-of-doors, as there is so much moisture in the atmosphere.

A fine plant of *Taxus adpressa* occupies a position at the end of a long, broad walk in the kitchen garden. The tree is 16 feet high, and 30 feet across. Intersecting the kitchen garden, in addition to a good wall for the culture of fruits, are several large Box hedges.

In the park is an interesting church, which has been built on the site of an ancient Roman temple, the foundations of which were discovered some years ago. There is a well, too, in the neighbourhood, which ebbs and flows, the stream issuing therefrom being called Nant-y-Rheibio, "the bewitched well." Giraldus Cambrensis supposed it to have some dependence on the fluctuation of the tides, but the sea at the nearest point is about 20 miles distant.

The gardener at Dynevor is Mr. A. Richardson, who has occupied the post for several years and has carried out many improvements. *A. P. Rowler.*

THE ALPINE GARDEN.

SAXIFRAGA DR. RAMSAY.

WE owe to Mr. Robert Lindsay, of Kaim's Lodge, Midlothian, the beautiful silvery Saxifrage which bears the name of the late Dr. Ramsay, himself an ardent horticulturist. The plant was raised by hybridising the two silvery Saxifrages, called *S. Macnabiana* and *S. lantoscana superba*, and in its habit it largely partakes of the latter parent. The rosettes of silvery-grey are very handsome, and the plume-like spikes of flowers are arched over after the fashion of *S. lantoscana superba*, in itself one of the most charming of this class of Rockfoils.

The individual flowers are beautiful, the purity of the white ground being the more effective on account of the presence on the petals of a few red spots. *Saxifraga Dr. Ramsay* is both a good grower and a free-flowerer, but those who wish plants to increase do not care to have too many flowering rosettes at one time, since those which bloom die. However, this variety produces rosettes freely enough, and, by taking the young ones off and repeating the process year by year for a time, a good stock of plants may be obtained. At the same time, this and other Silvery Saxifrages are more beautiful when they are in good-sized plants. Like others of its class, *S. Dr. Ramsay* succeeds best in a soil containing a little lime, and those who have not this in their soils can easily supply it by the addition of old mortar rubbish or pieces of limestone in chips.

TEUCRIUM PYRENAICUM.

The Pyrenean Germander (*Teucrium pyrenaicum*) is a beautiful little Alpine plant of value, although in many gardens it is not one of great permanence. In light and dry soils I have seen it as dwarf as 3 inches, although it is sometimes as much as 7 or 8 inches in height. The plant is prostrate in its growth, and forms a little mat of roundish, downy leaves, notched at the margins, and bearing in summer a number of small clusters of pretty little creamy-white and purple flowers. It is a plant which appeals rather to the specialist in such flowers than to the cultivator of Alpine flowers with more showy blossoms. The Pyrenean Germander does not, however, seem to be perfectly hardy, and this appears to result largely from the fact that the leaves are so woolly that the rain lodging about them causes them to decay in very wet seasons. Slugs are serious enemies to the plant, and in

gardens where these pests are numerous, it is necessary to entrap them. In wet districts the plants should be sheltered in winter and spring from heavy rains. The stock is increased by division, and the divisions should be grown on in pots until they attain a fair size, the pots being filled with loam, sand, and grit, and placed in a frame or an Alpine house. A similar compost may be used on the rockery, where the plant should occupy a position well exposed to view and on a level terrace or gentle slope. *S. Arnott.*

The Week's Work.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Black Currant gall-mite or big bud.—Before the bushes burst into leaf, carefully examine them to see if they are infested with this pest, picking off any of the big buds and burning them without delay. Should the bushes be badly infested, grub them up and burn them, and plant any fresh bushes as far from the old site as circumstances will allow. A remedy strongly recommended by various growers is to spray during March, April, and May with ordinary soft soap and Quassia mixture, the quantities being 2 ounces of the former to 4 ounces of the latter, dissolved in 1 gallon of water.

Vines out-of-doors.—It would seem that vines in the open are not so common nowadays as formerly. This is to be regretted, for, apart from the question of the fruit ripening, the foliage is extremely attractive. Even where the fruit does not ripen sufficiently for dessert purposes, it can always be utilised for the making of wine. A south or south-west wall is the best position in which to plant out-door vines. They will thrive in any good soil; but when preparing the ground for planting, on no account use rank farmyard manure. The use of too much of this commodity is probably the main cause of mildew, which is the greatest pest of outdoor vines in this country. Defer the planting of young vines till about the month of May, when the ground will be warm, and root action will soon commence. Suitable varieties are Royal Muscadine, Sweetwater, and Strawberry Grape. The work of pruning established vines (if these have not already been attended to) should be commenced at once, after which they should be washed with an insecticide such as Gishurst Compound to clear the rods of red spider and other insect pests.

General remarks.—The extremely severe weather recently experienced has acted beneficially in retarding the fruit-buds, thus affording them a better chance of escaping the ill effects of spring frosts. Whenever the weather is too bad to allow of work in the open, anything that can be done under cover should receive attention. The fruit in the fruit room will require examining for the purpose of removing any that are decayed. Exercise care in ventilating the fruit room, and admit no more fresh air than is absolutely essential, as an excess at this time of the year causes the fruits to shrivel.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Forwarding crops under glass.—Everything possible should be done to raise under glass many kinds of vegetables which would have been sown in the open ground had the weather been more favourable. By adopting this course, little time will be lost, as, the seed germinating under much more favourable conditions, the subsequent growth will be more satisfactory. The seedlings must be pricked off when quite small, either into boxes, unheated frames, or, in southern localities, merely improvised shelters. Under no circumstances should they be "coddled," but, on the contrary, air must be admitted whenever possible.

Cauliflowers.—Plants of early-forcing varieties that were potted up into 8 and 10-inch pots and are now growing in a cool temperature may, if the pots are well filled with roots, be introduced to a temperature from 50° to 60° and

exposed to as much light as possible. Give them a surface dressing of well-decayed cow manure and fibrous loam and let the roots be at all times well supplied with water. For a successional crop, another batch may be potted up either from seedlings raised last November or from plants which have been wintered in an unheated frame. Select the strongest plants, lift them with as large a ball of earth as possible, and pot them very firmly. Some of the same batch should also be planted out in unheated frames, or, failing these, hand-lights or cloches may be used, care being taken to select a sheltered, sunny position. Prick off young seedlings immediately before the third leaf is made, and sow small quantities of suitable varieties once a fortnight.

Kohl Rabi.—Seeds should be sown thinly in boxes about the middle of the present month in a gentle heat. Prick off the young plants as soon as they are large enough, and plant them out in an open position in well-prepared ground at the middle, or towards the end of April.

French Beans.—If these plants are not overcrowded, but are kept clean and in only a moderately warm atmosphere, they will now give abundant crops. Alternate waterings of diluted manure water should be afforded. The foliage should be thoroughly sprayed with tepid water twice daily on bright days, and the atmosphere must be kept moist. The most suitable place at this season for these plants is on shelves in the intermediate house. Make further sowings once a fortnight.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LOOER, Bart., Leonardslee, Sussex.

Seed sowing.—The details connected with seed sowing will now claim attention. Prepare a sufficient quantity of rich soil, which should be composed of rotted loam, leaf-mould, and silver sand. Next get some shallow seed trays, boxes, or pots, and prepare these. If boxes are used, a layer of coarse soil, or the siftings from the soil will be all that is required in the matter of drainage for such as will contain annuals, as these will not remain in the boxes for any length of time. The boxes intended for seeds of Conifer, Rhododendron, Erica, or similar plants will need to be clogged. No time should be lost before sowing seeds of Begonia, Lobelia, Marigold, Dianthus, Stock, Aster, Campanula, Salpiglossis, Phlox, and any other tender or half-hardy annual that may be desired. The boxes may be placed on a half-spent hot-bed; one that was recently used for Asparagus will answer well. Sow the seeds thinly and prick off the seedlings into boxes or pots as soon as they are large enough to handle.

Sweet Peas.—An endeavour should be made to have Sweet Pea flowers over as long a period as possible. Those that were sown in the autumn will now require thinning-out and staking. First place some short brushwood stakes on either side of the plants; these will afford a little shelter from winds and will also serve to support the Peas. The larger stakes, 7 to 8 feet in height, should be placed outside the smaller ones. When this has been done, rake the ground level, and apply a sprinkling of ashes and soot on each side of the row. Sow another batch of seeds in $\frac{1}{2}$ -inch pots, placing three or five seeds in each pot. These may be thinned out afterwards if all the seeds should germinate. Place the pots in a frame, or, if in a greenhouse, on shelves near to the glass. Sow also a batch of seeds out-of-doors, selecting well-tilled and liberally-manured soil. A good effect is obtained by sowing in clumps. If this method be adopted, a hole should be taken out, and half a barrowful of manure put at the base. Then fill in the soil and mix with it some soot and bone-meal, afterwards applying a few inches deep of rich soil on the surface. The seeds should be sown in the rich soil. Sweet Peas raised in pots may eventually be planted out in similar positions prepared in like manner. If long rows of Peas are desired, then dig out the trench as one would do for Celery. Among some of the best varieties and colours are Helen Lewis, King Edward VII., Queen Alexandra, America, John Ingham, Countess Spencer, Frank Dolby, St. George, Sutton's Queen, Flora Norton, S. J. Castle, Dorothy Eckford, Henry Eckford, and White Spencer.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Pineapples.—Pot-plants which are ripening their fruits will mature more satisfactorily if they can be removed to a light, dry house. Water them sparingly with clear tepid water. The earliest plants of The Queen, now developing their fruits, require to be treated more liberally in regard to heat and moisture than hitherto; the walls and other surfaces should therefore be damped frequently to create a humid atmosphere. Growth must be aided by liberally feeding the plants with diluted farmyard manure and guano, applying these alternately. In the afternoon the water may sometimes be weakly diluted with guano water and syringed about the base of the pots. While the plants are in flower syringing must be discontinued and the atmosphere kept moderately dry, but when the flowering stage is past growth must be again encouraged. Maintain a minimum temperature of not less than 70°, which, during the day, may be allowed to rise to 85° or 90° from the heat of the sun, but a little air should be admitted at the top of the pit. Close the lights early in the afternoon before the sun loses its power. Plants which were potted last month will now be rooting freely into the new soil, and it will therefore be safe to water them well with clear tepid water. Maintain the atmosphere in a humid condition, admitting air only on favourable occasions, and closing again early in the afternoon directly after syringing. Pot up the suckers from plants which have fruited, and place them in a warm and moist atmosphere, where they can be shaded from bright sunshine till rooted.

Cucumbers.—As soon as the roots of the earliest plants which are now fruiting appear on the surface, apply a top-dressing of loam mixed with a little decomposed horse manure. It is better to add a moderate top-dressing at frequent intervals than to give a large quantity at one time. Maintain a moist atmosphere, and syringe the plants in the morning and again at closing time in the afternoon. See that the roots are kept well supplied with water, using liquid manure and some approved fertiliser two or three times a week. Regulate the growths on the trellis, and stop the shoots at the second or third leaf. Do not allow the plants to carry more fruits than they can properly bear or they will soon become exhausted. To prevent red spider, syringe the foliage occasionally with a weak mixture of soft-soap and sulphur.

Obstruction of daylight.—Should the roof glass on any of the fruit houses have been affected by fogs, have it thoroughly washed, otherwise plants will become drawn.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Stove Aquatics.—The most successful method of cultivating these plants is to devote a house to them containing a central tank, but in cases where this cannot be done a few species may be grown in tubs. Aquatics add greatly to the interest of the collection of stove plants. All water should now be run out of the Water-Lily tank. The tubers should be removed from the old soil and placed separately in pots either of damp moss or wet sand, taking care to label each sort. The evergreen floating species should be placed in tubs or pans of warm water. Thoroughly cleanse the tank and see that there is no fault in the hot-water pipes which heat the water. Some authorities recommend planting the tubers of *Nymphaea* in tubs or large flower-pots and sinking these in the tank, but I find it more satisfactory to grow them in mounds of soil placed in position in the tank itself. The soil should consist of good heavy loam broken coarsely, and to which has been added a fourth part consisting of dried cow manure. If the loam is light, some clay should be mixed with it. After having allowed the soil to remain a couple of days in the house to warm, it should be made as firm as possible, remembering that the plants grow naturally in soil which is under considerable pressure from the water above. Plant the tubers about 3 inches deep, and place over the soil a good layer of gravel or coarse sand. The water should be warmed to a temperature of about 70°, and allowed to rise to

not more than 80° as the season advances. Such tall-growing aquatic plants as *Nelumbiums*, *Cyperus Papyrus*, *Sagittaria montevidensis*, &c., may be planted between the *Nymphaeas* and around the sides of the tank. *Hedychiums*, well rooted in pots, may be partially submerged in the water.

Primulas.—A pinch of seed of the single varieties may now be sown to provide a batch of plants for early flowering. Preparations should be made for rooting the growths of the old double-white variety. Lightly prick over the surface soil and cut away, with a pair of scissors, some of the lower leaves. Afterwards heap around the root-stock a top-dressing of sifted loam and leaf-soil, with plenty of silver sand. The soil may be easily kept in place if the pots are either sunk into empty pots a size larger, or a collar of cardboard is placed inside the rim of the pot. If the plants are given an intermediate temperature and the soil kept moist, the shoots will have rooted in about two months, when they should be removed and potted singly.

Hard-wooded plants.—For the next few weeks great care must be taken as regards ventilating the house in which these plants are grown. They need an abundance of air, but at the same time are most susceptible to draughts. Watering also requires judgment, and this is especially the case with *Boronias* and *Leschenaultias*. As the flowers of the *Epacris* fade, the plants should be rather severely pruned and placed, for a short time, in a warmer house. When the new shoots are about an inch long, repot the plants firmly in peat and sand, paying proper attention to the drainage. *Ericas* passing out of flower require similar treatment, although they should not be pruned quite so severely; merely requiring to have the weakly growths thinned out. The late-flowering *Heaths* must be kept in a well-ventilated house and as cool as possible without frost.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Blinds and other shadings.—At this time of the year there are frequent periods of exceptionally bright weather, and unless precautions are taken the foliage of Orchids is liable to become scorched by the sun's rays, especially if there are any flaws in the glass. The danger is greater at this season than at any other time of the year. Presuming that all the blinds and other shading materials are fixed in their proper places, it will be necessary to use them with discretion, for, although recommending caution in this respect, I do not advise shading the plants more than is necessary. It is better to err in giving too much shading than too little, as far more injury is likely to accrue to tender plants from too much sunshine than from too much shade. In cool houses where *Odontoglossums*, *Masdevallias*, &c., are housed, the temperature, when the sun is shining brightly, will quickly rise above 60°, especially on clear, bright, cold mornings, when the air outside is perhaps much colder than 40° and too cold to admit through the ventilators. In order to regulate the temperature of the greenhouse at such times it is advisable to lower the blinds.

The Cattleya and intermediate houses should be shaded when the sun is bright and continuous, but only on that side which is fully exposed to the sun's rays. The Mexican division which contains such plants as *Lælia anceps*, *Vandateres*, *Odontoglossum citrosimum*, &c., unless facing direct sunshine, will need no shading for the present, but so soon as the leaves begin to feel warm to the touch shading should be afforded.

The East Indian or warmest house contains a number of distinct species of Orchids, and many require very great care in the matter of shading, therefore, immediately the sun has sufficient power to raise the temperature 6° or 7°, the blinds should be used. With regard to providing suitable positions for the many distinct species which occupy the East Indian house, it is advisable to arrange such species as *Catasetum*, *Cynoches*, *Mormodes*, *Thunia*, *Dendrobium*, *Cyrtopodium*, &c., on the lighter side, and *Cypripedium*, *Aerides*, *Angraecum*, *Mystacidium*, *Vanda Lowii*, *Phalænopsis*, *Cirrhopetalum*, *Bulbophyllum*, the warm-growing *Cœlogynes*, &c., on the shady side, where they

may at all times be easily protected from direct sunshine.

Intermediate and cool houses.—The blinds on the *Cattleya*, Mexican, intermediate and cool houses should, when drawn down, be 5 or 6 inches above the glass. This may be easily arranged by fixing neat wooden rafters or iron rods from top to bottom of the roof. When the blinds are arranged in this manner abundance of light and air passes between the glass and the blinds, the benefit of which cannot be over-estimated. The blinds on the East Indian house need not be elevated above the roof glass, and the material of which the blind is made also for the intermediate and cool houses should be of a closer texture than that used for the *Cattleya* and Mexican divisions, in order to keep the houses as warm as possible. Many cultivators are obliged to grow such species as *Cattleya*, *Lælia*, *Epidendrum*, *Cœlogyne*, *Cypripedium*, *Cymbidium*, *Miltonia vexillaria*, *Vanda suavis*, *Trichopilea*, and numerous other Orchids in a house having an intermediate temperature, and it is found inconvenient or impracticable to separate them for the purpose of placing some species on the light and others on the shady side of the house; in this case it is best to shade all.

Some growers use blinds made of wooden laths and these are useful and convenient for covering the roofs at night-time when the weather is very cold.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Spring-flowering bulbous plants.—The various bulbs planted during autumn, including *Hyanthids*, *Tulips*, and *Narcissus*, are pushing through the soil, and as soon as the snow has completely disappeared, the surface soil of the beds will require to be carefully stirred with a small hoe. The *Crocuses* are pushing through the turf, and will soon make rapid growth. The blooms will require to be protected from the sparrows. Black cotton, supported on small sticks and twined about the plants in a kind of web, is the best form of protection. The birds are startled when they come in contact with the cotton. At one time it seemed that the varieties with yellow flowers were the only ones attacked by sparrows; but in recent years they have destroyed the flowers irrespective of colour.

Pits and cold frames.—Rooted cuttings of *Antirrhinums*, *Pentstemons*, *Calceolarias*, and *Violas* that have been wintered in cold frames require the soil to be loosened between the rows, and on sunny days several copious soakings of water should be given. These plants will soon be well rooted and ready for transplanting direct from the frame to where they are required to flower. *Antirrhinums* are easily raised from seeds, which should be sown at once. They are best massed in beds of distinct colours, such as crimson, yellow, and white. The *Pentstemon* is also easily propagated from seeds. This plant has few equals for massing in beds or borders. The great variety of colours and the beautiful pencilling in the throats of the flowers always evoke admiration. Innumerable are the bedding arrangements of other plants that associate well with the *Viola*. These flowers are almost indispensable; their value as edging plants on long herbaceous borders, or for planting in beds by themselves or as a groundwork to other subjects is very great. *Coxcombs* and *Celosias* are much used in the London parks for furnishing flower-beds during the summer months. Their plumes of purple, crimson, golden, yellow, and lemon-coloured flowers are especially attractive. A sowing of both *Celosias* and *Coxcombs* should now be made. When the seedlings are well above the seed-pan, place them near to the glass in a considerable heat, but guard against damping, which is a source of great danger to these plants in their early stages.

Lawns and edgings.—Attention should now be given to the rolling and mowing of lawns that are kept closely cut by mowing machines. The edges and verges on the side of paths should have the turf cut neatly and evenly, for nothing appears so untidy as a badly-kept edging, either by walks or around flower-beds. All mowing machines should have been repaired and set in proper order before this date. After the close of each season they require overhauling and readjusting, whether they be hand, horse, or motor mowers.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, MARCH 17—
Roy. Meteorological Soc. meet.

THURSDAY, MARCH 18—Linnean Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty years at Greenwich—41.7°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, March 10 (6 P.M.): Max. 43°; Min. 36°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, March 11 (10 A.M.): Bar. 29.7; Temp. 36°; Weather—Overcast.

PROVINCES.—Wednesday, March 10 (6 P.M.): Max. 42° Ely; Min. 34° Durham.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—

Perennials, Bulbs, Liliiums, &c., at 12; Roses and Fruit trees at 1.30, by Protheroe & Morris, at 67 & 63, Cheapside, E.C.

WEDNESDAY—

Hardy Border plants and bulbs, Liliiums, &c., at 12; Roses and Fruit trees, at 1.30; Azaleas, Palms, &c., at 5, by Protheroe & Morris, at 67 & 63, Cheapside, E.C.

FRIDAY—

Choice Established Orchids in large variety, by Protheroe & Morris, at 67 & 63, Cheapside, E.C.

Imperial Training in Horticulture.

The task of cultivating the land of the Empire is becoming more and more one for trained horticulturists. The increasing complexity of modern life causes an increase in the number of commodities indispensable to that life. The natural or agricultural rate of production being too slow to meet the demand, it has to give place to intensive methods which are essentially horticultural in their character.

Our point of view is strikingly illustrated by the custom which is growing up in various tropical regions of holding what are called "agri-horticultural shows" in the place of the purely agricultural and purely horticultural shows common in our own country. Though the word agri-horticulture is ungainly enough, it is expressive of the modern trend of development of the science of the cultivation of the earth.

In treating of the training of horticulturists for the Empire, we have not primarily in mind the training of men for service in the Government Botanical Gardens at home or abroad. Kew provides, in a manner not to be rivalled elsewhere, the technical education and practical experience necessary for the men who are to fill official posts of this kind, and in the present, as in the past, Kew men are giving an excellent account of themselves in all parts of the civilised world.

But even with respect to such posts as these more might be done than is at present

attempted. For botanical gardens are becoming also experimental stations. Now, the director of an experimental station requires special training of a kind not yet available at Kew. In such a man practical skill in the science of horticulture should be combined with a knowledge of the methods of experimentation.

We are concerned for the moment with the need for training young men who possess some small available capital, or, in default of capital, a fair endowment of energy, and who are willing to emigrate to one or other part of the Empire in order to till the soil.

It would be well for the Empire if the home country were engaged in preparing and sending out year by year colonists who had a knowledge of the methods of horticulture already implanted within them.

The reader may ask: Is it likely that any system of training at home will be of real value in the novel conditions which the emigrants are likely to encounter? Will it not be better to send them as boys to the new countries, there to learn their work by experience?

When the diverse conditions under which horticulture is carried on are considered: when the climate of Canada, severely continental in type, is contrasted with the insular climates of our tropical, island possessions: when regard is paid to the varied produce of the Empire, it may well seem as though the experience to be gained at home could be of but little service to the emigrant in his new surroundings.

Nevertheless, we believe that to draw such a conclusion would be to make a profound mistake. The successful horticulturist learns by experience to control, in as large a measure as is humanly possible, the conditions under which his plants are growing. He knows, consciously or unconsciously, the ideal conditions for certain plants, and proceeds sagaciously to provide the closest approximation to those conditions. His plants, like all plants, have simple wants—water and air, sunlight and warmth, together with small quantities of soluble compounds such as nitrogen and phosphorus. Some plants, it is true, need more water or light than others. But the peculiarities of the plants which grow at home are as wide as those that grow anywhere.

Therefore, the knowledge he has gained here will stand him in good stead abroad. He will make mistakes; but so he does at home. He will be confronted with special difficulties; but so he will be wherever he may practise his craft.

The training which he had at home would, moreover, unless it were of an inadequate kind, teach him caution; for it is only the half-trained who think they have nothing to learn.

It would be a good thing if the men going out from these shores to grow fruit in British Columbia, rubber in Malaya, or tea in Ceylon were men trained in the general, universal principles of horticulture, and not men, trained or untrained, selected haphazard by the careless hand of chance.

For this purpose no small horticultural college, with its good intentions and necessary limitations, would suffice. Such a horticultural station as that contemplated by the Innes bequest might, without detriment to the home interests which should be its first

care, form a centre for such Imperial training. What is wanted is an Imperial Institute of Horticulture; an institution amply endowed and supported by the constituent members of the Empire. Such an institution would not, of course, be a teaching body only; it would investigate as well as instruct. Nor would it exist solely for the service of the colonies and dominions of the Empire; it would benefit also the home country. An institution of the kind would not only train men to go abroad and train men for home horticulture, but it would attract men from the colonies themselves. To it would come men from the east and from the west in order that they might learn the latest word of horticultural wisdom.

This is no place to discuss detail: as, for instance, whether anyone should be admitted to study at the Imperial Institute of Horticulture before he had worked for a term at the practice of horticulture, or whether the manual and mental parts of the work should be carried on simultaneously—we refrain from using such words as "practical" and "scientific" in antithesis. To do so is ridiculous; for, if science is not practical and if practice is not scientific, then both are nonsense.

The proposal thus outlined in briefest fashion may seem, even to those who sympathise with the aspirations suggesting it, too bold to be likely of realisation. It is true that such a scheme would require the expenditure of a large sum of money. But when the importance and the magnitude of the work which such an institution would perform are considered, it cannot be doubted that the money would be well expended. Other industries, great and imposing, it is true, but, nevertheless, of lesser magnitude than those of agriculture and horticulture, have their "Charlottenburgs." In this country we are still without a Chair of Horticulture at any of the universities, and it is not long since the first Chair of Forestry was established. Why, at the next Imperial Conference, should not such a proposal as that outlined here be given consideration?

OUR SUPPLEMENTARY ILLUSTRATION.—At the Royal Horticultural Society on October 27 last year Colonel G. L. HOLFORD, C.I.E., C.V.O., Westonbirt (gr. Mr. H. G. Alexander), staged one of those magnificent groups of Orchids for which his gardens have become famous. One of the most admired plants in the group was *Lælio-Cattleya Lustre gigantea* (C. Luddemanniana × L.-C. callistoglossa), which was accorded an Award of Merit. The beauties of the flower consisted not only in its fine colouring, but more particularly in the remarkable arrangement of its segments. The plant is of dwarf and compact habit, and the flowers, therefore, appear unusually large in comparison to the size of the growths. The sepals are white, tinged with rose; the petals crimped and decurved, white, tinged and mottled with rose, the mid-ribs being white. The lip is deep claret-purple, lighter towards the front, which has a light violet shade, the base having deep, golden-yellow lines, and the front a branched reticulation of a yellowish tint. It is interesting to note the features of *Cattleya Warscewiczii*, which, with *Lælia purpurata*, were the parents of L.-C. callistoglossa, appearing so marked in the flower of L.-C. Lustre, whose fine substance is also derived from that parent.

THE "BOTANICAL MAGAZINE."—In the issue of this publication for March, there are illustrations and descriptions of the following plants:

CYCAS MICHOLOITZII, tab. 8242.—This species was discovered in Annam by Mr. W. MICHOLOITZ when collecting on behalf of Messrs. SANDER & SONS. A plant sent home by him in 1904 and a complete series of herbarium specimens were placed at the disposal of Sir W. T. THISLTON-DYER, whose formal description of the species was published in *Gardeners' Chronicle*, 1905, vol. xxxviii., p. 142, figs. 48 and 49.

SAXIFRAGA SCARDICA, tab. 8243.—A form of *S. scardica* was figured in the *Botanical Magazine*, 1905, tab. 8058. That form is most usually met with in Alpine gardens, but Mr. SPRAGUE pointed out at the time that it was not the typical state of the species. The typical *S. scardica* now figured is a rare plant, and it is stated to have been introduced to cultivation in this country by Mr. R. FARRER, of Ingleborough. A living plant was presented to Kew in 1908 by Mr. E. H. JENKINS. The differences exhibited by the two forms are described as follows:—In *S. scardica* proper the lower leaves are acute with 9-15 intramarginal pits, the 3-II flowered stems are reddish, and the reddish subacute calyx lobes are distinctly glandular-pilose. In the form figured at t. 8058, for which Mr. SPRAGUE proposes the name *S. scardica* variety *obtusata*, the lower leaves are subacute, with 5-II intramarginal pits; the 1-3 flowered stems are green, and the green, obtuse calyx lobes are relatively free from pubescence.

PSEUDERANTHEMUM SETICALYX, tab. 8244.—This is the species that was described by C. B. CLARKE in the *Flora of Tropical Africa* as *Eranthemum seticalyx*. The specific name has reference to the attenuate calyx-lobes, not to the presence of setæ, for the calyx is glabrous or nearly so. There are several species of *Pseuderanthemum* which may be grown so as to get them to flower in winter. These include *P. albiflorum*, *P. Andersonii*, *P. cinnabarinum*, *P. igneum*, and the species now figured, which last may also be grown so as to flower in late summer. These Acanthaceae plants require the temperature of an intermediate house.

NIGELLA INTEGRIFOLIA, tab. 8245.—For illustration and description of this species see *Gardeners' Chronicle*, 1908, xlv., p. 226.

RUBUS KOEHNENIUS, tab. 8246.—The figure of this plant was prepared from a plant purchased from Mr. SPÄTH, of Berlin, in 1890, under the garden name of *R. moriofolius*. It differs, however, from SIEBOLD's species so named, and Dr. FÖCKE (*Engl. Prantl. Pflanzenfam.*, vol. iii., pars iii., page 28) found it necessary to treat it as a distinct species referable to a small East Asian group, the *Corchorifolii* of the section *Batothamnus*. At Kew this plant forms a rounded bush 3 feet high. It blossoms towards the end of May, and its fruit ripens in July. The plant thrives vigorously in a border of loamy soil, and can easily be increased by means of suckers. Its attractions as a shrub for the garden lie in its fine, lobate leaves and in its abundant and distinct white flowers.

LINNEAN SOCIETY.—At a meeting to be held on March 18, at 8 p.m., the following papers will be read:—1, Miss STYLL LONGMAN, "The Dry Rot of Potatoes"; 2, Mr. A. HORNE, "The Structure and Affinities of *Davidia involu-crata*," Baill.

MR. W. BUOD is retiring after 47 years' service as head gardener to Mr. DALGETY and Captain DALGETY his son, at Lockerby Hall, Romsey, Hants. He will be succeeded by Mr. W. BAXTER, from Melchet Court Gardens, Romsey, where he has served as foreman for the past ten years under Mr. G. HALL, who is so well known as a leading exhibitor of Japanese Chrysanthemums.

ROYAL GARDENERS' ORPHAN FUND.—From February 26 last the address of the office of this fund will be Milton House, Surrey Street, London, W.C. The secretary is Mr. BRIAN WYNNE.

MR. J. F. BAILEY.—At the annual meeting of the Royal Society of Queensland, held at the Technical College, Brisbane, on January 29, Mr. J. F. BAILEY, Director of the Botanic Gardens, Brisbane, was elected to the presidency, in succession to Mr. J. C. BRUNNICH, F.I.C. The late president took for the subject of his retiring address, "The Land we Live On." Speaking of the economic position of Queensland, he showed that whilst Queensland could grow practically all the food stuff she requires, she still depends largely on outside markets. If only a narrow strip of 6 per cent. of the whole of Queensland were cultivated, Queensland could produce a wheat crop equal to about that of the United States.

TRIALS OF DAHLIAS.—The National Dahlia Society, in addition to holding two exhibitions in September next, has arranged for three trials of Dahlias for the purpose of determining the varieties best adapted for garden decoration. These trials will be as follows:—Garden Dahlias, in association with the Royal Horticultural Society, at Wisley Gardens; Cactus Dahlias, in conjunction with Mr. J. T. WEST, at Shenfield; and Pompon Dahlias at Slough, under the care of Mr. CHARLES TURNER. The garden Dahlias at Wisley will be grown under a distinctive name, and two plants of each variety intended for trial should be sent to the superintendent in April, addressed, if by rail, R.H.S. Gardens, Horsley Station, L. and S.W.R.; or, if by post, R.H.S. Gardens, Wisley, Ripley, Surrey. A post-card should, in either case, be sent announcing the despatch of plants. In connection with the other trials, new varieties of Cactus and Pompon Dahlias are alone invited, and these will be grown under numbers, in conjunction with comprehensive collections of varieties in commerce. Two plants of each variety should be sent not later than the end of May. Those desirous of including their novelties in the trials should notify their intention to Mr. E. F. HAWES, Royal Botanic Gardens, Regent's Park, N.W., and send with the notification the names of the varieties intended for trial. These names will be registered in numerical order, and the corresponding number with address label will be returned ready for despatch to the trial ground. All packages should be sent carriage paid. On arrival they will be carefully planted, be supported with a single stake, and grown without disbudding. The plants will be inspected on convenient dates by a special committee of the National Dahlia Society.

THE HORSE GUARDS' PARADE: A SUGGESTED IMPROVEMENT.—London, which is always to its citizens a fascinating place, may yet become a splendid city. It has unrivalled parks, and no lack of stately buildings, but, by reason of its haphazard growth, it lacks the ordered majesty which should belong to the metropolis of a great empire. Statues, some of great beauty, some unworthy of their subjects or of any city, have been dumped down in obscure corners, or in crowded thoroughfares. Fine buildings rub shoulders with mean houses, and great avenues of adequate proportions are but few. Recent improvements, however, prove that these disabilities are becoming widely recognised, and that artistic ability is available to remedy some at least of these defects. Kingsway is a noble thoroughfare in the making. The Marble Arch improvement is a notable success. Mr. J. W. SPEAIGHT, to whom London is indebted for the idea of this latter improvement, has now turned his attention

to the amelioration of that dreary stretch of desolation—the Horse Guards' Parade. Mr. SPEAIGHT would transform this into a great Place of parade ground, broad walks, and avenues, wherein the statues of British military heroes should be gathered together—a British Valhalla. The plans, which Mr. SPEAIGHT, with the collaboration of Mr. C. E. MALLOWS, F.R.I.B.A., has now prepared, represent a good idea finely developed. The cost—some £60,000—is not considerable, and the work would provide employment both for skilled and unskilled labour. It is to be hoped that all who are eager for the beautification of London will lend their active support to the scheme.

MR. W. J. SIMPSON, late gardener at The Grange, Sutton, Surrey, and one of the most expert cultivators of Sweet Peas, has removed to Stoke Rochford, Grantham, as gardener to H. W. JEFFERSON, Esq.

*** LAWN.**—We have received a pamphlet on this subject by W. J. STEVENS. The author rightly insists on the necessity there is for providing a good foundation for the lawn at the commencement. It is impossible to obtain good results if the ground is likely to fall afterwards here and there and thus show depressions when the Grass should be level or have an even slope. The details of lawn-making with turf and with seeds are carefully explained, it being advised that one or the other method should be adopted, according to local circumstances. As a rule, however, the best sward can be obtained by sowing seeds, it being next to impossible to get turf free from weeds. Short descriptions of the principal kinds of Grasses are given, and information with respect to the renovating and manuring of lawns, as well as methods of destroying worms and Moss. The pamphlet concludes with an article by Mr. HEARNE, of Lord's Cricket Ground, on the formation and management of cricket and tennis grounds.

PUBLICATIONS RECEIVED.—*One and All Garden Books: Stocks.* By R. P. Brotherston. (London: Agricultural and Horticultural Association, Ltd.) Price 1d.—*Bulletin de la Societe Nationale d'Acclimatation de France.* (Paris: 33, Rue de Buffon).—*Bulletino della Societa Botanica Italiana.* No. 1.—*List of Herbaceous Perennials Tested in the Arboretum and Botanic Garden Central Experimental Farm, Ottawa, Canada, with Descriptions of Flowers, and Other Notes.* By W. T. Macoun. (Bulletin No. 5, Second Series). (Ottawa: Government Printing Bureau).—*U.S. Department of Agriculture: Bureau of Plant Industry.* Circular No. 23. Potato Diseases in San Joaquin County, California. By W. A. Orton. *Bureau of Entomology.* Bulletin No. 66, Part IV.: Some Insects injurious to Truck Crops. The Leafhoppers of the Sugar Beet and their relation to the "Curly-Leaf" condition. By E. D. Ball, Ph.D. Bulletin No. 75, Part VI.: Miscellaneous Papers on Apiculture. The Status of Apiculture in the United States. By E. F. Phillips, Ph.D. Circular No. 104: The Common Red Spider. By F. H. Chittenden, Sc.D. Farmers' Bulletin No. 344: The Boll Weevil Problem, with special reference to means of reducing damage. By W. D. Hunter. (Washington: Government Printing Office).—*Agricultural Bulletin of the Straits and Federated Malay States.* (February). (Singapore: The Methodist Publishing House).—*Johnston on Small Holdings and Allotments.* Second and Revised Edition. (London: Effingham Wilson, 54, Threadneedle Street, E.C.) Price 16s. net.—*The Estate Magazine.* (March). Price 6d.

NOTES FROM A "FRENCH" GARDEN.

THE recent snowy weather has been very harmful in the French garden. Work had to be entirely suspended, and the numerous sowings which in ordinary conditions would have been made were inevitably delayed. This weather has emphasised the importance of having everything in readiness for the making of the hot-beds, and the ground prepared before Christmas for the crops in the open.

Although the weather has caused much delay, it would be unwise to make the hot-beds thicker than usual with a view to making up for lost time, as plants, especially seedlings, suffer from excess of heat as well as from cold.

The snow has cooled the beds that were made in January and February, and the paths between the frames will have to be filled up again with hot and strawy manure.

In many places the mats have been kept continually on the lights, and this has been prejudicial to the crop of Radishes. As soon as the weather permits the plants will be pulled out. The Lettuces also will require attention, as they have many decayed leaves.

The first Lettuces planted in January will be ready for harvesting shortly. We generally cut the Lettuces early in the morning, and put them in hampers, head downwards. This is to prevent dirt from getting between the leaves: they are carried to the shed to be packed.

If Cauliflowers sown in September have not grown satisfactorily, they should be planted now, but if the plants are strong and healthy, it is preferable to wait till the Lettuces are cleared before planting them among the Carrots.

We are now sowing another batch of Cauliflower "Lenormand," to be planted in the open amongst the Cabbage and Cos Lettuces at the beginning of May.

Endive sown in the middle of February will be ready for transplanting on a hot-bed 9 inches in height when trodden down. We shall allow 140 to 150 plants per light. The lights are kept closed until the plants are well established, after which they receive a little ventilation.

For a succession we generally sow some seeds in the hot-beds, on which are reared the young Melons. The plants are pricked off a month after sowing.

We are sowing Celery, and, as the snow has delayed this work, a hot-bed will be requisitioned. One batch is of the variety Chemin; this is employed for early cropping. The variety Long Winter Green is used for the main batch. A few seeds of Celeriac Improved Parisian will also be inserted.

Melons sown in the middle of February will now require to be potted into 3-inch pots filled with rich, loamy soil. The soil is not made firm at the roots, and the pots are well filled so as to avoid them holding too much water. The plants are plunged in a hot-bed which has been prepared a few days earlier. We insert from 90 to 100 plants in each light, which are kept closed for eight or ten days, after which they can be opened a little in the middle of the day, to assist in hardening the plants.

The main batch of Melons should be sown in the middle of March to have them ready at the beginning of May to utilise the frames and lights until then occupied by the Carrots and Turnips. We sow two lots of seeds at an interval of a few days, in case the first batch fails.

In some of our frames we have planted a crop of Lettuces without sowing Carrots amongst them. As soon as the Lettuces are cleared, we shall remove the frames and the lights, put the soil in a convenient place, and then turn the manure over and well tread it. After this operation the frames and the soil will be replaced in their original positions. These beds will then be ready for the sowing of Turnip Early White. To sow Turnips in the frame we have a special appliance a little shorter

than a light, viz., 4 feet 3 inches by 4 feet 4 inches. It is made of 11 pieces of wood nailed at equal distance across 10 similar pieces. At the place where the slips of wood cross is fixed a small peg 1 inch in length. When this tool is pressed on the soil it makes 110 holes, into each of which are placed three seeds of Turnip. The lights are kept closed till the young plants come up, when a little ventilation is permitted and the quantity increased gradually, some being allowed even at night-time. When the cotyledons are well developed, all save one plant are removed from each hole.

Tomatos that were raised from seeds sown on February 20 will be pricked off in beds which have previously carried a crop of Lettuces. The beds will be prepared as for the sowing of Turnips.

We are planting early Potato Henot in a well-sheltered bed. The tubers are very even in size, and the haulm is small. We plant them in rows made 2 feet apart and allow 18 inches between the plants in the rows. By the middle of May they will be fully earthed up, when we shall plant Tomatos between the rows, and this crop will occupy the ground when the Potatos are lifted. *P. Aquatias.*

LAW NOTES.

REPAIR OF NURSERIES.

AN action of considerable interest to nurserymen was recently tried before Mr. Justice Jelf, at Nottingham Assizes, in connection with a dispute which had arisen between Messrs. J. R. Pearson & Sons, of Nottingham, and their late landlord.

The land which formed the subject-matter of the action had formerly been occupied by Messrs. Pearson as nursery ground, but it was afterwards sublet by them. When the lease ran out, the landlord of the premises, Mr. Charlton, brought an action for damages, mainly on the ground that the land had not been left in proper condition.

Putting the matter briefly, the dispute principally turned on the construction of a clause in Messrs. Pearson's lease, which provided that the land should be given up at the expiration of the tenancy "in good state, plight and condition." In addition to this, the landlord contended that the land had not been used "in a husbandlike manner, according to the custom of the country."

Messrs. Pearson, as defendants, thus had to defend the manner in which the land had been left by their under-tenants, and they raised a variety of interesting objections to the landlord's claim. They pointed out that the lease contained no restrictive conditions as to cropping, and that a nurseryman could not claim for compensation or tenant-right on his leaving the land, and ought, consequently, to have a free hand as regards cultivation and manuring.

In summing-up the case to the jury, the learned judge declined to regard the points put forward by the defence as relevant to the issue, and stated that, in his opinion, the case turned entirely on the wording of the covenant in the lease to the effect that the land should be given up "in good state, plight and condition." So far so good, and if the matter had been left to the jury at this point, they would have had merely to determine the simple question as to whether the tenants had or had not left the land in this state. But the learned judge went further than this, and expressed the opinion that the tenants would not be leaving the land in good state, plight and condition unless they actually left it in just such a state as they would yield it up to a son or a brother, or as it was during the middle of their tenancy, i.e., in the height of condition as regards cultivation and manuring. If the learned judge was correct in adopting this point of view, it will be seen that a nurseryman who holds under a lease in these terms is in a position of extreme hardship, inasmuch as he, like the market-gardener, can be called upon to leave the land at the end of his tenancy in first-class condition (and not merely in fair condition), although, unlike the market-gardener, he can claim no com-

ensation from his landlord for improvements or special manuring.

Fortunately for Messrs. Pearson, the case came before a jury composed of men familiar with agricultural conditions from the practical point of view, and, somewhat to the surprise of those present in court, they entirely disregarded the summing-up, and gave a verdict for Messrs. Pearson on all points.

Had the case come before a jury of another type, the result might have been disastrous for Messrs. Pearson. It is a practical instance of the unsatisfactory position of the nurseryman, which has more than once been described in these columns. The case also furnishes an additional argument in favour of the remedy which has been urged many times in these pages, that, in disputes between nurserymen and their landlords, all matters of fact should be compulsorily referred to the arbitration of a single practical man, as is already the rule in the case of market-gardeners. The simplest way to achieve this object would be to extend to nurserymen the same easy machinery for arbitration which is granted to market-gardeners by the provisions of the Agricultural Holdings Act. *H. M. V.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

THE R.H.S. DAFFODIL CLASSIFICATION.—

I desire to say that I was wrong in attributing to the R.H.S. Council the want of mature consideration in issuing this new scheme. It appears that the Council did exactly as requested by the Narcissus Committee, i.e., authorised first the appointment of the Special Committee and then its recommendations when received. The blame must rest with the Narcissus Committee, of which I am myself a member. It should have appointed its own sub-committee and fully considered its report before passing it to the Council for its imprimatur. Mr. Jacob gives an erroneous impression by his account of the omission of Mr. P. R. Barr's name from the Special Committee. Mr. Barr was the original mover for a revision of the classification, and his name was necessarily one of the very first chosen by the Narcissus Committee. Its subsequent omission was owing to a pure but most unfortunate misconception. I need hardly explain that in making this correction I am not in any way depreciating the work of Mr. W. Barr. I will not occupy space by answering Mr. Jacob on the general question of this classification. He apparently stands alone in his advocacy. The experts in the subject seem to be united in their strong disapproval, which will probably have been effectually expressed elsewhere before this is in print. *G. H. Engleheart.*

I fully recognise the great service conferred by the Daffodil Committee in compiling and issuing this List. They are the most competent, and, indeed, the only body who could do so with the necessary experience and authority, and, moreover, since a new classification was urgently needed, it was certainly wiser to issue it now, though necessarily imperfect, than wait, perhaps indefinitely, for a more complete or perfect scheme. But the List was admittedly tentative, and, hence, invited the expression of opinions of those interested. Anyone who has thought about the matter at all will have realised how difficult the task is and how impossible it would be to make a perfect scheme that would satisfy all interests. But Mr. Jacob says: "It does not profess to be in any way natural or botanical. It is for garden and show purposes. Personally, I regard it as one-seventh garden and six-sevenths show." It seems to me that this fully justifies Mr. Engleheart's criticism, and, without going into any question of degree, I plead that regard might be paid to other points of view. Mr. Engleheart's letter is, I think, evidence that it would be possible to do so with advantage, and that, so far from its value for show purposes being diminished, the classification would be improved, would gain in general usefulness and authority, and, what is especially desirable, it would appeal to a far wider circle than those who are only, or primarily, interested

as exhibitors. Referring to doubtful cases, Mr. Jacob asks whether certain varieties should be classed in one division or another, and adds that, whatever view might be taken, he is ready to argue the case for the other side. The opinion of an individual, even if he is an expert, has only a limited value. It varies with the degree of his experience and is influenced by his special interest in the flower—as exhibitor or grower, gardener, breeder or botanist. It is just such debatable cases, where there seems to be as much to be said for one side as the other, that illustrate the necessity for the widest possible expression of opinions, and it is in such cases especially that considerations from the point of view of the breeder and botanist would be helpful in making a satisfactory decision. *A. J. Bliss.*

DAMAGE BY SNOW.—I am sending you a photograph (see fig. 72) of the wreck made by the heavy fall of snow last week on Mr. W. Wood's place at Dartford Heath, when seven houses, 300 feet long by 12 feet wide, completely collapsed, although fires were going. As there were 23° of frost, scarcely any of the contents of the houses were saved. Amongst the plants lost were over 20,000 young Tomatos, besides Carnation and Chrysanthemum cuttings, so that practically the whole of the season's crops are ruined. Having known

Broccoli, and Brussels Sprouts on highly-manured or loose soil. Under such conditions, nearly all the Winter Broccoli has collapsed, and many of the Brussels Sprouts are of little value, because there are no compact buttons, only loose leafage that is scorched in the open field on hard, poor soil. Green vegetables in general are in a much better condition, although not by any means entirely undamaged. The Broccoli crop, even in fields, has suffered severely in a few instances. Kales, more especially the old cottager's type and scotch, show their superiority over other green vegetables during such winters as this, and are valuable in any household or market. Such seasons as the present teach us that it is unwise to rely upon one sowing of any of the winter and spring green vegetables, and that smaller, less succulent plants are superior to larger, sappy specimens for withstanding severe frosts. The Spring Cabbage crop is looking anything but promising. The 26° of frost experienced just after Christmas, in spite of its suddenness, did our plants no harm. Fortunately they were securely covered with snow, and they looked very fresh after the thaw. Now they look unhealthy, for the many frosts during February—both wind frosts and rime—without any covering or rains to help them, have caused the plants to dwindle to very small proportions. The best course to take is to commence forming a gentle

NAMING OF MULTIGENERIC ORCHID HYBRIDS.—Having carefully studied the circular issued by the sub-committee of the Orchid Committee of the Royal Horticultural Society, it appears to me that a much simpler and more intelligible plan might be adopted than any of the half-dozen described. Plan No. 1, as at present adopted, involving the combination of parts of the names of the different genera combined in the hybrid, is, to my mind, open to a practicable modification as follows, which considerably shortens the compound names without, however, sacrificing, for the Orchid expert, their significance. By the present system, several syllables of each genus are used; thus, in the examples given, we have *Anguloa* × *Lycaste* = *Angulocaste*, *Anætochilus* × *Hæmaria* = *Anæctomaria*, and so on; a trigenic hybrid *Sophrontis* × *Cattleya* × *Lælia* thus becoming *Sophrælaiocattleya*. So that it is quite obvious that, as the circular states, for multigenic hybrids of very complex character, the names would become ridiculously long and unmanageable. A careful study of the generic names shows, however, that each genus in its name has a single syllable or dissyllable, sometimes more than one, which could be adopted as its symbol, and used in conjunction with others in such a way that there would hardly be more syllables than genera. This, at any rate, is a great step in the right direction, while those acquainted with Orchids could at a glance read off the symbolic syllables, and see at once the composition of the plants, so far as the genera involved were concerned. It is absolutely hopeless to attempt to do more than this; that is, to indicate the varietal parentage in addition. Having thus indicated the nature of my suggestion, I will illustrate it by comparing the list of bigeneric and trigenic hybrids already named and cited in the circular under consideration, with the compound names on my system:—



FIG. 72.—PLANT HOUSES DESTROYED BY SNOW IN A MARKET NURSERY.

Mr. Wood for a great many years as a worthy man and good grower, I am making an appeal on his behalf, and shall be glad if you will find room to publish the photograph in your next issue, with my letter, as I feel sure that many will contribute to help a man over such a disaster. I shall be glad to acknowledge direct, and through your columns each week, any subscriptions given, if you will kindly allow space for that purpose. The following donations have been promised:—H. O. Larsen, £10 10s.; James Sweet, £10; Joseph Rochford, £10; Geo. Monro, Ltd., £10; J. Nielsen, £3 3s.; A. J. Monro, £2 2s.; R. Copley, £2 2s.; A. W. Pollard, £2 2s.; H. B. May, £1 1s.; Robert Piper, £1 1s.; James Walker, £1 1s.; Mrs. Monro, £1; F. Horne, £1; R. Seymour Copley, £1. *Geo. Monro, March 11.*

CABBAGES AND THE FROST.—Most of the life of the winter vegetables has been squeezed out by alternate freezing and thawing. They are looking very flabby and dejected. There was a prolonged growing period last autumn, and such is scarcely the best weather for preparing green crops for withstanding a severe winter. If there is one cultural point emphasised more than another during the present winter, it is the folly of growing such crops as Winter Broccoli, Spring

hot-bed, and to raise a few thousand young, healthy plants of the smaller early-heating varieties, such as Sutton's April, or any selected type of Ellam's Early. Plants raised at this season grow away very quickly. Everything must be done to prevent a shortage in the supply. It is usually possible to find suitable spots for pricking-off frame-raised plants a few inches apart, to be moved during April, with a small ball of earth, to their final positions. When they are established there, light applications of nitrate of soda will assist in the early formation of dark, tender, succulent leaves. Soluble fertilisers are never more economically employed than for adding colour and succulence to such produce. It renders them so tender that the supply rarely equals the demand, which is always a healthy sign to the purely market man. Perhaps the quickest hearting of all the Cabbages suited to spring sowing is "Earliest," which has received two awards, and ought to be grown in every private garden. *Charles Foster, Reading.*

FROSTS AT MONMOUTH.—On the morning of March 4 we registered 25 degrees of frost, and on the 5th inst. 32 degrees. Fortunately, for some subjects, the ground was covered with about 8 inches of snow. *T. Coomber, The Hendre Gardens, Monmouth, March 8.*

Group Genera.	Hybrid as Named.	New System.
1. <i>Anguloa-Lycaste</i>	<i>Angulocaste</i>	<i>Angcaste</i>
2. <i>Anætochilus-Hæmaria</i>	<i>Anæctomaria</i>	<i>Hæmaecta</i> or <i>Anæria</i>
<i>Dossinia-Hæmaria</i>	<i>Dossinimaria</i>	<i>Dossaria</i>
<i>Macodes-Hæmaria</i>	<i>Macomaria</i>	<i>Macoria</i> or <i>Macria</i>
3. <i>Chondrorhyncha-Zygopetalum</i>	<i>Chondropetalum</i>	<i>Chonalum</i>
<i>Batemannia-Zygopetalum</i>	<i>Zygobatemannia</i>	<i>Zygannia</i> or <i>Batalum</i>
<i>Colax-Zygopetalum</i>	<i>Zygocolax</i>	<i>Zygalax</i>
<i>Aganisia-Zygopetalum</i>	<i>Zygonisia</i>	<i>Aganialum</i> or <i>Zygalia</i>
4. <i>Cochlidia-Odontoglossum</i>	<i>Odontioda</i>	<i>Cochlossum</i> or <i>Odontoda</i>
<i>Miltonia-Odontoglossum</i>	<i>Odontonia</i>	<i>Miltossum</i> or as hitherto

These last two, it will be noted, are named approximately or quite on the briefer system I advocate, and it is useless for me to go through the entire list, as the above are sufficient to show how compound names can be built up in a short compass, and yet indicate all the genera involved. I have, indeed, gone through them all, and found no difficulty whatever in applying the system. For *Cattleya* and *Lælia* some objection might be raised to the use of such similar-sounding terminals as "leya" and "lia" for these genera; but, to my mind, the first essential is a clear label, or written or printed record, rather than a pronounced name, which, in practice, is little used. Turning now to the trigenic hybrids cited, we have *Brassavola-Cattleya-Lælia* = *Brassocattlælia* reduced to *Brassatlia*, and *Sophrontis-Cattleya-Lælia* = *Sophrælaiocattleya* reduced to *Sophratlia*, which is surely a step in the right direction, since, from the very outset, the orchidist who gripped the principle and knew the generic names could read them off instantly, quite as well from the abbreviated forms as he could from the long and cumbersome ones, which, moreover, are rendered impracticable where many genera may be involved. I take, for instance, by way of test, eight genera as they stand seriatim on the list, viz.: 1, *Anguloa*; 2, *Lycaste*; 3, *Anætochilus*; 4, *Hæmaria*; 5, *Dossinia*; 6, *Chondrorhyncha*; 7, *Zygopetalum*; and 8, *Aganisia*; and, with a little ingenuity, arrive at this: *Chondroszygan-gochæmagalum*, i.e., nine syllables, as representing all the eight genera. This is bad enough, I admit, but it is only about half as long as the seven generic names combined in the circular as an example of unwieldiness. In my

bumble opinion, it is a practical impossibility to invent a system of nomenclature which can embrace an unlimited number of genera in one name. The one I suggest will certainly deal with a fair number, embracing the great majority of likely combinations, and that, at least, is something. It would, however, be essential that the naming be done or approved by the Orchid Committee of the R.H.S., so far as British productions are concerned, since it is obvious that different combinations of the same symbolic elements are not desirable, though they would none the less indicate the composition of the hybrid to the expert, and it is practically only the expert who is concerned. *Chas. T. Druery, V.M.H., F.L.S.*

ANOTHER HYBRID FRUIT FROM LUTHER BURBANK.—In the current number of the *Revue de l'Horticulture Belge*, published on March 1, the "Wonderberry" is described by a correspondent named Albert Dervaes as the latest product raised by Mr. Burbank. This most curious hybrid fruit has the alternative names of Sunberry and Sugarberry. It is described as the results of a cross between two species of Wild Solanum (*S. guianense* and *S. villosum*). The first of these species is a native of the western side of South Africa, and the second of the western side of Eastern America. While neither of these species produces edible fruit, this specific hybrid produces a profusion of delicious berries, which are both sound and wholesome. There is also the additional advantage that they come quite true from seed like a natural species. The plant is not more than 18 inches high by a little more in diameter; the flowers show themselves about the end of May and succeed one another without interruption till very late in the autumn. The fruit or berry is of a blackish-blue colour of the size of a large Black Currant, and is produced in clusters of six in such abundance as to entirely cover the plant. The first fruits ripen early in July, and the same plant continues to yield fruits until late in autumn or until the first frosts. The fruit is either eaten raw or cooked or made into jam. The culture is easy and requires less care than either that of Haricot Beans or Tomatos; any soil suits it provided that it be not too highly manured, the result of which is only to produce a more luxuriant vegetation without increasing the amount of fruit. Seed may be sown under glass in April, and in the open ground in May. The seedlings may be planted out when danger of frost is over at a distance of three-quarters of a yard apart, after which they require no further care than hoeing between the rows and keeping free from weeds. They require no artificial manures. At the end of the season, when the plants go to rest, if the crowns are protected with dead leaves, they will shoot vigorously the following spring. *W. E. Gumbleton.*

NITRO-BACTERINE TRIALS.—As Mr. Hutchinson stated in your issue of February 27 that I made "several statements liable to mislead the general reader," will you kindly permit me to reply to these charges under three headings? (1) *Concentrated fertilisers.*—The continuation of Mr. Hutchinson's quotation from the *U.S.A. Farmers' Bulletin*, 240, reads as follows:—"Floors used for drying inoculated seeds should be thoroughly scrubbed and rinsed, especially if the same floor space has served for mixing fertilisers." And the last clause reads: "Fertilisers should be spread and mixed with the soil, or drilled, previous to sowing the seed, and if the drill has been used for this purpose all parts with which the seeds may come in contact should be cleaned." I leave it to the reader to judge which is the more misleading, to state, as Mr. Hutchinson does, that the reference "concerns the method of sowing the seed" only, or to state as I did that "the action of these concentrated fertilisers on inoculated seed is injurious." (2) *Action of lime.*—Mr. Hutchinson states that when speaking of the growth of the nitrogen-assimilating organisms in a culture solution I "consider it politic not to mention that potash and phosphates are equally indispensable." Mr. Hutchinson might as fairly complain that I do not mention water and some form of sugar as being indispensable. Mr. Hutchinson is wrong when he states that I include a number of different bacteria under the term nitrogen-assimilating organisms. All through the article I was speaking only of the

nodule-forming organism (*Pseudomonas radicola*). Prof. Chester, of Delaware, one of the greatest authorities on soil organisms, definitely states that the presence of carbonate of lime is necessary to fixation in laboratory cultures. What, then, becomes of the charge of writing "a dissertation on the requisite conditions for the culture of organisms not at present concerned"? (3) *Comparative tables.*—The alteration of Mr. Chittenden's figures in the table I gave was made at the suggestion of Dr. Keeble (vide *Gardeners' Chronicle*, p. 36) as being a more scientific method of comparing the yields. Had I quoted the figures as given by Mr. Chittenden in his report, they would have shown a still greater advantage for inoculation—an increase of 17.4 per cent. for seed inoculation, and an increase of 20.7 per cent. for seed and soil inoculation. My comparison of the yields from the plots on the fallowed land is said to be "inaccurate and useless" because taken "from plots in absolutely different series." I was under the impression that the experiments on the cultivated land formed one series, and those on the fallowed land another series. That Mr. Chittenden also thought this is shown by the three comparative tables G, O and P, given in his report. I am glad that Mr. Hutchinson has given the table comparing the yield of inoculated seed only with yields from other manures on the cultivated land. Certainly the lowest yield is from the inoculated seed, but then the addition of 10 tons of manure to this soil also decreased the yield! Can a garden soil, which gives a decreased yield when manured with dung, be truthfully called either a poor or an ordinary garden soil? *W. B. Bottomley, King's College, London.*

INOCULATION WITH NITRO-BACTERINE.—In a leaflet that is being circulated by the Nitro-Bacterine Distributing Agency, Prof. Bottomley criticises the results of experiments with Nitro-Bacterine carried out this summer. Referring to the experiments at Wye College, a brief account of which appeared in the *Gardeners' Chronicle* for January 23, he states that in this case "evidently there were already present in the soil sufficient bacteria to produce a supply of nodules," and goes on to say that, "In *Seed and Soil Inoculation* (p. 10) it is pointed out that under these conditions inoculation is useless." All this is very true, but I should like to point out that in making these statements Prof. Bottomley seems to be reducing to a very small minimum the number of cases in which inoculation is likely to result in an increased crop in this country. One of the soils on which the Wye experiment was carried out was very poor indeed and low in organic matter, and had not borne a leguminous crop for many years—just the type of soil on which, according to *Seed and Soil Inoculation*, inoculation is necessary. If, in such a soil as this, "there were already present . . . sufficient bacteria to produce a supply of nodules," it, at least, seems unlikely that there are many cultivated soils in this country which do not already possess a sufficient supply of nodule-bacteria. The advantage of inoculation, when a leguminous plant new to a district is introduced or on reclaimed land, as proved in Germany and America, is indisputable; but in this country, where most of the land has been under cultivation so long, its value has not yet been demonstrated. *C. T. Gimmingham, Bacteriologist to the S.E. Agricultural College, Wye, Kent.*

THE TRAINING OF FRUIT TREES.—I was pleased to see the remarks of B., p. 149, on this subject. Speaking generally, it is a fact that fruit trees upon walls are less carefully trained than was the case even a few years ago. Men who have been educated in gardening routine in what are looked upon as good schools are some of the greatest sinners in this phase of fruit culture. I venture to say that if the trees were subjects for a horticultural exhibition, and prizes offered for them, we should quickly see a change in wall-tree training. It is quite as easy to train a Peach tree correctly as it is to cross the branches with young shoots or tie or nail others in just as they grow, with an almost semi-circular bend. Any ordinary labourer is put to train the trees, and often without any instruction, except to get them done quickly. As a rule, fruit trees are allowed to retain too many shoots. The crops would be much better if less bearing wood were retained. *E. M.*

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 9.—A large and successful meeting was held in the Society's Hall, Vincent Square, on Tuesday last. The building was filled with exhibits, some of them overflowing into the annexes. This was partly in consequence of the competitive classes for forced bulbs. In addition many trade growers showed large groups of bulbous plants, so that the exhibition was composed largely of Hyacinths, Tulips and Narcissi. Orchids made a fine display, the chief honour for these flowers going to Sir JEREMIAH COLMAN, Bart. Awards were also given for groups of Alpine plants, Begonias, Camellias, Carnations, forced shrubs in flower, and other spring-flowering plants. The NARCISSUS COMMITTEE assembled for the first time this season.

Not much was brought to the notice of the FRUIT and VEGETABLE COMMITTEE, and this body made no award to a novelty, neither did the FLORAL nor NARCISSUS COMMITTEES, but the ORCHID COMMITTEE granted five First-class Certificates and two Awards of Merit.

At the three o'clock meeting in the lecture room an address on "Tulips, and the Tulip Mania" was given by Mr. W. S. Murray.

Floral Committee.

Present: W. A. Bilney, Esq. (in the Chair); and Messrs. Chas. T. Druery, E. A. Bowles, Jno. Green, T. W. Turner, J. W. Barr, R. Hooper Pearson, C. R. Fielder, W. Howe, J. Jennings, Herbert J. Cutbush, Chas. Blick, J. F. McLeod, Jas. Douglas, W. J. Bean, E. T. Cook, Arthur Turner, Chas. Dixon, Chas. E. Shea, Chas. E. Pearson, W. Cuthbertson, W. P. Thomson, E. H. Jenkins, W. J. James, and George Paul.

Mr. L. R. RUSSELL, The Nurseries, Richmond, Surrey, exhibited about 50 plants of *Rhododendron (Azalea) indica* trained in a semi-globular shape and finely flowered. These were good examples of Madame Van der Cruyssen, Professor Walters, Comte de Chambord, President Oswald de Kerchove, Phœbus, &c. (Silver Flora Medal.)

Messrs. W. PAUL & SON, Waltham Cross, contributed a showy floor group consisting of a number of choice Camellias, flowering Peaches, Almonds, Pyrus, &c. (Silver Flora Medal.)

Messrs. HUGH LOW & CO., Royal Nurseries, Bush Hill Park, Enfield, showed a miscellaneous collection of greenhouse and hardy subjects, and among them *Daphne indica rubra*, *Erica codonodes Veitchii*, *Acacia cordata*, *A. acinacea*, *Grevillea alpina*, and a collection of perpetual-flowering Carnations. (Silver Banksian Medal.)

Messrs. W. CUTBUSH & SON, Highgate and Barnet, showed forced plants, including *Rhododendron Jacksonii*, *R. canadensis*, hardy *Azaleas*, *Pyrus Malus Scheideckeri*, *Magnolias*, &c. The same firm exhibited seasonable hardy flowers. (Silver Banksian Medal.)

Messrs. PAUL & SON, The Old Nurseries, Cheshunt, showed *Lachenalia Coston Gem*, a variety of *L. pendula* having yellow flowers of small size and furnished with a red calyx; two new Hybrid Tea Roses named Mrs. Sophia Neate and Rhea Reid; *Clematis montana rubens* and seedlings of *Azalea sinensis*.

Messrs. J. CARTER & CO., High Holborn, London, exhibited on the floor of the Hall growing examples of lawn Grasses in trays, forming a piece of sward about 20 feet by 8 feet. This plot was surrounded by a serpentine border of flowering and evergreen plants. (Silver-gilt Banksian Medal.)

Mr. H. BURNETT, Carnation specialist, Guernsey, exhibited perpetual-flowering or tree Carnations as at recent meetings. (Silver Banksian Medal.)

Mr. W. H. PAGE, Hampton, Middlesex, again made a beautiful display with Carnations, Daffodils, and Lilliums. (Silver Flora Medal.)

Messrs. H. CANNELL & SONS, Swanley, Kent, showed an interesting collection of Begonias in about 50 species and varieties. Some of the inflorescences, such as in *B. manicata* and *B. Verschaffeltii*, were developed on tall stems, 2 feet or thereabouts in height. Several of the semperflorens type were especially floriferous; *B. s. gigantea rosea* has finely-coloured blooms. *B. Saturne* of the *manicata* type has very strong flower-spikes and numerous blossoms. Others of interest were *B. ascotiensis*, *B. fuchsioides*, and *B. Wellsiana*. (Silver Flora Medal.)

Messrs BEES LTD., Mill Street, Liverpool, showed a batch of the new *Primula malacoides*. The plants were extremely floriferous, some of them, in 4-inch pots, having 20 or more inflorescences. The plant is a splendid acquisition amongst greenhouse subjects for winter blooming. (Silver Banksian Medal.)

Messrs. H. B. MAY & SONS, The Nurseries, Edmonton, staged miscellaneous flowering and foliage plants of a decorative character, including many handsome Ferns. Small pot-plants of Clematis in batches of white, mauve, lavender, and other shades were set in groups of Cinerarias, *Primula* × *kewensis*, *Rhododendron* (*Azalea*) *indicum*, and *Primula obconica* of an improved strain, with Ferns as a groundwork. (Silver Banksian Medal.)

Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea, exhibited 250 Hyacinths in about 60 varieties. All were shown in large massive spikes of blooms in almost all colours. Messrs. VEITCH also showed *Boronia megastigma* and its golden-flowered variety, *Crocea angustifolia*, small plants of Orange in flower, and a grand display of *Rhododendron* (*Azalea*) *indicum*. (Silver Banksian Medal.)

A batch of *Lachenalias*, some as pot and others as basket plants, was shown by the Marquis of SALISBURY, Hatfield (gr. Mr. Prime). Those in baskets were especially fine; the culture throughout was good. (Silver Banksian Medal.)

Sir EVERARD HAMBRÖ, Hayes, Kent (gr. Mr. Grandfield), showed a very large number of hardy flowering plants, including masses of *Primula cortusoides*, *P. floribunda*, *P. Forbesii*, *Crocus* King of the Whites, *Kalmia glauca*, hardy Heaths, Saxifrages in great variety, and many other Alpine plants, all well cultivated and excellently displayed. (Gold Medal.)

Messrs. BARR & SONS, 11-13, King Street, Covent Garden, London, exhibited bulbous flowers, mainly choice varieties of Narcissi. Notable flowers were Admiral Togo (a sturdy Ajax variety), White Lady (of the Leedsii section), Bridesmaid (white), Fairy Queen (white), and Constellation. Messrs. BARR also exhibited a collection of Alpine and hardy garden plants, Crocuses being a feature; one with lavender-blue flowers, named *Bleu Celeste*, was especially pleasing, the pans in which this was shown being masses of flowers. Harlequin is a striped pale mauve variety with a deep violet base. There were also Tulips, *Lachenalias*, Scillas, and Anemones in variety.

Mr. G. REUTHE, Keston, Kent, again showed *Rhododendrons*, rare and choice flowering shrubs, and an assortment of seasonable hardy flowers. *Iris histrioides* major and *Saxifraga Bursieriana* were prominent in this exhibit.

Messrs. R. WALLACE & Co., Kilnfield, Colchester, showed on a table a rockery planted with a number of dwarf, hardy subjects. The design was boldly laid out, and on a large scale would afford a pleasing feature in a villa garden. (Silver-gilt Banksian Medal.)

Messrs. THOMAS S. WARE, LTD., The Nurseries, Feltham, also showed a rockery; also plants of *Veltheimia viridiflora*, *Iris reticulata*, *Dicentra* (*Dielytra*) *spectabilis*, &c. (Silver Banksian Medal.)

Messrs. JOHN PEED & SON, Mitcham Lane, Streatham, S.W., showed a rockery planted with Alpine species of low growth, and succulents. This firm also exhibited a batch of *Lachenalia aurea*, *L. luteola*, and *L. Nelsonii*. (Silver Banksian Medal.)

Messrs. G. & A. CLARK, nurserymen, Dover, showed a small rockery planted with hardy Primulas, &c.

Mr. P. HORTON, Cravenhurst, Seaford, Sussex, exhibited a small collection of Hyacinths, Narcissus in variety, *Veltheimia*, *Crocus*, *Iris histrioides*, &c.

Messrs. JOSEPH CHEAL & SONS, Crawley, Sussex, showed Alpine plants arranged amongst rockwork and with a row of dwarf Conifers and small shrubs such as are suitable for planting on a rockery.

COMPETITIVE EXHIBITS OF FORCED BULBOUS PLANTS.

THE competitive classes arranged for forced bulbous plants were generally well contested. The prizes in most instances were offered by the Dutch Bulb Growers' Association. Hyacinths were especially well shown, and it is doubt-

ful if finer spikes of these flowers have ever before been staged at this early date. The Tulip and Narcissus grown in moss-fibre, in bowls or ornamental pots without drainage material, served to demonstrate the value and utility of this material for growing bulbous plants.

In the class for 18 Hyacinths of distinct varieties open to amateurs, the premier prize of six guineas was awarded to the Hon. VICARY GIBBS, Aldenham, Elstree (gr. Mr. E. Beckett), for a superbly-grown collection, which included *L'Innocence* (white), *Electra* (blue), *City of Haarlem* (yellow), *Jacques* (pink), *Schotel* (pale blue or porcelain), *La Grandesse* (white), *Lady Derby* (pink), and *Menelik* (purple-violet or dark plum colour). The examples throughout showed great cultural skill. The second prize of five guineas was won by L. NOBLETT, Esq., Monkswell, Wavertree, Liverpool. The varieties King of Yellows, King of Blues, Morendo and Isabella (pink) were particularly fine. The remaining prizes were won by the Duke of PORTLAND, Welbeck (gr. Mr. J. Gibson); H. S. BARTLETT, Esq., Shooter's Hill; the Marquis of SALISBURY (gr. Mr. Prime), and Mr. A. G. GENTLE, Little Gaddesdon, in this order.

In the class for 12 Hyacinths, open to amateurs, there was good competition. The 1st prize was won by A. EARLE, Esq., Childwell Lodge, Wavertree, Liverpool (gr. Mr. Hutchinson), with excellent examples of King of Blues, Goliath (blue), Mont Blanc, Morendo and others; 2nd, F. STEWART JESMOND, Green Lane, Wavertree, Liverpool; this exhibitor showed King of Blues, *Schotel* and *City of Haarlem* exceptionally well; 3rd, Lord HOWARD DE WALDEN, Audley End, Saffron Walden (gr. Mr. J. Vert). The 4th and 5th prizes were won respectively by E. G. MOCATTA, Woburn Place, Addlestone, Surrey (gr. Mr. F. Stevenson), and Mr. G. DYKE, The Gardens, Garston Manor, Watford.

Four pans of Hyacinths.—The schedule required 10 bulbs of one variety in each pan, and this class made a particularly fine display. Those shown by the Duke of PORTLAND, Welbeck Abbey (gr. Mr. J. Gibson), were much superior to all others and won the 1st prize: the varieties were King of Blues, *City of Haarlem* (yellow), *La Grandesse* (white), and Morendo (pink); 2nd, the Hon. VICARY GIBBS, who showed King of Blues, *L'Innocence*, *City of Haarlem* and Lord Balfour (rose and crimson); 3rd, Lord HOWARD DE WALDEN. There were six entries in this class.

The class for trade growers brought three competitors, the 1st prize being the Gold Medal of the Dutch Bulb Growers' Society, Haarlem. It was won by Messrs. R. & G. CUTHBERT, Southgate, N., with a fine collection arranged in groups at the western end of the hall. The plants were staged in semi-circular groups of one variety and in a setting of small *Adiantum* Ferns. Among the finer examples were *Simplicity* (white), *Lord Derby* (pink), *City of Haarlem* (yellow), *L'Innocence* and *Linnaeus* (red), Messrs. JAS. VEITCH & SONS, LTD., Chelsea, also staged a very fine collection of 250 pots of Hyacinths in some 50 of the leading varieties, the plants being particularly well grown. Messrs. GLEESON & Co., Watford, was the other exhibitor.

Bulbs grown in moss-fibre or similar material.—The prizes in these classes were presented by Mr. Robert Sydenham. There were classes for six Hyacinths, six Narcissi and six Tulips respectively. The best Hyacinths were shown by Hon. Mrs. GUY BARING, 116, Cadogan Square, S.W.; 2nd, Miss C. A. MITCHELL. Mrs. BARING also won the 1st prize for Tulips; 2nd, Lady TATE, Streatham (gr. Mr. W. Howe), who was 1st for six vases of Narcissi; followed by R. HOLMES, Esq., Tuckwood, Norwich.

Narcissus Committee.

Present: H. B. May, Esq. (in the Chair); and Messrs. W. Poupert, Joseph Jacob, Henry Backhouse, W. F. M. Copeland, Arthur R. Goodwin, E. M. Crossfield, P. Rudolph Barr, Walter T. Ware, Geo. H. Engleheart, Alex. M. Wilson, G. W. Leak, G. Reuthe, H. Denison, J. T. Bennett-Poë, A. Kingsmill, Robt. Sydenham, J. Duncan Pearson, W. Wilks, E. A. Bowles, F. Herbert Chapman, Christopher Bourne, Henry B. Young, and James Walker.

Lady TATE, Park Hill, Streatham (gr. Mr. W. Howe) filled a large table with bulbous and other flowers, including Tulips, Daffodils, Hyacinths, *Lachenalias*, *Hippeastrums*, *Azaleas*, *Richardia*, *Dicentra* (*Dielytra*), arranged with Ferns, *Retinospora piceifera*, *Helxine*, *Pilea muscosa*, and having a row of Bamboos at the back. The group made a bright display of colour and was much admired. (Silver-gilt Banksian Medal.)

Messrs. ROBERT SYDENHAM, LTD., Tenby Street, Birmingham, exhibited Lily of the Valley, Narcissi, and Hyacinths growing in moss-fibre and all finely flowered.

Messrs. CARTWRIGHT & GOODWIN, Blakebrook, Kidderminster, showed Narcissi in variety. The exhibit was characterized by the extreme refinement of the blooms and their excellent colouring, especially in the flowers of the Pœticus and Leedsii sections. Notable examples were Cirlet, Sunset, *Aspasia*, Victoria, Waterwitch, *Blakewell*, Lucifer, Beauty, Fairy Queen, Scarlet Eye and Chaucer. (Silver-gilt Flora Medal.)

Messrs. W. CUTPUSH & SON, Highgate, staged a collection of Hyacinths in pots, even as to height and length of flower spike. We noted the following fine specimens: Grand Maitre, Lord Balfour, *Schotel*, Ornamente Rose, General Havelock, *Lady Derby*, *La Grandesse*, *City of Haarlem* (one of the finest of the yellow varieties), and General von Heyden. A collection of Narcissus shown by this firm was also a comprehensive one. (Silver-gilt Banksian Medal.)

Messrs. R. H. BATH, LTD., Wisbech, showed a great assortment of bulbous plants in pots and bowls, having Hyacinths, Tulips and Narcissi in all the best early-flowering varieties. Those in bowls grown in moss-fibre without material for drainage were especially useful for indoor decoration. (Silver Flora Medal.)

The Rev. JOSEPH JACOBS, Whitewell Rectory, Whitchurch, Salop, showed Narcissi, including the trumpet varieties Sarah Bernhardt and Hoboken Fairy, a refined variety with a soft yellow coronet and lemon-coloured calyx. There were also varieties of *N. Pœticus* and *N. Tazetta*.

Narcissus Queen of the West and *N. Cirlet*, shown by Mr. WALTER T. WARE, Bath, and Messrs. CARTWRIGHT and GOODWIN respectively, were awarded Certificates of Commendation for their value as forcing varieties.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair); and Messrs. Jas. O'Brien (hon. sec.), Harry J. Veitch, de B. Crawshaw, R. Brooman-White, J. Wilson Potter, W. Bolton, Gurney Wilson, W. Waters Butler, H. Ballantine, H. A. Tracy, H. G. Alexander, A. Dye, W. H. White, W. H. Hatcher, J. Cypher, J. Charlesworth, W. Cobb, A. A. McBean, F. J. Hanbury, R. G. Thwaites, H. J. Chapman, G. F. Moore, F. Menteith Ogilvie, J. Forster Alcock, W. Boxall, H. Little, P. Sander, Stuart Low, and Sir Jeremiah Colman, Bart.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate (gr. Mr. Collier), was awarded the Society's Gold Medal for a grand group composed largely of Gatton hybrid *Dendrobiums*, *Spathoglottis*, *Phaio-Calanthes*, &c., together with an interesting selection of rare and pretty species. The new hybrid *Dendrobiums* included *D. Duchess of Albany* (a pretty pearly white), *D. sulphureum* (yellow), *D. Purity* (white, with purple disc), *D. Chessingtonense* Gatton Park variety, *D. Goldfinch* and many others, but none of them was equal to the handsome *D. Lady Colman*, which gained an Award of Merit at the last meeting, and which was again well shown. The centre of the group was of scarlet, yellow and crimson *Epidendrum O'Brienianum* and *E. Boundii*, the *Dendrobiums* being arranged in sections throughout the group. *Cymbidium* *Lady Colman* was very fine; the selection of yellow *Dendrobiums*, the patch of the white variety of *D. nobile*, and the fine *D. Cybele* Gatton Park variety were very attractive. At one end was a selection of pretty and curious species, including *Dendrobium tetragonum*, *Bulbophyllum comosum*, with five heads of white blooms; the yellow form of *Sophranitis grandiflora*, *Epidendrum polybulbon*, &c.

Messrs. CHARLESWORTH & Co. Haywards Heath, staged a bright and effective group, the plants in which were all of very high quality,

and for which a Silver-gilt Flora Medal was awarded. Among the hybrid *Odontoglossums* were several superb forms of *O. ardentissimum*, one especially being very large and finely blotched with dark purple. Other hybrids noted were good scarlet-red *Odontioda Craveniæ* and *O. Bradshawiæ*, the white *Brasso-Cattleya Queen Alexandra*, *Lælio-Cattleya Empress Frederick*, *L.-C. Sheila*, a pretty white flower, *L.-C. Katie*, of a clear yellow, and others. (See Awards.)

Col. G. L. HOLFORD, C.I.E., C.V.O., Westonbirt (gr. Mr. H. G. Alexander), showed *Lælio-Cattleya Arbaces* (*C. labiata* × *L.-C. Cassiope*), a perfectly-formed flower of fine substance of a bright rosy-lilac colour with a deep purple front to the finely-crimped labellum.

Messrs. SANDER & SONS, St. Albans, were awarded a Silver Flora Medal for a group in which new hybrid *Odontoglossums* were well represented. These included *O. Thalia* (*Andersonianum* × *excellens*), a pretty canary-yellow flower uniformly spotted with red-brown; *O. Verona* (*Adrianiæ* × *Vuykstekei*), cream-white, spotted with chestnut-red and tinged with red on the petals; *O. Hebe* (*Lindleyanum* × *Rolfæ*); *O. Solon* (*Adrianiæ* × *ardentissimum*), of fine shape, white, heavily marked with

ruby-red colour, a thin irregular cream-white line running round the central portion and a similar transverse line partly across the middle, the crest of the lip being yellow with red blotches on each side and in front. Its parentage is uncertain, but it might be *Cochlioda Noezliana* × *Odontoglossum ardentissimum album*. Mr. GOODSON also showed *Cattleya Schröderæ The Prince*, a very fine flower with crimped petals and lip, the latter having a velvety-purple front.

J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis), sent *Odontoglossum crispum Carmania*, a finely-blotched variety, and the new *O. Wyonianum*. (See Awards.)

NORMAN C. COOKSON, Esq., Oakwood, Wylam (gr. Mr. H. J. Chapman), showed *Odontioda Bradshawiæ Oakwood* variety (*O. crispum Graireanum* × *C. Noezliana*), a fine flower of a uniform reddish-scarlet colour and yellow crest; *Odontoglossum percultum Oakwood* variety, white, beautifully blotched with purple; and the handsome new *Odontioda Bradshawiæ Cookson's* variety. (See fig. 73.)

Messrs. HUGH LOW & Co., Enfield, staged an effective group of *Dendrobiums*, fine varieties of *Cattleya Trianæ*, *Cymbidium Wigania-*



FIG. 73.—ODONTIODA × BRADSHAWIÆ COOKSON'S VARIETY: AWARDED A FIRST-CLASS CERTIFICATE AT THE ROYAL HORTICULTURAL SOCIETY'S MEETING ON TUESDAY LAST.

purple; *O. Helenus* (*harvengtense* × *Coradinei*), quite a new form with primrose-yellow flowers closely speckled with cinnamon-brown. Among other *Odontoglossums* was a very remarkable and beautiful imported form with the sepals and petals of a good *O. triumphans* and a broad sulphur-coloured lip, much fringed, and bearing one large blotch in the middle. Also in the group was a fine selection of *Cattleya Trianæ*, together with the very large pure white *C. Trianæ Queen Alexandra*. *Zygonisia Sanderi* (*Aganisia lepida* × *Zygopetalum*) is an interesting novelty with cream-white flowers heavily blotched with violet. For others, see Awards.

Messrs. JAS. VEITCH & SONS, King's Road, Chelsea, staged a group of good *Odontoglossum crispum*, *O. Pescatorei*, *Cattleya Trianæ*, *Lælio-Cattleya Callistoglossa* and a number of their *Cypripedium Countess of Carnarvon*, which varies very much in form and colour, but is always good and lasts a long time in bloom.

H. S. GOODSON, Esq., Fairlawn, West Hill, Putney (gr. Mr. G. E. Dav), showed *Odontioda Goodsoniæ*, a charming hybrid and probably the finest in shape and richest in colour of any yet raised. The flower is large, the petals and sepals equally broad and of a glowing

num, *C. Holfordianum*, *Aërides Vandarum*, &c. (Silver Flora Medal.)

Messrs. ARMSTRONG & BROWN, Tunbridge Wells, staged an effective group of good *Cypripediums*, *Cymbidium Woodhamsianum*, *C. eburneum*, *C. Ballianum*, *Odontoglossum*, &c.

Messrs. JAS. CYPHER & SONS, Cheltenham, were awarded a Silver Banksian Medal for a group in which were good *Cattleya Trianæ*, well-flowered *Odontoglossums*, including *O. Cervantesii*, *Cypripedium Milo Westonbirt* variety, *Sophranitis grandiflora*, *Epiphranitis Veitchii*, *Aërides Vandarum*, &c.

Monsieur MAURICE MERTENS, Mont St. Amand, Ghent, was awarded a Silver Banksian Medal for a very interesting group of pretty hybrid *Odontoglossums*.

J. FORSTER ALCOCK, Esq., Exhims, Northchurch, sent *Cypripedium W. Hopkins*, a distinct flower of fine shape.

H. A. INNES, Esq., Croft Spa, Yorks., sent two light varieties of *Cattleya Trianæ*, a very large and good *Lycaste Skinneri alba*, and a fine dark *Masdevallia chimæra*.

Mr. W. P. HORTON, Cravenhurst, Seaford, staged a group of *Odontoglossums*, *Cypripediums*, and *Dendrobiums*.

AWARDS.

FIRST-CLASS CERTIFICATE.

Cattleya Schröderæ "Mrs. F. Sander," from Messrs. SANDER & SONS, St. Albans.—A pure white variety, large and of fine shape, the broad labellum finely crimped at the margin.

Odontioda Bradshawiæ Cookson's variety (see fig. 73), from NORMAN C. COOKSON, Esq., Oakwood, Wylam (gr. Mr. H. J. Chapman).—This hybrid is a near approach to the ideal scarlet *Odontoglossum crispum*, long hinted at by the Orchidist. The flowers equal those of an ordinary *O. crispum*, the greater part of the sepals and petals being of a clear cinnabar scarlet colour, with lighter margin flecked with rose colour, the tips of the segments being cream white. The crest of the lip is yellow, with a red blotch in front, the apex tinged with rose.

Sophr-Cattleya Thwaitesii (*S. grandiflora* × *C. Mendelii*), from R. G. THWAITES, Esq., Cheshington, Streatham (gr. Mr. Black).—A hybrid comparable to the handsome *S.-C. Doris*. The sepals are carmine-red, with the silvery ground colour showing in places. The petals are broad, reddish-rose, slightly darker on the veining. Lip cowslip-yellow, with the margins of the side lobes and the front lobe red. A pretty flower of true *Cattleya* shape.

Cattleya Trianæ "Grand Monarch," from F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth).—A perfect giant in stature and a model in form. The sepals and very broad petals are bright rosy-lilac, the front of the lip purplish-crimson, the disc orange, with some dark lines at the base.

Brasso-Cattleya Cliftonii magnifica (*B.-C. Digbyano-Mossii* × *C. Trianæ Uplands* variety), from Messrs. CHARLESWORTH & Co., Haywards Heath.—A further advance on the beautiful type illustrated in the *Gardeners' Chronicle*, January 16, 1909, p. 34. In the present variety the sepals and petals are silver-white, tinged with rose, the broad, fringed lip being rich ruby-crimson in front.

AWARD OF MERIT.

Odontoglossum Wyonianum, from J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis).—A pretty, clear white flower, unique in marking, the small, confluent, dark-red-purple blotches being arranged in the middle portions of the segments in a very attractive manner. The spring crest of the labellum is yellow, with some red markings.

Brasso-Lælio-Cattleya Cooksonii (*B.-L. Mrs. Gratrix* × *C. Dowiana aurea*), from Messrs. CHARLESWORTH & Co.—A very effective cross with yellowish flowers tinged and veined with copper-red, the lip being fringed.

BOTANICAL CERTIFICATE.

Chytroglossa Marileoniæ, from Messrs. SANDER & SONS.—A charming dwarf species with elegant racemes of pretty flowers.

CULTURAL COMMENDATION.

To Mr. H. Ballantine (gr. to Baron Sir H. SCHRÖDER, Bart.), for *Cymbidium insigne*, with three very fine spikes.

To Mr. Salter (gr. to WALTER COBB, Esq.), for an enormous *Cœlogyne cristata alba*, heavily bloomed.

Fruit and Vegetable Committee.

Present: George Bunyard, Esq. (in the Chair); and Messrs. Jos. Cheal, E. Beckett, Alex. Dean, H. Parr, G. Hobday, Jas. Gibson, Henry Hooper, H. Markham, Chas. Foster, G. Reynolds, P. C. M. Veitch, Jno. Lyne, J. Davis, A. R. Allan, Jas. Vert, F. Perkins, Owen Thomas, Jno. Harrison, C. G. A. Nix, P. D. Tuckett and A. H. Pearson.

Messrs. SUTTON & SONS, Reading, exhibited, Lettuces and Radishes forced by the "French" system of forcing these salads. The Lettuces were (Cabbage) *Commodore Nutt*, *Improved Tom Thumb*, *Early Paris* and *Golden Frame*, and (Cos) *Nonsuch* and *Little Gem*. Radishes included *Earliest of All*, *Paris White-tipped* and *Sutton's Forcing French Breakfast*. The beds were made and sown with Radishes and Carrots in December, amongst which the Lettuces exhibited were transplanted from sowings made under cloches in October. (Silver Banksian Medal.)

The Hon. VICARY GIBBS, Aldenham House, Elstree (gr. Mr. Ed. Beckett), showed especially fine samples of Onion Ailsa Craig, for which a Silver Banksian Medal was awarded.

P. NELKE, Esq., Woodlee, Virginia Water (gr. Mr. G. Basket), showed seven varieties of Apples, all plump and well preserved, the varieties being Cox's Orange Pippin, Court-pendú-plat, Hereford Winter Quoining, Ribston Pippin, Dumelow's Seedling, King of the Pippins, and Old Nonpareil. (Silver Banksian Medal.)

Messrs. WILLIAM WOOD & SON, North British Wharf, Wood Green, showed bottles for preserving Grapes in water. The bottle lies flat on one of its sides and is filled from a hole in the centre of the upper side. The mouth is curved upwards and none of the water can escape from the neck when refilling and run over the Grapes (see fig. 74).

COMPETITIVE CLASSES FOR APPLES.

Four dishes, distinct, shown by amateurs.—

There were three competitors, the 1st prize being awarded to Sir MARK E. COLLET, Bart., St. Clare, Kemsing, Sevenoaks (gr. Mr. M. Nichols). The varieties were Newton Wonder, Bramley's Seedling, Alfriston and Hambling Seedling; 2nd, Viscount ENFIELD, Wrotham Park, Barnet (gr. Mr. H. Markham).

In the class for one dish, Lt.-Col. BORTON, Cheveney, Hunton, Maidstone (gr. Mr. Whittle), won the 1st prize with the variety Belle du Bois; 2nd, Hon. VICARY GIBBS (gr. Mr. Ed. Beckett), with Bramley's Seedling.

In the classes for trade growers Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea, staged eight dishes of culinary Apples, the varieties being Newton Wonder, Lane's Prince Albert, Betty Geeson, Belle de Pontoise, Bramley's Seedling, Wadhurst Pippin, Alfriston and Lord Derby. The fruits were finely preserved, and Messrs. VEITCH received a Silver Knightian Medal as the 1st prize.

SCOTTISH HORTICULTURAL.

MARCH 2.—The monthly meeting of this association was held at 5, St. Andrew Square, Edinburgh, on this date. The president, Mr. Whytock, was in the chair, and there was a large attendance of members. A lecture was delivered by Mr. John Hunter, F.I.C., County Analyst, Edinburgh, on "Soil Science." Mr. Hunter said lime was not an oxidiser; it might neutralise acidity in a water-logged soil, but it would not prevent the acidity from reappearing unless the soil were properly aerated. The principal value of draining land was not to carry off water, but to ventilate the soil, which was necessary for the existence of the living organisms which it contained, and to draw off the heavy carbonic acid which existed to the extent of 60 to 70 per cent. in the air of the soil, but which was not required for the liberation of the essential elements of plant life.

Fourteen new members were elected. The paper at the meeting on April 6 will be by Mr. L. B. Stewart, Royal Botanic Garden, Edinburgh, on "Insectivorous Plants."

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

(ANNUAL MEETING.)

MARCH 8.—The annual general meeting of this Benefit Society was held on the above date at the Horticultural Hall, Westminster. Mr. Thos. Winter, vice-chairman of committee, presided. The Secretary read the annual report and balance-sheet.

EXTRACTS FROM THE REPORT.

The year has been marked by steady progress, both in the number of members that have been enrolled and the amount of money that has been invested, the total sum invested this year—£2,700—being £500 more than in 1907.

BENEFIT FUND.

Although the number of members has increased considerably, the net gain on the year being 44, the sick pay for the year amounted to £485 4s. 6d., being about £5 more than in 1907. The above amount is apportioned to members paying on the higher scale at 9s. 2d., and to members paying on the lower scale at 6s. 1d. The new rule allowing members to withdraw twice the amount of interest on the last balance of their account in the books of the Society has been much appreciated. The membership now stands at 1,288, made up as follows, 741 on the higher scale, and 547 on the lower

scale. During the year 21 members have lapsed, and seven have died, the sum of £81 7s. 11d. having been paid to the nominees of the latter.

The subscriptions to the Benevolent Fund have amounted to £238 9s. 5d., and the payments from the same £118 4s., this sum including the money paid to members over 70 years of age. Two widows of deceased members were given £5 and £2 respectively from this fund, these being the only special grants made during the year.

We regret that so little advantage is taken of this fund, as we think that members recovering from an illness might more largely avail themselves of the benefits accruing from it. The sum of only 30s. has been withdrawn from the Convalescent Fund. The amount paid into the fund in 1908 was £11 5s. 6d., to which sum Mr. Sherwood contributed £5 5s.

The expenses of the Management Fund have been reduced by about £22 when compared with 1907.

The assets held by the Society amount to nearly £35,000, the subscriptions last year being £2,030 0s. 10d.

In proposing the adoption of the Report, the Chairman dealt with the principal points, and drew attention to the useful work being carried out by the Society.

Votes of thanks were cordially offered the officers and committee, and these were re-elected.

KINGSTON GARDENERS'

MARCH 4.—At the meeting of this association held on the above date, Mr. C. P. Raffill, of the Royal Gardens, Kew, gave a lecture entitled, "Holiday Rambles," the subject being illustrated by lantern slides. Mr. Raffill discoursed on the subjects of the pictures, which included views of the Rhododendron Gardens of Cornwall. Sir J. T. D. Llewelyn's gardens at Penllergare; the Botanic Gardens, Birmingham; the Botanic Gardens, Liverpool; and finally, the Blackburn public parks, in which not only was the smoky, grimy atmosphere of



FIG. 74.—A NEW BOTTLE FOR PRESERVING GRAPES. (See text.)

that Lancashire town too plainly in evidence, but also the injurious effect these deleterious substances have on vegetable life. The contrast between vegetation growing in Cornwall and Lancashire was very marked.

UNION OF FRENCH HORTICULTURAL TRADERS.

We are informed by Mr. George Schneider that at the last meeting of the Committee of L'Union Commerciale des Horticulteurs et Marchands grainiers de France, presided over by Mons. A. Truffaut, it was decided after due consideration of the propositions contained in the Report of the Commission on the Revision of Tariffs to be submitted to the French Parliament, to protest against any new duties or increase of duties on the importation of plants, flowers, fruits and vegetables. The Union Commerciale is of opinion that French horticulture is sufficiently protected. The adoption of new or increased taxes might cause other countries to create or increase tariffs which would sensibly affect the exportation of French products, such as flowers, fruits, and Palms from southern, and plants and trees from western parts, of France, as well as early vegetables and fruits from the Paris district, these products forming the most important part of French horticulture.

It was decided that a deputation should wait upon the President of the Commission and also that Mons. Deloncle, M.P. for the Department of Seine, and Mons. Arago, M.P. for the Alpes Maritimes, should be asked to use their influence and to oppose all new taxes and any increase of existing taxes on such produce when the discussion of the Bill takes place in the French Parliament.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending March 6, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The weather—The general condition was very wintry throughout the whole Kingdom. Snow fell in considerable or large amounts in almost all localities, the heaviest falls occurring either about the middle or at the end of the week. Thunder was heard at Gordon Castle on Tuesday afternoon, and at Tavistock on Friday afternoon.

The temperature was much below the average, the deficit amounting to nearly 10° in the Midland Counties and England S.W., and to more than 10° in England S.E. The highest of the maxima were registered on rather irregular dates, but in most places either very early or quite late in the period. They ranged from 49° in the English Channel, to 41° in England E. and Scotland N. During the greater part of the week the thermometer remained below 40° over the Kingdom generally; on some occasions in central and south-eastern England it remained at about 32° or below it all day. The lowest of the minima were recorded, with some exceptions, between the 3rd and 5th. In England S.E. the thermometer descended to zero (at Marlborough on the 3rd), and in Scotland E. to 1° (at West Linton on the 5th), while readings as low as 7° and 8° respectively were recorded in England N.W. and the Midland Counties. Over nearly all parts of the Kingdom the minima were below 20°, but in the English Channel the lowest value was 28°. From thermometers on the grass the lowest readings reported were 5° at West Linton (on the 5th), 4° at Llangannarch Wells (on the 4th and 5th), 3° at Canterbury and Balmoral, 5° at Hereford, 6° at Aspatria, 7° at Kew, and 8° at Cardiff.

The mean temperature of the sea.—At nearly all stations except Cleggan the water was colder than during the corresponding week of last year. The greatest difference being about 4° at Margate and Eastbourne. The mean values for the week ranged from 45.9° at Plymouth, and 45.2° at Cleggan, to about 39° at Kirkwall, Pennan Bay, and Burnmouth, to 36.1° at Eastbourne, and to 35.6° at Margate.

The rainfall (rain or snow) exceeded the normal in all districts except Scotland N. and W. and Ireland S., the excess being large in nearly all parts of England. At some places in the south-east of England the snow measured on Thursday morning yielded more than an inch of water, and at Dungeness as much as 1.9 inch. More than an inch was also measured over a large part of the Midlands and northern England as the result of the snowfall on Saturday, the largest quantity reported being 1.3 inch at Sheafle and Fulbeck. Some places further south experienced a large amount of rain and snow; at Shaftesbury the gauge yielded 1.64 inch. At Buxton and Huddersfield the depth of snow after the fall of Saturday averaged 10 inches, while at Ulcombe, Kent, on Friday morning the depth on the level was 12 to 15 inches.

The bright sunshine was generally rather above the average in the western districts, and below it in the east. The percentage of possible duration ranged from 38° in Ireland N., and 34 in the English Channel, to 19 in England E., and 18 in the Midland Counties.

THE WEATHER IN WEST HERTS.

Week ending March 10.

The wettest week as yet this year.—The present term of cold weather has now lasted nearly five weeks. Throughout the past week the days and nights have been all more or less cold, and on the coldest night the exposed thermometer registered 19° of frost, which is the lowest reading but one of the above-mentioned cold period, and the lowest in March for ten years. The ground is at the present time 3° colder at 2 feet deep, and 4° colder at 1 foot deep, than is seasonable. Rain, hail, snow or sleet fell on all but one day, and to the total depth of 1½ inches—making this the wettest week as yet recorded here this year. On one day the ground was covered with snow to the average depth of 2 inches. As much as 6 gallons of rain and melted snow have come through the bare soil percolation gauge, and 5½ gallons through that on which short grass is growing. The sun shone on an average for 3½ hours a day, which is about the average duration for this period in March. On three days no sunshine at all was recorded. Light airs and calms have alone prevailed during the week. The mean amount of moisture in the air at 9 o'clock in the afternoon exceeded a seasonable quantity for that hour by 3 per cent. E. M., Berkhamsted, March 10, 1909.

DEBATING SOCIETIES.

CROYDON & DISTRICT HORTICULTURAL.—At the fortnightly meeting of this society, held on Tuesday, March 2, a lecture on "Manures" was given by Mr. W. Rowson, Falkland Park Gardens, a member of the society.

IPSWICH AND DISTRICT GARDENERS.—A large number of the members of this association were present at the Co-operative Hall, on Wednesday, March 3, when a discussion took place on "The Violet, its culture and varieties." A paper was announced to have been read by Miss H. C. Philbrick, of Halstead, who was unavoidably prevented from attending.

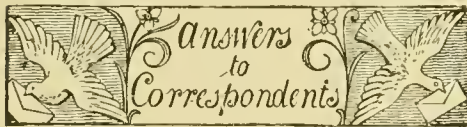
WARGRAVE AND DISTRICT GARDENERS.—At the last meeting of this association a short practical paper on "Primula Culture" was read by Mr. W. Glen, of Shiplake. The lecturer gave details on the subjects of seed-sowing, soils, pricking-off, potting, and ventilation.

Obituary.

EDWARD SHUTTLEWORTH.—We regret to record the death at Putney on the 5th inst. of this well-known Orchid grower and collector in his eightieth year, after a somewhat long illness. Deceased was better known to the past generation of Orchid growers, having been employed in Knight and Perry's Nursery at Chelsea. He afterwards entered the establishment of the late William Bull, later taking charge of the Orchid collection of Mr. G. H. Bunney, of Stratford. On the dispersal of this collection in 1872, he again entered the service of Mr. William Bull, who in the following year sent him as collector to the United States of Colombia. He made several successful journeys, sending home large consignments of Cattleyas, *Oeontoglossum crispum*, *Oncidiums*, *Miltonia vexillaria*, *Masdevallias*, and other plants. Among many introductions his name is recorded in *Masdevallia Shuttleworthii*, *Stanhopea Shuttleworthii*, *Smilax Shuttleworthii*, and *Dieffenbachia Shuttleworthii*. He retired from horticultural life some 15 years ago, after being in business with Mr. John Carder, who so lately predeceased him, and Mr. J. C. Charlesworth. The remains were laid to rest at Mortlake Cemetery on the 11th inst.

ENQUIRY.

BURNING CLAY SOIL.—Can any reader inform me what is the best method of burning clay for garden purposes? My first attempt has not been successful. After starting a fire I built up the clay around it, then a layer of small coal slack, and again clay. I found a difficulty in keeping the fire from being smothered, and much slack was left unburnt. Ought air passages to be left in the heap? *L. F.*



ADVICE IN ORCHID GROWING: *L. F. P.* We dare say there are openings for Orchid experts, but cannot undertake to advise you as to the fees you should charge. You will need to advertise.

BEGINNER IN FLORISTS' BUSINESS: *V. B.* We cannot advise you in respect to finance beyond the fact that, if you have to borrow money at the commencement, you will be likely to experience considerable anxiety before it is repaid. If you are diligent and keep out of debt, you will probably succeed.

BEGONIA GLOIRE DE LORRAINE: *Nemo.* Propagate the plants from cuttings and grow them on in a warm house, affording increased pot-room as required. This Begonia thrives best in its early stages when placed on a shelf near the glass of the roof. It makes an excellent subject for planting in baskets.

BULBS: *B. Hodgson.* The bulbs were infested by the grubs of a small fly, and by the bulb mite (*Rhizoglyphus echinopus*). The little beetles are members of the family *Brachelytra*, and they were probably feeding on the decayed vegetable matter. In the bottle there were, besides these beetles and bulb mites, a number of small worms belonging to the family *Enchytraeidae*, and nearly allied to the earth-worms. They are decidedly injurious to the roots of plants. Vaporite or apterite would be likely to kill them if mixed with the soil. The bulb mites might probably be killed by the same means, but no liquid insecticide appears to be of any use against this pest.

COELOGYNE CRISTATA: *T. H.* This Orchid does not require a high temperature; a cool intermediate house is suitable. The cause of failure to flower is usually due to an insufficiency of water at the roots during the plant's season of active growth, when too much rain-water can scarcely be given. *Coeogyne cristata* should be shaded from the sun in summer and never be thoroughly dried off at

the roots. Insert cuttings of *Hydrangeas* of mature growth when available. The plants may also be propagated readily by division.

FIBRE FROM CHINA: *J. J. F.* The fibre appears to be Hemp (*Cannabis sativa*), or an allied species.

FORCING SEAKALE: *J. R. B.* Very good samples of Seakale may be grown in the cellar you mention during winter and early spring, seeing that a temperature of from 54° to 58° is maintained. The quickest and best way to establish a plantation of Seakale that will provide plants for forcing purposes as required, is by utilising the extremities of the roots taken up each year for forcing. These are cut into lengths of 4 or 5 inches, and kept in a box containing dry sand until the following March, when, the condition of the ground permitting, these root-cuttings or "thongs," as they are commonly called, are dibbled in rows formed at about 15 inches apart, putting the sets at distances of 9 inches in the rows, and covering them with about 1 inch of soil. After this has been done, apply a surface dressing of short manure between the rows and plants to the depth of 1 or 2 inches. It is only necessary afterwards to keep them free from weeds and remove the flower-stems as they appear, until November or December, when they may be lifted for forcing. A deep, light, loamy soil enriched with short manure is the best rooting medium for Seakale. Root-cuttings treated as described will furnish strong plants for forcing next winter and following spring. In raising plants from seed, the seeds should be sown thinly in March or April in prepared ground in drills drawn 2 inches deep and 12 inches apart, closing in the soil over the seed with the feet, treading and raking the ground level afterwards. Thin the seedlings to 6 inches from plant to plant in the rows, and apply a mulching of short manure. Plants thus raised will be ready for transplanting in March, 1910, after the crown buds have been removed so as to prevent the plants running to seed during the summer. If you have any established plants of Seakale in your garden, you might take up a score or two, cut the roots into lengths as recommended, and plant the root-cuttings forthwith in the manner indicated to furnish plants for lifting to force in December next and onwards. If you plant in this month or April, one-year-old, two-year-old, and three-year-old seedlings, the three-year-old seedlings should furnish you with good plants for forcing next December, the two-year and one-year-old seedlings supplying respectively good forcing roots in the two following years. For Rhubarb, see next week's issue.

GRUB IN GARDEN SOIL: *Ashtonian.* One of the specimens you sent as wireworms is the grub of a ground beetle. These insects and their grubs are carnivorous, feeding on other insects, &c., and not on vegetable food, so that they are in no way garden pests, but the reverse. They may be easily distinguished from the wireworms by the quickness of their movements. They run fast, while the wireworms are slow in their actions. They are the grubs of the skipjack or click beetles, but we cannot tell you to which species they belong, as the grubs resemble one another very closely.

MUSHROOMS DISEASED: *H. K.* The Mushrooms are affected by a minute parasitic fungus, *Hypomyces perniciosus*, which, when once introduced, spreads very quickly under the conditions of temperature and moisture essential for the rapid growth of Mushrooms. According to a leaflet on this disease, issued by the Board of Agriculture and Fisheries, numerous Toadstools and other fungi suffering from the parasitism of different kinds of *Hypomyces* are common in woods and pastures every season, and spores are probably introduced into the Mushroom bed along with the manure or road sweepings commonly used. In some instances it is certain that the spawn is infected before it is placed in the Mushroom bed. When infection occurs through the introduction of spores into the house by wind or other causes, the disease may be confined to certain portions of the bed, and the prompt removal of infected Mushrooms as soon as the slightest symptoms are observed may check the

disease from assuming the proportions of an epidemic. When a house or other structure in which Mushrooms are grown has become infected, it should be completely emptied and thoroughly sprayed, both roof, walls, and floor, three times at intervals of 10 days with a solution of sulphate of copper—1 lb. of sulphate to 15 gallons of water. During this period of spraying, the house should be kept warm and moist, for the purpose of favouring germination of the spores of the parasite, which are destroyed with greater certainty when growing than when in a resting condition. After removing the soil and manure of an infected bed, great care should be taken in cleansing the tools, boots, and even clothing; otherwise there is great risk of infecting other beds.

NAMES OF FRUITS: *G. T. O.* We do not recognise the Apple. It is probably a local variety.—*C. Luke.* Darling Pippin.

NAMES OF PLANTS: *H. J. W.* *Thuja Lobbii* var. *zebrina*. *T. Lobbii* is known also as *T. plicata* and *T. gigantea*.—*Nemo.* 1, *Satureia montana* (Winter Savory); 2, *Eriobotrya japonica* (Loquat); 3, *Aloe socotrana*; 4, *Cotyledon*, send when in flower.—*C. O.* 1, *Pteris hastata*; 2, *Adiantum formosum*; 3, *Cyperus alternifolius*; 4, *Oncidium barbatum*—*H. Q.* 11. *Brunfelsia calycina*, known in some gardens as *Franciscia calycina*.—*T. T.* 1, *Pleurothallis lateritea*; 2, *Stelis ophioglossoides*; 3, *Bulbophyllum auricomum*.—*S. A.* You should number the specimens. The Fern is *Asplenium lucidum*; the tall, grass-like plant *Panicum plicatum*; the flower *Polygala Dalmaisiana*; the plant with prickles *Euphorbia splendens*; *Eupatorium Weinmannianum* is the specimen having white flowers; that with thick leaves, having a red mid-rib, is *Elæodendron orientale* (syn. *Aralia Chabrieri*).—*R. E. J.* 1, *Sprekelia formosissima*; 2, *Begonia Ingramii*; 3, *B. metallica*; 4, *B. hydrocotylæfolia*; 5, *Eranthemum pulchellum*.—*W. B. M.* We cannot recognise the plant either from the drawing or the description.

PALMS WITH DEAD FOLIAGE: *W. T. C.* The plants have suffered from the unsuitable atmosphere of the dwelling-house during the protracted cold weather.

PROPAGATING PELARGONIUM RASPAIL FOR FLOWERING IN WINTER: *F. R. D.* Plants propagated any time during March or April will flower well the following winter. They should be potted firmly in good loam, with some manure added. Place them in the open in a position fully exposed to the sun during the summer. About the first week in September they should be transferred to the greenhouse. All the flower-stems should be removed until about one month before they are required to be in flower. The house in which they are grown should be light and airy, as they will not succeed in a close, stagnant atmosphere. Do not use manurial stimulants too freely until late in the spring, when growth will be especially active, and the plants can make use of much food.

THE LOQUAT: *Nemo.* This plant—*Eriobotrya japonica*—is easily cultivated in any ordinary greenhouse. It thrives also in the open garden in sheltered positions in warm districts. If grown in pots, the roots need plenty of room.

WORMS IN STABLE MANURE: *C. W.* These are worms belonging to the family *Enchytraeidae*, and nearly related to the earth-worms. They are injurious to the roots of plants, but they may be killed by soaking the soil thoroughly with lime water. Vaporite or apterite would probably kill them; the latter proved fatal to them in a laboratory experiment, but that is no proof that it would succeed under other circumstances.

COMMUNICATIONS RECEIVED.—*A. J.*—*W. T. C.* (Thanks for 1s. which has been placed in the R.G.O.F. box)—*J. C. & Co.*—*M. B.*—*Java*—*T. W. C.*—*W. C.*—*W. S.*—*W. P. R.*—*H. M.*—*S. R.*—*J. G. W.*—*Reading Gard. Assoc.*—*W. A. C.*—*An Old Reader*—*A. J. H.*—*Linnean Soc.*—*C. P. R.*—*W. W. P.*—*T. H.*—*W. G. F.*—*G. H.*—*Onlooker*—*R. B.*—*H. E.*—*Rev. D. R. W.*—*T. H. S.*—*W. M.*—*L. T. D.*—*I. O'B.*—*J. R. J.*—*H. W. W.*—*Royal Institution*—*W. W. N.*—*E. S. F. M.*—*G. M.*—*W. H.*

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VERSAILLES AND PETIT TRIANON.

THE gardens of Versailles have so often been described in detail that it is not necessary to attempt the task again. For many years now it has been the fashion to hold them up to scorn. But, however much one may condemn them and the school of landscape gardening of which they are the most famous example, Versailles is, nevertheless, not lacking in attraction. The splendour of the design is unequalled among the gardens of the world. Then, the associations of the place and the emotions they inspire in the foreigner's mind lend to the gardens a certain charm. The thoughts of the English visitor are strongly coloured not only by memories of Louis XIV. and Le Nôtre, who laid the foundations of the scenes around, but by memories also of those events, so full of menace, that occurred here in the early years of the French Revolution.

In the present condition of the gardens there is a strong contrast between the scheme itself and the mode in which its details are carried out. A certain air of neglect and decayed grandeur overhangs the place. The flower-beds are filled with the most ordinary of bedding plants, and are edged with the ugly and old-fashioned Box-edging. The walks are rough, and the famous *tapis vert* is a very ordinary piece of lawn by no means well kept (see Supplementary Illustration in *Gardeners' Chronicle*, November 14, 1903).

Perhaps the strongest emotion Versailles inspires is that of melancholy.

The most astonishing feature of Versailles is the Orangery (see Supplementary Illustration in *Gardeners' Chronicle*, December 26, 1903). On a deeply-sunk area on one side of the Chateau are congregated some hundreds of Orange trees in tubs. The labour and expense of attending to these plants and housing them every winter are certainly not justified by their appearance. The greater proportion of them should be burnt right away. One hundred or one hundred and fifty years ago the cultivation of Orange trees in tubs was very general. The fact that the plant produced one of the most precious of all fruits, as well as the fragrance and associations of its blossom, gave it an interest in the gardens of northern Europe which it scarcely possesses to-day. And an Orange tree in a tub is scarcely ever an object of beauty. These specimens at Versailles are very much the opposite. The French as a nation have a deserved reputation for a strong artistic feeling and a deeply-rooted sense of economy. It is difficult to understand how they continue to tolerate this Orangery at Versailles, which outrages both.

PETIT TRIANON (see Supplementary Illustration in *Gardeners' Chronicle*, November 21, 1903). A very different scene awaits him who enters the grounds of Petit Trianon, close by. Here is an "English Garden" of the Continental type, and decidedly one of the best of its kind. In the first place, it is not too large. In the intricacies of some of the larger "English Gardens" of the Continent—like that at Munich, for instance—the stranger is speedily bewildered. But here, at Petit Trianon, the area is small enough to be completely traversed in a comparatively short time, and the gentle curves and windings of its walks give a pleasant diversity of prospect without obliterating the visitor's sense of locality. This garden was made by Marie Antoinette in her early and happier days in France. The ideas of Le Nôtre had dominated the garden-making of Europe for a century or more; this and other gardens of the same type expressed a feeling of revolt against them.

There is but little flower gardening at Petit Trianon. It owes its charms to its noble trees and shrubs, to its pleasant disposition of water, path and lawn, and, perhaps not least, to its contrast with the more famous garden close by.

There are many fine trees of particular interest at Petit Trianon—especially those of American origin. The deciduous Cypress (*Taxodium distichum*) is represented by six specimens growing on the edge of the lake and averaging 50 feet in height. A Tulip-tree (*Liriodendron tulipifera*) is about as high. Weymouth Pines (*P. Strobus*) are here in some quantity, and one of them is 10 feet in girth of trunk and nearly, or quite, 100 feet high. The American White Ash (*Fraxinus americana*) is of a similar stature. A white Oak, probably *Quercus bicolor*, is 50 feet high. *Populus deltoidea* has a trunk 12 feet in girth, and there are several very striking examples of the Poplar with hairy young wood which we know as *P. nigra betulæfolia*, the characteristic rough burrs on the trunk being remark-

ably developed. *Populus canescens* is about 100 feet high and 14 feet in girth of trunk. *Pinus Laricio* var. *Pallasiana*—the variety with erect-growing branches—is 80 feet high and its trunk 9 feet in girth. Other species represented by fine specimens are Cedar of Lebanon, *Carpinus caroliniana*, *Fraxinus pubescens*, an old tree of *Morus rubra* (uncommon in Britain), a large *Sophora japonica* (near the villa), and the true red Spruce (*Picea rubra*).

The little hamlet of picturesque cottages which Marie Antoinette built to give diversity to the scene still remains, but the buildings are not kept in good repair. Here, as in the gardens of Versailles, the effects of time are very evident, and the management lacks either the means or the will to combat them. B. J. W.

SOME OF THE NEWER SWEET PEAS.

A SWEET Pea of great beauty, though somewhat too susceptible to atmospheric influences, commemorates the name of Henry Eckford, who did so much to develop this flower. Several years have elapsed since the variety was introduced, but it has not yet been entirely superseded. As much, perhaps, may be said of the success of my own namesake, also raised by Mr. Eckford, which now stands alone in the Eckfordian catalogue under the head of "Indigo Blue." The finest varieties raised by the late Mr. Eckford were Dorothy Eckford and Queen Alexandra. Whether in dimensions, in faultless form, or in perfection of colour, those ideal representatives of purest white and richest scarlet will not easily be surpassed. At present, however, the predominating forms are the Spencer hybrids, with their fantastically "waved" or "crenulated" standards, to whose excessive multiplication some prominent horticulturists are beginning to object, on the ground that older and—as they deem them—more valuable varieties are in danger of being forgotten. Among the most prominent of the latest Spencerian hybrids is a notable one entitled "The King," by Messrs. Dobbie & Co., and "King Edward Spencer," by Mr. Atlee Burpee. It is probably the largest, and one of the most brilliant in colour, of all Sweet Peas of its own peculiar hue, but requires a fertile soil and a warm summer to develop its possibilities. In the coolness of autumn it perceptibly declines. Etta Dyke, whose synonym in America is the White Countess Spencer, is, perhaps, the most eulogised of all pure white Sweet Peas of this special description. Very beautiful are also the Primrose, Ramona, and Apple Blossom Spencers; likewise the beautiful lavender-coloured Asta Ohn, raised and named after his daughter by Mr. Henry Ohn, the Chinese head-hybridist of Mr. Lister Morse, of the Santa Clara Nurseries, in California. Mr. Morse recently sent to me several unnamed Spencerian hybrids, whose appearance during next summer I await with interest. Among named varieties that I have not yet seen in flower are Mrs. Walter Carter and Dobbie's Mid Blue, the former of which is said to resemble the variety Mrs. Charles Foster, while the latter is unquestionably an exquisite production. The Marquis and Mrs. A. Ireland

are, in their way, equally charming introductions. Two of the loveliest of recent Spencer hybrids are Mrs. Routzahn and Mrs. Henry Bell. Their most formidable rival in delicate beauty and refinement is Evelyn Hemus, which, notwithstanding the present keen competition in form and colour, seems likely to endure. *David R. Williamson.*

WEEDS AND HOEING.

ALTHOUGH the deleterious action of weeds upon crops is well known to all practical cultivators of the soil, very few accurate determinations have been made of the amount of reduction in yield of a crop which is produced when weeds are allowed

Comparing plots 4 and 5 with plot 1, we see that in the wet season of 1907, allowing the weeds to grow reduced the crop about 60 per cent., the loss in the drier year 1908 being about 50 per cent. The serious character of these figures is obvious.

An interesting and unexpected result is recorded on plots 4 and 5. The yield on No. 5, from which the weeds were removed by hand only, is practically the same as that on No. 4, which was kept clean by hoeing. Stirring the ground and leaving a natural mulch upon it is usually supposed to be conservative of soil moisture, leading indirectly to an increase in crop. This, however, has not been the case in these experiments, neither in the wet nor the drier season; it would appear from

PINUS RIGIDA.

WHILST *Pinus rigida*, Miller, cannot be described as one of the most ornamental of Pines in English parks and gardens, it is an interesting species, and fills an important place in the sylvia of Eastern North America. The species is found in a wild state as far north as New Brunswick, and reaches southwards to Georgia and the western slopes of the Alleghany Mountains. It is abundant in the central portions of this area, where it covers thousands of acres of dry, sterile land, in which scarcely any other tree would thrive.

Pinus rigida bears its leaves in groups of three, each leaf being usually from 2½ to 4 inches long. The shoot is yellowish-brown and glabrous, and the winter bud is about ½ inch long. The cones are remarkably variable in size, shape and arrangement. The branch shown in fig. 75 was taken from a tree growing in the Queen's Cottage Grounds at Kew Gardens. The tree, a bushy specimen not much more than 20 feet in height, was blown down during a recent gale, when the upper branches were seen to be covered with clusters of small cones interspersed with older and somewhat larger cones, as seen in the illustration. The smaller, clustered cones are 1 to 1½ inches long, and both in size and arrangement resemble those figured by A. B. Lambert in his *Pinetum*, t. 19, and described as *P. rigida*, small-coned variety. Lambert's tree was growing in 1803 at Pain's Hill. The shape of the cones is more or less ovate, but, as stated above, this is a variable character, forms of *Pinus rigida* being known with almost orbicular cones. The cone-scales are furnished each with a short, stiff, recurved spine. The tree

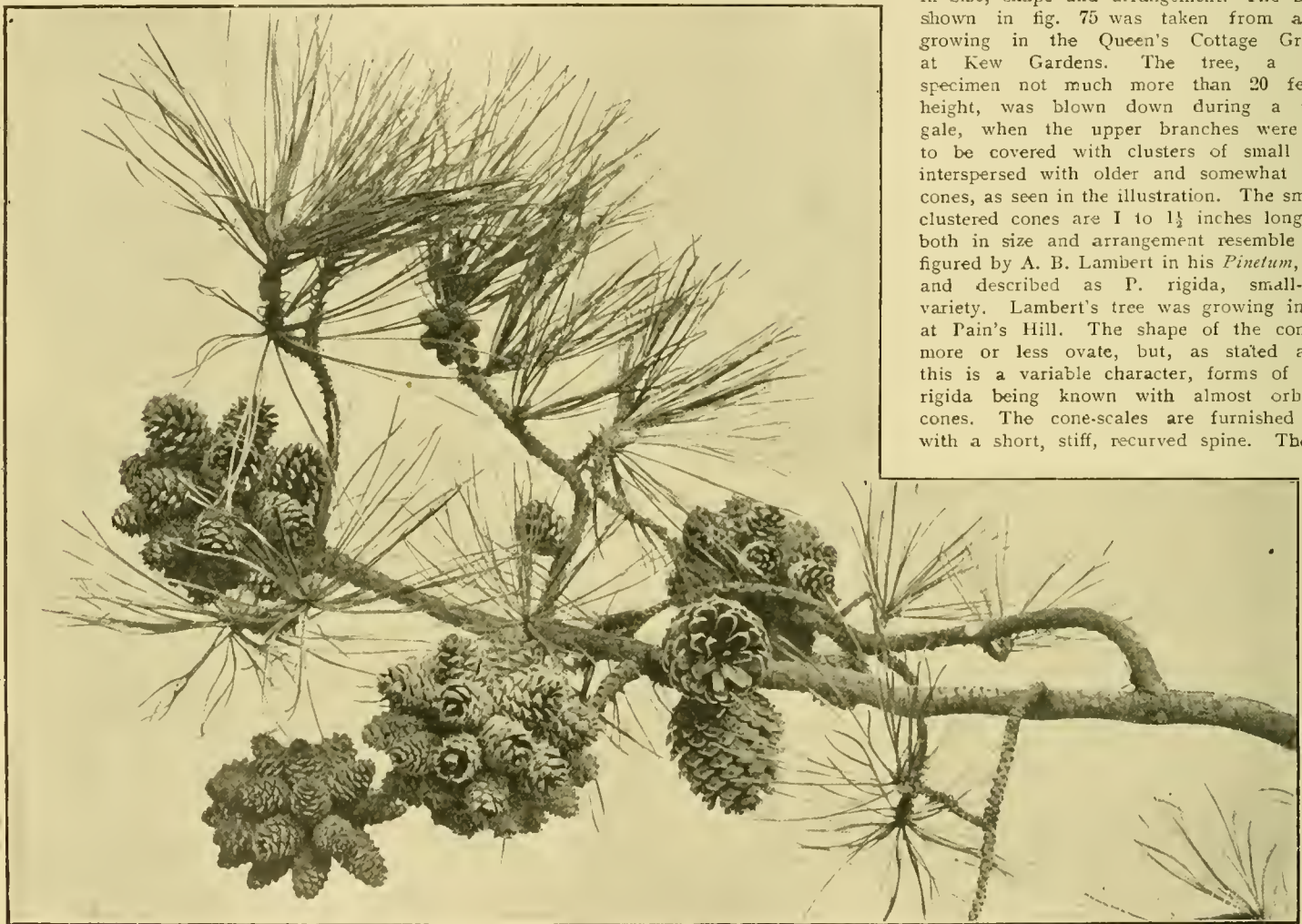


FIG. 75.—CONE-BEARING BRANCH OF PINUS RIGIDA.

[Photograph by E. J. Wallis.

to compete with it. During the last two seasons experiments have been carried on at the University College Farm, Reading, to test the influence of weeds in this respect, and incidentally to determine the value of hoeing.

Mangels were grown on half an acre of ground, which was divided into five plots arranged as indicated in the table below: the yields are given for both seasons:—

		Yield	
		1907.	1908.
Plot 1.	Not weeded after setting out the plants	15½	16½
" 2.	Hoeed once after setting out the plants	39½	30½
" 3.	Hoeed twice after setting out the plants	37½	36½
" 4.	Kept quite clean by hoeing	39½	38
" 5.	Kept quite clean by hand weeding only, no hoeing being done after the plants were set out	40	38½

the results of these experiments that the benefit of hoeing is almost entirely due to the destruction of the weeds which otherwise would have competed with the crop.

Reviewing the returns on plots 1 to 4, we see that:—

	1907.	1908.
Hoeing once added...	17½	13½
Hoeing again gave a further increase of	4½	6½
Several hoeings later only added	1½	1½

In the early part of the summer the seeds of weeds were found to germinate freely, and the plants grew at a rapid rate, and very soon almost smothered the young mangels. The first hoeing, however, in June got rid of these weeds, and the comparatively few which came up later were easily kept in check. *John Percival.*

retains its cones for about 10 or 12 years. It has also another peculiarity common to but few species, i.e., the production of adventitious shoots on the trunk and primary branches. So numerous are these at times that parts of the trunk are almost covered with short twigs.

Pinus rigida does not form so large a tree as some other Pines. Sargent gives its maximum height in a wild state as 80ft, but it is more usually 50 to 60 feet high. The largest trees known to me in the British Isles are in the fine arboretum at Arley Castle, near Bewdley, where there are three notable specimens, the tallest of which, according to Mr. Robt. Woodward's *Hortus Arleyensis*, was 79 feet high and 5 feet 11 inches in girth five years ago. The other two are both 7 feet 2 inches in girth, and respectively 69 feet and 66 feet in height. These trees were planted about 1820 by

Lord Mountnorris, who was then the proprietor of Arley. A larger specimen is recorded as having existed at Woburn in 1840: it was 75 feet high and 11 feet in girth, but it is improbable that it still survives.

This species is one of the Pines known as "Pitch Pine." It is not, however, the most valuable of that name, for that distinction belongs to the more southern and tender *P. palustris*. The timber contains large quantities of resin, but is little used now except for fuel and charcoal-making. Some years ago large numbers of this tree were planted in Germany on the supposition that it was the tree which produces the real "Pitch Pine" timber. But neither in that country nor in our own is it likely to rival our native *P. sylvestris* as a forest tree, whatever the soil or position may be. *W. J. Bean.*

PLANT NOTES.

SCHIZANTHUS.

To have a good batch of *Schizanthus* in bloom during May, the seeds should be sown about the latter end of August. The soil used should be a light-textured compost, and the seed-boxes should be placed in a cold frame during the germination of the seed. The seedlings should be transplanted when large enough to handle, placing four in a 3-inch pot. Stand the pots on a shelf in a greenhouse in which a temperature of from 50° to 55° is maintained. They will also succeed in a cold frame if kept well up to the glass, otherwise they will become drawn. As soon as they are well rooted they should be potted into 6-inch pots, using a compost consisting of two parts loam and one part leaf-soil, with the addition of a little silver sand and crushed charcoal. When growth is well established pinch out the points of the principal shoots to induce a bushy habit.

The *Schizanthus* requires plenty of fresh air, which promotes a sturdy, vigorous growth. Guard against mildew, and, should it appear, dust the plants lightly with flowers of sulphur. By the middle of January the plants will be ready for their final potting, which should be in 10-inch pots, using the compost recommended above, to which may be added some concentrated plant manure. Do not make the soil too firm in potting, as this will impede the free growth of the roots. Care in watering is very necessary when the plants are newly potted; it is advisable to keep them on the dry side until they are well rooted. At this stage it will be necessary to stake the plants, using tall bamboo canes for the purpose. Fasten the growths neatly to the stakes with green raffia, taking care not to tie them too tightly.

It is beneficial to syringe the spaces between the pots on bright days, and a light spray overhead is desirable in the afternoon. When the pots are filled with roots, the plants are benefited by a small quantity of an approved fertiliser. Soot-water and farmyard liquid manure are also suitable fertilisers for the *Schizanthus*.

Schizanthus retusus is very useful for furnishing blooms for cutting, the flower-stems being stiff. It forms an elegant basket plant. *J. Gardner, Eaton Hall Gardens, Chester.*

TRITELEIA UNIFLORA.

This plant is valuable for the embellishment of the greenhouse at this season of the year. It has star-shaped flowers that vary from white to porcelain-blue. The period of flowering lasts about three months.

The cultivation of *Triteleia uniflora* is simple. The best receptacles are pots or hanging baskets, and it thrives best in a compost of loam, leaf-mould and sand. When baskets are used the pendulous habit of the flowers are seen

to advantage. The bulbs should be started into growth before being placed in the receptacles in which they are to flower. Place them in damp moss or partially-decayed leaf-soil about the middle of September in a cool, shady position, and in three or four weeks the new growths will be sufficiently developed for the plants to be potted. If pots are used, seven or eight bulbs should be planted in a 6-inch pot. After potting, they should be placed in a cold frame and watered as required; frost must not be allowed to reach the plants, and at the end of November they should be afforded an atmospheric temperature of about 55°, when they will commence to throw up their dainty little flowers.

After the season of flowering is over, the root-stocks may be planted out permanently in a warm, sheltered aspect on a rockery, or they may be dried off, have the old soil shaken from their roots, and be stored until the following season. *J. O. Edwards, Plas Isaf, near Ruthin.*

DAPHNE COLLINA.

ALTHOUGH a native of the south of Italy and introduced to British gardens so long ago as 1752, this plant is but rarely met with in cultivation. It is an erect, evergreen shrub from 2 to 3 feet high, with obovate, deep-green leaves, glabrous and shiny above and somewhat hairy beneath. The deep pink flowers are produced in terminal heads and are deliciously fragrant. The period of flowering is from January to March. Here, in the north of London, a plant has been in flower during the past month, and in spite of the vagaries of the weather, it has produced its flowers abundantly, without any protection beyond that afforded by a small quantity of straw shaken between its branches. I find it is by no means fastidious in regard to soil, as any good garden mould suffices for its needs. This fact, coupled with its complete hardiness and free-flowering qualities, should commend it as a desirable subject for planting in gardens, especially as the blooms are produced at a season when flowers are most appreciated.

ADONIS AMURENSIS.

THIS is an extremely useful plant at this season of the year, and noteworthy on account of its complete hardiness and early-flowering character. Its tufts of graceful Fern-like foliage and glistening golden-yellow flowers are produced toward the latter part of January and throughout February. The flowers are about 2 inches across, and, when well established, are greatly appreciated by everyone. This winter-blooming plant delights in a rich soil, and should on no account be disturbed when once planted. It is a native of Manchuria and Siberia. *Adonis Kiknasaki* is quite distinct from *A. amurensis*, although it may probably prove to be a geographical form of the older species. It is a native of Japan, and is distinguished by its extreme earliness. The lemon-yellow-coloured flowers are more cup-shaped than those of *A. amurensis*, and the foliage is much more finely divided. Here, on a London clay soil, this plant has been in flower during the last few weeks in the open border, though not protected in any way. *E. J. S., Finchley.*

THE ALPINE GARDEN.

GERANIUM TRAVERSII.

THERE are many truly exquisite things among the dwarf Geraniums, or Cranesbills, and probably none is more appreciated by rock gardeners than *G. argenteum*, with its silvery leaves and delicate flowers. Yet it is excelled by its allied flower from the Antipodes, for *Geranium Traversii*, from New Zealand, is even more beautiful. The silvery leaves, resembling to some extent, those of *G. argenteum*, are not

so finely shaped, yet they are prettier, the silvery colouring being more satin-like in its appearance, and the delicate carving of the margins as fine. The foliage is larger, and the plant as a whole is taller, although equally suitable for the rock-garden. The flowers, also, are larger, and those of the type are of a very beautiful colour, best described as very light purple, streaked with carmine. There is, however, a rarer, white-flowered variety, called *elegans*, which, in the front of a border, is very beautiful.

EPIGÆA REPENS.

ONE of the most exquisite trailing shrubs of moderate growth is *Epigæa repens*, variously known as the Mayflower and Trailing Arbutus. It is far from common, and there are many who find it difficult to cultivate. In its native land, North America, where it extends from Newfoundland for a considerable distance into what was long known as the North-West Territory, and southward into Michigan, Kentucky, and Florida, it loves sandy and rocky woods, and delights particularly in the shade of evergreen trees. In practice, we find that, in some parts of Great Britain and Ireland, it requires special care.

Our winters and the late frosts which too frequently follow them do not appear to be favourable to the *Epigæa*, and frequently it is killed by a severe frost following a mild and open winter. I am anxious to impress this upon those who seek to cultivate this shrub successfully, as it will be found that it is generally necessary to afford it some protection against the inclemencies of late spring. It also needs a sandy or stony soil, and the shade of evergreen trees. The shade should not be too great; low evergreen shrubs are sometimes too dwarf to give the *Epigæa* the necessary amount of light as well as the desired shade. Protection is best afforded by means of a handlight, which is kept over the *Epigæa* at nights, and, when severe frosts occur, during the day. The light should be opened at other times, by setting the top angleways across the lower part. If the plants are in the open, it is better to have this top shaded with whitening, or some of the shading material sold for the purpose. Under such conditions, watering is necessary, and, consequently, there should be free drainage.

Epigæa repens is a creeping or trailing plant, with rather rounded, evergreen leaves, pointed at the top, often somewhat heart-shaped at the base, dark green, usually smooth above, but hairy beneath. They are rather leathery to the touch, and are arranged alternately on the creeping branches. The flowers naturally constitute the greatest attractions of the plant. The dry, rather hard, imbricated sepals surround a tube-like flower, spreading out into an open corolla, generally composed of five lobes, and of pink colour. Wax-like in its appearance, the flower is of great beauty, and the association of the flowers in clusters at the end of the branch adds to their charm. The branches are from 6 to 15 inches long, but with us they seldom attain the latter length. The propagation of *Epigæa* is best effected by layering after flowering, which is generally from March to May.

ERODIUM CHRYSANTHUM.

A RARE and pretty Heron's Bill is that called *Erodium chrysanthum*, and, although it first came under my observation some years ago, it never seems to become more plentiful in gardens. The cultivation presents some difficulties, and it is not surprising to find the plant quoted in a recent catalogue at the high price (for one which has been in cultivation for a fair length of time) of 5s. per plant. *E. chrysanthum* is, indeed, more expensive than when first put into commerce, and this is a bad sign in itself of the character of a reputedly hardy plant.

Erodium chrysanthum has one powerful enemy in the slug. This is, I believe, the worst

enemy of the *Erodium*, and every ingenuity is required to baffle its attentions by means of zinc rings, notched if we please; brass gauze rings (which are better than those of zinc); rings of soft and lime, and so forth. With due care these devices may serve in gardens where slugs abound; but there must be no stray leaves either of the *Erodium* or adjacent plants hanging over the circlet, or the slug will find its way over the barrier. The circlet must be deep enough in the ground to prevent the slug from getting underneath.

Years ago my attention was drawn to this Heron's Bill in a somewhat noted nursery. "Here," said the nurseryman, himself a lover of Alpines, "here is *Erodium chrysanthum*. This rare plant will only do in the shade." Naturally, I followed this suggestion, but the

KILLARNEY HOUSE, CO. KERRY.

SITUATED in the romantic district of Killarney, the beauty spot of Ireland, is Killarney House, the seat of the Earl and Countess Kenmare. It was my pleasure to visit the gardens and grounds of this domain during August of last year, and never shall I forget the magnificent scenery which a view from the terrace in front of the mansion affords. The landscape is of impressive grandeur, and Nature is assisted in the scene of magnificence by the art of the landscape gardener, who has formed terraces that are the sites of much floral beauty. With great skill these terraces are connected with the receding slopes of the wilder pleasure grounds and still further distant park, wherein are flowering shrubs in great variety

in cloud or mist. The highest (3,410 feet) is Carrantuohill, the highest mountain in Ireland.

The mansion is a comparatively modern structure, the outside walls of which are furnished with climbers, including Magnolia, Jasmine, Passiflora, Genista, Ceanothus, and *Carpenteria californica*.

A portion of the grounds known as her ladyship's garden is laid out in the Italian style. The flower-beds are enclosed with dwarf hedges of clipped Box and Yew. Some are worked to designs, one representing the Prince of Wales's feathers, another the Kenmare coat of arms, &c. The flower-beds and borders have been planted on an elaborate colour scheme, in which the newer varieties of Antirrhinums, with flowers of various shades, are largely utilised, combined with Marguerites, Violas, and Begonias. A part



FIG. 76.—KILLARNEY HOUSE, THE RESIDENCE OF EARL KENMARE.

plant died. Recently, however, I have seen this dictum in favour of shade entirely controverted. In an Irish garden I saw it last year, quite happy in the sun, with its pretty yellow flowers above the graceful Fern-like foliage. I believe that it requires protection from slugs, a dry soil, and a sunny situation. With these it should survive our winters, save in the far north and the wet west, in a satisfactory way. However, it is difficult to say what is certain to suit this flower, and this note is penned with the diffidence taught by experience in dealing with "miffy" subjects, however beautiful they are. *Erodium chrysanthum*, with its lemon-yellow flowers, its silvery foliage, and tufted growth, is lovely enough to deserve all the care we can give it. *S. Arnott*.

together with many Conifers, Bamboos, Ferns, and Heaths. There are long vistas of trees that stretch for more than a mile, only ending at the water's edge of the largest of the lakes of Killarney. This is a large sheet of crystal water, some seven or eight miles long and four or five wide, containing islands whereon are ruins of historical abbeys, castles, and towers. These islands are covered with a profuse vegetation, the water scene being in harmony with its surroundings and conveying a sense of quiet and repose. Looking beyond this great lake, are seen immense tracts of wild Heather and bracken Fern, leading up to huge, almost purple, ranges of rugged, rocky mountains which rise, nearly perpendicular in places, many hundreds of feet. Innumerable peaks stretch as far as the eye can penetrate, but these are frequently lost

known as the Upper Fan garden has a totally different style of bedding, the bright colours of *Calceolaria amplexicaulis*, *Salvia patens*, and a pretty variety of pink Phlox gave a pleasing effect. On descending a flight of steps the Lower Fan garden is reached, wherein are large numbers of Lavender and other old-fashioned herbs and flowers. Single Dahlias, in front of a background formed by a hedge of English Yew, afforded a bright display of colouring. On returning to the upper terrace the middle terrace was seen. This has designs worked out in *Viburnum Tinus* in the Grass, whilst others are outlined in *Berberis Darwinii* and *Pernettya*. The enclosures were filled with *Lobelia cardinalis*, *Verbena venosa*, Scarlet Queen *Salvia*, and other bright flowers. The border shrubs are kept closely trimmed, but

these scrolls appeared to be too harshly clipped and mutilated. A Yew hedge, with turrets clipped in the top, divides each of these terraces. At one end is a pergola formed of Yew, and this adjoins the western garden, wherein are numbers of flower-beds designed in Box. The beds in summer-time are filled with Marguerites, Pinks, Pentstemons, *Salvia patens*, Marguerite Carnations, and other showy flowers. Some large tubs were filled with pink-flowered Ivy-leaved Pelargoniums; they were most effectively arranged on the upper terrace. The borders close to the windows of the mansion were filled with an assortment of sweet-smelling flowers. Leaving the terrace gardens by a fine ornamental wrought-iron gate, the hardy flower garden is reached. This contains a fine collection of

Lardizabala biternata, *Trachelospermum jasminoides*, and *Solanum jasminoides*. The flower-beds were filled with pink and white-flowered Phloxes, *Pentstemon Salmon Queen*, *Clarkia*, the double rose-flowered *Godetia*, an excellent bed of *Lavatera trimestris rosea*, and others.

Near to the pergola are a tea-house and a dairy, the buildings being surrounded by Roses, with beds of annuals and other flowers. There were also borders planted with *Violas* in large masses of one colour. The *Camellia* grows finely in the open in this Irish garden.

The path leads to an avenue, where the choicest and rarest of flowering shrubs are planted, including many not regarded as hardy. The plants are in robust health and grow luxu-

KEW NOTES.

ARDISIA CRENATA.

ARDISIA CRENATA is also known in nurseries as *A. crenulata* and *A. crispa*. For some weeks past, a batch of plants of this species has been a conspicuous object in the greenhouse. It forms a small, erect shrub, with dark green, leathery foliage. The inconspicuous, white flowers are produced in panicles, and are succeeded by bright red berries about the size of Holly berries. The berries hang for a long time so that the plants bear often crops of two seasons at the same time.

Ardisia crenata is readily increased from either seeds or cuttings, but the best plants are ob-



FIG. 77.—THE LAKES AS SEEN FROM KILLARNEY HOUSE GARDENS.

choice plants arranged in groups of various sizes and in harmony of colour. It was new to me to see *Agapanthus umbellatus*, both the white and the blue varieties quite acclimatised and remaining out-of-doors all the winter; the plants are sheltered by one of the finest hedges of *Cupressus macrocarpa* in the United Kingdom. There is an enclosed tennis-court at the top end of these borders. At one side of the court is an arched pergola, which is much the best example I know of this kind of work. Through an opening in this hedge is a garden devoted to Lilies. Near this is a part known as the Daisy terrace. It is encircled by a pergola furnished with a wealth of climbers all growing in the greatest luxuriance; many were of species not hardy in the midlands of England. The plants included *Carpenteria californica*, *Berberidopsis corallina*,

riantly. Amongst them I noticed *Escallonia montevidensis*, *E. Philippiana*, *E. langleyensis*, *Berberidopsis corallina*, *Desfontainia spinosa*, *Pittosporum* in variety, *Olearias*, *Xanthoceras*, and *Solanum jasminoides*. A splendid specimen of *Daphniphyllum glaucescens*, the Azorean Laurel, *Quercus glabra*, *Eupatorium Weimannianum*, immense clumps of both the green and variegated varieties of *Phormium*, the New Zealand Flax: also Bamboos in variety, one of which, *Arundinaria nobilis*, was flowering in different parts of the garden.

This account of Killarney House is very imperfect, but it may convey some idea of the beauty of Earl Kenmare's home in this picturesque spot. Mr. A. J. Elgar is the capable and enthusiastic head gardener. *W. Crumf, V.M.H.*

tained from seeds. They should be sown in pots, filled with sandy soil, in spring. The receptacles should be plunged to the rim in a propagating frame till germination commences. The young plants should be potted singly into small pots and stood on a damp surface in the propagating house. During the summer months hot-house treatment should be afforded, but care must be taken not to allow the roots to become dry or the plants will shed their leaves. When well rooted in the small pots, they should be transferred to others 4 inches in diameter, in which they should be wintered. A suitable potting soil consists of equal parts peat, fibrous loam, and leaf-mould, to which is added plenty of coarse sand. The following spring the largest plants should be potted into 6-inch pots, and the remainder into pots a size smaller. The plants

should be given a light position in an intermediate house, where, during the summer, they will flower. An increased amount of ventilation at this stage will assist fertilisation and help to harden the plants. There is a white-berried form named *alba*. As young plants produce the best results, a few seedlings should be raised each year and grown on without stopping the leading shoots. *A. O.*

The Week's Work.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. Ford, Pencarrow, Cornwall.

Chrysanthemums.—The earlier batches should now be transferred into 6-inch pots, using a heavier compost than that employed for the first potting, and making the soil rather firmer than on the previous occasion. For a few days after the plants are repotted keep them in a somewhat close atmosphere and lightly syringe them when the weather is fine in order to prevent the foliage from flagging. Afterwards gradually inure them to fresh air, and do not employ fire heat except in circumstances when frost cannot be excluded by means of the outside coverings.

Flowering shrubs.—These plants require but gentle forcing to bring them into flower at this season. As soon as the flowers show colour remove the plants to the show house. Hydrangeas in growth require more manure water than the generality of forced shrubs, and it is only by liberal feeding that larger flower-heads can be obtained.

Vallota purpurea.—These beautiful bulbous plants which frequently thrive luxuriantly and flower abundantly in cottage windows are, curiously enough, often the despair of the gardener. Healthy plants, not too pot-bound, should be given merely a top-dressing. Repot the others in a mixture of fibrous loam, leaf-mould and sand. Use comparatively small-sized pots, and do not press the soil too firmly. All the plants should be placed to make their growth in a light position on a moist base in an intermediate house. Plenty of moisture, both in the atmosphere and at the roots, will now be beneficial. When the plants have completed their growth, remove them to a cooler house or frame.

Clivia (Imantophyllum) miniata.—If the plants in flower are removed to the coolest part of the house, their flowering season will be greatly prolonged. Copious waterings and frequent applications of manure are essential during the period of growth. *Clivias* growing in large pots do not often require repotting, although they must not be permitted to become excessively pot-bound, or the quantity and quality of the blooms will deteriorate. Large plants requiring attention may be divided, and thus furnish a quantity of useful plants of smaller size. Plants potted firmly in good soil in 5 and 6-inch pots flower freely, and are most serviceable for house decoration. After dividing and potting, place the plants in a warmer house until they have completed their growth. Besides *Clivia miniata* and its varieties, the more uncommon species, *C. Gardenii*, and the reputed hybrid, *C. cyrtanthiflora*, are both deserving of more extended culture.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Filberts and Cobnuts.—The pruning of these trees should be left till late in the season, allowing the young growths to remain until there is a plentiful supply of catkins to pollinate the female blooms. The female blooms usually open in March or April, but they may be somewhat later this year. The stem of the tree should be kept clear of all suckers, unless the latter are required for purposes of propagation. Young trees are generally planted with a short leg, but, in any case, it is advisable to keep the stem clear of branches for at least 2 feet up from the ground. The method of pruning generally practised in this country is to prune the trees to the shape of a goblet or basin, this having been proved the most remunerative form of culture by market growers. Young trees should on no account be planted in rich or recently-manured

ground. Cobs and Filberts do exceedingly well in poor, stony soil, or on sloping banks where it is often difficult to cultivate other fruit trees; but owing to Nut trees being so accommodating in the matter of soil and situation, it frequently happens that they are much neglected. These Nuts are a very profitable crop, and well repay a reasonable amount of care and attention. When the pruning is completed, fork the ground over and dig in all leaves and rubbish, at the same time working in a little lime. Young trees are best transplanted in the autumn; but if it should be found necessary to plant them now, this can be safely done provided reasonable care is taken. Some suitable varieties are Kentish Cob, Early Prolific Filbert, Cosford Cob, and Merveille de Bollwyller. There is also a purple-leaved variety which, apart from its fruit, is well worthy of a place in the shrubbery for its ornamental foliage.

Bush fruits.—It is usual in gardens where birds are very destructive to the fruit-buds of Gooseberries and Red Currants to defer pruning till the trees have started into growth; but these trees must not now be delayed any longer, as, owing to the sun's increasing power, the buds will advance rapidly. It is better to prune at the proper time, and either net the fruit bushes or dress them with one of the many compositions on the market for warding off birds. A second application should be given if repeated heavy rains render the first ineffectual.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Thunias.—*Thunia Marshallii*, *T. Bensoniæ*, *T. alba*, *T. candidissima*, *T. pulchra*, *T. Brymeriana* and *T. Veitchii* are now commencing to develop new growths from the old stems, and it is therefore time to repot them. Turn the plants out of their pots, shake away all the old soil, shorten the dead roots to about 1 inch and clean them thoroughly of all scale insects. The usual mode, and a convenient one, of cultivating *Thunias* is in clumps of six or eight stems, as the effect, when each stem produces its drooping raceme of flowers, is much better than when the plants are cultivated singly in small pots. The flower pots should be of various dimensions according to the size of the stems. My practice is to place about eight of the strongest stems in pots of 7 or 8 inches in diameter. These should be half-filled with clean crocks, using good-sized pieces, and placing them in an upright position so that the water can readily pass away. Over the drainage place a thin turf of fibrous loam with the grass-side downwards. The new roots will penetrate this before the appearance of the flower-spikes, and the plants will derive great benefit. For the compost, use one-half good fibrous yellow loam, one-quarter peat, and for the remainder chopped Sphagnum-moss and small crocks. Plant the stems about 2 or 3 inches apart, and use neat sticks for holding them firmly in their places. Keep the surface of the compost about half-an-inch below the rim of the pot to facilitate watering. When repotted, place the plants in the lightest position in the East Indian house, or the warm plant stove, and elevate them so that the tips of the old stems will almost touch the roof glass. When these are extra long, bend them over and tie them down, so that the young shoots may be brought nearer to the light. For the first few weeks after the potting afford water sparingly, but as soon as the roots are seen to be pushing freely through the compost and the new shoots are progressing satisfactorily, the quantity of water may be increased, and when fully established, an occasional application of weak liquid cow manure will be beneficial. *Thunias* produce their flower-spikes at the apex of the new growths, and as these spikes generally appear about the middle of May, it is advisable to grow the plants on as rapidly as possible.

Chysis.—In the Cattleya house, plants of *Chysis bractescens*, *C. aurea*, *C. Sedenii*, *C. Chelsonii* and *C. Lliminghii* produce their flower-buds in conjunction with the young growths. These plants are now commencing to grow, but only sufficient water to keep the roots moist should be applied, for if kept too wet they may fail to bloom. Suspend them near the roof glass, where they will obtain plenty of

light, heat and air. The plants should not be repotted till after the flowers have faded.

Lælia anceps.—The present is a good time to repot this species and its varieties. Unless the compost is worn out, there is no need to disturb well-rooted plants which have sufficient space for growing. When repotting established plants, the old roots may be left untouched, and if the old compost is firm and in good condition, place the whole mass into a larger pot. Make the drainage perfect, and add fresh material consisting of Osmunda fibre and Polypodium in equal parts. A little chopped Sphagnum-moss should be given in addition, and plenty of small crocks. Mix these materials well together and pot rather firmly. In dividing up worn-out specimens, cut away the dead roots and useless pseudo-bulbs, leaving about two bulbs to each leading growth. After repotting, some judgment is needed in affording water to the plants so as to prevent decay and the loss of old roots. It is a good plan to give only a slight watering around the edge of the pot till the plants are re-established. After this stage the amount of water, heat, atmospheric moisture and ventilation may be gradually increased.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir Edmund G. Loder, Bart., Leonardslee, Sussex.

Chrysanthemums.—Young plants that are to be bedded out, being well rooted, should be potted up singly and placed again in the frames. When a week has elapsed pinch the points from the shoots. The plants will be fit to put out into their permanent positions in the first week in May, according to the locality.

Dahlia.—Remove some of the sturdy shoots that are now growing from the started tubers, and insert them in small pots containing sandy soil, placing them in a warm propagating frame. When the cuttings have become nicely rooted they should be shifted into pots one size larger, and, as soon as they have recommenced to grow, they may be removed to cooler quarters.

Gladiolus.—The ground intended for *Gladioli* having been deeply dug in the autumn should now be forked over. The soil may then be expected to be in good condition at the end of the present month, when the corms should be planted. *Gladioli* succeed best in moderately light soil. In districts where the natural soil is heavy it is necessary to add a liberal quantity of leaf-mould and sand, mixing these materials with the staple.

Nicotiana.—Seeds should now be sown in boxes containing fine soil. As soon as the seedlings are large enough to be handled, prick them out into small pots. *N. Sanderae*, being richly coloured, contrasts well with the white flowers of *N. affinis*. *N. sylvestris* is a fine plant for larger borders. Under good cultivation it grows 6 to 8 feet in height, and produces huge inflorescences of white flowers. Plants of *N. Sanderae* now flowering in the conservatory, if taken good care of, may be planted out early in June; they will produce a good effect earlier than plants raised this season.

Salpiglossis.—Seeds should be sown thinly in shallow boxes. Prick out the seedlings as soon as they are large enough into other boxes, keeping them near to the roof glass.

Mignonette.—Sow a pinch of seed on a warm border after the surface of the ground has been raked very fine, selecting *Machet*, *Golden Queen*, or any of the large-growing varieties. *Mignonette*, being pretty hardy, often succeeds well from an early sowing, provided such thinning is done as is necessary to provide each plant with sufficient space.

Herbaceous plants.—In the event of fine weather, a commencement should be made to fork over the surface of the ground in the borders. It is assumed that all the spots where bulbs are growing are sufficiently indicated by means of labels. If it were otherwise, forking could scarcely be done without causing serious injury. If it is thought desirable, some cow manure or bonemeal may be added as the work proceeds, also some soot and lime around the bulbs and tender plants now pushing through the soil. On frosty mornings manure may be wheeled on to the ground for providing a mulch for the shrubs at the back of the borders. Be careful to renew any labels that are likely to fail during the season. Zinc labels are the best

for this purpose. Let them be all written in one style, and placed in the ground at the same angle.

Narcissus and Polyanthus.—Clean the sites where Narcissus will presently flower in the Grass, and apply a dressing of soot and bonemeal. Polyanthus and Primroses should be cleaned and the surface of the soil around them pricked over and given a dressing of manure, such as decomposed cow manure or a mixture of soot and bonemeal.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Early Peaches and Nectarines in pots.—It will be necessary to pay more attention to cultural details directly the fruits have passed their stoning stage. During bright sunny weather the pots must be examined two or three times a day, so that water may be applied to the roots before the soil becomes too dry. Manure water may be given at shorter intervals than hitherto. As soon as it is seen that the fruits have commenced to swell for the second time, apply a surface-dressing of rich compost. It is advisable to plunge the pots in litter, or some other suitable material, to prevent the soil becoming dry quickly, and provide an equable medium for the roots. The final thinning of the fruits may now be carried out. Let each tree carry such a crop as will be proportionate to its size and strength; on no account allow any trees to be overtaxed, otherwise the quality of the fruit will be poor. From 12 to 18 fruits may be considered a fair crop for most trees. Stop the leading shoots when they have made three or four leaves, and cut back any fruitless wood to the growth nearest the base. The temperature may now be safely increased, if it is necessary to hurry the crop; but it will be better to take advantage of sunny weather by closing early in the afternoon than to use much fire heat.

Early Peach trees in borders.—Before commencing to tie in the young growths, remove those shoots not required for fruiting next year, leaving only one shoot at the base, and another at the point, of the current bearing wood, unless it is intended to remove some of the old branches at next season's pruning. Now is the time to note those branches it is intended to cut out, so that sufficient young wood may be laid in to replace them. The young growths should be brought to the under-side of the trellis, for if this is left till pruning time there is danger of their being damaged. As soon as the fruits have "stoned," they may be safely thinned to the number necessary to furnish the crop. Remove first those less exposed to the sun, then thin out the others, leaving them evenly distributed over the trees. About one fruit to each square foot of space is generally sufficient, but young trees which show signs of making gross wood will be the better for bearing a larger crop. Syringe the trees with rain-water in the morning and at closing time, and should red spider appear on the leaves, syringe them with a solution of soft soap and sulphur. An occasional light fumigating with a nicotine compound will keep aphid in check.

Mid-season trees.—Do not neglect disbudding, but carry out the operation at intervals. Where fruits have set very thickly, it is advisable to pull off all those on the under-side of the trellis at once. Apply root waterings when necessary, and stimulants to established trees carrying full crops of fruit. Syringe the trees twice daily, and frequently damp all the surfaces in the house.

Late trees.—Trees which are being retarded for the latest supply must not be subjected to cold draughts, these being injurious.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Tomatos.—Although the winter-fruiting plants are now more or less exhausted, any that are still healthy and appear to be capable of producing fruit for six weeks or two months longer should be encouraged to do so. Remove all surplus growths, and apply a good top-dressing of rich material, also manure water when water is needed. The pollination of the flowers should be attended to daily. Winter Beauty and Sunrise have again proved invaluable varieties for

winter-fruiting. It is assumed that successional plants have now filled their final pots with roots; therefore, place them in the position in which it is intended they should ripen their fruits, choosing the lightest place possible. These are best trained up the roof of a warm house, keeping the growths at a distance of about 8 inches from the glass. No manure water should be given the plants until a good set of fruit is obtained. Maintain the atmosphere dry and buoyant, especially during dull weather and when the plants are commencing to flower. Admit air daily, if only sufficient to cause a slight circulation, for stagnant conditions favour disease. Another sowing of seeds should be made.

Vegetable Marrows.—The seedlings raised at the time previously advised should now be sufficiently advanced to be put under frames on mild hot-beds. Care should be taken to select a warm day for transferring the plants. Two plants may be put under an ordinary light. Plant them on ridges, but do not cover up the whole of the fermenting material with soil until the plants have made a good start. Maintain a temperature of from 50° to 55°, allowing this to rise with sun heat. Syringe the plants on fine days, and close the frames early in the afternoon. Add fresh linings to the frames when necessary, and thoroughly cover the glass with protective material every night. Spare plants may be potted into larger pots or boxes, and, if placed in available spaces in fruit or intermediate houses, they will be useful. Sow more seeds in 2½-inch pots.

Sorrel.—By careful treatment a small bed of Sorrel will produce abundant supplies. Care should be taken to select only the best varieties for cultivation. Sow seed thinly during the present month in shallow drills about 9 inches apart, and thin the seedlings when large enough to handle until they are 3 or 4 inches apart. They may be transplanted either the following autumn or spring. Old plants can also be transplanted satisfactorily, and, if given a thorough top-dressing of well-decayed manure every year, a bed will continue in good condition for a long time. Sorrel succeeds well in a western aspect.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Animals and birds in public parks.—In many public parks birds and even animals are kept in a state of domestication. In the parks belonging to the London County Council there are large aviaries, also enclosures for animals. They have proved of interest to large numbers of visitors. At every enclosed park containing a stream or sheet of water there are collections of waterfowl. These include both white and black swans, many varieties of geese, and a large quantity and variety of both fancy and common ducks. Some of the aviaries are constructed to hold small birds of the type of finches, redpoles, and yellow hammers; others are made for larger birds, such as ravens, owls, jackdaws, jays, and magpies. The golden, silver, and common pheasants all have attractive and striking plumage that is comparable in beauty with that of the peacock or turkey, which may be seen in the enclosures in company with deer and goats. The pouter, tumbler, and other fancy types of pigeons are also to be seen in many parks, in company with the common wood pigeon, which has become plentiful, and is increasing in numbers in our town pleasure grounds. Squirrels have been introduced, but these have not proved a great success. Guinea pigs are housed and fed at several parks, where they find plenty of admirers, particularly amongst juveniles, whose love of Nature is now stimulated largely in the schools. It would astonish many if they could see on a fine Sunday morning, principally in the East of London, the numbers of persons who frequent the parks carrying cages wrapped in a dark cloth kerchief. Each of these cages contains a bird, which is brought to the park for the purpose of teaching it the notes from other songsters. Formerly these men were mistaken for bird trappers. I have counted, soon after 6 a.m., fully 50 men lingering about the small bird aviaries for this purpose. These leave their homes in the congested streets thus early from their desire to obtain the best songster. Prizes, I am informed, are offered at competitions for the best songsters thus trained.

Special attendants.—The birds and animals are, in most of the London parks, cared for by a special officer, who is appointed to feed and to attend to their requirements, including the breeding and rearing of the young.

Wild birds.—The restful nature of public parks, the protection afforded birds and their eggs by the Wild Birds' Protection Act, and the provision for their further guarding in the parks' by-laws encourage wild birds to remain and increase. Though I have no actual record of all the birds to be met with, I may enumerate some of them. The house sparrow is always plentiful, and is constantly fed by visitors. This bird becomes so tame as to almost take food from the hand. Starlings are at times numerous; the robin can always be found, while the black-bird and song thrush are plentiful even in Victoria Park. The carrion crow will, at times, build its nest in lofty trees; but these are destroyed, because this crow is an enemy of the duck, destroying its eggs as well as the young birds. Chaffinches and greenfinches are to be met with, also the white throat, wren, tit, and wagtail. A few years ago I saw two kingfishers in a wooded portion of the middle lake in Victoria Park. The moorhen is always with us, it breeds plentifully. There may be several other birds of a migratory nature, including the seagull, which visit the parks in London in winter. During winter and very cold weather, small birds are supplied with pieces of fat and other food, these being suspended in some of the shrubberies.

The aviaries can be made any size, and they are best partitioned into divisions. The height should permit of the attendant being able to cleanse them regularly and easily. They can be made either square, octagonal, or circular in shape, and in an artistic and ornamental design. Temporary glass sides to shelter the inmates from cold winds are an advantage. Small birds are most interesting; they will live in captivity a long time, but they rarely breed.

THE APIARY.

By CHLORIS.

The weather until nearly Christmas was very warm for the season of the year, and thus the bees, being active, made severe inroads into their stock of sealed stores. As soon as warmer weather is again experienced, any hives that had not a good stock of food when last examined in autumn should be inspected. If the store be low, a cake of candy should be placed over the cluster. Disturb the bees as little as possible when examining the hives. One of the best foods will consist of a little warmed honey well mixed with very fine, powdery loaf sugar until it is of the consistency of soft putty. When the weather becomes still warmer and more settled, then liquid food may be given with advantage. There is no doubt that success in apiculture depends upon having a strong stock of bees when the honey flow commences, and this time varies according to the locality and source of honey. In some districts fruit trees are the main source from which the nectar is gathered; in others, Clover; and yet again the apiary may be situated in a seed-producing district. It will be necessary to commence feeding the bees about six weeks before the expected honey flow commences, to enable the colonies to be ready to store in the supers at the right time. After bees have commenced carrying honey and pollen in spring the queen commences egg-laying. Often the supply of one or both is interrupted by a spell of bad weather, but the brood requires feeding, or it will perish if the supply in the hive has been consumed. One may frequently see in the spring the signs of starvation in the hives, without opening a single brood chamber. Whenever larvae, which look like white grubs, are discovered upon the alighting boards, the inmates of the hive are not in a flourishing state. There have been too many mouths to feed, and the "workers" have dragged some of them out of the comb; under these circumstances a bottle of syrup should be given. In instances where the hives have a good supply of sealed stores, take a knife and remove the cappings over the honey, or it may suffice if the cappings are bruised. A comb bruised about every nine or ten days will be ample, beginning with the centre comb.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MARCH 23—

Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by Mr. K. Lloyd-Praeger, on "Rock Gardens").

WEDNESDAY, MARCH 24—

Perpetual-flowering Carnation Soc. Sb. at Hort. Hall, Westminster. Annual dinner in the evening.

THURSDAY, MARCH 25—Torquay Spring Fl. Sb.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—42.3°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, March 17 (6 p.m.): Max. 44°; Min. 26°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, March 18 (10 a.m.): Bar. 29.2; Temp. 47°; Weather—Sunshine.

PROVINCES.—Wednesday, March 17 (6 p.m.): Max. 45° Ireland, S.E.; Min. 37° Durham.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—

Hardy Border Plants, Bulbs and Tubers, Azaleas, Ferns, &c., at 12; Roses and Fruit Trees at 1.30, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

TUESDAY, WEDNESDAY, AND THURSDAY—

Unreserved clearance sale of the Orchids, Stove and Greenhouse Plants, at the Deepdene Gardens, Dorking, by order of the exors. of Lily, Duchess of Marlborough, by Protheroe & Morris, at 12.30.

WEDNESDAY—

Herbaceous Plants, Lilies, and other Bulbs and Tubers, at 12; Miscellaneous Plants and Bulbs, Japanese Lilliums, &c., at 1; Roses and Fruit Trees, at 1.30; Azaleas, Rhododendrons, Palms and Plants, at 5, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

Duplicates from the "Rosslyn" collection of Orchids, also imported *Odontoglossum crispum*, at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 1.

* The
Orchid
Stud-Book.

The issue of this work is an important event in the history of the hybridisation of Orchids. Orchid hybrids—specific, generic and multigeneric—have increased in numbers during recent years at so great a rate that an authoritative catalogue such as is here provided has become a pressing need. The art of the hybridist has so outstripped that of the systematist that, as Buffon said of botany in general we may say of Orchid hybrids in particular, "it is easier to learn the subject than its nomenclature." Therefore any considered contribution to the problem of naming Orchid hybrids is to be welcomed.

Though not all experts will agree with certain of the proposals put forward by Messrs. Rolfe and Hurst, none will dispute the high qualifications which they bring to their task nor deny them a tribute of admiration for the determination and industry with which they have grappled with the difficulties that had to be faced. Some idea of the magnitude of these difficulties may be gathered from the fact that the supplements, which contain additions only up to the end of 1907, occupy 73 pages, or almost one-third of the entire work! The authors propose to issue from time to time further supplements in the *Orchid Review*, and therefore invite raisers to send particulars of hybrids flowering for the first time to the Editor of that journal.

The scope of the book is outlined in the

* *The Orchid Stud-Book*, by Robert Allen Rolfe and Charles Chamberlain Hurst. (Kew: Frank Leslie & Co., 12, Lawn Crescent.)

preface, which is followed by a brief but valuable history of Orchid-hybridisation. The historical account opens with an extract from our pages in which the late Dr. Lindley described in 1858 *Calanthe Domini*, the first hybrid Orchid raised in Europe. It was in connection with the introduction of this hybrid that Dr. Lindley remarked to Mr. James Veitch, "Why, you will drive botanists mad!" It would be interesting to know whether, when using these words, there flashed before Dr. Lindley's mind the recognition of the fact that the production of Orchid hybrids would overthrow the then current view of the sterility of species and their hybrids, *inter se*, or whether he saw with prophetic insight the bewildering difficulties of classification and nomenclature which the advent of such hybrids was to cause.

In any case, Messrs. Veitch cheerfully took the risks and continued to raise hybrids. Dominy, their expert, achieving one success after another, made for himself a name which will last as long as Orchids continue to fascinate. Following Dominy's example, an ever-increasing number of hybridists turned their attention to Orchids, crossing species with species, genus with genus, introducing fresh "blood," either specific or generic or both, into hybrids already formed till it has become impossible for any but a specialist to trace the derivation of the more complex of these extraordinary cross-breeds.

The next part of the Stud-book gives a useful account of the methods of hybridising Orchids and of raising seedlings.

Then follow the two essential parts of the book, each of which contains an enumeration of Orchid hybrids. The first of the two lists (Part I.) consists of an enumeration of the species and hybrids which have served as parents in the production of hybrids. The names of the parent plants are arranged alphabetically, and after each pair of parents is given the name of the resulting hybrid. Part II. includes an alphabetical list of existing hybrids, each accompanied by parental names, references to descriptions and figures, name of the raiser or exhibitor, date of first flowering, synonym and notes. References to original records are given wherever possible. The references to hybrids exhibited at the meetings of the Royal Horticultural Society are taken from the *Gardeners' Chronicle*, which has published unbroken records since the time of the epoch-making *Calanthe Domini*. Among other sources of information to which recourse is made are the *Journal de la Société Nationale d'Horticulture de France* and the *Orchid Review*. The work concludes with an index of synonyms.

There can be no doubt that it will not be always easy to look up references—and the work of course is a work of reference, but this defect is due to the intricacy of the subject rather than to any shortcomings on the part of the authors. Lack of system of nomenclature has led to this confusion: one raiser adopts a Latinised specific name, another prefers a name in the vernacular, often the Christian and surname of an individual. The attempt of the authors to introduce order where disorder reigns has led them to propose many new names in place of

old names; but whether the new will replace the old in general usage remains to be seen.

In framing their system the authors have adopted the following rules:—

The sign of hybridity \times between generic and specific name serves to distinguish a hybrid from a natural species.

Hybrids between species receive specific names. Such specific names are Latin, Greek, or Græco-Latin, and consist of one word or of two short words connected by a hyphen. Words of more than six syllables are excluded. Reciprocal specific hybrids bear the same name, but when sufficiently distinct receive an additional varietal name. Hybrids between forms belonging to different genera receive generic names compounded of those of the parent genera or of convenient parts of such generic names. Secondary hybrids—hybrids of hybrids—are dealt with in a similar manner.

For our part we are inclined to think that this method will be found impracticable. The end of inter-crossing genera is not yet in sight, and a reform adopted now ought to have regard once and for all to future contingencies. If this view is accepted we are of opinion that one of the yet more arbitrary, but in the long run more logical proposals now before the Scientific and Orchid Committees of the Royal Horticultural Society will have to be adopted.

But to return to the Stud-book; existing names not in conformity with the rules laid down have been modified. Thus the hybrid between *Cattleya Dowiana* and *C. Eldorado* appears in the book as *C. \times Ingramia* and not under its usual appellation of *C. \times Lady Ingram*. *C. \times Suzanna*, a name given five years later to the result of the same cross, and which is in accord with the rules, is left as a synonym. *Brasso-Cattleya \times Veitchii* is preferred to the earlier *Brasso-Cattleya \times Digbyano-Mossia* on the ground that the latter prior name has seven syllables. For the same reason *Brasso-Cattleya Maronia* replaces *Brasso-Cattleya \times Madame Charles Maron*, because the latter consists of three distinct words. *Brasso-Lælia Digbyano-purpurata* appears as *Brasso-Lælia Veitchii*. Names formed by joining the specific appellations of the two parents without abbreviation have generally been avoided as too long, though this is not always the case. *Odontoglossum \times crispum Hallii*, and *O. \times Hallio-crispum*, the latter being the reversed cross, are both included under *O. \times Cooksonii*. In a similar way *O. \times spectabile* includes both *O. \times crispo-Harryanum*, and *O. \times Harryano-crispum*. It appears to us that such alterations will cause no small amount of unnecessary confusion. Who, for instance, would recognise the well-known *Cypripedium* Baron Schröder under the name given in this list, viz., *Paphiopedilum \times Schröderi*? This hybrid from *Cypripedium Fairrieanum* and *C. ornatum* has always been known in gardens under the former name. *C. Germaine Opoix* and *C. Gaston Bultell* are given merely as synonyms of this hybrid, yet all three plants are totally distinct.

It is a matter for discussion whether it would not be better to treat the secondary hybrids as florists' flowers and to name them always in the vernacular. A better case could certainly be made out for treating first hybrids as the authors have done in this work

than for applying the Latin system in respect to merely cross-bred varieties that have little more specific value than a collection of Pelargoniums or Roses. Paphiopedilum Schröderi, if the sign of hybridity is omitted, might to all appearance be a true series, and, if the sign of hybridity is always to be used in literature, the frequent repetition will become exceedingly troublesome. It has to be remembered also that there is another serious objection to the changing of existing names. When old plants are given new names the amateur is in danger of purchasing plants he already possesses in the belief that he is acquiring novelties. The authors' rules indeed are opposed to the spirit of one of the Vienna recommendations, viz., Article 50, which states that: "No one is authorised to reject, change or modify a name because it is badly chosen, or disagreeable, or because another is preferable or better known, or because of the existence of an earlier homonym, which is universally regarded as non-valid, or for any other motive either contestable or of little import!"

We fear that the insistence on original records will also lead to mistakes. Take for an example *Lælio-Cattleya Berthe Fournier*. This hybrid was originally raised on the Continent, and it was recorded as a cross between *L.-C. elegans* and *Cattleya Dowiana*, but it afterwards turned out that one of the parents was *Lælio-Cattleya Schilleriana*, which, although a totally different plant, is known in some gardens as *L.-C. elegans*. More recently Mr. Alexander raised for Colonel Holford a hybrid between the true *L.-C. elegans* and *Cattleya Dowiana*. Following the first record it was named *L.-C. Berthe Fournier*, although there was not the slightest resemblance between it and the original *Berthe Fournier*, which, as we have shown, was obtained from a different parentage.

In conclusion we would add that though our criticisms, if well founded, indicate that Messrs. Rolfe and Hurst have not effected a final solution of a most intricate set of problems, we have, as we stated at the outset, a very deep feeling of gratitude for their work. This feeling we are convinced will be shared by all who are aware of the notable contributions made by the authors, both in the present *Stud-book* and in their former works. No system of classification and nomenclature of Orchids can, by the nature of the case, be perfect. The *Stud-book* makes a definite step toward the evolution of order out of chaos.

OUR SUPPLEMENTARY ILLUSTRATION portrays a plant of *Fritillaria askabadensis* flowering in the Royal Gardens, Kew. The species is comparatively new to cultivation. It was first exhibited in this country by Miss WILLMOTT, V.M.H., who received an Award of Merit from the Royal Horticultural Society for a specimen shown on March 25, 1907. The species was originally discovered by SINTENSIS, near the village of Kasakala, close to the town of Askhabad, growing in chalky soil, at an elevation of 1,000 metres above sea-level. These places are in the Trans-Caspian province of Russia. The plant resembles in stature the well-known *Crown Imperial*, *F. imperialis*, but the flowers are smaller and pale yellow tinged with green. A description of the plant by Mr. J. G. BAKER is given in our issue for April 12, 1902, p. 238.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Society's Committees will take place on March 23. In the afternoon a lecture on "Natural and Artificial Rock Gardens" will be delivered by Mr. R. LLOYD PRÆGER.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, March 22, at 8 o'clock, when a discussion will take place on the paper read at the last meeting by Mr. GEORGE HEAD on "Giant London." The Council have accepted an invitation from the South Wales and Monmouthshire Committee of the Institution to hold the next country meeting at Cardiff on May 20 and 21.

THE PERPETUAL-FLOWERING CARNATION SOCIETY will hold its sixth show on Wednesday next, 24th inst., at the Royal Horticultural Hall, Vincent Square, Westminster. The exhibition arrangements will be undertaken by Mr. E. F.

the Holland House show will be held on July 6 and 9, and Wolverhampton show on July 13, 14, and 15. A silver vase, value £50 (or its equivalent in cash), is offered for the most meritorious and effective display in the show, the competition being open to all exhibitors. A 1st prize of £40 is offered for a display of miscellaneous plants, in or out of bloom, arranged with cut flowers and foliage for effect, with £30, £20, and £10 as 2nd, 3rd, and 4th prizes respectively. For a group of ornamental foliage plants arranged for effect, £25, £20, and £12 10s. are offered as prizes. There are numerous classes for Sweet Peas. In a class for 72 Roses of distinct varieties, prizes of £20, £12, £7, and £3 are offered. There are numerous classes for fruit and vegetables.

M. ERNEST CALVAT.—This well known French Chrysanthemum raiser has received further recognition of his services in connection with hor-



FIG. 78.—FRITILLARIA ASKABADENSIS: FLOWERS YELLOW, TINGED WITH GREEN.

(See also Supplementary Illustration.)

HAWES, Royal Botanic Gardens, Regent's Park. The secretary is Mr. HAYWARD MATHIAS, Lucerne, Stubbington, Fareham, Hants. The honorary treasurer, Mr. LAURENCE J. COOK, writes us as follows.—"I would remind readers of the *Gardeners' Chronicle* that the exhibition will probably be the finest show of Carnations ever seen in Europe, and, from an artistic point of view, perhaps, in the world. There are two fine cups and gold and silver medals and many prizes for competition."

THE COMING OF AGE OF THE WOLVERHAMPTON FETE.—The committee of this flourishing fête is this year celebrating the 21st exhibition. At the annual show, on July 13, 14 and 15, substantial prizes are to be offered in most of the classes, and those interested should write to the secretary, Mr. W. E. BARNETT, Snow Hill, Wolverhampton, for a copy of the schedule. Both the Holland House and Wolverhampton shows have, unfortunately, of late years been held on the same date as this floral fête. This year,

the French Government has appointed him Officier d'Académie. The "palmes académiques" are usually bestowed upon professors, journalists, and literary workers in France who contribute to the public instruction. M. CALVAT has certainly done much to popularise the culture of Chrysanthemums in a special way.

BERLIN HORTICULTURAL SHOW.—This international horticultural show, which will be held from April 2 to 13 next, will probably attract many visitors from all parts of Europe. An excursion is being organised by the National Horticultural Society of France, which offers to its members an eleven days' trip for £16. Besides visiting the Berlin show, the party will be provided with hotel and travelling expenses to Cologne, Hamburg, Dresden, Leipsic, and Frankfurt. The members of the jury will commence their sittings on April 1. Several English horticulturists have accepted invitations to officiate as members of this body.

A FRENCH NATIONAL CARNATION SOCIETY.—A new special society has recently been formed at Antibes (Alpes-Maritimes) having for its special care the culture of the Carnation. Its title is La Société Nationale des Giletlistes. The officers include Dr. POIRAULT, president; and several vice-presidents. The general secretary is M. JULES GREC, of Antibes.

THE NATIONAL SWEET PEA SOCIETY'S PROVINCIAL SHOW.—This takes place on July 13, at Saltaire, a village which derives its name from Sir TRUS SALT and the river Aire, which runs close by. The village was built in the 'sixties to accommodate the workpeople employed in the Saltaire Mills, then newly erected, and it was considered a model village, with a beautifully-situated and well-designed park. The show will be held in the park, as have been the exhibitions of the Saltaire, Shipley and District Rose Society since it was formed in 1903. The association has been remarkably successful; the amount of money taken at the gate at the first show in 1902 was only £18, but last year it amounted to £214. With the exception of a band, no attractions are offered but those of the floral displays. In 1907 the National Rose Society held its provincial show at Saltaire.

PARIS SPRING SHOW.—Our readers may be reminded that the spring exhibition of the National Horticultural Society of France will be open from May 17 to 23.

MR. J. COUTTS, who was recently appointed a departmental foreman at Kew, has been head gardener at Killerton Park, Exeter, for several years, where he has carried out many improvements.

NAARTJES.—At some of the Colonial fruit shows of the Royal Horticultural Society during the last few years, visitors have come across the word Naartje applied to certain kinds of South African Oranges. It appeared as if Naartje was merely a South African name for all varieties of Oranges. Further inquiry showed that this was not the case: for example, at the Natal exhibit of some two years ago at Vincent Square, "Oranges" and "Naartjes" were shown side by side. The former term included St. Michael and Navel Oranges, the latter various varieties which might all be classed as Mandarins or Tangerines. Mr. R. A. DAVIS, Government Horticulturist to the Transvaal, has published a paper on the subject in the *Transvaal Agricultural Journal* for January of this year. The term Naartje, he says, "stands, in South Africa at least, for all possible sorts of Mandarins and Tangerines." Mr. DAVIS suggests that some agreement should be come to amongst the South African colonies, either to drop the name Naartje, and ship fruits as either Mandarins or Tangerines (a matter of difficulty when the difference between some classes is almost imperceptible), or to class all as Naartjes, and quote the particular variety to which the fruit may belong.

PUBLICATIONS RECEIVED.—*The Journal of the Board of Agriculture of British Guiana*. (January). (Demerara: The Argosy Co., Ltd., Georgetown). Price 1d.—*Government of the Gold Coast's Report upon the Botanical and Agricultural Department for the year 1907*. (Gold Coast: Government Printer).—*U.S. Department of Agriculture*. Farmers' Bulletin 343: The Cultivation of Tobacco in Kentucky and Tennessee, by W. H. Scherffius, Collaborator, and H. Woosley and C. A. Mahan, Special Agents, Tobacco Investigations, Bureau of Plant Industry. (Washington: Government Printing Office).—*The Agricultural Gazette of New South Wales*. (January). (Sydney: Government Printer). Price

6d.—*The Philippine Agricultural Review*. (November, 1903). (Manila: Bureau of Printing).—*Claremont Pomological Club*. Bulletin No. 1: "Mealy Bug and Fumigation." (California: Claremont, Los Angeles County).—*Beautiful Flowers and How to Grow Them*, edited by Horace J. and Walter P. Wright. Part X. (London: T. C. and E. C. Jack). Price 1s. net.—*Lawes Agricultural Trust*. Rothamsted Experimental Station, Harpenden. Annual Report for 1903, with the supplement to the "Guide to the Experimental Plots," containing the yields per acre, &c.—*Two Essays on Sweet Peas and How to Grow Them*. (a) For Amateurs and Exhibition, by Walter A. Voss, F.C.A.; (b) For Market Growers, by W. F. Emptage, A.A.E.B. (London: W. Speaight & Sons, 98 and 99, Fetter Lane, E.C.) Price 1d.—*Annual Report of the Board of Regents of the Smithsonian Institution*. Showing the operations, expenditures and condition of the institution for the year ending June 30, 1907. (Washington: Government Printing Office).—*Kew Bulletin of Miscellaneous Information* (No. 2), containing Diagnoses Africanæ; XXVII. New Orchids; 33 Varieties of the Oil Palm in West Africa; the Section Microcos of Grewia in Africa, &c. (London: Wyman & Sons, Ltd., Fetter Lane, E.C.) Price 4d.

THE FERTILISING VALUE OF SNOW.

So far as we are aware, Professor Frank T. Shutt, M.A., F.I.C., chemist, Dominion Experimental Farms, Ottawa, has furnished us with the first complete analysis of snow.

The author thought that a chemical examination of snow might furnish results that would prove interesting, especially from the agricultural standpoint, since the greater part of such nitrogen compounds as the snow contains must eventually serve to fertilise the soil. The collection of the snow samples examined was made in the arboretum of the Central Experimental Farm, an area of 65 acres devoted to the growth of trees and shrubs.

The atmosphere of this locality, while naturally not free from smoke, is stated to be fairly pure—for Ottawa is not a city characterised by tall chimneys, and, besides the few residences on the farm, there is only a single line of a little-used railroad in the immediate vicinity.

Snow has lain since November, but the examination did not commence till nearly the end of February. With the exception of the first collection, which represents the surface 1½ inches of the accumulated snow, the samples submitted to analysis were all freshly-fallen snow, care being exercised to collect either during the snowfall or within a few hours of its cessation.

Not one of the samples appeared in the slightest degree dirty or soiled, but were of the purest whiteness; nevertheless, on melting, there was on the surface of the resulting water or clinging to the sides of the vessel a certain amount of sooty material, and frequently also there was a slight deposit.

The tabulated data are as follow:—

Date of Collection.	Nitrogen, parts per million.		
	As Ammonia.	As Nitrates.	Total Nitrogen.
1907.			
February 21	288	136	424
" 25	354	300	654
March 4	205	170	375
" 4 (12 hours after preceding)	218	170	388
" 15	457	330	787
" 20	342	128	470
" 25	144	111	255
April 8	198	94	292
" 10	313	107	420
" 17	655	317	972
" 25	401	333	734
May 4	115	65	180
Average	308	163	471

From the wide fluctuations noticeable in the nitrogen content of these samples, it is evident that the condition of the atmosphere of a locality may change both frequently and considerably, though it may also be supposed that the size of

the snowflakes and the temperature of the atmosphere during the fall exert an influence on the filtering and solvent powers of the snow.

The author thought it quite probable that when the period since the preceding snowfall had been a brief one, say a day, there would be a smaller nitrogen content than when a longer period, several days or a week, ensued, but the data do not show that this was always the case. Nor were there found any marked differences in purity between samples collected at the beginning and towards the close of the same snow-storm, though in this matter data from one fall only, viz., that of March 4, is presented.

From the above data it is estimated that one pound of nitrogen per acre is furnished to the soil from an average winter's snow at Ottawa.

It is not supposed that the whole of the fertilising, or, to speak more correctly, the agricultural value of snow, lies in the nitrogen it possesses; nevertheless, we have in these data some support for the widely-accepted belief that snow is a direct fertiliser. It is very evident, however, that the value of snow in this respect has been greatly over-estimated by agriculturists.

From the Rothamsted investigations we find that 69 samples of rain gave an average of 0.70 parts of nitrogen in one million of rain; while in seven samples of dew and hoar-frost were found 2.79 of nitrogen in parts per million. That is to say, the Rothamsted rainfall is 1½ times as rich in nitrogen, and the dew and hoar-frost is 5½ times as rich as the Ottawa snow. *J. J. Willis, Harpenden.*

NOTES FROM A "FRENCH" GARDEN.

It has been necessary to water some of the hot-beds to stimulate the growth of the Carrots and to force the Lettuces to form hearts. Two circumstances have tended to cause this dryness: (1) our beds were made up of long and strawy material; (2) they were built on the level ground, and this method allows of the moisture draining away. But the same circumstances prevented a lot of damping off which would otherwise have taken place amongst the plants during bad weather, and, therefore, the advantages of this method deserve to be widely known.

Manure is now being prepared by passing it through a fine sieve for spreading among the Carrots after all the Lettuces have been taken away. This manure will be made to thoroughly cover the roots of the Carrots, thus preserving their fine colour. Watering will be necessary to level the soil and clean the leaves.

The Cauliflowers of the variety Driancourt, raised in the autumn in the open ground, have been given abundant ventilation in order to get them sufficiently hard to transplant them at the end of the present month. The ground having been heavily manured, is now ready for their reception. They will be planted 2 feet apart each way, and Spina'h "Monstrous of Viroflay" and Lettuce All the Year Round, which were raised early in January, will form the intercrop. The Ox Heart Cabbages planted last November, being somewhat backward, have not suffered much from inclement weather. Late frosts in April are more prejudicial to this crop. The ground about them is now being hoed deeply, and the drills in which they were planted are being levelled, in order that the soil may be brought around the stems of the plants. The only further attention they will need will be ample watering.

The Passion Lettuces planted late in January were somewhat loosened in the ground by the thawing of the snow. We have had to tread the beds in order to make the ground firm again. This may have damaged the intercrop of Radishes. We are now planting another batch of this variety, which was saved in case the first plantation failed. Passion Lettuces under lights must be well ventilated day and night, as it will be necessary soon to remove the frames and lights, and place them over the Melons.

A batch of Globe Artichokes (*Cynara Scolymus*) are now being planted in the open at distances of 2½ feet. The ground has been deeply dug and heavily manured. These plants were wintered in frames in pots. A batch of young shoots is being inserted in 2½-inch pots. The shoots were taken from the old stools. The cuttings will be placed on a hot-bed. It was formerly our custom to insert them directly into their permanent quarters, but the young plants, being later, failed to produce any flower-heads in the summer and were too tender to pass through the winter.

Seeds of Cardoon de Tours are being sown. Though this variety is very thorny, it is by far the best, on account of its eating—and keeping qualities. Three seeds are inserted in a 2½-inch pot, and the pots are placed on a hot-bed. The seedlings are thinned out to one in each pot, and the single plants retained are gradually hardened for planting out at the end of the day.

The manure around young Me'ons is changed

COST OF PLANTING FOREST TREES.—In the Cardiff papers for March 6 mention was made of a proposal by the City Corporation to plant some 40 acres of land near their reservoirs in Breconshire with forest trees. Scotch Fir was suggested, and the waterworks engineer is reported to have stated that about £8 per acre would be the cost of planting. I am aware that this price can be supported by the figures at which nurserymen undertake forest planting; but such "contract-planting" is unsatisfactory, because the price paid is inadequate, second-rate trees are often used, and the work is hurriedly and badly done by men who are paid piecework at a rate so low that they must needs cover the maximum of ground in the minimum of time. There are two very strong reasons why all forest-planting in this country should be well done at the present time, firstly, because the industry is in an experimental stage, and we are only feeling our way, and, secondly, because the public are sympathetically watching the industry, and it will be unfortunate if their ardour is damped by failure due to bad work and mismanagement. The Cardiff City Corporation will

show; therefore *D.* need not be surprised at this variety taking a high position. As to Baumann's Red Reinette, its flavour is so poor that I consider land wasted that is devoted to this variety. The flesh is much too hard and dry. King of the Pippins I place in the same category, or nearly so. Sturmer Pippin is a dry and tasteless thing. King of Tompkins County is a good-flavoured Apple in April when properly stored. Any Apple known to an experienced judge can easily be awarded its proper prize without cutting. *E. M.*

LIGNUM NEPHRITICUM.—A reference to *Lignum nephriticum* in the issue for February 6, p. 96, induces me to add a few words to the answer there given as to the botanical source of this wood, which, I was under the impression, had never been satisfactorily determined. So far back as 1859, a list of products, about which information was wanted as to their botanical origin, was drawn up by Sir William Hooker, assisted by the great pharmacologist, Daniel Hanbury, and printed in the 3rd edition of the *Admiralty Manual of Scientific Inquiry*, under



FIG. 79.—VIEW FROM THE TERRACE AT KILLARNEY HOUSE, SHOWING THE LAKES AND THE MOUNTAINS IN THE BACKGROUND.

(See page 180.)

every week, in order to maintain the necessary heat. The Melons raised in the middle of February are having their shoots stopped at the second leaf. *P. Aquatics.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

WOOD'S GRAPE BOTTLE.—When this bottle was submitted to the Fruit and Vegetable Committee of the R.H.S. on the 9th inst., the criticism passed upon it generally was with respect to the form of the neck. As was shown in fig. 74, p. 175, the neck is curved. As a result, it was found that only 6 inches of the stem below the bunch could be inserted into the bottle. That was held to be an objection. It was suggested the neck should be slanting and rather longer in order that as much as 10 inches of the wood may be inserted. *D.*

be well advised if they assure themselves that their work is well done, even if the increase in cost compels them to curtail the acreage that they plant. *S. W.*

CATLEYA TRIANÆ COURTAULDIANA.—In response to the enquiry which I notice in your issue of the 13th inst., p. 163, I may state that *C. Trianæ Courtauldiana* flowered in my collection a few years since. Its feature was a very dark lip, but there was nothing in the flower of extraordinary beauty. *Jeremiah Colman, Gatton Park, Surrey.*

LATE DESSERT APPLES.—I agree with the judges awarding prizes to Cox's Orange Pippin even in March, if the fruits are preserved in proper condition, for none can equal this favourite variety when not in the least shrivelled. Such fruits do not need tasting, for it is known that Cox's Orange Pippin retains its high flavour so long as it remains plump. A judge knowing this Apple would not think of cutting the fruits at a

the title of "Botanical and Pharmacological Inquiries and Desiderata." In this list the following paragraph occurs:—"Lignum nephriticum. —This rare wood was sent to the Paris Exhibition of 1855 from Mexico. To what tree is it to be referred?" Again, in another edition of the *Admiralty Manual*, published in 1871, Professor Daniel Oliver was associated with Hanbury in drawing up a new list, entitled, "Inquiries Relating to Pharmacology and Economic Botany," and, in this, information is again asked for in the following words: "This rare wood, noticed by some of the earliest explorers of America, is a production of Mexico. To what tree is it to be referred? Its infusion is remarkable for having the blue tint seen in a solution of quinine." The fact of its being a native of Mexico would put it out of the running as being the produce of *Moringa pterygosperma*, which is a soft-wooded tree of India, where it is known as the Horseradish tree. Perhaps this note may be the means of bringing out some further information on this interesting wood, which is sometimes known as Bois de nephritique. *John R. Jackson.*

TALL CONIFERS AT KNEPP CASTLE.—At Knepp Castle, Sussex, the seat of Sir Merrick Burrell, Bart., there is a specimen of *Taxodium sempervirens* 97 feet in height and 18 feet 6 inches in girth at the base. It would be interesting to know the height of the tallest tree of the species in Britain. In the Royal Horticultural Society's *Journal*, October, 1892, on the occasion of the Conifer Conference, the heights are given of some of the best-known Conifers in Great Britain. The tallest *Taxodium* was 75 feet. How much has that tree grown in the 17 years that have since elapsed? There is also a very fine specimen of *Picea cephalonica* at Knepp; it is 79 feet high and has a girth of 13 feet 3 inches. In the report of the Conifer Conference there are only five trees mentioned that were more than 100 feet high. These were *Abies Douglasii*, 120 feet; *Abies excelsa*, 103 feet; *Abies Menziesii*, 110 feet; *Abies pectinata*, 111 feet; and *Larix europæa*, 100 feet. *W. A. Cook, Leonardslie Gardens, Sussex.*

APPLE SCAB.—A. D. (pp. 123 and 157) opens up a subject of great importance to fruit growers, viz., the placing of clean samples of Apples upon the market. I have about half an acre of land planted for about 15 years with Duchess of Oldenburg Apple. These trees gave splendid crops of fruit, both in size and colour for the first eight or ten years. Since then the crops have hardly paid for the gathering, owing to so much of the fruit being affected by scab. The trees are half standards, on the free stock, with clean, healthy bark and plenty of fruit spurs. They were planted rather closely together, but owing to their upright habit of growth, assisted by careful pruning, they do not shade each other to any great extent. Little spraying has so far been done, but we are thinning the trees and shall then spray them with a solution of copper sulphate. We had four long rows of Apple trees, two of Ribston Pippin and two of Cox's Orange Pippin. The trees of Ribston Pippin were badly cankered and were cut down. On pruning the trees of Cox's Orange Pippin recently, I was surprised to find endless signs of canker on them, and especially on the row nearest the Ribston Pippins. This indicated that the spores of the fungus are dangerous to healthy trees, as we have other trees of Cox's Orange Pippin in another orchard and on similar soil which are quite free of canker. *H. C.*

Some varieties of Apples are more subject to scab than others. Why should not these varieties be double-grafted upon poorer kinds which produce healthy shoots and are free from scab? One source of encouragement to the fungus is deep planting. Trees should not be planted deeper than the ground line mark appearing on their stems when received from the nurseries. Apple grafts require to be kept as high and as dry as possible, but dressing and spraying the trees are the best, and, indeed, the only means of getting rid of this fungal pest. *John Smith, Horticultural Instructor, St. Helen, Ipswich.*

I have sprayed the trees annually now for nearly 20 years with at first my own mixture of caustic soda (Greenbank's 98%) and pearl ash, but more recently with an alkali mixture which entails less trouble in preparation, but I regret to say we get much more scab than is pleasant to look upon. I have come to the conclusion that there are other causes answerable for the yearly attack of this pest, worse in some seasons than others, than the want of spraying, which, according to some writers, is a safe and sure remedy. Combined with a cold subsoil of heavy and retentive material, which is too common here, we get, I might almost say annually, a spell of cold, unless weather, lasting often a fortnight, just after the fruit is set. That is the period when the foundation for "scab" is laid; the leaves, too, are affected with a fungal growth, which is against proper progress. Some varieties feel the effect of this disagreeable weather more than others, notably Warner's King: this is partly owing to the various times at which varieties open their blossoms. Some writers would say, spray again with other antidotes, such as Paris Green, &c. That is all right when the result of such treatment turns out as one could wish, but, having been once seriously deceived by results of such spraying, I am decidedly cautious of attempting these summer sprays. Some years

ago the greatest so-called expert in spraying advised me to use Paris Green, and gave me full instructions as to quantity. I used the wash at half the strength recommended, with the result that the trees were singed in their leaves, many losing them. Stirling Castle, Lane's Prince Albert, and Cox's Orange Pippin were affected most. Never shall I forget the sight of some hundreds of trees in this state of defoliation. The worst of it was that the damage did not end with that year. Where the subsoil is heavy and retentive of moisture it is naturally more cold and ill-adapted for the growth of fruit than that of a more porous nature like a pure loam. Extra deep trenching is much the best remedy under such circumstances, but not the bringing of the bottom soil to the top. *E. Molyneux.*

POLYSTICHUM ACULEATUM GRACILLIMUM DRUERYI.—With reference to Tyro's remarks (see page 157) under the above heading, I may say that, in other quarters, I was complimented by those who saw the plant on the appropriateness of the name. Two out of the four names, or, rather, parts of the one name, are specific ones; the next in order is descriptive, and distinguishes the Fern clearly from the one of the same section previously certificated; while the last, as indicating the raiser, who is the same in both cases, cannot lead to any confusion. I may, however, say that I intended that my name should appear in this case in parenthesis (Druery), as indicating the authority for the name, but by some slip it was entered and certificated as per heading, and I have not considered it worth while to alter it. As regards Tyro's reference to the Vienna Congress, I think the R.H.S. would experience difficulty if it attempted to enforce these regulations upon the varieties of plants submitted to its committees for awards. I have myself studied the voluminous Vienna reports, and confess myself utterly baffled in my attempts to comprehend its rules and regulations, and the recommendations, exceptions, reservations, and so on which qualify nearly every one of them, owing to the impossibility of abolishing the basis of established nomenclature on other and less systematic lines. It is imperative to give fancy names to the innumerable varieties of florists' flowers, &c., which present comparatively slight differences of form and colour; but it is a different thing altogether when we deal with what may be termed pedigree plants, like most of our Fern varieties, where it is possible to divide them into sections and give them descriptive names by which their special character is indicated, without the need of referring in every case to a descriptive catalogue. Inside Fern circles the names are no trouble at all; it is only outsiders who make a "bogy" of them. My own plumose Lady Fern, for instance, *Athyrium felix-foemina plumosum Drueryi*, becomes simply P.D., and *Polystichum angulare divisilobum plumosum densum* is simply Jones's *densum* to those who are in the cult, and I say again that it is they who are chiefly concerned, while those outside the cult who desire to take up the study, can, by the aid of these names in print in recognised standard books, see how useful they are when properly arranged and classified. As regards Tyro's reference to the reverted seedlings, it is not stated that they reverted to another allied species, but that they had a strong resemblance to it, which, considering the great similarity between the two species concerned, is not very wonderful. All three British species of *Polystichum* are very close allies. *P. lonchitis*, the Holly Fern, for instance, is only distinguished from *P. aculeatum* by its being pinnate instead of bipinnate, and if it sported in that direction, could not be discriminated from the latter. In point of fact, it has occurred several times that *P. aculeatum* has appeared mysteriously among *P. lonchitis* seedlings, very probably as merely bipinnate sports of *P. lonchitis* itself. *C. T. D.*

SCHEDULES RECEIVED.

Brighton and Sussex Horticultural Society's eighteenth annual Rose and Sweet Pea exhibition, to be held in the Dome and Corn Exchange, Royal Pavilion, Brighton, on June 29 and 30; also **Chrysanthemum show**, to be held in the same buildings on November 2 and 3. Secretary, Mr. J. Thorpe, 53, Ship Street, Brighton.

Penarth Rose Society's show, to be held in the Penarth Cricket and Football Field, on Wednesday, July 7. Hon. secretary, Mr. H. A. Gerhold, Windsor Road, Penarth.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MARCH 9.—*Present:* Mr. E. A. Bowles, M.A., F.L.S., F.E.S. (in the Chair); Rev. W. Wilks, Dr. F. Keeble, Messrs. C. T. Druery, A. Worsley, W. Hales, J. Arkwright, de B. Crawshaw, J. Douglas, H. J. Chapman, G. Massee, A. W. Hill, H. T. Güssow, G. S. Saunders, A. W. Sutton, E. M. Holmes, J. T. Bennett-Poë, J. Fraser, R. Hooper Pearson, H. J. Veitch, and F. J. Chittenden (hon. secretary).

Beetle in stem of Yanda teres.—Mr. G. S. SAUNDERS reported that he had examined the stem of *Yanda teres* sent to a recent meeting of the committee, and found that the beetle boring into it was a species of *Xyleborus*, not a native, nor, so far as could be ascertained, recorded as occurring in Europe up to this time. The plants attacked were sent by Mr. ROGERS from a greenhouse at Bury, Lancs.

Spots on leaves of Lapageria.—Mr. MASSEE reported that he had examined the leaves of *Lapageria* shown at the last meeting and found that the roundish brown spots upon them had been caused, not by a fungus, but by drip.

Orchid hybrids.—Mr. H. J. CHAPMAN showed *Odontioda Bradshawia* Oakwood var., raised by crossing *Odontoglossum crispum* var. *Graireanum* (white) with *Cochlioda Noezliana*. The flowers showed no trace of blotching, but were almost of one shade of colour throughout. Another form, *Odontioda Bradshawia* Cookson's var., raised from *Odontoglossum crispum* × *Cochlioda Noezliana*, had a deep mauve margin to the brick-red segments, and showed distinctly the deeper coloured blotches upon the lighter ground colour. The difference in colour and markings in these two varieties forms an interesting problem in heredity.

"Vegetable" asbestos.—Mr. HOLMES reported that he had examined this material, sent to the last meeting, and could find no trace of vegetable structure in it. The substance was creamy white in colour, and was lamellated, fairly soft to the touch, and resisted fire. Chemical analysis showed it to contain alumina in large quantities, magnesium, calcium, and smaller quantities of sodium and silica. Mr. HOLMES considered that the analysis pointed to this being of mineral origin, and not of having been derived from "a Cactus from China," as the sender had suggested. It appeared to be nearly allied to the substance known as "mountain leather."

Bulb on inflorescence.—Mr. WORSLEY showed an inflorescence of *Lachenalia tricolor* having a small bulb occupying the position of a terminal bud on the inflorescence.

Aberrant Orchid.—From Mr. G. W. MILLER, of Wisbech, came a specimen of *Cypripedium Pitcherianum* Williams' var., with a well-formed double lip.

Fasciation in Euonymus japonicus.—Mr. J. FRASER showed fasciated branches of *Euonymus japonicus*. The fasciation had followed after severe cutting back of the stem. Numerous buds had started in growth from near where the cut had been made, and among them some had produced fasciated shoots.

Malformation in Tulip.—Rev. J. JACOB sent a flower of Tulip having on the mid-rib of one of the perianth pieces on the outer side two small horn-like growths. The structure was similar in character to those seen in crested flowers, and was apparently the commencement of a crested growth.

LINNEAN SOCIETY.

MARCH 4.—A meeting was held on this date, Dr. D. H. Scott, F.R.S., president, in the chair. Miss L. S. Gibbs read a paper entitled "A Contribution to the Montane Flora of Fiji, including Cryptogams, with Ecological Notes." The Fiji group consists of 200 islands, only 80 of which are inhabited; Viti Levu is about 4,100 square miles in area, with forest-clad mountain ranges, the highest point being Mount Victoria, 4,000 feet in height. The botanical history of

the group begins with the visit of H.M.S. "Sulphur" in 1840, and in the same year the Wilkes Expedition touched at the islands. The "Herald" called in 1856, and Dr. Seemann visited the group in 1860-61, and embodied his results in his *Flora Vitiensis*. Mr. Horne, Director of the Botanic Gardens at Mauritius, spent a year collecting, in the late '70's.

Thanks to these investigators, the flora of the lower parts of the chief islands are fairly well known. The author, therefore, decided to confine her investigations to the region lying 2,900 feet or more above sea-level, and the three spring months of August, September, and October were spent at Nadarivatu, the highest inhabited point.

From the collections, the flora may be described as Indo-Malayan. They contain about 40 new species and many new records. Thus, of the eight species of Piper, Mr. C. de Candolle

sideing. The balance-sheet showed that the annual income of the society during the past year had amounted to £191 13s. 6d. The surplus in hand from the show was £8 6s. 4d., and it was stated that the society was in a very fair financial position. Lady Bathurst was elected president of the society for the coming year. It was resolved that the name of the society be the Gloucestershire Rose and Sweet Pea Society, and that steps should be taken to become affiliated with the National Sweet Pea Society. Mr. M. Ll. Baker was re-elected chairman of the society, Mr. J. Manners treasurer, and Mr. S. Gibbons hon. secretary. The committee was re-elected, with the addition of Major Organ, and Mr. Conway Jones was reappointed chairman of the committee. The rules were revised to meet the inclusion of Sweet Peas in the society's schedule, and the schedule committee was re-elected as last year.

known to be unfavourable to inoculation. Eight plots were treated with nitrogenous manures, and four with superphosphate. Was it fair to sum up the total yields of crops grown under both unfavourable and favourable conditions and draw a general conclusion therefrom? By so doing Mr. Chittenden showed a decrease of 65 lbs. or 14 per cent. (since corrected to 20 lbs. or 4 per cent.) from inoculated seed. If the comparison were made of the totals grown under conditions favourable to inoculation, there was a decrease of 7 per cent. on the cultivated land, but the large increase of 18 per cent. on the fallowed land.

No comparison was made in the report of the yield from inoculated seed alone with the yield from the other manures alone. On the cultivated land inoculated seed gave the lowest yield, but dung also gave a lower yield than the yield from the untreated (control) plot. On the



FIG. 80.—SCROLL BEDDING IN THE GARDENS OF KILLARNEY HOUSE.
(See p. 181.)

found five to be new, and of Peperomia, all seven proved novelties. The introduction concludes with some observations as to the origin of the flora, and is followed by a systematic enumeration of the whole collection.

An animated discussion followed, in which the following engaged:—Dr. A. B. Rendle, Mr. R. A. Rolfe, Prof. P. Groom, Dr. O. Stapf, Mr. J. Hopkinson, Mr. A. P. Young, Mr. T. A. Sprague, Mr. A. Groves, and Mr. Clement Reid. The author replied to the various questions put, and concluded by a display of lantern-slides from her own photographs.

GLUCESTERSHIRE ROSE AND SWEET PEA.

MARCH 5.—The annual meeting of the members of this society was held at the Guildhall, Gloucester, on this date, Mr. Conway Jones pre-

HORTICULTURAL CLUB.

MARCH 9.—At a meeting of the members of this club on the above date, Professor Bottomley spoke on soil-inoculation, and replied to criticisms which Mr. Chittenden had published in the Royal Horticultural Society's *Journal*.

Professor Bottomley prefaced his remarks by complimenting Mr. Chittenden on the care and thoroughness of his experiments, which were the most comprehensive of any yet made on Peas in this country. The results, however, did not appear to justify the conclusion arrived at by Mr. Chittenden. It was stated that "the experiment was planned to ascertain whether any benefit was to be derived from the inoculation of leguminous crops under any conditions in such a naturally poor soil as that of the Wisley garden." Twelve out of the 24 plots were treated so as to produce conditions which are already

fallowed ground inoculated seed gave the highest yield, an increase over the control plot of 17 per cent., if the report figures are taken, or 10 per cent., if correction is made for the variation in number of plants in the two plots. Table J. was unfair; because on two plots (15 and 16) there is a difference in number of plants of Maincrop. The yield of Maincrop, which gives the largest increase on plots 13 and 14, is omitted, although there is no mention made of any variation in the number of plants. The scientific method would have been to make a correction for this fact. This would have given an increase of 1 per cent., 10 per cent., and 15 per cent. for soil inoculation, seed inoculation, and soil and seed inoculation respectively.

Again, there was a difference in the action of lime alone and the action of a mixture of lime superphosphate and potash on the nitrogen fixing organisms. The U.S.A. Department of Agricul-

ture had shown the beneficial effect of lime on inoculation. At Wisley, on the limed plots, inoculated seed gave an increased yield of weight of Peas on both cultivated and fallowed land—an increase of 4 per cent. and 29 per cent. respectively. The mixture of lime, superphosphate and potash gave a decreased yield in both cases—a decrease of 16 per cent. and 27 per cent. respectively. On the fallowed land Mr. Chittenden ignored the beneficial effect of lime alone, because lime was added to the super and potash mixture which gave a decrease. As the American instructions for using inoculating material state that concentrated fertilisers should be spread and mixed with the soil previous to sowing the inoculated seed, it would be interesting to know the date when Mr. Chittenden applied the superphosphate mixture.

MR. CHITTENDEN'S REPLY.

The following is a summary of Mr. Chittenden's reply: An attempt was made in the Wisley experiments with nitro-bacterine to compare the yield of 12 pairs of similarly-treated plots, assuming that if equal weights of seed were sown on each of the plots, other conditions being equal, the crop from the two plots would be the same. But, on the fallowed land, for instance, there was sometimes great variation in the number of plants of one or two varieties on the two plots to be compared, owing to factors which were not commensurable. In such cases the yield from the variety most variable in this respect was entirely ignored, or (and in any case) from these plots no general conclusions were drawn.

was drawn), as was stated in the report, was 3.61 per cent. Yet Prof. Bottomley inferred that the reason of the failure of inoculation to produce any benefit on this soil was that it was so rich in organic matter that the nodule-forming organisms were unable to do their normal work. As Prof. Bottomley was aware, ordinary field soils usually contain at least 5 per cent. of organic matter, and garden soils contain as a rule very much more, 10 per cent. being not unusual. If his strictures were accurate, then practically no cultivated soil in the country was likely to benefit by inoculation, because it contained too much organic matter.

What evidence had Prof. Bottomley that the soil was too rich in organic matter for the bacteria to do their work? *On every plot, as stated in the report, the Pea roots were well supplied with nodules.* The trial was really a contest between the bacteria already in the soil and those added in the nitro-bacterine, and the former showed to the better advantage. It remained for Prof. Bottomley to show why this was the case.

It had been assumed that the bacteria in four of the plots were killed or injured by the application of potassic and phosphatic manures. These manures were applied and mixed with the soil (which had been limed) long before the seed was sown. The lime was present in sufficient quantity to prevent any acidity in the soil. That the manures had no injurious effect was evident from the presence of nodules on all the roots. Professor Bottomley also assumed that the manures had been sown in such a way as to injure the bacteria of the seeds, i.e., bacteria sown with the seeds. This was not the case.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 4.—*Committee present:* Messrs. E. Ashworth (Chairman), Thorp, Cowan, Ward, Keeling, Warburton, Holmes, Upjohn, Ashton, Parker, Low, and P. Weathers (hon. sec.).

Z. A. WARD, Northenden (gr. Mr. Weatherley), was voted a Silver-gilt Medal for a showy group of plants, mainly of *Odontoglossums*, one of which, *O. × Beauté Celeste*, or *O. × eximium* "Ward's variety," received an Award of Merit.

Mr. J. ROBSON, Altrincham, was voted an Award of Merit for *Odontoglossum crispum* "Supreme," and a similar Award for *Cypripedium × Actæus* "Robson's variety."

Messrs. A. J. KEELING & SONS, Westgate Hill, Bradford, were awarded a Bronze Medal for a small miscellaneous group.

Messrs. MOORE & Co., Leeds, staged a group for which a Silver-gilt Medal was awarded. *Odontoglossum × Lawrenceanum* var. "Distinction" received an Award of Merit.

J. MCCARTNEY, Esq., Bolton (gr. Mr. Holmes), was awarded a Silver Medal for a group of *Cattleyas* and *Lælias*. *Cattleya Trianae* var. *Lowiae* was given an Award of Merit.

A. WARBURTON, Esq., Haslingden (gr. Mr. Daigleish), staged a group of *Odontoglossums* (Bronze Medal), another of *Cypripediums* (Silver Medal), also a miscellaneous group (Silver Medal). *Cypripedium × Euryades* var. King Edward VII. was voted a First-class Certificate.

R. ASHWORTH, Esq., Newchurch (gr. Mr. Fletcher), obtained two Silver Medals, one for



FIG. 81.—VIEW OF MESSRS. SUTTON AND SONS' "FRENCH" GARDEN EXHIBIT STAGED AT THE ROYAL HORTICULTURAL SOCIETY'S MEETING ON THE 9TH INST.

(See report published in last week's issue, p. 174.)

Professor Bottomley had drawn up tables showing what he considered the figures ought to have been if the number of plants on the two plots had been the same. This he had done by an unscientific method of calculation, for (1) there was no evidence that the plants on the respective plots were of the same strength to start with; (2) the plants were not growing (since the space was the same on each of the plots and the number of plants varied) under equal conditions of space; and (3) the number of plants (owing to an accident already explained) of two varieties is unknown. Prof. Bottomley had attempted to rectify the tables, knowing, as a rule, the number of plants of only one of the four varieties, and sometimes not even that. No one could say from the data available what the total yields would have been if the number of plants had been equal in the pair of plots.

Prof. Bottomley made a comparison between the yields obtained from half an area which received a light dressing of dung, with a like portion that was not manured, apparently to show that the soil of the Wisley garden was so rich in organic matter that it would not respond to an extra amount of manure. *Why did he not compare the yields from the whole of the areas which received these different treatments respectively?* This would have shown that even such a light dressing of dung had the effect of increasing the yield of Peas.

What were the facts with regard to the amount of organic matter in the soil? The loss, on ignition, of the cultivated soil (from which the only general conclusion in the report

He also failed to give weight to the evidence adducible from the report regarding the need for lime in this experiment; if he had carefully considered it he would have found that lime made no difference whatever to the results of the trial.

In conclusion, Mr. Chittenden considered that more investigation was necessary before any hope could be entertained of getting much, if any, benefit from inoculation of leguminous plants on cultivated soil, since it was first necessary to prove that the bacteria were not only alive but were of greater virulence than those already in the soil.

In the discussion which followed, the following gentlemen took part:—Dr. Keeble, Messrs. J. Walker, C. E. Pearson, Arthur W. Sutton, and W. A. Voss. Mr. Arthur Sutton suggested that Mr. Harry J. Veitch, the chairman, should put an acre or so of land at the disposal of Prof. Bottomley for the purpose of further experimenting with nitro-bacterine. Mr. Veitch, in closing the discussion, expressed himself as willing to adopt Mr. Sutton's suggestion so far as his own nurseries were concerned, but advanced the opinion that it would be more satisfactory if the Council of the Royal Horticultural Society were to set apart a piece of ground at Wisley for use by Prof. Bottomley. In acknowledging a vote of thanks, Prof. Bottomley accepted the proposal, with the proviso that Mr. Chittenden should help him in the recording of the experiments, since Mr. Chittenden would be on the spot, and Wisley is not too accessible for a busy man whose work is in London.

Odontoglossums and the other for a general display.

Mr. J. STOTT, Radcliffe, was awarded a Bronze Medal for a small group of *Cypripediums*.

Mr. W. SHACKLETON, Gt. Horton, near Bradford, was also awarded a Bronze Medal for a group, principally of *Cypripediums*.

FEBRUARY 18.—There was a good display of plants at the meeting held on this date.

Z. A. WARD, Esq., Northenden, showed a group of *Odontoglossums*, including many choice hybrids. (Silver-gilt Medal.)

R. ASHWORTH, Esq., Newchurch, exhibited a group of *Odontoglossums* in competition for the "Ward" Cup. (Silver-gilt Medal.)

J. MCCARTNEY, Esq., Bolton, was granted a similar award for a general display, chiefly of *Cattleyas* and *Cypripediums*.

G. SHORLAND BALL, Esq., Burton, Westmoreland, was awarded a Silver-gilt Medal for a beautiful display of miscellaneous Orchids, in which were two fine specimens of *Dendrobium glumaceum* and several choice forms of *Lycaste*.

H. J. BROMILOW, Esq., Rainhill, Liverpool, exhibited *Cypripediums*. (Silver-gilt Medal.)

Messrs. A. J. KEELING & SONS, Westgate Hill, Bradford, showed a miscellaneous exhibit, in which were numerous plants of great interest. (Silver-gilt Medal.)

Silver Medals were awarded A. WARBURTON, Esq., Haslingden, for *Odontoglossums*, and another for *Cypripediums*; Messrs. JAS. CYPHER & SONS, Cheltenham, for a general display of Orchids; Messrs. HUGH LOW & Co., Enfield, for *Cattleyas*; Messrs. HEATH & SONS, Cheltenham,

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending March 13, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The weather.—The general condition continued wintry and unsettled. The sky was mostly very cloudy or quite overcast, and falls of sleet or snow occurred in nearly all parts of Great Britain, while rain, sleet, or hail was experienced in Ireland. Precipitation was less frequent in the north-west of England and west of Scotland than elsewhere. Thunder was heard at Gordon Castle on the 10th.

The temperature was again below the average, the greatest divergence being about 4°5' in the Midland Counties and England S.W., and the least 1°7' in Scotland N. The highest of the maxima occurred on the 7th or 8th in most parts of England, and on the 12th or 13th elsewhere. They ranged from 53° in Ireland S. to 47° in Scotland E. and England N.E. The lowest of the minima, which were registered on the 7th or 8th over the greater part of the kingdom, but on the 12th in several Scottish localities, ranged from 8° in Scotland E. (at Nairn on the 7th), 20° in Scotland N., and 22° in England N.E. and Ireland N., to 31° in England E., and to 35° in the English Channel. The lowest grass readings reported were 16° at Buxton and Markree Castle, 17° at Llangunnawell, 18° at Balmoral, Huddersfield, Sheffield, and Newton Rigg, and 19° at Cockle Park (Morpeth) and Dublin.

The rainfall exceeded the average in the north-east of Great Britain and also in the English Channel, just about equalled it in England E., S.E., and S.W., and was less in Ireland, Scotland N. and W., England N.W. and the Midland Counties. At Crathes and Balmoral the quantity of melted snow measured on the morning of the 7th yielded 1.49 inch, and 1.96 inch in the two respective gauges.

The bright sunshine was less than the average in all districts. The percentage of the possible duration ranged from 29 in the English Channel, 25 in Ireland S., and 22 in England S.E. to 13 in Scotland W., 11 in England N.E., and 8 in Scotland E.

THE WEATHER IN WEST HERTS.

Week ending March 17.

The sixth week in succession of cold weather.—The present cold period has now lasted nearly six weeks, during which time there have occurred only four unseasonably warm days, and only one warm night. Throughout the past week the days have been, as a rule, much more unseasonably cold than the nights, the highest reading in the thermometer screen on four days ranging only between 35° and 38°, or from 13° to 10° below the average for the middle of March. On the two coldest nights, however, the exposed thermometer indicated 18° of frost. The ground is now 4° colder at 2 feet deep, and 6° colder at 1 foot deep, than is seasonable. Some snow or hail fell on five days, but the total measurement amounted to less than half-an-inch. On one day the ground was covered with snow to the average depth of 2 inches. About one and a half gallons of rain-water has passed through both percolation gauges during the week. The sun shone on an average for one and three-quarter hours a day, which is less than half the usual duration for this period of the year. Two days proved altogether sunless, while on two other days the record of bright sunshine amounted to less than half-an-hour. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by 7 per cent. E. M., Berkhamsted, March 17, 1909.

Obituary.

CALEB FENNER.—We regret to record the death, on the 8th inst., at Reading, of this well-known cultivator of Roses and Dahlias. Deceased was manager in the late Charles Noble's nurseries at Bagshot for 16 years, and for 23 years he was gardener to the late T. W. Girdlestone at Sunningdale, Berks. During the time he was with Mr. Girdlestone he raised many single Dahlias, including the Tom Thumb varieties. He was also successful in winning many of the principal prizes for Roses throughout the country. Deceased was in his 81st year. He leaves a widow, eight sons and four daughters. The remains were interred in Reading Cemetery on the 15th inst.

ENQUIRIES AND REPLIES.

THE BURNING OF CLAY SOIL (see p. 176).—The most important item in the burning of clay soil is to secure a strong body of heat before applying too much clay to the heap. The fact that L. F. had much slack coal left unburnt is proof that the body of fire was at the start insufficient. In starting the fire or laying its foundation some root stumps grubbed a year previously should form a centre around which to build. If the burning is a large one, several stumps should be employed and freely interspersed with logs of wood and lumpy coal, or coke and coal, the whole being moderately saturated with tar or some old tar barrels used in the burning. A plentiful supply of cleft Oak, Pine, or Apple logs should then be built up, freely mixing lump

coal with the first few layers, after which a thin layer of clay with small coal should be applied, gradually adding more clay till the heap is well covered in. Success in such matters depends upon securing a great heat at the start and maintaining such a heat for some time. Air passages are not essential, though such might prove helpful in certain instances, but the fire could easily be smothered in its early stages by the application of too much clay. The subsequent feeding of the fire should, therefore, be gradual. E. J.

—Two great difficulties attend the burning of stiff soils, the one arising from the heat engendered being so great as to bake instead of to disintegrate the materials composing them, the other, that the heat may not be raised sufficiently high to alter the inorganic constituents contained therein from a passive to an active or available form. The first difficulty arises from permitting too great a draught of air, and, consequently, causing a rapid and often through draught, a partial but excessive combustion. The second difficulty arises from either the heap being made up too closely or too open. In the former case, the too free access of air occasions the fires to burn languid, and consequently deficient heat through absence of sufficient draught; whilst if the clay or sod is packed too closely, the absence of air retards combustion, and thus necessarily the amount of heat required for the due perfection of the process, and combustion will not infrequently be stopped altogether by the interstices becoming filled with ashes, and by that means almost wholly excluding the atmosphere. As soils vary so much with respect to their capacity for burning for manure, no hard and fast rule can be laid down to suit every case. On soils which are very stiff and that do not contain much vegetable matter, great care is required in order to form clamps that will burn thoroughly, without too great a degree of heat or too little. One of the principal rules to be observed is to commence by having a rough log of wood, and build up around this a few upright pieces of tree loppings or the like, then surround these by some root-chunks, upon which to erect the sods on end (never commence by building the sods on the ground). Only the three or four first sods which are placed in the middle should have their grassy sides presented to each other, each succeeding row being placed with the grassy side next to the earthy side of the preceding row, the whole to be set up as compactly as possible. When the heap is thus erected of a dome shape fire should be applied at the bottom, in the flues left for draught. Any clay with a moderate degree of sward will thus, if carefully attended to, produce a quantity of ashes suitable to the wants of the gardener. It may be mentioned that, in calm weather, heaps should be made as open as is consistent with arrangements necessary for a due draught by means of flues left at intervals; in windy weather the heaps should be formed as close and as large as possible, labourers being continually employed to stop up every crevice, particularly those on the leeward side, for which purpose the whole of the sods should not be heaped up at first, but a few left scattered about in order to apply in the manner named. Soils burned in this way which contain only a small amount of vegetable matter will frequently require the aid of Furze, underwood, hedge clippings, small coal, or other inflammable materials to assist the operation. All inexperienced hands use too much fuel, get their fires too fierce, lay their stuff too hollow, make a great deal of smoke—whereas the less they make the better—get their heaps to a red heat, and burn through in a week or ten days. The consequence is that, when these heaps are opened, instead of ashes, or lumps that will turn to ashes by exposure to the air, out roll knobs as hard and as useless as brick-ends. J. J. Willis.

ANSWERS TO CORRESPONDENTS.

ALBERTA MAGNA: *Franciscus*. The plant forms a shrub or small tree, and is a native of Natal, at elevations of 3–5,000 feet above the sea-level. In this country it should be treated as a greenhouse plant. The soil best suited for it is a compost of loam and peat. It forms a fairly large Laurel-like plant, and is best cultivated in a border. The species has flowered in the Temperate House at Kew.

ham, for a miscellaneous exhibit; and J. McCARTNEY, Esq., Bolton, for Cattleyas and Lælias.

First-class Certificates were awarded to the following plants:—*Cypripedium* × *Lady Ursula*, a fine hybrid between *C.* × *Mrs. Tantz* × *C. insigne* Harefield Hall variety, shown by S. GRATRIX, Esq.; Whalley Range; *Cymbidium* × *Holfordianum*, shown by R. ASHWORTH, Esq.

Awards of Merit were granted to *Odontoglossum* × *Lambeauium* Ashworth's variety, shown by R. ASHWORTH, Esq.; *Cypripedium villosum* Keeling's variety, *Spathoglottis* × *aureo-Viellardi*, and *Sophronitis grandiflora* var. *maxima*; these three were shown by Messrs. A. J. KEELING & SONS; *Cypripedium* × *Prospero* Oakdene variety, *C. aureum* var. *vertumne*, and *Odontoglossum* × "W. C. Price," these three exhibited by E. ROGERSON, Esq.; *Cattleya Triana* var. "Sir Lees Knowles," shown by J. McCARTNEY, Esq.; *Cypripedium* × *Iris* var. *magnificum*, shown by Mr. W. BOLTON; *Odontoglossum* × *crispo-Harryanum* Ward's variety, *O.* × *amabile* var. *Georgius*, *O.* × *amabile* var. *Willie*, and *O.* × *lochriense* Ward's variety, these shown by Z. A. WARD, Esq.; *Cypripedium* × *Euryades* var. *Rossendalensis*, *Odontoglossum* × *venustus*, and *O.* × *Primus*, these three shown by A. WARBURTON, Esq. P. W.

BRITISH GARDENERS' ASSOCIATION. (LONDON BRANCH).

MARCH 6.—The first social evening held by this branch took place at Carr's Restaurant, 264, Strand, on the above date. The meeting was in aid of the Branch funds. Mr. E. F. Hawes presided. Notwithstanding the inclement weather, more than 70 members and friends assembled. During an interval in the proceedings, the Chairman, in a brief speech, set forth the objects of the association, and invited any gardeners who were not members to join the association.

DEBATING SOCIETIES.

BATH AND DISTRICT GARDENERS'.—A largely-attended meeting of this society was held on Monday, March 8. Mr. T. Parrott presided. A paper on "Pelargoniums" was read by Mr. Edwards. He said that about 700 varieties were awarded certificates by the Royal Horticultural Society in the period between 1860 and 1890, and of the 170 species of Pelargonium which were known nearly all were natives of South Africa. The four sections of Pelargonium were all distinct from each other, and except in one instance they had refused to be interbred. The instance was that of a Zonal and Ivy-leaf, of which an accidental cross between the two had been secured by M. Lemoine about 30 years ago. Pelargoniums were readily raised from seed, while they could also be increased by cuttings and pieces of the root. The best time to sow the seed was in March or April, in a temperature of 60°.

BICKLEY AND DISTRICT HORTICULTURAL.—A meeting of the above society was held on March 4, under the chairmanship of Mr. J. Hunter. A paper was read by Mr. Legg, of Hamilton Lodge Gardens, Bickley, on "The Cineraria and its Culture." The paper gave full details for the culture of this popular greenhouse flower.

BRISTOL AND DISTRICT GARDENERS'.—At the meeting held on Thursday, March 11, Mr. Scott, of Downside Gardens, gave a paper on "Border Carnations." The lecturer said July is the best month for layering, and autumn the best time for planting. Wood ashes mixed with the soil proved very beneficial for Carnations, which should be planted firmly.

PORTISHEAD.—Under the auspices of the Somerset County Council, the second lecture on "Gardening" was given on March 9 in the Parish Room, Portishead, by Mr. J. Eittle. The lecturer spoke on vegetable culture, giving practical hints on thinning crops, hoeing, weeding, watering, and feeding the different sections of vegetables, namely, those grown for their roots, leaves, fruits, seeds, and pods.

READING AND DISTRICT GARDENERS'.—A lecture was given in connection with the above society on Monday, March 8, in the Abbey Hall, Reading, by Mr. W. F. Giles, of Messrs. Sutton & Sons, the subject being "Vegetables, Old and New." The lecture was illustrated by a collection of about 100 lantern slides. Mr. A. F. Bailey (chairman) presided, and there was a large attendance of members. Mr. Giles opened his remarks by tracing the history of some of the common vegetables. Mr. Giles showed pictures taken from *Gerarde's Herbal*, published in 1597, showing the type of vegetables of that time, and also, by way of contrast, varieties of the present day. Thomas Andrew Knight, afterwards President of the Royal Horticultural Society, made the first recorded cross with culinary Peas in 1787.

TORQUAY GARDENERS'.—At the fortnightly meeting of this association, held on Friday, March 6, Mr. G. Wilson read a paper entitled "Some Notes on Vine Culture." Mr. W. A. Masterman, vice-president, presided. Mr. Wilson gave a detailed account of vine culture under glass, dealing with the raising of the vines, making of borders, planting and general treatment, pruning (summer and winter), thinning, ripening, and the general management of the vineyard.

ASPARAGUS: *Head Gardener.* There are several varieties or selections of Asparagus. If you are desirous of cultivating the largest, nothing can surpass that known as the Giant French, but as an all-round variety, few, if any, are superior to a true type of Connover's Colossal. Perfection is also an admirable variety. It produces heads of the highest quality. Palmetto, an American variety, may also be recommended. Where large quantities are grown these might all be included in the collection. Asparagus generally does very well on the flat, providing the land is well drained, especially so on light soil, but, generally speaking, in cold, wet districts and where the land is very heavy, the crop does better when the beds are slightly elevated above the ordinary level. The roots are then naturally drier owing to the alleys between the beds acting as drains. There are many excellent patent manures specially prepared for this crop. In addition to these fertilisers, common salt may be applied once a year. The lighter the soil the more salt is necessary.

BEECH-COCCUS: *W. A.* An account of this pest, with measures to adopt for its eradication, was given in the issue for October 10, 1908, p. 257.

BOOK OF CARPET BEDDING DESIGNS: *M. H. D.* We know of no work on this subject other than those that are out of print.

BORONIA MEGASTIGNA: *A. H.* If you take cuttings now and insert them in pots and place them on a greenhouse shelf, covering them with a bell-glass, some will be likely to make roots. In order to make success more certain place an old plant in a warmer house than that in which it has been growing, and, after two or three weeks take cuttings from this plant and insert them in pots filled with sandy peat. Place these in a propagating case or under a hand-light. The pots to receive the cuttings should be made up some days before using. If the soil is thoroughly watered when the pots are made up, no water will be required again for a week or 10 days after the cuttings are put in.

CHICORY: *J. R. B.* This vegetable may very well be forced in such a cellar as you describe. It is easily grown and forced, and the produce commands a fair price. Seed should be sown thinly in April in drills 2 inches deep and 15 inches apart, and the seedlings thinned out to about 9 inches in the row. We assume your cellar is quite dark now, as shown by the diagram. The proposed admission of light through thick ground glass fixed in a portion of the domed roof, as shown in the second diagram, would be an advantage to the crops in some stages of growth. When the subdued light is not required, the glass could be covered with mats or other light-obstructing material. We would not recommend you to try Asparagus, as the produce obtained in the conditions afforded by your cellar would probably lack sufficient size and quality. *My Gardener* will furnish you with useful information regarding the subjects you mention. This book can be obtained from our publishing department.

DAFFODIL WITH THREE FLOWERS: *E. A. H.* The abnormality is not uncommon. It is the result of fasciation or fusion of growth.

DAFFODILS FAILING TO FLOWER: *W. G. & Co.* This may be usually attributed to one of two causes. The bulbs may have been unduly forced into growth soon after they were potted, or they were imperfectly ripened in the previous autumn.

DOUBLE-SPATHED RICHARDIA: *G. C. W.* This abnormal development is not uncommon. The second spathe is merely a leaf which has assumed the character of the floral bract. There are no extra organs of reproduction present, nor even a rudimentary spadix.

FUNGUS IN SOIL: *E. P. P.* The soil is infested with a slime fungus, probably *Fuligo* varians. Water the ground with a weak solution of permanganate of potash.

LAND FOR A MARKET NURSERY: *S. R.* There are so many circumstances to be taken into account, it is essential that the site should be visited by an expert. It is an advantage for the land to slope from south to north, provided the slope is moderate. The land appears too light for fruit culture. With

regard to the water supply, if the pond does not furnish a sufficient quantity, a well could be sunk, and a small motor pump utilised to convey the water to a tank at the highest level. We repeat, however, that a satisfactory report can only be made after inspection. You do not even state how the pond is to be kept filled with water.

LILAC: *J. R. B.* You could force Lilac during the winter and early spring months. The plants could be grown out-of-doors for forcing purposes. They only require simple cultural treatment to induce them to form bushy plants, well furnished with flower-buds, and capable of being taken up (at intervals of a fortnight or so) with balls of soil adhering to the roots. Stand the plants closely together on the floor of the cellar on a little garden soil, and cover the roots with similar mould. Afterwards water through a rose to settle the soil about the roots. The atmosphere of the cellar should be maintained in a moist rather than a dry state. Lilac trees for forcing may be obtained at a very moderate price per dozen or per hundred from any nurseryman doing a wholesale and retail trade in shrubs. It might be worth your while to buy a few dozen Lilacs now, purple and white varieties, although the purple variety will yield white flowers when forced in the dark. For "Etherisation of Lilacs" see *Gardeners' Chronicle*, March 9, 1904, p. 187, and April 2, 1904, p. 228.

NAMES OF FLOWERS, FRUITS AND PLANTS.—We are anxious to oblige correspondents as far as we consistently can, but they must bear in mind that it is no part of our duty to our subscribers to name either flowers or fruits. Such work entails considerable outlay, both of time and money, and cannot be allowed to disorganise the preparations for the weekly issue, or to encroach upon time required for the conduct of the paper. Correspondents should never send more than six plants or fruits at one time: they should be very careful to pack and label them properly, to give every information as to the county the fruits are grown in, and to send ripe, or nearly ripe, specimens which show the character of the variety. By neglecting these precautions correspondents add greatly to our labour, and run the risk of delay and incorrect determinations. *Correspondents not answered in one issue are requested to be so good as to consult the following numbers.*

PLANTS: *A. W. G.* *Daphne Laureola* (Spurge Laurel).—*R. L.* 1, *Cupressus* species (cone required for more complete identification); 2, *Cupressus Lawsoniana aurea*; 3, *Abies magnifica*; 4, *Cedrus Libani*; 5, *Thuja dolabrata*; 6, *Cupressus Lawsoniana filiformis*.—*A Reader.* 1, *Asplenium nidus* (Bird's Nest Fern); 2, *A. bulbiferum*; 3, *Gymnogramme ochracea*; 4, *Begonia metallica*; 5, *B. semperflorens rosea*; 6, *B. manicata*; 7, *Cotyledon intermedium*; 8, *Eurya latifolia variegata*.—*A. H.* 1, *Cyrtomium falcatum*; 2, *Blechnum brasiliense*; 3, *Adiantum hispidulum*; 4, *A. formosum*; 5, *Abutilon megapotamicum variegatum*, syn. *A. vexillarium variegatum*; 6, *Sedum Sieboldii*.—*J. Clark.* The Orchids are *Cattleya Trianae* and *Cælogyne graminifolia*.—*T. B.* *Clerodendron Thomsoniae*, the correct name of the plant known in gardens under the name of *C. Balfouri*.—*F. G.* 1, *Epidendrum glumaceum*; 2, *Oncidium cheiroporum*; 3, *O. pubes*; 4, *Eria bicolor*.—*H. H.* 1, *Phaius grandifolius*; 2, *Masdevallia simula*; 3, *Spiranthes colorata*.—*J. W. C.* *Ardisia crenulata*.—*F. H.* 1, *Selaginella viticulosa*; 2, *S. Wildenovii*; 3, *Pteris tremula*.—*Hibernica.* 1, *Cordylone* (*Dracæna*) *Regina*; 2, *D. fragrans*; 3, *D. ornata*; 4, *D. amabilis*; 5, *Codiaeum* (*Croton*) *volutum*; *C. Evansianum*.—*R. S., Surrey.* *Magnolia fuscata*, native of China; first bloomed in England in 1802. It is very fragrant in the afternoon.—*C. E. F.* *Bryophyllum calycinum*.

PANSIES AND "FRENCH" GARDENING: *An Old Reader.* There are plenty of ways of disposing of stocks of Pansies and Violas. That there is a good market for early vegetables and salads can be determined by making enquiries in almost any provincial town at the present time, for it will probably be found such produce is unobtainable there. We cannot, however, describe your plan as "wise" or "silly," because we have no knowledge of your experience and business ability. There is a demand for such things, and you must determine for yourself whether or not you can produce them and sell them at a profit at the prices they are likely to realise.

RHUBARB: *J. R. B.* Rhubarb may be forced successfully in your cellar. Plants may be raised from seed sown in the manner recommended in last week's issue (p. 176) for Seakale; but it would take some time to obtain by this method plants fit for forcing. The better way would be to obtain a sufficient number of old stools of Rhubarb. These may be divided into pieces, each having one or more buds. The divisions should be planted in ground which has been trenched from 2 to 3 feet deep, and two or three good layers of manure incorporated with the soil in the process of trenching. A space of 2 to 2½ feet should be allowed between the rows, and the same distance from plant to plant in the rows. Rhubarb is a gross-feeding plant, and therefore requires generous treatment. Royal Albert, Dancer's Early Scarlet, and Myatt's Victoria are excellent varieties. The last-mentioned variety is not so early as the others, but, if liberal supplies of manure are worked into the soil, it produces stalks of great length and thickness, and of first-rate quality. In planting, keep the crowns of the individual plants level with the surface of the soil, and make the latter firm about the roots. Afterwards apply a surface-dressing of half-rotted manure to the depth of 3 inches. No Rhubarb should be taken from the plants the same year that they are planted, but the lower stalks should be removed from the plants as soon as they appear. The plants will be ready for forcing in two or three years.

SOIL AND MANURE FOR ANALYSIS: *S. C. A.* If you are a Fellow of the R.H.S., you can have soils and manures analysed for a small fee by the Society's Consulting Chemist, Dr. A. J. Voelcker M.A., 22, Tudor Street, E.C. If you suspect eelworm to be present in the manure, on no account use it for Cucumber culture.

STACHYS TUBERIFERA: *R. B.* The tubers may be purchased of the nurserymen and seedsmen. They should be planted at the end of the present month or in April, and in successive batches till the buds can no longer be kept in a dormant state. Choose a warm, open site for the beds or rows, and a fairly good, not over-rich soil. If it be clayey, mix leaf-soil and sand with it to the depth of 8 inches, incorporating these materials with the staple. The soil should then be consolidated by tramping it all over, and made roughly level. With a small draw-hoe make drills 2 to 3 inches deep and 8 to 10 inches apart, and in these lay the tubers lengthwise, cover them, tread over the lines lightly, and make the surface level. Instead of planting in drills, the tubers may be dropped into holes made with a dibber. Weak manure water may be afforded when the plants are in active growth, and plain water in very hot weather. The stems may be allowed to lay on the soil, or they may be supported with Pea-stick spray. The crop may be lifted and stored in sand in a cellar, or left in the ground with a covering of Fern or litter, so that they may be get-at-able in frosty weather. We think that this is the better way, the plant being quite hardy in this country. The common names of the plant are Crosnes (French) and Chinese Artichoke. Prepare and cook the tubers like Potatoes or Jerusalem Artichokes.

VIOLETS DISEASED: *T. B.* The plants numbered (2) are affected with a fungal disease. Spray them with a weak solution of the Bordeaux mixture, or, better, burn the stock and start with fresh plants in another quarter of the garden. The other leaves are infested with spider. Spray the foliage with tobacco water, Quassia extract, or one of the other common insecticides.

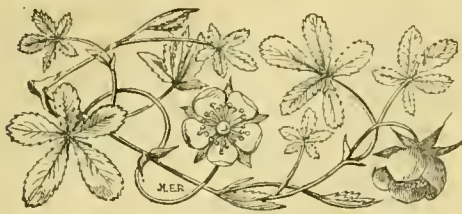
WOOD ASHES: *W. A.* If the quantity of wood burned in the house is considerable, the ashes should be saved for garden purposes. They form a useful source of potash manure and are useful for top-dressing lawns and vegetable crops, mixing with potting mould, dressing Rose-beds, lightening heavy land, and other purposes.

COMMUNICATIONS RECEIVED.—*G. K.* (Australia)—*W. G. S.*—*J. O'B.*—*W. J. B.*—*G. Monro*—*P. A.*—*F. M.*—*B. D. J.*—*C. T. D.*—*T. H.*—*W. W. P.*—*J. Watkins*—*W. B.*—*X. Y. Z.*—*H. N.*—*G. R.*—*T. W. C.*—*W. C.*—*W. S.*—*E. C. P.*—*F. W. P.*, California—*E. B.*—*Anxious*—*S. & Sons*—*A. J. B.*—*W. A. C.*—*J. G. W.*—*A. D. H.*—*W. Anton*—*J. D. G.*—*R. P. B.*—*E. H. J.*—*H. W. W.*—*W. R.*—*J. R. P.*—*T. D.*—*L. R. R.*—*W. D.*—*H. G.*—*E. L.*—*H. A. R.*—*J. Mc H.*—*C. D.*—*W. H.*—*H. T. H.*



FRITILLARIA ASKABADENSIS, FLOWERING IN THE ROYAL GARDENS, KEW.

Photograph by C. P. Raffill.



THE Gardeners' Chronicle

No. 1,161.—SATURDAY, March 27, 1909.

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CULTURE OF CUCUMBERS.

BEFORE the Cucumber disease (*Cercospora melonis*) became so prevalent, it was possible to maintain a continuous supply of fresh Cucumbers from May to September inclusive; in fact, I have cut, from plants raised in April, superb young fruits in October, the plants at that date being as fresh and green as one could expect.

Unfortunately, this cannot be done to-day, and in those instances where the plants early fall a prey to the leaf-spot, they may cease to be profitable in less than half the time I have instanced. In some cases, indeed, the young plants are attacked before they are 2 feet high. In two instances known to the writer, and where new glass-houses were erected on a fresh site, the first-planted crop was completely destroyed by disease before bearing at all. A second batch of plants was so badly attacked that it was cleared out, but a third planting gave a fairly good, though, of course, late, and, therefore, much less profitable, crop.

During the last two seasons there have been fewer complaints concerning early outbreaks of the disease, and in the majority of instances the first fruits have been cut before any very serious loss of foliage has resulted. The disease spreads rapidly: a spot or two may appear to-day, and a week hence probably not a sound or unaffected leaf can be found in the

house. It is difficult to find an effective remedy. Carbolic acid diluted with water and applied to the floors of the houses has been found very destructive of leafage, and in some instances the "cure" was as bad as the disease. Greater dryness, too, has been tried within the house, also in the hottest weather the top ventilators have been left open at night-time, with the result that the former practice has promoted a rapid increase of red spider, while the latter plan has hindered the development of the fruits. It is to be regretted that heat and moisture, the conditions essential to success in the case of a tropical subject like the Cucumber, are the conditions also best suited to the rapid increase and spread of the disease. The only remedy or safeguard against the disease would appear to be that of cultivating two crops of plants where one sufficed before. But in conjunction with this there must be a complete clearance of the houses, sulphuring the structure two or three times, a bountiful application of whitewash to all possible parts of the house, and a general wash down before making a fresh start, the young plants being prepared elsewhere.

But, disastrous as the results of this fungal disease are, cultural errors are responsible for a loss equal, if not, indeed, greater, than that caused by the fungus, and this is all the more to be regretted because it is preventable. It is by no means clear why so many Calendar writers recommend the almost identical practice either of "stopping the plants at 3 feet high," or when they have reached "the second or third wire," the latter recommendation implying that all Cucumber houses are built on the same plan. The practice of stopping is said to promote early fruiting, but I have never experienced this. Moreover, I consider it to be wrong in principle, as well as in practice, to take the leading shoot out of a climber or twiner such as the Cucumber while the plant is really in its infancy. Whilst doing this does not appreciably hasten the production of laterals, it does, by enforcing an early fruiting of the lower parts of an immature plant, diminish and hinder the fruit-bearing character of the plant as a whole. For special purposes it may be desirable to place a limit to fruit production, or to promote the earliest possible fruiting, so that the crop can be cleared to give place to a second one. It is another matter altogether when the plant is expected to produce a profitable market crop, and which it can only be made to do by permitting it to cover its allotted space with laterals in the shortest possible time. To effect this the main stem should be permitted to grow unchecked until it has reached to within 1 foot of the ridge in a house 10 feet or 11 feet wide and 7 feet or 8 feet to the ridge. In a house 20 feet wide, with rafters, say, 12 feet in length, the stopping may be done at about 6 feet up the roof, by which time the plants will have attained to a certain stability and be showing abundantly for the first crop of fruits. During this growth of the main stem, a large number of laterals will have formed lower down, and will be already set with fruits—usually one at each joint, or two, and even more fruits in certain varieties. The Cucumber plant is capable of producing a limited number of fine fruits on the main stem. Indeed, the handsomest and best-proportioned fruits are mostly produced thereon. It is not prudent, however, to permit an early fruiting on the main vine, as by so doing the bearing capabilities of the first laterals are impaired. All laterals developed within 1 foot of the soil are best removed, as the fruits must not touch the soil. Above this height all fruit-bearing laterals should be stopped at the second fruiting joint, the subsequently-formed sub-laterals,

which appear very quickly, being stopped at the first joint. A new "break" is usually trained in from the first joint on the lateral. In this manner the fruiting is continued up the plant. In the worst instances of Cucumber training I have seen, the main stem had grown to a height of 4 feet or 5 feet, as is done with the Tomato, and with the whole of the laterals suppressed from the start. The roots were deeply buried in rich soils, with the result that the leaves were nearly of the size of Rhubarb leaves, but not a fruit was to be seen. As a matter of fact, all the fruiting laterals had been cut away. Incredible as this may appear, I have seen at least two instances of the kind, and in each case promptly advised the grower to pull up the plants and burn them.

In the raising of the Cucumber plant from seeds a single seed should be placed in a 3-inch pot filled with light, rich soil. An endeavour should be made to promote a quick growth, so that the stem below the cotyledon is not more than 6 or 8 inches in length, as the ground level of the plant at that time is practically its level to the end. I never earth up the cotyledonous stem at all, the plant being supported by its first-formed or main roots and the innumerable fibres that develop thereon. In not a few instances known to me this portion of the stem has been buried deeply, the result being undue grossness of growth and a lack of fruitfulness.

A point of importance is that the house should be ready for the plant, and that the latter has not to wait for the former. A check at this stage will result in the lower laterals proving fruitless. With a bottom heat of 75° F. the seedlings appear in a couple of days, and four or six days later the young plants should be raised a few inches and finally removed from the seed-frame. When the second or third rough leaf has been made the seedlings may be planted out, the house and soil being warmed in readiness. The planting-out will depend on the season of the year and the way the young plants are produced, though, as a rule, from 14 to 21 days must elapse after the appearance of the seedling before it is ready for transplantation to its permanent quarters. In certain instances the plants may require a week longer than this.

The question of bottom heat for Cucumbers has been debated many times, and while it is essential to the production of good winter fruits, it is by no means necessary, or even desirable, for the summer crop. It is best that the rooting area should be of a restricted character, so that the roots may be under the direct control of the cultivator. The mounds of earth in which the plants are placed should be only moderately firm—not so firm as to be practically impervious to the supplies of moisture afforded, nor yet so loose as to permit the water to pass away without benefiting the plant. The subsequent treatment resolves itself into thinning, tying, watering and top-dressing. The Cucumber delights in moisture and very rich soils. Formerly the plants were grown on freshly-made beds of dung within the house, but beds or mounds of soil produce far better results. Much moisture is needed when the fruits are developing, and, if the weather is hot, watering cannot easily be overdone. Unless heavy supplies of root moisture are applied when a full crop of fruits is hanging, there will be a big percentage of long-pointed and undeveloped fruits.

Atmospheric moisture is of importance at all times; though when the plants are in flower the afternoon syringing or damping should be dispensed with for a day or two. An excess of moisture settling on the blossoms at that time causes decay in the young fruits. In connection with

the fruiting of these plants the much-debated point of pollinating the flowers arises: this, whilst absolutely essential when seeds are required, is neither necessary nor desirable in the production of Cucumbers for the table; moreover, it destroys some of the symmetry of the fruits. *E. H. Jenkins.*

ORCHID NOTES AND GLEANINGS.

BULBOPHYLLUM DAYANUM

THE genus *Bulbophyllum*, including *Cirrhopetalum*, is very remarkable, the different species displaying the greatest diversity of structure. Many of them have the labellum, petals, and sepals decorated with hair-like appendages, which, in some cases, as, for example, in *Bulbophyllum barbigerum*, seem to be almost constantly moving. *Bulbophyllum Dayanum*, illustrated in fig. 82, is a native of Burma, and was originally described in the *Gardeners' Chronicle*, 1865, p. 434, from a plant which flowered with the late Mr. John Day, at Tottenham. For a long time afterwards the species seems to have been lost, but in late years it has appeared occasionally, the specimen now illustrated being supplied by Mr. James O'Brien, of Harrow-on-the-Hill.

The plant is of compact growth. The pseudo-bulbs are of a dark shade of chocolate-purple, and the under-sides of the leaves are suffused with the same colour. The flowers are borne close to the pseudo-bulb, and rest on the surface of the Sphagnum-moss around the plant. The sepals are of a greenish Citron yellow, speckled with claret-purple spots, and furnished at the margin with orange-yellow coloured hairs. The petals are claret coloured, with a narrow, white border; they are fringed like the sepals. The labellum is yellowish, tinged with rose, and marked with projecting, deep crimson spots; it is four-ridged. The column is yellowish and speckled with crimson below.

ODONTIODA GOODSONIÆ.

THIS beautiful hybrid (see fig. 83) was exhibited by H. S. Goodson, Esq., Fairlawn, West Hill, Putney (gr. Mr. G. E. Day), at the Royal Horticultural Society's meeting on March 9. It was flowering for the first time on a very small plant, but, owing to the deep, ruby-red colour of the flowers, and the attractive cream-white markings on the segments, it was considered one of the most beautiful and remarkable of the *Odontiodas*. The parentage of the plant is not definitely known, but it was suggested that the parents were *Cochlioda Noezliana* and a white or sparsely-spotted form of *Odontoglossum ardentissimum*. The crest of the lip is yellow, with red markings.

VANDA CÆRULEA.

THIS lovely *Vanda* is seldom seen at its best condition when under cultivation. It is found on the dry, grassy slopes of the Khasia Mountains in Eastern India in the neighbourhood of the Brahmapootra, at an elevation of 4,000 feet above sea level. The plants are found in great numbers on Oak trees, which are small, gnarled, and sparingly leafy, so that the *Vandas* are fully exposed to the sun, air, and wind. The atmosphere is humid, especially during the rainy season, but at no time is it fully saturated with moisture. The plants cling, by their roots, tenaciously to the rough, dry bark, and often completely cover the boughs. In the flowering season the temperature averages 70°, and the atmosphere during the daytime is dry; but in July and August, when rains are frequent, the temperature is a little higher, whilst in winter it falls much lower. Under these conditions of summer heat, autumn drought, and dry, cool air of winter, the most beautiful of Indian Orchids flourish, such as *Dendrobium Devonianum*, *D. Dalhousianum*, *D. Farmeri*, also species of *Cœlogyne*, *Bulbophyllum*, *Cymbidium*, and a few species of *Cypripedium*. *F. Newman.*

VEGETABLES.

CHICORY.

I WAS pleased to read *A. D.'s* note (p. 116) on "Chicory as a Forced Vegetable." Good and regular supplies of Chicory (*barbe de capucin*) during the winter and spring months are a *sine quâ non* where French cooks are in care

The soil, having been dressed previously with well-decomposed manure, and afterwards deeply dug, should be trodden over and raked level preparatory to drawing drills between 1 and 2 inches deep and from 12 to 15 inches apart. The rows should run north and south, and into the drills should be sown the seed of the Witloof or white-leaved Chicory at any



FIG. 82.—BULBOPHYLLUM DAYANUM, WITH STRUCTURAL DETAILS OF FLOWER.

of the kitchen. I have cultivated Chicory extensively in years gone by, not only as a salad ingredient, but more especially as a vegetable. The heads resulting from well-grown roots resemble Seakale, and when stewed and served with melted butter form a choice second-course vegetable. A deep, light and moderately rich soil is suitable to the growth of Chicory.

time from the middle to the end of April for producing large, well-developed roots for forcing during November and the five following months. Draw the soil over the seed in the ordinary way, tread the surface, and rake it well. The roots will, if well grown, attain the size of moderately large Parsnips. When the seedlings have attained to a height of

about 1 inch thin them out to 9 inches from plant to plant in the row. The only after-treatment necessary between thinning the crop and the covering of the roots for forcing is a vigorous weeding and stirring of the soil between the rows three or four times during the months of June, July, August and September. When the large leaves of the plants have decayed and have been removed towards the end of October or early in November, according to the season or locality, place a little sifted wood or coal ashes around the crowns of the individual plants preparatory to covering those required for forcing with wooden troughs. These are made of two boards 9 inches deep and ends of the same width, the trough being 8 feet long. The ends are made 1 inch higher than the sides to keep the lids in position when placed thereon. Cover the troughs when they are in position over the Chicory with fermenting tree leaves to the thickness of between 2 and 3 feet. The heat thus imparted to the interior of the troughs and the ground in which the Chicory roots are growing will result in the production of good, solid, well-blanching heads. Fresh troughs should be brought into use at intervals of a week or 10 days, in order to maintain a succession. Three

BROCCOLI AND FROST.

Snow's Winter White and Christmas varieties were planted in this garden for the purpose of furnishing a supply of Broccoli throughout January. We had a good supply from those plants that had formed heads and had been lifted and planted in a cold Peach-house before the frost set in; but many were left in the garden, as they were not ready for lifting, with the result that all these have been destroyed by the frost. Purple Sprouting Broccoli has also been ruined by the cold weather. The result is disappointing, as if the kinds mentioned had been hardy, like the later sorts, we could have maintained a supply of this vegetable in winter. Among the later kinds grown here are Standwell, Late Queen, Safeguard, and Eastertide, all of which have escaped injury by frost. The variety last mentioned appears most damaged. If they had been planted on rich soil, I do not suppose they would have done so well. I certainly do not agree with those who recommend plenty of manure for Broccoli, but deeply-dug ground is essential and also a very firm soil when planting. There are many who plant Broccoli after Peas or Potatoes without even stirring the soil. On rich, loose ground Broccoli make luxuriant growth, and produce very fine heads if no frost

plant-stakes and labels are now sent us from abroad; while the little bundles of split wood that we see exhibited for sale at many shop doors are slowly but surely ousting our Kentish "pimp" from the market. Three-quarters of a century ago Oak bark sold in the London market at 14 guineas per ton; while that of the Sweet or Spanish Chestnut brought 11 guineas, and Birch and Larch 7 guineas per ton. To-day, however, matters are different and lucky indeed does the wood-manager consider himself who can sell his carefully-stripped and well-harvested Oak bark at one-fifth of the above-named price; while, incidentally, it may be mentioned that the cost of labour is now about one-fourth higher than formerly. At no very remote date, throughout the length and breadth of the land bark-stripping or "flawing" was an event of the year in Oak woodlands, and was considered as an industry of purely British origin. Now, however, except in a few isolated instances, the picturesque hut of the bark-stripper, the suppressed thud of the wooden mallet, and the far-reaching trestles of creamy white bark (the latter the pride of the woodman, as indicating first quality), are things of the past. Foreign competition and the substitution of chemicals and foreign barks for tanning leather have dealt a deathblow to this industry.

But this is not all, for, apart from the great fall in price of the bark, the loss in the way of labour to both young and old is very considerable. Thus it has been estimated that no less than 1,200 persons used to find employment during the "barking" season for, at least, two months of each year. Whether the industry will ever be revived is very doubtful, though it is generally admitted that the results obtained by substituting chemicals for the Oak bark in tanning leather are anything but satisfactory.

Charcoal-making has proved no more enduring than bark-stripping and is now rarely engaged in. Yet not a century ago the hut of the charcoal burner was a prominent feature of our woodlands, and the finest charcoal was considered to be that produced in some of the old forest-remains of southern and eastern England. The Kentish forests at one time supported many of the familiar charcoal burners, and very brawny and thrifty were these denizens of the woodland, with their rustic-wooden huts and piles of rifted firewood. But times are changed. Foreign imports have hushed for ever the ring of the axe and the merry laugh of the quaintly-clad charcoal burner.

Not so very long ago the cultivation of Osiers for basket-making formed an important occupation in many parts of England and Ireland; but here again preferential carriage rates, combined with greatly increased labour expenses, over which we have little or no control, have caused this highly-remunerative industry of our forefathers to become almost a thing of the past in many parts of the country. The result is that the Osier beds of the Thames and Ouse valleys have almost ceased to exist. French and other Continental Willows have all but ousted the British trade from the market, and, strange as it may seem, it is nevertheless a fact that two brothers engaged in Willow culture, one in the Channel Islands and the other only a short distance from the metropolis, are, by the action of the railway companies, placed on almost the same footing as regards delivery of their produce to the London market. I know of many instances where Osier beds, once well-kept and highly-remunerative, are at the present time mere jungles of almost useless underwood.

Faggot-making, too, is no longer a paying industry in this country, for the little bundles of cleft wood and "fire-lighters" of foreign importation have, as already stated, all but replaced our "pimps." The reason for the fast-dying-out of this industry is not far to seek when it is explained that, in order to compete with latter-day substitutes, the fire-lighting faggot has to be delivered in the London market at the



FIG. 83.—ODONTIODA GOODSONII: FLOWER RUBY-RED WITH WHITE MARKINGS. (See p. 194.)

or four dozen troughs will be necessary. When the produce has been cleared from the first batch of troughs, place the latter over the rows of roots in continuation of the third and fourth lot of troughs. As the season advances from winter to spring, only sufficient covering of leaves to exclude light and air will be necessary. Where very early supplies of Chicory are required, roots may be taken up and placed in a warm house in deep boxes, with the crowns about half an inch above the surface of the soil, in which they are placed perpendicularly. Other boxes of similar dimensions are placed over them to exclude the air and light. After the first cutting is made, the same roots, if allowed to remain in the boxes, will produce a second, though less abundant, crop of blanched leaves. The finest examples of Chicory are obtained by forcing undisturbed roots. Moreover, a saving of labour is also effected. I have forced Seakale in the same manner with most satisfactory results. The troughs, if stored in a dry place when not in use, will last sound for several years. H. W. Ward.

appears, but on firm ground the plants grow very sturdy, and can, therefore, better withstand severe weather. High moulding of the soil about the plants is also to be recommended. I find the first week, or thereabouts, in April a suitable time for sowing early Broccoli, the third week best for the main crop, while the first week in May is suitable for very late kinds. A. J. Long, Wyfold Court Gardens, near Reading.

FORESTRY.

DECLINING WOODLAND INDUSTRIES.

WHETHER owing to preferential carriage rates, foreign importation, or cheaper Continental labour, many time-honoured woodland industries have either become crippled or almost extinguished in this country. As instances, I may quote the stripping and harvesting of Oak bark, the cultivation of Osiers for basket-making, the manufacture of charcoal, faggot-making, lath-rending, and the once highly-remunerative growth of coppice wood for Hop poles. Even

ruinously low figure of from 2s. 3d. to 2s. 6d. per 100. But this is not all, for, with the decline of the small faggot, the larger or oven faggot, from which the others were made, has sadly decreased in value, and faggots which, even in our own days, brought from 18s. to fully 20s. per 100, are now almost a drug on the market.

With the decline of Hop-growing, a blow has been given to the cultivation of Hop-poles which, up to late years, were greatly in demand at almost extravagant prices. Now many of the coppice woods which produced these poles have with the Hop-gardens been grubbed out.

Plant-stakes and labels, which once were made from our home-grown wood, are now sent in neat bundles from abroad, and at such low

with a bold front the changes which time has brought about in the way of preferential carriage rates, keen foreign competition, or cheaper Continental labour. *A. D. Webster.*

TREES AND SHRUBS.

CUPRESSUS MACROCARPA.

I RECEIVE so many inquiries from all parts of Britain from enthusiasts respecting this tree, that a few remarks in respect to its adaptability as a hedge-forming plant may be of interest to readers of the *Gardeners' Chronicle*. I am sure, also, that it would be very helpful if others in different parts of England would give their experience of this tree as a subject for forming a

macrocarpa would probably suffer from drought if planted in light soil.

There is a variety named Lambertiana very like macrocarpa, but somewhat darker in colour and not nearly so close-growing. It is classed as synonymous with *C. macrocarpa*, but I think there is considerable difference between them. *A. J. Elgar, Killarney House Gardens, Co. Kerry.*

GRISELINIA LITTORALIS.

To many gardeners this hardy evergreen shrub may be unknown. Yet it is very handsome. Propagation with cuttings of mature wood can be carried out in the month of August or, with better results, in December. *G. macrophylla* is a fine species, with larger and more shining leaves. As this species cannot be rooted from cuttings, it should be grafted on *G. littoralis*. *F. M.*

KNIPHOFIA MULTIFLORA.

THIS species has several points of interest; it blooms very late in the season, and it is one of the few species of *Kniphofia* in which the individual flowers are erect. It was discovered by Mr. J. M. W. March, growing on the mountains of Natal, at an elevation of 5,600 to 6,000 feet above the sea-level. A plant flowered in the Royal Gardens, Kew, in the Cape House, in November, 1900, and this is the same month as the plants shown in fig. 84 flowered in Mr. T. Smith's nursery at Daisy Hill, Newry, in the open. *Kniphofia multiflora* is still rare in cultivation. At the time the plant flowered at Kew we also received a specimen from Mr. W. E. Gumbleton, which had flowered in his garden at Belgrove, Co. Cork. The plant is figured in the *Botanical Magazine*, tab. 7832.

NOTICES OF BOOKS.

* THE AMERICAN APPLE ORCHARD.

THIS highly-instructive handbook is intended primarily for the American cultivator of Apples for home and export purposes. The Apple is the most widely-known and prized tree fruit of the temperate zone. The extreme northern and southern agricultural regions are practically outside the Apple-growing sections; and even within the Apple-growing country there are great differences in distribution. The leading States, as shown by the number of Apple trees reported in 1900, were as follow:—Missouri, 20,040,399; New York, 15,054,832; Illinois, 13,430,006; Ohio, 12,952,625; Kansas, 11,848,070; Pennsylvania, 11,774,211; Michigan, 10,927,899; Kentucky, 8,757,238; Indiana, 8,624,593; Virginia, 8,190,025. Some of these States rank above others because of their size. There are several well-recognised Apple-growing sections—the Lake Ontario, the Mississippi Valley, the Allegheny, the Nova Scotia, and the Pacific coast sections.

The author insists on porosity in the soil so as to enable the roots to extend downwards to a considerable depth, and, unless this condition be natural, or it can be brought about by the cultivator, the trees suffer from the exigencies of the weather, or are liable to be uprooted by the wind. Moreover, a *hard pan* at a short depth below the surface prevents the escape of moisture, and Apple trees are impatient of a water-logged state of the land, becoming unhealthy and dying out early. As a preventive measure, nothing is better than deep drainage. Hence a gravelly subsoil is better suited to the Apple than a clayey, impervious soil, if rich plant food be

* *The American Apple Orchard*, by F. A. Waugh. Published by Orange Judd Company, New York. Crown 8vo. A sketch of the Practice of Apple Growing in North America at the beginning of the 20th Century. Illustrated. Kegan Paul, Trench, Trubner & Co., Ltd., London. 6s. net.



FIG. 84.—KNIPHOFIA MULTIFLORA AS IT FLOWERED IN NOVEMBER LAST IN MR. SMITH'S NURSERY AT NEWRY.

rates as to defy competition in this country. Lath-reading, too, which in Bedfordshire, Buckinghamshire, Hertfordshire, and many other English counties was, a few years ago, a thriving and paying home-work, is now almost unknown, owing to the comparatively small cost at which the foreign material is placed on our market. This, too, has decreased the sale and consumption of Scotch Fir timber, from which the best class of builders' laths were made. These, however, are only a few of the many industries of British woodlands which have been crippled or quite lost sight of from one or several causes over which we have little or no control; but it behoves us to meet

hedge. My own experience goes to show that there is no other shrub to compare with it, for at all seasons it is of a delightfully refreshing green colour, very close-growing and neat. It has, I believe, an unfortunate habit of dying off after a certain number of years (perhaps someone can state the cause), but if a plant dies the gap can be easily filled up by planting a small tree and at the same time tying down some branches of the adjoining trees. The magnificent hedges in these gardens have been planted about 26 years, and in that time only two or three plants have died. I have not noticed any ill effects from the extraordinary wind storms which are often experienced here. *Cupressus*

provided. In these matters the author is in agreement with orchardists in our own country.

On the eastern slope of the Allegheny Mountains, a soil known as Peter's black loam is well adapted for Apple culture. In Western New York, the Miami strong loam is another suitable soil. It is found in great abundance in Wayne county, N.Y., one of the best Apple-growing counties. The Miami silt loam is the chief basis of the Apple-growing district in Clinton county; whilst, in the famous Clay county, the Marion silt loam is the principal soil developed; and Norfolk loam and Norfolk silt loam on the Delaware peninsula form the chief soils of the Apple-growing land. In this district Apple culture is coming to be a big and profitable industry. The same kind of soil is good for growing Potatoes.

Windbreaks are much needed in the United States for protection from cold winds, and in summer for the protection of the maturing fruits. But, although it is doubtful if windbreaks mitigate low temperatures directly, they offer resistance to the wind, and, in that way, reduce the evaporation from the twigs, which is the chief cause of injury in winter. The windbreak does good by holding the snow on the ground, also fallen leaves and litter of all sorts, and it thus prevents severe freezing of the soil. In some parts the windbreaks are of greater usefulness in the summer than in the winter, as wind waving and unsymmetrical growth of the crown are averted by their use.

Some persons object to them on the score of their taking up space which might otherwise be utilised for fruit trees and such windbreaks are apt to harbour insects, predatory birds, and weeds. The author considers that the only situations where they are useful are bare sides of hills, where the land is not protected from the quarter whence the wind mostly comes. A windbreak may consist of coniferous trees or deciduous trees which are more rapid in growth, and easier to establish. Advice is given on many subjects, including the starting of an orchard, the raising of a stock of trees, interplanting, and evils of wide planting. Annual plants afford the soil protection against the summer heat. For these crops, Broad Beans, Vetches, Cow Peas, and Clover are in common use, and they are sometimes ploughed in to serve as green manure.

* ARTIFICIAL MANURES.

THERE are still some gardeners who are apt to look askance at artificial or mineral manures. When enquiry is made of them why they avoid the use of such fertilisers, it is usually found that they have given them a trial and that the trial has proved the reverse of satisfactory. If the enquiry is pushed still further, it is discovered that the trial has been made without the adequate knowledge of the properties of the substances used or of the dangers attaching to the use of improper quantities.

Since, however, there is no room for doubt as to the value of "artificials" when properly employed, either alone or in conjunction with natural manures, it is to be hoped that this little book may fall into the hands of cultivators who desire guidance on the subject of the use of artificials.

It is written in an extremely simple and direct manner, under such headings as Artificial Manures and How to Use Them—The Kinds of Artificial Manures: What They Do and When to Apply Them—Artificial Manures for Garden Vegetables, for Fruit Trees and Bushes, and for Flowers. With this useful guide, the gardener, if he will follow carefully the advice given, will discover, as, of course, most of his colleagues have already discovered, that artificial manures are indispensable to successful cultivation.

* *Artificial Manures and How to Use Them in the Garden, Orchard and Allotment*, by Professor John Percival, Director of the Department of Agriculture and Horticulture, University College, Reading. 1s. Published by the Author, Northcourt Avenue, Reading.

NURSERY NOTES.

JAMES CARTER & CO., FOREST HILL.

MANY who visit this nursery during the winter months might imagine that it was wholly devoted to the cultivation of *Primula sinensis*. At this time of the year the majority of the glass-houses are occupied by this greenhouse plant, and, for the time being, at any rate, *Primulas* are the chief concern of the establishment. This year the stock embraces some 16-17,000 plants grown almost wholly for seed production.

We cannot estimate the number of varieties this large collection represents, but it embraces almost all the best kinds in commerce, including many fine productions raised at Forest Hill. The chief thing that impresses us when inspecting such a varied collection is the great and rapid improvement that has taken place in this

tion of "bouquet." The bouquet *Primula* originated in these nurseries about 10 years ago. It is probably the result of extraordinary vigour. The main axis is short, but the leaf and flower-stalks are stout and the foliage dense and robust. Then there are those known as the "Giant" type, with flowers of relatively enormous size. They are distinct in appearance from any of the others, but are nearest to those known as the ordinary single *Primulas*, amongst which many of the gems of the race are found. Amidst so much variety in single plants it is not surprising that there are some with double flowers, and these, especially in the stellata breed, are extremely pleasing. In all the semi-double flowers we examined, complete anthers were present and pollen was plentiful. We were informed that it was not difficult to obtain seeds from any of these double kinds, and it is perhaps remarkable that the varieties breed so true to type, although



FIG. 85.—PRIMULA "PRINCESS MAY" FROM MESSRS. CARTER'S COLLECTION.

Primula. It is, indeed, a triumph for the florist. As a wildling, *Primula sinensis* is a plant of no remarkable beauty, but it is little short of marvellous what our cultivators have done with it since the time of its introduction, early in the nineteenth century. Many florists' flowers have been in cultivation for so long that their origin is lost in obscurity, but with the greenhouse *Primula* we can trace its progress step by step, and almost foresee in what direction further advance is trending. There seems to be no finality in the plant's capability for change, and even in the leaves great diversity exists. But it is in the inflorescence that the most marked differences occur; in one instance we meet with a lax flower-spike, bearing its blossoms in tiers, graceful and plume-like, whilst another type buries its flower-spike so low amongst the foliage as to warrant the appella-

one house may contain many kinds. No inter-crossing appears to obtain in these plants under cultivation, except by the set purpose of the hybridiser. Each flower is artificially pollinated by means of a little brush, and this work is one of great importance in a nursery where plants are especially cultivated for seed production. It is well known that pollen is more readily disseminated when the weather is fine and dry, and, although early plants are the finest, those that open their flowers later always give the largest amount of seed. The first batch is sown about the end of June, but others raised a month later, although they make smaller plants, give much the best results in seed production. Flowers that are opening now find brighter and drier conditions than those that are in bloom, say, about Christmas time.

It is curious in this matter of seed production

how the varieties differ. The beautiful Princess May variety (see fig. 85), with its enormous blooms of exquisite pink shade, is an example of a poor seeder. Very large batches of this plant are needed to ensure even a moderate supply of seeds, and so we find large quantities of this choice Primula at Forest Hill. From half the number of plants of such a variety as Holborn Queen, a choice white kind, a larger quantity of seed can be gathered. The capsules remain on the plants until June, when they are gathered, placed in boxes, and thoroughly dried in a warm greenhouse. It is afterwards a simple matter to break the seed vessels, and, after separating the larger portions of the husk by means of a fine sieve, to secure the well-ripened seeds. Seed-formation has been termed the highest effort of a plant, by which is meant that all the energies of the organism are directed in this end. It certainly has a great effect upon the colour of the flowers, for, as the capsules begin to swell, the tones become much paler, and it is only in the very youngest blooms that the true colour is seen. The plant generally becomes affected by the strain, and loses a great deal of its vigour in consequence. But this notwithstanding, the Forest Hill plants exhibit first-class cultivation, and although they were all more or less in seed-bearing, they made a fine display, and showed the skill of those responsible for their culture. It is interesting, in view of recent knowledge in plant-breeding, to know that by simply selecting and inbreeding, a variety can be "fixed" in a comparatively short time. In some cases the progeny comes true from seed after four or fewer generations, but in others it takes longer. We saw this process of selection in one case, where three plants of a certain batch that showed advance were placed by themselves. They were to be, or had been, pollinated, and it is expected that finer offspring will be obtained from them.

We may enumerate a few of the best varieties. Holborn Crested is a flower of a beautiful pink colour, having fimbriated petals and deeply crested foliage. It belongs to the "giant" race, the beautiful blossoms, notwithstanding the fimbriation, being of perfect form. King Edward is a charming white variety, with very great substance of petal, and producing its flowers in large trusses that are set off by handsome foliage. The variety named after the Princess of Wales has its flowers flaked with carmine. They are small, but of extremely delicate appearance. Elaine is still one of the best of the white kinds; it is very robust in habit, and bears large, stout trusses of bloom. There are two types, one bearing leaves of the Fern character, whilst the other has the ordinary Palm-shaped foliage. Both stocks breed true from seeds.

Orange King shows its colour in the unopened flowers. The orange shade becomes less marked as the blossoms expand, but even then the tone is pleasing. The flowers are small, but efforts are being made to improve it in this direction, and if this is successful, the variety will demand much attention. Vivid is a double-flowered variety of a magenta tone, very free in blooming, and with tall inflorescences.

There is a set named after the colours of the separate varieties, including Holborn Scarlet, Holborn Rose, Holborn Crimson, Holborn Pink, Holborn White, and Holborn Magenta. They are all useful kinds and amongst the most desirable colours. One of the newest is Holborn Coral. Among the late-flowering varieties, we may instance Late White, scarcely one of the plants being in bloom so late as April 15.

The skill and care which Messrs. Carter have expended in the work of crossing and selecting are amply repaid by the excellent results which have been obtained. A collection of Primula sinesis is among the most interesting of objects, both from a botanical and a horticultural point of view, for it provides the most striking illustration imaginable of the variability of a pure species.

The Week's Work.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. Ford, Pencarrow, Cornwall.

Succulent plants.—All the species of Cacti which, during the winter have been kept dry at the root, are now showing signs of renewed activity, and this is the best time for carrying out any necessary repotting. As these plants thrive and flower best when grown in comparatively small pots, it is not necessary to repot healthy specimens every year. When it is necessary to repot a plant, shake the greater part of the old soil from the roots, examine them carefully, and cut away any diseased portions. As Cacti are not greatly affected by such pruning, it is advisable to cut well into the healthy part. Good fibrous loam and sand, with plenty of broken brick rubble or limestone, is the most satisfactory compost for most succulent plants. Epiphyllums and Rhipsalis, however, require a little peat or leaf-soil added. Crock the pots well, and pot firmly. Tall plants, and those with weak stems, will require the support of stakes, which should be placed in position as the potting proceeds. Any plants which have decayed at their base should have the live portions removed and be treated as cuttings. If the diseased part is cut away and the remainder exposed to the air for a couple of days before being inserted in dry, sandy soil, the plant will readily form roots. For the next four months these plants should be watered freely, and syringed twice, or even more frequently, on bright sunny days, to induce them to complete their growth by the beginning of August, thus allowing sufficient time for them to become thoroughly matured before winter. If a light, well-ventilated, and heated house can be devoted to them, their culture will be comparatively simple. A small collection grown with mixed plants should be given the sunniest part of the house—greenhouse or tropical, according to the needs of the different kinds. Stout leather gloves should be worn when handling the prickly species, especially in the case of Opuntias, which are not so inoffensive as they appear to be.

Camellias.—These plants now require a slightly higher temperature and a moist atmosphere. The plants should be syringed twice daily to cleanse the leaves. When they have finished growing, remove the plants in pots to the open air. Also freely ventilate the house for those planted in beds and borders.

Violets in frames.—As the sun gains power the plants should be shaded during the hottest part of the day to preserve the colour of the flowers. This may be done by lightly white-washing the glass of the lights, which, during bright sunshine, should be drawn up and tilted to their utmost capacity. The frames should be ventilated whenever conditions permit. Keep the surface soil well stirred, and remove all runners that appear on the plants. Apply occasional waterings with liquid cow manure, and immediately afterwards a light watering with clear water.

Stove plants.—To compensate for the increased evaporation due to ventilation, the plants should now be syringed more heavily, and the damping down should be done more frequently.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir Edmund G. Loder, Bart., Leonardslee, Sussex.

Carnations.—Make preparation for planting out Carnations that have been wintered in frames or under the protection of a south wall. The best soil for Carnations is a good loam resting on a well-drained subsoil. It is advisable to give them a fresh site every season, or, if this is not practicable, to apply a considerable quantity of fresh loam, and fork this into the staple. It is assumed that the ground was well trenched last autumn, and some decayed cow manure placed in the trenches; but if this preparation was not made, it had better be carried out forthwith. Carnations should be planted in the positions where they are to flower at about the end of March. They should be set at distances of about 1 foot each way. If the plants are very pot-bound, it may be necessary to loosen the roots a little by the use of a fine-pointed stick. Every plant should have its roots in a moist con-

dition before it is removed from the pot. In planting, let each be inserted about half an inch deeper than it was in the pot. Press the soil moderately firm, and scatter a little soot over the soil as a deterrent to slugs. In order to trap wireworms, slice some Carrots, and place these slices at different positions in the soil, examining them from time to time in order to destroy the pests. If sparrows should prove troublesome, either stretch some black cotton round about the growths of the plants, or protect the whole of them by means of netting. It is necessary for us to net all our Carnations at this season; but later, when there is more vegetation, the birds are less troublesome.

Giant Ten-week Stocks and Chinese Asters.—Sow seeds of the best varieties of Stocks and Asters thinly in shallow boxes filled with moderately light soil. Prick out the seedlings as soon as they are large enough to handle into other boxes. Such Asters as Ray, Crushed Strawberry, Azure Blue, Ostrich Plume, and varieties of the Comet type are invaluable.

Nemesia.—Sowings should now be made thinly in boxes. The seedlings whilst still small are very liable to damp off, and they must be shaded from strong sunshine.

Salvia "Bluebird."—Sow seeds of this Salvia, and also of S. "Fireball," these being very valuable for bedding purposes.

Lawns and garden paths.—Grass used for tennis lawns, croquet, and bowling greens, or other portions that are subjected to a great deal of traffic, should now be given a liberal dressing of the preparation which was recommended in the *Gardeners' Chronicle* for January 30, or a sprinkling may be made of one of the lawn fertilisers obtainable from the trade. In either case, the dressing should be well brushed in, and, after rains, the Grass should be frequently rolled. Sow fresh seeds wherever the Grass appears to be failing, taking care to sow the proper Grasses for the particular purpose the lawn is intended to serve. Garden paths should be given attention as soon as possible, regraveling them or forking them over, rolling them, and attending to the drainage. A garden path should be both useful and of smart appearance; nothing detracts more from the appearance of the garden than untidy paths.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Deciduous Calanthes.—Take these plants out of their pots, cover the old drainage material with a layer of rough Sphagnum-moss, and after shaking the soil away from the pseudo-bulbs, lay them in an upright position on the moss. In a week or two hence new roots will be seen pushing out from the base of the young growths, when the plants should be repotted. In the meantime, select a sufficient quantity of good turfy loam (free from wireworm), and lay it in a convenient place in order that it may become moderately warm before using. Loam is the principal soil needed for Calanthes, and some cow-dung should be mixed with it. The dung should be collected, spread on a mat or boards, and exposed to the sun until dry. It should afterwards be sifted through sieves of various sizes, finally using one with a very fine mesh. Keep the prepared manure dry until required. Previous to laying the pseudo-bulbs on the moss, cut off the dead roots to about an inch in length. The stumps thus left will be found useful to keep the bulbs steady in the fresh soil till the plants become established. Examine the base of each bulb for scale insects, and thoroughly cleanse them of these pests by using a stiff brush and suds made of soft soap. When the plants are ready to be repotted, select clean pots of sizes varying according to the requirements of the cultivator, as the plants can be grown singly in small pots, or several bulbs may be placed in larger ones. Half fill the pots with clean crocks, and cover these with Sphagnum-moss, or a thin turf of loam, as advised for Thunias last week. The soil should consist of one-half loam, one-fourth cow-dung or well-decayed leaf-soil, and one-fourth finely-chopped Sphagnum-moss, adding some small crocks and coarse silver sand. In potting the plants, shake the soil down till it is moderately firm, filling to within 1½ inches of the rim. Place the pseudo-bulbs on the surface, add more soil, press this firmly on to the old roots,

burying the base of the bulb about half an inch, and make the surface level. This will leave space for watering, and will also allow for a top-dressing of loam when the plants are about half-way through the growing season. These plants must be given the best and lightest positions if placed in the East Indian house; but *Calanthes* may be grown to perfection in the plant stove, Pine pit, or Cucumber houses. Do not water the plants at the roots for two or three weeks after the potting, but damp between the pots twice daily. The soil may afterwards receive an occasional light sprinkling from a fine-rosed can, but much discretion must be exercised, for a wet soil at that stage will cause the tips of the roots and leaves to turn black and decay. When the roots have a firm hold on the sides of the pot, and the plants are in vigorous health, abundance of water should be alternated with weak liquid cow-manure. Strong, direct sunshine should only be permitted to reach the plants when the new pseudo-bulbs begin to form. Deciduous *Calanthes* may be rapidly increased by removing the old back pseudo-bulbs and inserting them thickly in flower-pots filled with Sphagnum-moss. The best position for them is on a dry shelf near the glass, and the moss should be sprinkled whenever it appears dry. They will soon commence to grow, and may afterwards be repotted.

Calanthe Regneri.—Late-flowering varieties of this species will now be in bloom. These will also require repotting after the spikes are cut and growth has recommenced. This section of *Calanthes* is far more serviceable to those who live in the neighbourhood of large towns and smoky districts, as the flowers escape the fogs which are so prevalent at the time when the earlier varieties bloom.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Carrots.—If the varieties sown early in the New Year were quick-maturing sorts, and the plants were partially thinned while still small, they should now be sufficiently developed for use. The rows should be carefully examined as the vegetables are required, thinning the roots at intervals. Successional sowings will need to be partially thinned, as previously advised, as soon as the second leaf is made. Carrots under glass should be syringed twice on bright days, and the lights must be closed early in the afternoon. Occasionally, before watering, apply a dressing of soot and specially-prepared vegetable manures. Frequently stir the soil between the rows. Sowings may now be made out-of-doors, but before doing this give the soil a thorough surface dressing of wood ashes and soot. Should extra fine roots be required, it will be necessary in most cases to make deep holes, by means of an iron bar. Fill the holes firmly with very fine specially-prepared soil, preferably old potting soil which has done service for pot plants, taking care to add plenty of soot and wood ashes. New Intermediate belonging to the St. Valery type is probably one of the finest all-round Intermediate Carrots, and as a short-rooted variety Model is not only an excellent sort, but it is well adapted for shallow and hot soils.

Beetroot.—Beetroots raised early in frames should be thinned out as soon as they are large enough. It is a capital plan to apply a top-dressing of either finely-sifted leaf-mould or manure from a spent Mushroom-bed. Beetroot should never be overcrowded, and least of all when grown under glass. Another sowing of a Turnip-rooted variety may be made in an unheated frame or on a warm border in the garden. Old roots which have been clamped together for the winter, or stored in the root-shed, should now be taken out. Any growths they have made should be rubbed off, and the roots stored thinly in sand or ashes under a north wall, where they will keep sound for many weeks.

Seakale Beet.—Seeds of this vegetable, sometimes known as Spinach Beet, may be either sown under glass and pricked out on well-prepared ground exposed to sunshine, or sown in drills, 18 inches apart, in the allotted position. The end of March is a good time for sowing the seed thinly in boxes, in gentle heat. Plant out the seedlings after they have made the second leaf and the plants are well hardened.

It is also advisable in large establishments to devote a cold frame to forwarding a few plants, allowing the same distance as advised for sowing outside, and planting them in about 18 inches of rich soil, which should be made very firm.

Cabbages.—These vegetables in many instances have been seriously injured, and no time must be lost in making them good as far as possible. Plants which were put out as reserves and slightly protected will now prove invaluable. Frequent hoeings will do much to stimulate new growth. Make a slight application of manure.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Fig trees in pots.—The fruits on the earliest trees which were started into growth in December will soon be showing signs of ripening. Make frequent applications of manure water, and, to further assist the trees, apply a liberal top-dressing of well-decomposed cow and horse manure. If it is necessary to hurry the ripening, it will now be safe to have an atmospheric temperature of 65° at night; but the temperature should be allowed to fall several degrees if the night is unusually cold. Spray the trees with rainwater early on fine mornings, and again at closing time in the afternoon. Frequently damp the floor spaces in the house. Stop and regulate the growths so that all the shoots and leaves will be exposed to the light and air. As soon as the fruits have actually commenced to ripen, it will be necessary to omit the use of manure water. At that stage the atmosphere should be kept rather drier than hitherto, discontinuing the syringing, but being careful to keep the roots thoroughly well supplied with water.

Fig trees in borders.—Established trees which are growing in shallow and restricted borders need very frequent root waterings, and if these are not afforded with unremitting regularity, there will sure to be some fruits fall from the trees. Trees that are bearing a full crop need liquid manure given them at every alternate watering, and it will be useful to apply a liberal mulching of decomposed horse manure. Give timely attention to stopping the shoots, and thus prevent overcrowding. Cut out any weak, unfruitful wood which can be spared. Red spider must be prevented or eradicated. The best remedy is to sponge the leaves with a weak solution of soft soap and sulphur. Ventilate the house freely during bright, genial weather, opening those ventilators at the top of the house. Close them early in the afternoon, after spraying the trees.

The season.—The present season has been one of the worst I have known for forcing fruits. The cold weather, with little sunshine, has had a retarding influence, and the crops generally are a few days later than usual. But nothing will be gained by the use of an excessive amount of fire heat, for growth made under such conditions is of a most unsatisfactory nature. It will be useful to cover the roof glass with garden mats or tiffany during very cold nights, and retain heat in this way. Such crops as Melons, Cucumbers, Pineapples, and Tomatos, being usually cultivated in low houses or pits, may be easily protected in this manner. Discretion in ventilating the houses during the early part of the day, coupled with an endeavour to obtain as much value as possible from sunshine by closing them again early in the afternoon, are the chief means the cultivator has for forwarding his crops.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Propagation of fruit bushes.—Cuttings inserted in the ground earlier in the season have probably been loosened by the action of frost. It will be necessary to examine them and make the soil quite firm again about each one.

Newly-planted trees.—If stakes were not placed to trees at the time of planting, the latter will be sure to have become somewhat loosened. Therefore, examine every specimen, and fix stakes at once in cases where they are required. Any newly-planted trees that were not pruned immediately after planting must be given attention at once. Do not prune them severely, as they are not likely to make much growth during the first season. Some cultivators would not prune them at all this year:

but when this is not done, it is usually necessary to prune them severely in the second season in order to obtain the required shape.

Apricots.—Do not use nets or any other covering for the protection of the flowers against frost except when circumstances make it imperative. By overshading, the object in view may easily be defeated, for its effect upon the flowers is to increase their tenderness and render them more susceptible to harm from cold winds or frosts.

Figs.—Although the season is so far advanced, it has not been safe in all localities to untie the bundles of Fig growths that were tied in the autumn as a means of protection. In the early part of March as much as 25° of frost have been registered. But the protective material must not be allowed to remain any longer. Its use at any season has a disadvantage, for it renders the shoots more liable to injury from late frosts. If the growth upon established trees are kept well thinned out by frequent pinching, it is possible to get the wood so thoroughly hardened by autumn that it will withstand the frosts of an average winter. I would only protect Fig trees as a last resource, or in localities where experience has proved that such protection is absolutely necessary. Trees that have been bundled and matted must still be given some protection on frosty nights.

Preparations for grafting.—Make everything necessary for this operation, for, in the event of warmer weather, the sap will rise readily in the stocks. Most growers have their own special mixture of grafting clay, but in cases where it is inconvenient to prepare such clay at home, the French cold-grafting wax sold as "Mastic l'Homme Lefort" may be recommended as a substitute.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Boating.—This is one of the most popular pastimes in the London parks during the spring and summer months. The privilege of letting the boats was formerly granted to contractors, but the L.C.C. now has its own boats, and lets them direct to the public. They are, therefore, obtainable much cheaper than formerly, and they are better supervised. The hire of a sculling or pair-oared boat is 6d. per hour, and the same charge is made for a canoe. Each boat is only permitted to carry a certain number of persons, varying from one to four. No boat can be retained for a longer period than one hour. Both at Battersea and Victoria Parks there are motor launches, each capable of carrying from 40 to 50 persons at a time, who are conducted around the ornamental water at 1d. per head. The demand for boats is greatest from April to October, but boats can be hired at any time of the year, unless there is ice on the water. In a busy season, the motor launch at Victoria Park will carry as many as 56,000 persons, and, during the same period, the small boats are hired by 40,000 persons, the charge for these latter being 6d. per hour. Very often damage is done to the boats, not necessarily wilfully, but mainly because of inexperience in handling them, and a boatbuilder is constantly employed carrying out necessary repairs.

The boats.—The best boats are built of Mahogany, but some are made of white or Spruce wood. A double or pair-oared skiff, measuring 21 feet by 3 feet, is a very useful craft for this kind of work, and it will carry four persons. Outrigger skiffs, to carry two persons, are 18 feet long and 3 feet wide; whilst the gigs, that carry only one person, are of the same length, but a few inches narrower, being only 2 feet 6 inches in width. Canoes are made of several sizes; that known as the "Rob Roy" is generally made from 15 feet to 17 feet long.

Maintenance of the boats.—The boats, when new, are very highly varnished. They are coated with what is known as boat varnish—a different material to ordinary wood varnish. Even if the boats do not require much in the way of repair at the end of the season, they should be thoroughly cleansed and revarnished. If they are in a very old condition, it is better to paint, grain, and varnish them. The sculls or oars need the leathers on the handles greasing occasionally; and as the blades show wear, they should be protected with slips of sheet tin, zinc, or copper.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MARCH 30—
Cornwall Daffodil and Spring Fl. Soc. Exh. at Market Hall, Truro (2 days). Bournemouth Spring Fl. Sh. (2 days).

APRIL 2-13—
International Horticultural Exhibition at Berlio.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—44.5°.

ACTUAL TEMPERATURES.—
LONDON.—Wednesday, March 24 (6 P.M.): Max. 51°; Min. 43°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, March 25 (10 A.M.): Bar. 29.1; Temp. 52°; Weather—Overcast.

PROVINCES.—Wednesday, March 24 (6 P.M.): Max. 50° Bury St. Edmunds, S.E.; Min. 48° Durham.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—
Hardy Border Plants, Bulbs, and Tubers, at 12; Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Norris.

WEDNESDAY—
Herbaceous Plants, Lilies and other Bulbs, at 12; Roses, at 1.30; Azaleas, Rhododendrons, Palms, and Plants, at 5; at 67 & 68, Cheapside, E.C., by Protheroe & Norris.

FRIDAY—
The collection of established Orchids formed by the late Lord Burton, 500 Cattleya labiata, and an importation of Dendrobium Jamesianum; at 67 & 68, Cheapside, E.C., by Protheroe & Norris, at 12.45.

The Temperature of Respiring Plants.

The fact that living organisms, both plant and animal, respire is well known. It is also well known that the process of respiration, which may be described roughly as one of oxidation, results not only in the release of energy whereby the organism does the work of living, but also in the production of energy in the form of heat.

The usual method of demonstrating this production of heat consists of inserting a thermometer into the midst of each of two heaps of soaked Peas or similar objects, the one heap consisting of dead, the other of living material. When careful precautions are taken against loss of heat by radiation, it is possible to observe that the thermometer in the heap of living, respiring seeds records one or two degrees of temperature more than that recorded in the control heap of dead, and, therefore, non-respiring seeds. Such a small difference in temperature is not impressive, and, indeed, is misleading. Professor Peirce, of Stanford University, California, has introduced a new method by the aid of which it is possible to demonstrate that the amount of heat liberated by germinating seeds, opening flower-buds, or other living objects, is much more considerable than is indicated by the results obtained by the old methods of experiment.

The essential of the new method consists in the use of the well-known Dewar flask

as the vessel in which the respiring object, seed, flower, or other is placed. The Dewar flask, known popularly as the thermo flask, was invented by the distinguished chemist after whom it is named for the purpose of experimentation with liquid air. It consists of two glass flasks, silvered or unsilvered, fused together at the neck, but otherwise separated from one another by a space from which the air is exhausted. Such an apparatus makes an admirable non-conductor, and it is, of course, on this property of non-conduction that the general use of the thermo flask depends. Hot liquids placed in it retain their heat for many hours; conversely, and for the same reason, cold liquids remain cold.

Using such flasks, Professor Peirce found that, when filled with germinating Peas, a thermometer plunged through a plug of cotton wool in the neck of the flask, and so brought into contact with the Peas, registered at the beginning of the experiment 17° C. On the following day the temperature registered was 19° C. in the morning and 23° C. in the evening. During subsequent days it rose steadily and reached a maximum of 56° C. (= 132° F.), or many degrees above fever-heat, on the eighth day. In the control-experiment, which consisted in placing dead Peas in a similar flask under like conditions, the temperature showed no rise at all during the eight days.

Another series of experiments made independently by Professor Molisch confirm these remarkable results. Professor Molisch used large quantities—from 6 to 10 lbs.—of living leaves, and, taking precautions to prevent loss of heat by radiation, found that the temperature within the mass of leaves rose very rapidly and extraordinarily. In the course of 12 to 15 hours the temperature of a mass of *Pyrus malus* leaves rose to 59° C. (138° F.); Hornbeam to 51.5° C., Lime to 50.8° C., and so on. The leaves of other plants, e.g., evergreens such as Ivy and Conifers like *Abies excelsa* gave less striking results. As in Professor Peirce's experiments, so here there is no question of the heat having been produced by fermentation set up by micro-organisms. Indeed, Professor Molisch found that if the experiment was stopped before the highest temperatures were reached, the leaves were alive and fresh. When the experiment was continued after the highest temperatures had been attained, the thermometers recorded at first a gradual fall of temperature and a subsequent and second rise due to the respiratory activity of fungi and other micro-organisms.

He interprets the fall of temperature which takes place after about 15 hours as being due to the death of the leaves, and concludes that the leaves of such plants as Apple and Hornbeam actually kill themselves by the high temperature set up by their respiratory activity. In the overcrowded and insulated situations in which the leaves find themselves they die of fever.

Professor Molisch himself points out that these high temperatures set up by masses of cut leaves are not altogether normal, and are, in fact, to be ascribed in part to "wound-fever." As has been shown by various observers, wounded plants, for example, cut Potato tubers, develop, as a response to the stimulus of wounding, a "wound-fever." Shortly after the operation a cut Potato, re-

spiring more actively, develops more heat than it would have developed had it remained intact. Just as in animals and man himself wounding may be followed by fever, so it may be in plants.

Nevertheless, these high temperatures set up in masses of leaves are by no means due altogether to "wound-fever," for cut-off branches with intact leaves show a similar though smaller rise of temperature. It will be recognised that no such temperatures as those here recorded would be developed in a plant under normal conditions, for the heat would be dissipated both by radiation and conduction. Nevertheless, these facts are of great practical and theoretical interest: of practical interest in showing that large masses of grain, tubers, roots, &c., closely packed, may readily suffer from overheating; of theoretical interest in indicating that high, local temperatures may be developed in the plant. Now, many of the normal chemical operations which the plant carries out are operations which proceed more swiftly at a higher than at a lower temperature. These experiments of Molisch and Peirce indicate that a transitory, local heating up of the plant may take place as the result of its increased respiration, and that, in consequence of the higher temperature, the rate of many vital processes may be accelerated.

ACANTHUS MONTANUS.—This tropical species of *Acanthus* is not often seen in gardens in this country, yet its decorative value entitles it to a place in the stove. The plant has a double attraction, for not only is the inflorescence stately, but the foliage is also of a highly decorative character. The bracteoles are veined with light purple, causing the flowers to appear of that colour, although the species is sometimes described as rose-coloured. The three-lobed lip of the corolla is perfectly white. In our sketch (fig. 86) by Mr. WORTHINGTON SMITH, the leaf is given in outline only, and does not show the beautiful marbling of yellow and green on the lamina. The leaves arise close together, and spread themselves quite horizontally, giving a somewhat stiff appearance, which is further accentuated by the spinescent character of the plant. The inflorescence is drawn in our sketch to a natural size from a plant exhibited by Messrs. JAMES VEITCH & SONS, at the meeting of the Royal Horticultural Society, December 22 last, when the Floral Committee conferred on the plant a First-class Certificate. The whole character of the plant, in common with other *Acanthaceae* species, is spiny.

SURREY EDUCATION COMMITTEE.—Mr. A. E. BURGESS, for several years lecturer in gardening to the Hertfordshire County Council, has been appointed inspector of school gardens under the Surrey Education Committee. The post became vacant by the resignation of Mr. JOHN WRIGHT, V.M.H., who felt himself unable to continue the duties. During the past three years Mr. HORACE J. WRIGHT has carried out the work on behalf of his father, and the Education Committee recently offered him the permanent inspectorship, but other engagements prevented him from giving his whole time to the post. Prior to his appointment in Hertfordshire, Mr. BURGESS was head gardener and assistant instructor under the Essex County Council, and also conducted classes in nature study and in horticulture for teachers. There will be this year in Surrey some 106 blocks of school gardens and 2,000 lads receiving garden instruction.

LINNEAN SOCIETY.—A meeting of Fellows will be held on Thursday, April 1, at 8 p.m., when the following paper, amongst others, will be read:—"Results of Breeding Experiments with Peas, showing Mendelian Phenomena," by Mr. A. D. DARBISHIRE.

ENGLISH VISITORS TO THE BERLIN SHOW.—The following gentlemen have accepted invitations to act as jurymen at the International horticultural exhibition at Berlin:—Messrs. STUART H. LOW, GEORGE PAUL, HARRY J. VEITCH, S. T. WRIGHT, LOUIS SANDER, and R. HOOPER PEARSON. The Council of the Royal Horticultural Society on Tuesday last deputed Sir DANIEL MORRIS, K.C.M.G., V.M.H., D.Sc., and Mr. HARRY J. VEITCH, V.M.H., to represent the Society on the invitation of the organising body to send two delegates. The members of the jury will meet on Thursday, April 1, at nine o'clock a.m., and the show will be open to the public from April 2 to April 13.

* **A BOOK ON HARDY FLOWERS.**—M. PHILIPPE DE VILMORIN has recently edited a new edition of *Les Fleurs de Pleine Terre*. It is a comprehensive and instructive volume, containing nearly 1,400 pages, and illustrated with 1,800 small woodcuts, beside several full-paged plates in colour. The French landscape gardener, M. ED. ANDRÉ, supplies several garden plans in colour. We note that at the outset some attention is paid to the raising of seeds and to the various methods of raising flowering plants for outdoor culture. Every flower named is enumerated in alphabetical order, and the author under each separate heading deals with the etymology, the habitat, synonyms, culture, &c., of the plant in question. Throughout this portion there are many cross references that will help the reader in any research he may be engaged upon. The second part of the volume contains many tabulated and selected lists for various purposes. There are comprehensive lists of plants classed according to their nature and use. The rock-garden receives attention, and there are several views in M. VILMORIN'S own rock-garden at Verrières. A glossary of botanical and horticultural terms is given, and the names of flowers in several of the European languages find a place in the closing pages of the book. In the calendar of seed-raising and planting the period of flowering of each plant is added, and in another calendar the flowers are arranged in lists month by month, according to the flowering season of each. The classification of flowers according to colour is useful, as is also the examples of planting beds and borders for obtaining a succession of bloom from June to autumn.

DEEP TILLAGE IN THE KITCHEN GARDEN.—

The discussion upon this subject which has taken place recently in these pages, and which we propose to bring to a close in the present issue, has arisen from differences in respect to methods rather than to any lack of appreciation of the advantages to be obtained by trenching. These advantages have been described again and again in these columns, and no experienced gardener would think of questioning them for one moment. Mr. BECKETT aims at efficiency and, having considerable resources at his command, he regards labour and expense of quite secondary importance. He knows perfectly well that the roots of most vegetables, the tap-rooted ones especially, are capable of growing very deeply into the soil; therefore, he knows that the sooner the bulk of soil can be brought into an equal condition

of fertility, we will say 2 or even 3 feet deep, the sooner he will have a perfect root medium for his crops. In this he is right, and most of our readers who have joined in the discussion are well aware that the results of

the deep tilling practised in the Aldenham House gardens are unexcelled. How long the process of converting the deeper soil to a fertile condition is to last in a particular garden must depend upon circumstances. If a poor



FIG. 86.—ACANTHUS MONTANUS, A STOVE FLOWERING PLANT. (See p. 200.)

* *Les fleurs de pleine terre*, by Vilmorin, Andrieux et Cie., Paris.

subsoil can be brought to the surface and made fertile by the action of the weather and by the adding of suitable materials in one year, so much the better, but if circumstances are not favourable the process must be continued for several years. In cases, for instance, where the area of ground available for cultivation is very limited, or where labour is scarce, it may be necessary to proceed slowly, but it has not been shown that in the interval it is possible to cultivate vegetables of the same quality as those Mr. BECKETT habitually exhibits.

THE "WOOD" FUND (see p. 171).—Mr. GEORGE MONRO sends us the following list of additional contributions on behalf of Mr. W. WOOD, Dartford Heath, who recently sustained great loss to his plant houses owing to a heavy fall of snow:—The total amount published on p. 171 was £56 2s. The following amounts have been given or promised since:—Sams, W., £1 1s.; Wright, F., £2 2s.; Rochford, E., £5; Gray, H. P., £1 1s.; Rochford, John, £5 5s.; Ryder, E., £1 1s.; Humphrey, W. E., 10s. 6d.; Monro, Geo., Junr., £1 1s.; Wills, E., 10s. 6d.; Kingsmill, Andrew, 10s.; Cypher, James, & Sons, £1 1s.; Veitch, James, & Son, £5 5s.; Mott, E. C., £2 2s.; Aquatias, Paul, 2s.; Howard, Henry, 2s. 6d.; Clark, G. & A., 10s. 6d.; Watkins, A., £1; Barter, J. F., £1 1s.; total £85 8s. We are glad to record the generous way in which Mr. MONRO's appeal on behalf of Mr. W. WOOD is being met, and hope that those sympathisers who have not yet sent subscriptions will do so without delay.

PUBLICATIONS RECEIVED.—*The Agricultural Journal of the Cape of Good Hope.* (February.) (Cape Town: *Cape Times*, Ltd. Price 6d.)—*Clay's Successful Gardening.* (Fourth edition.) By Professional, Amateur, and Market Growers. (London: Clay & Son, Stratford.) Price 9d. net.—*Rock, Wall, and Water Gardens.* (Colchester: R. Wallace & Co., Kilnfield Gardens).—*New Zealand Department of Agriculture.* (Dairy Division.) Bulletin No. 11: Review of the work of the 1907-8 season, by W. M. Singleton, Acting Dairy Commissioner. (Wellington: John MacKay, Government Printer).—*New Zealand Department of Agriculture.* (Dairy Division.) Bulletin No. 12: New Zealand dairy produce on the British market: with notes on dairying in Great Britain, Denmark, and Canada, by D. Cuddie, Dairy Commissioner. (Wellington: John MacKay, Government Printer).—*New Zealand Department of Agriculture.* (Veterinary Division.) Bulletin No. 13: Bovine Contagious Mammitis, by J. A. Gilrath. (Wellington: John MacKay, Government Printer).—*New Zealand Department of Agriculture's Annual Report for 1908.* (Wellington: John MacKay, Government Printer).—*The Journal of the Board of Agriculture.* (March). Containing information on Narcissus cultivation, planting of fruit trees, varieties of Pears, notes on insect, fungus, and other pests, etc. (London: Board of Agriculture and Fisheries.) Price 4d.—*Trees and Shrubs of the British Isles, Native and Acclimatised.* By C. S. Cooper, and W. Percival Westell, F.L.S. Part II. (London: J. M. Dent & Co., 29 & 30, Bedford Street, W.C.) Price 1s. net.—*Board of Agriculture and Fisheries.* (Agricultural Statistics 1908). Vol. XLIII., Part II. Returns of Produce of Crops in Great Britain, with summaries for the United Kingdom. (London: Wyman & Sons, Ltd., Fetter Lane, E.C.) Price 4½d.—*The Royal Gardeners' Orphan Fund Twenty-first Annual Report and List of Subscribers, 1909.* (London: Milton House, 35, Surrey Street, Strand, W.C.)—*The Book of the Cottage Garden.* By Charles Thonger. (London: John Lane, The Bodley Head.) Price 2s. 6d. net.—*Imperial Department of Agriculture for the West Indies.* Report on the Experiment Station, Tortola, Virgin Islands. (Barbados: The Imperial Commissioner of Agriculture for the West Indies.) Price 3d.—*List of Herbaceous Perennials Tested in the Arboretum and Botanic Garden Central Experimental Farm, Ottawa, Canada.* With descriptions of flowers and other notes. By W. T. Macoun. Bulletin No. 5: Second Series. (Ottawa: Government Printing

Bureau).—*Purdue University Agricultural Experiment Station.* Bulletin No. 131: Vol. XIV. Concentrated commercial feeding stuffs. (U.S.A.: Lafayette, Indiana).—*"Lloyd's" Gardening Book.* Edited by William Earley. (London: Edward Lloyd, Ltd., 12, Salisbury Square, E.C.) Price 3d. net.

FLORISTS' FLOWERS.

SWEET PEA "HENRY ECKFORD."

As the Rev. D. R. Williamson said on p. 177, this flower has great beauty, but it requires shading from hot sunshine in order to colour perfectly. Its colour is a rich salmon, exquisite in texture and finish. There is a Spencer (waved) counterpart of "Henry Eckford" in existence, although it has not yet been put on the market for sale. It has two names, "Nancy Perkins," under which it received the Award of Merit of the National Sweet Pea Society, and "Earl Spencer," the name under which it has been well shown by Mr. Cole, gardener to Earl Spencer. Among Sweet Pea enthusiasts this Spencer form of "Henry Eckford" is much talked about. It is expected to be purchasable in the autumn of this year, but few growers have any large quantity of it, and the demand is expected to exceed the supply. A nice point

is available, it is best to sow the seeds in boxes or pots, and transplant them early in April. If there is no frame, the seeds may be sown in deep boxes about half filled with soil, using a sheet of glass over the top and taking care to admit plenty of air during the day. By this method the plants are preserved from birds and slugs whilst very young.

If lard buckets are used, one or two plants are enough in each. After planting care must be taken never to allow them to become dry. An occasional dressing of artificial manure will be of great benefit, for the tubs soon become filled with roots. The manure can be used in a dry state, and sprinkled on the soil, or it may be well stirred into water. Some varieties are more adapted than others for tub culture. Among the best for this purpose are Etta Dyke (white), Yellow Hammer (primrose), Queen Alexandra (scarlet), Geo. Herbert (rose), Frank Dolby (lavender), Chrissie Unwin (cerise), and Countess of Northbrook (pale pink). Never let a seed pod form, or the plants will soon cease to bloom, but if the flowers are cut before going to seed it is possible to keep the plants in flower from June until October.

Should the plants get too high, take the tops out. This will cause the side shoots to flower more freely. The best stakes are formed of dark bamboo canes, which can be bought of

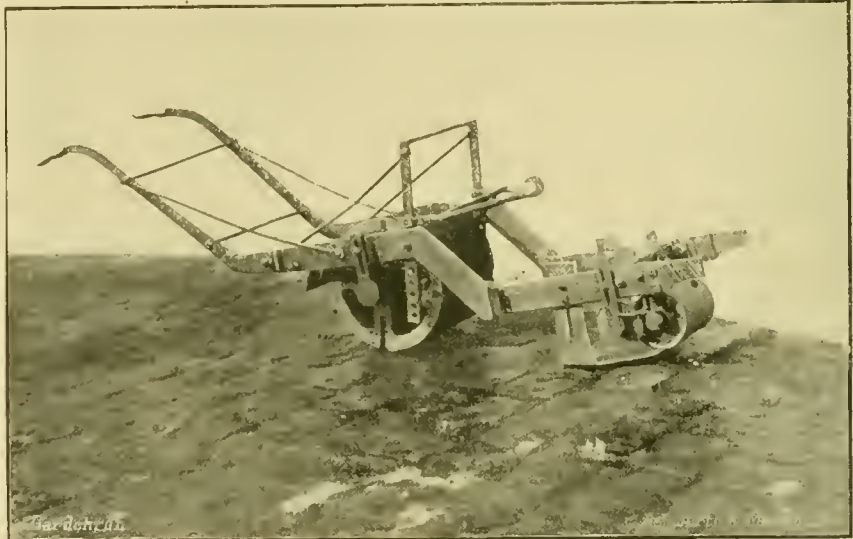


FIG. 87.—A TURF-CUTTING MACHINE.

arises—Are "Nancy Perkins" and "Earl Spencer" the same? For all practical purposes they are, and no doubt they will be bracketed by the National Sweet Pea Society as like varieties. The reduction of the list of names is a consummation much to be desired. Will the National Sweet Pea Society ever take its courage in both hands and decide to recognise only one name for synonymous varieties, or, as it prefers to term them, "too much alike varieties"? Only when it does this will the list be reduced. *Correspondent.*

SWEET PEAS IN TUBS.

In some town gardens it may be necessary to grow Sweet Peas in tubs. Oil barrels cut in half and painted green will last for years. If these are too large, a lard bucket, painted, will answer the purpose well enough. Holes should be drilled in the bottom, and a good layer of crocks or rough cinders should be put at the base for drainage. On this put a layer of rotted manure, then nearly fill the tub with some good soil, bonemeal and manure. The soil should be made moderately firm by ramming. If oil barrels are used, put in each barrel 10 or a dozen seeds, but thin the plants out to five when all danger of losing them is past. Five plants will give better results and more blossoms than if 12 were left. If a cool frame

horticultural sundriesmen. Place one or two stakes to each plant, then twine some green twine from one to the other. The tendrils will cling to this, and, with just an occasional tie, the plants will always look neat and tidy. Sweet Peas in tubs can also be used for covering a trellis or wall, provided something is put for them to cling to. For a small garden I do not think there is a better way to grow Sweet Peas than this. *Geo. Herbert.*

A TURF-CUTTING MACHINE.

The turf-cutting machine shown in fig. 87 has been in use for some years past in Messrs. Stannig's garden and grounds near Preston. In Cuerden Hall Gardens we have stripped 1½ acres of turf in 30 hours. There was barely a yard of sward without a clump of rushes, but that made no difference to the working of the machine. But it is of little use if the ground contains many stones; on one occasion the blade came in contact with a large stone, and the man guiding the handles was lifted nearly two feet off the ground. Fortunately this only happened a few times.

Two horses are required to draw the machine, also a man to guide the handles and another to lead the horses. The pace is about equal to

that of slow ploughing. There are circular knives, one on either side of the back roller, and they are 12 inches apart. These determine the width of the turves. They can be regulated to cut to any depth, and the knife or plate underneath cuts the sward far more evenly than does an ordinary hand-worked turf-cutter. The turves may be left in their places on the ground until required for removal. We have another useful implement to cut the turves the desired length. Guided by a line, the operator pushes the cutter before him at a moderate speed. The blade can also be regulated to the desired depth. In this district turves are cut to a width of 1 foot, but only about 16 inches in length, which allows them to be placed in their new position with forks. The objection to this smaller size is that there are many apertures requiring to be filled with fine soil. *Wm. P. Roberts, Cuedon Hall Gardens, Preston.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

THE FRUIT CLASSES AT THE R.H.S. MEETINGS.—When I saw the *Book of Arrangements* for 1909, I thought that one reason for discontinuing the autumn fruit show was in order to have classes at the usual fortnightly meetings that would serve to bring before the public such varieties of fruit as could scarcely be shown at their best in September or October. But, like your correspondent *D.*, in your issue of March 13, I am greatly disappointed that prizes were awarded to varieties like Cox's Orange Pippin and King of the Pippins when exhibited in February. Although such varieties can be kept in good condition till late spring (I have had Cox's Orange Pippin good in May), it does not follow that, with the great majority of growers, this would be the case. The rule that an exhibitor may not exhibit in two classes, differing only in the number of dishes, prevents him from showing in both the collections and single-dish classes, and, therefore, the classes are not so well filled as they might be. *Pomona.*

D., p. 163, appears to be a little hurt because the exhibits of late Apples at the R.H.S. meeting on February 23 and the judgment on them were not in accordance with his own views. The class, as scheduled, made no reference to varieties, but left the choice entirely with the exhibitors. If the class had been one for Grapes, instead of Apples, are we to assume that well-preserved bunches of Muscat of Alexandria, Madresfield Court, &c., would have been inadmissible? *D.* gives the varieties exhibited by the trade firms, and says that not one of these sombre-looking fruits were to be seen in the amateurs' prize collections. I agree with *D.* that February is early for an exhibition of late Apples, and, as *D.* says, April would be more suitable, when the qualities could then be better judged. The Fruit and Vegetable Committee sits fortnightly, and if *D.* or any other person cares to exhibit at these meetings in April good dishes of any of the late varieties of Apples, they will not be overlooked, but awarded recognition according to their worth. *Double D.*

NARCISSI FOR FORCING.—At the meeting of the Royal Horticultural Society held on March 9 the Narcissus Committee awarded Certificates of Commendation to two Narcissi for their value as forcing varieties. A Narcissus that will respond to early forcing is very valuable, but there is such a wide difference between the variety that is destined chiefly for a "show" flower and one that ranks as a market flower. In view of the fact that the Daffodil had for two months prior to March 9 been a leading feature in the flower markets, whilst the large number of varieties exhibited at this exhibition were also forced, that date does not appear to be a particularly suitable one on which to decide the forcing value of any variety. Adaptability to forcing, and in particular "early forcing," is a splendid quality in a Narcissus, particularly if the flower is of a desirable tone. *E. C. Jenkins.*

TRENCHING (see also p. 201).—The discussion on this question is, from my point of view, interesting. I can hardly hope or expect to convince those who are known to be strongly opposed to the system I have recommended. Mr. A. Shakleton enquires how the first crops fared after the work had been accomplished. My answer is, quite satisfactorily. In following my system, a certain amount of trouble is necessary during the first season or two after trenching, but, having once accomplished this, the difficulty is overcome. Many can bear witness as to the crops obtained here during the first year after the work has been carried out. I am glad Mr. Shakleton and I are at one as to the value of a deep tillage of the soil; the great difference seems to be as to the method in producing it. My contention is that the sooner this can be achieved the better, but few gardeners are in a position, even if they wished, to deep-trench the whole of their kitchen garden in one season. Mr. G. H. Jenkins is not far wrong when he states that some persons appear to have a dislike bordering on dread when they see clay soil on the surface, forgetting how soon this may be brought to good use, and that what is so frequently termed inert soil is too often left below to remain as such. In answer to *J. S.*, I have had a great many kinds of soil to deal with, but never one such as he describes, where the subsoil is so bad that even weeds cannot exist in it. My advice is, take extreme measures and trench the whole of it to the depth I recommend, and do the best to alter the character of such soil as quickly as possible. If Mr. E. Simms is under the impression that I recommend bringing unkindly subsoil to the surface only to those who have exceptional facilities for carrying out the work he is mistaken. I am of opinion that the more inferior the subsoil the greater need is there for deep trenching and taking drastic measures for bringing this to the surface, where it can be more conveniently dealt with both by the aid of the weather and by adding suitable ingredients. I can assure Mr. Simms that he has not misunderstood me and that my advice was not given subject to reservation. *E. Beckett.*

I agree with Mr. Beckett's mode of trenching when cultivation has been long pursued and when the subsoil has become disintegrated and decomposed by the roots of plants, &c.; but I do not believe in burying the topsoil and replacing it by a crude subsoil, as this system would result in the loss of years of profitable cropping. In our garden the subsoil is impregnated with salts of iron, which, when brought to the surface, are detrimental to the growth of vegetation. Bastard-trenching may be recommended with advantage on such land, and in another year, when the subsoil has had plenty of manure, &c., incorporated with it, the ground may be trenched. I am inclined to think that a person who advocates bringing subsoil to the surface, no matter what its condition, has not had much practice in breaking up land. It is one thing to break up new land and quite another to trench a garden that has been cultivated for a century and a half. Few gardeners have the spare labour to trench to a depth of 3 feet, but good crops can be grown on land that has been manured and bastard-trenched. *G. H. H. W., North Hants.*

I am pleased to read the testimony of Mr. Beckett (p. 76) as to the value of bringing to the surface the bottom layer of soil when land is trenched. On taking charge of these gardens, 10 years ago, I found the surface soil was only 9 inches in depth, the subsoil being a very stiff clay. In my first year the land was well dug, receiving at the same time a good dressing of London manure, but with very poor results. I therefore resolved to adopt Mr. Beckett's advice on trenching. I selected two plots to start with. I had them dug three spits deep, and the bottom layer was brought to the top. Having plenty of manure at my disposal, the trenches were filled with dung that had been exposed to the influence of the weather throughout the winter. In the spring the land received a liberal top-dressing of wood ashes, with soot and lime added, and these materials were lightly forked in. The crops planted on this land were Peas, Scarlet Runners, Broad Beans, and Winter Greens. The results were excellent in the first year. I made drills for the Peas and Beans with a spade and covered the seeds

with old potting soil. The Peas grew 2 feet above the average height and yielded splendid crops. The other crops were equally successful. I have now completed the trenching of the whole of the garden, with the best results. It appears to me that Mr. Beckett's critics are influenced by theory and not by practice. *Thos. Paleman, Node Gardens, Welwyn.* [This correspondence must now cease.—Eds.]

THE TRAINING OF FRUIT TREES ON WALLS.—The remarks by *B.*, p. 149, relative to the old-time method of training fruit trees on walls are interesting. The note by *E. M.* on the subject, p. 172, is of too sweeping a character, if not wholly inaccurate, as applied to professional gardeners. During a long experience in representative gardens in England, Ireland, and Scotland, I have never once come across such examples of training fruit trees on walls as described by *E. M.* in gardens presided over by duly-qualified gardeners. The shoots of the Peach and Morello Cherry should be trained at 4 inches apart on the prescribed wall space allowed to each tree, and should radiate at the same angle from the centre on either side. The Peach, Nectarine, and Morello Cherry need the same methods of pruning and training. They only require the shoots to be thinned out a little and shortened, those of the Peach and Nectarine to a wood-bud. Strong, leading shoots should be cut out where they can be dispensed with in order to ensure an equal distribution of the shoots over the space allotted to each tree on the wall. These trees require more time and skill to train them properly than any other kind of fruit tree, including Apricot, Pear, and Plum. The pruning and training of the Morello Cherry should be proceeded with as soon as the leaves drop; but January is quite soon enough to prune and trim Peaches and Nectarines. I always cut out as many of the old branches of Fig trees in May as there are shoots of the previous year's growth to take their place. By so deferring the pruning of these trees the wounds bleed very little, if at all, because the sap is drawn to the leaves. The writer has had charge of gardens for over a quarter of a century, in which there is nearly a mile of walls devoted to fruit trees. Nearly 300 yards of these walls, from 9 to 12 feet high, are devoted to Peach and Nectarine trees, more than 150 yards to Morello Cherries, and nearly as much space to Fig trees. Four men were engaged in nailing and training fruit trees from November to February, at which date the head nailer (after the Figs were attended to) took charge of the trees for the remainder of the summer and early autumn months. *H. W. W.*

POLYSTICHUM ACULEATUM GRACILLIMUM DRUERYI.—From Mr. Druery's courteous rejoinder (see p. 188) to my note, two facts become evident. First, that his notions of nomenclature are somewhat hazy, as he states that two out of the four names are specific, whereas the first is, of course, generic, and the second only specific. The next in order (third, which is really varietal) he states "is descriptive, and distinguishes the Fern clearly from the one of the same section previously certificated." But how can such vague terms as "pulcherrimum" and "gracillimum" be considered descriptive and distinctive? On Mr. Druery's own showing (p. 98), the true distinction of *P. a. pulcherrimum* is in "the terminal pinnules of the frond," being "deeply serrate, forming a sort of fringe." A truly descriptive and distinctive name, therefore, would have been "serratissimum" or "fimbriatum." It is interesting to learn that the fourth was originally intended to indicate the authority for the name, but was included through an accident, and it was not thought worth while to correct the error. (Shades of Linné and his binomial system!) Second, that Mr. Druery's statements are not intended to be taken too literally, for, although he avers that "it is not stated that they (the seedlings) reverted to another allied species, but that they had a strong resemblance to it," a reference to p. 98 will make it clear that he did state "but several reverted to an extremely near approach to . . . *P. angulare*, a closely-allied species." As to the R.H.S. finding difficulty in enforcing the regulations of the Vienna Code of Botanical Nomenclature upon the varieties of plants submitted for awards, there is no need for attempting

this in the case of "fancy names"; but where scientific names are concerned, it should not be beyond the wits of the R.H.S. Committees to follow these regulations, seeing that the whole of them (English edition) are contained in 23 pages 8vo., and it should, moreover, be borne in mind before anything that names, once published, are not the exclusive property of those "in the cult," but belong to the far wider, general, scientific public. *Tyro.*

MARKET GARDENING IN FRANCE.—At a time when the French system of intensive culture is being much talked of in this country, the following extracts from an article in a recent issue of *La Tribune Horticole* may be of interest:—"In the majority of the 'regions maraicheres,' especially in the environments of Namur, the forcing of vegetables on hot-beds is not profitable, and the growers are unanimous in acknowledging it. The culture of vegetables on hot-beds entails considerable labour, and is costly; the grower cannot always procure as much manure as is necessary, and often he has to pay a very high price for it. Fermentation is not always uniform, and cannot be regulated; it is never durable enough for subjects of slow growth. For these it is necessary to remake the beds, and even then growth is often checked for several weeks. Further, the fermentation of the manure creates excessive moisture, which does not easily evaporate, seeing that one cannot ventilate regularly during dull weather; the result is an abnormal vegetation, with tissues gorged with water. Early vegetables can be produced more easily and more economically from structures heated by hot water than by culture on hot-beds." *W. Aulon, Brougham Gardens, Penrith.*

THE WONDERBERRY.—Another American creation, this time a cousin to the Potato and the Tomato, but more remarkable than either; more even than the Pomato from the same source! Two *Solanums*, namely, *S. guineense* and *S. villosum*, were taken, juggled with, and out came a miracle, the "Wonderberry." It will grow anywhere in any soil, except rich; it will fruit as no other plant can; and its fruits are just the thing for tarts and jam. A few seeds in a small packet, bearing on one side a portrait of this marvel, and on the other the cultural instructions—"Sow early under glass like Tomatoes, and transplant to garden at the proper time." Nothing simpler. An enthusiastic friend sent me a packet, and told me not to worry over Black Currant mite or Gooseberry-mildew any more, but to grow Wonderberry and make my family happy. The seeds looked ordinary and the given origin excited curiosity, so I proceeded to look up the history of the two reputed parents. They proved to be nothing other than forms of *S. nigrum*, a weed in every country*; therefore, the Wonderberry is *S. nigrum* also. The seeds, on careful comparison, proved it beyond doubt. Then I remembered that this same story had been round in another form about two years ago, but the name given then was Huckleberry, instead of Wonderberry, and it came from a Toronto nurseryman—"Easily grown, quite hardy, matured from seeds in five months, black fruits, no stones, nothing to equal it for pies, jams, sauces, and canning, insect-proof, and frost improved the flavour." We grew some plants of it from seeds obtained from Toronto, and they turned out to be simply Nightshade—*S. nigrum*. What does it all mean? Every intelligent child shuns the fruits of this weed of waste land and manure heaps, the poisonous properties of which are undoubted. Children who have eaten the fruit have died soon after from its effects, which are very distressing—vomiting, colic, convulsions, &c. Mr. N. E. Brown informs me, however, that in some countries the fruits of *Solanum nigrum* are not only innocuous, but they are actually eaten, and on consulting various books I found several records to that effect. A Russian chemist who had investigated the question as to the berries being poisonous in some countries and harmless in others concluded that the difference was not due to any difference in the plants, but to variations in the climatic conditions under which the fruits were grown, the narcotic principle being either undeveloped or finally dispelled

under the influence of certain conditions, of which heat and light were probably the most important. It is, therefore, quite possible that the Nightshade is poisonous in Great Britain and harmless in America. After all, are we so hard up for fruit as to be forced to turn to one of our most pestiferous weeds, which is also known to be a deadly poison, because we are advised to do this by some seedsmen in America? *W. W.*

EUPHORBIA PULCHERRIMA (see p. 156).—We have cultivated plants in these gardens that have measured 18 inches across the bracts and well formed in every respect. The usual size, as *E. H. J.* remarks, is 10 to 12 inches. The cuttings from which these plants were propagated were taken the third week in May from rested plants in pots of the previous year's flowering. They were made with a heel of the old wood and inserted in thumb-pots in a propagating frame. When rooted, they were potted several times, the last shift being to 7-inch pots. The plants were placed in a cool house during the summer months, but when the weather became colder they were shifted to an intermediate house. When the bracts appeared they were put into a still warmer house, where the temperature was 70°, but they were returned to the intermediate house when the bracts had fully developed. Care in watering is one of the chief items in the successful cultivation of these plants; when dry at the roots they soon lose their bottom leaves. Some cultivators keep their plants in a heated structure all through the growing season, but this is a mistake. *Moschosma riparium* is an excellent companion plant for *E. pulcherrima* in decorative work. The white blooms of the *Moschosma* form an excellent background to the scarlet bracts of the *Euphorbia*. *T. A. C., Canons Park, Edgware.*

THE NEW GRAPE BOTTLE (see p. 175).—As the idea for this bottle was conceived by myself I may, perhaps, be allowed to reply to the criticism passed upon it by members of the Fruit and Vegetable Committee as stated by *D.* in last week's issue of the *Gardeners' Chronicle*? Absorption takes place only from the end of the stem inserted in the water; therefore, there is no advantage in having a greater length of stem in the bottle than is provided for. If the end of the stem were to rest on the bottom of the bottle this would hinder absorption. Although a small length of stem only is provided for by the curved neck of bottle, the bunch may be cut with the same length of stem attached as formerly. This will allow for pieces being cut off periodically in the case of long-keeping Grapes, but with this advantage—instead of being inserted in the bottle right up to the bunch, the Grapes will stand well clear of the neck, and thereby prevent all risk of the berries being rubbed or bruised by contact. But care will be necessary to prevent the bottle overbalancing. The advantages I claim for this bottle are:—(1) The bottle can be filled with water either before or after the bunch of Grapes is placed in it without the slightest fear of spilling any water among the berries. (2) Either a short-stemmed or long-stemmed bunch can be preserved with equal success. (3) Any ordinary flat shelf or stand can be utilised for the purpose of supporting the bottle. *W. Bullock, Copped Hall Gardens, Epping.*

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 23.—Another successful meeting was held in the Society's Hall, Vincent Square, on Tuesday last. It was very similar to the preceding exhibition, there being a splendid array of bulbous and other hardy flowering plants, forced shrubs, Carnations, Orchids, Azaleas, Ferns, Cyclamen, Cinerarias, and other greenhouse plants. The FLORAL COMMITTEE granted one First-class Certificate and five Awards of Merit; the ORCHID COMMITTEE conferred three Awards of Merit. The FRUIT AND VEGETABLE COMMITTEE had little brought to its notice, and made no award to a novelty. At the three

o'clock meeting a lecture on "Rock-gardens: Natural and Artificial" was delivered by Mr. R. Lloyd Praeger.

Floral Committee.

Present: W. Marshall, Esq. (Chairman), and Messrs. George Paul, W. J. James, E. H. Jenkins, W. Cuthbertson, Chas. E. Shea, C. E. Pearson, Charles Dixon, Arthur Turner, W. Bain, C. Blick, H. J. Cutbush, W. Howe, J. F. McLeod, C. R. Fielder, R. Hooper Pearson, W. J. Bean, R. C. Notcutt, J. R. Green, and R. C. Reginald Nevill.

MESSRS. WM. CUTBUSH & SON, Highgate, London, N., exhibited large collections of forced trees and shrubs, Alpine and rock-garden plants and perpetual-blooming Carnations. *Prunus triloba*, *Laburnum*, *Azaleas*, *Camellias*, *Viburnum Opulus*, *Magnolias*, and similar subjects made an effective display of blooms. The rock-garden exhibit was presented in a pleasing style, and planted with a wealth of spring bulbous and other plants. *Sanguinaria canadensis* and *Ranunculus amplexicaulis* are both interesting. In the former the flower is held, as with a stake, by the leaf which clasps its lamina around the peduncle. (Silver Flora Medal.)

Scented-leaved *Pelargonium* in variety were shown by Messrs. HEATH & SON, Cheltenham. *P. multibracteatum* is a valuable greenhouse climber. The same firm showed a *Carnation* raised from *Souvenir de la Malmaison*, crossed with a tree variety; it is named after the Hon. Lady Audley Neeld.

MESSRS. PAUL & SON, the Old Nurseries, Chess-hunt, contributed a group of considerable size of varieties of Lilacs propagated and cultivated in this country, in no point showing inferiority to those from the Continent. We observed among the varieties *Souvenir de L. Thibaut* (massive in spike and large in regard to the individual blooms), *Comtesse de Choiseul*, *Leon Simon*, *Souvenir de Louis Späth* (of a dark lilac tint), and *Maréchal de Bassompierre* (a variety having a very large and massive spike). Messrs. PAUL also showed standard plants of *Calceolaria Burbidgei*, a shrubby hardwood species, bearing its large yellow blooms in lax clusters. (Silver-gilt Banksian Medal.)

Mr. L. R. RUSSELL, Richmond Nurseries, Richmond, Surrey, showed a large floor group of hardy *Azalea* Anthony Koster (a well-known variety), Lilacs in pots, and *Weigela Eva Rathke*, the group having a row of tall Palms at the back. He also showed on an adjacent table some handsome *Bertolonias* with finely-developed leaves, and *Cordylines* (*Dracanas*) having well-coloured foliage. (Silver Flora Medal.)

An assortment of greenhouse flowers was exhibited by Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea. A bold display of colour was furnished by numerous plants of Indian *Azaleas* that were literally smothered with flowers; there were also various species of *Citrus* in bloom, a batch of brilliant *Anthuriums*, blue-flowered *Hydrangeas* intermixed with *Camellia reticulata* (a pleasing combination), *Boronias*, *Streptosolen Jamesonii*, &c. As a separate group, Messrs. VEITCH exhibited plants of hardy *Rhododendrons*, including *Ascot Brilliant* (having abundant trusses of bloom of a rosy-scarlet colour), the beautiful *Pink Pearl* (splendidly flowered), and *R. mirabile* (a variety with rosy-crimson flowers developed in large trusses). (Silver-gilt Flora Medal.)

MESSRS. R. & G. CUTHBERT, Southgate Nurseries, Southgate, London, exhibited well-bloomed specimens of *Azalea sinensis*. The plants were excellent little specimens, well furnished with flowers in a variety of colours. (Silver Banksian Medal.)

MESSRS. H. CANNELL & SONS, Swanley, Kent, made a fine show with *Begonia Saturne*, for which an Award of Merit was granted, a row of *B. nitida alba odorata* being arranged at the back. (Silver Banksian Medal.)

MESSRS. SUTTON & SONS, Reading, filled a large table with *Cinerarias* of the Cactus-flowering type. The plants were admirable specimens, compact, dwarf, and each with a large, broad inflorescence. The assortment of colours was wide. (Silver-gilt Banksian Medal.)

MESSRS. H. B. MAY & SONS, The Nurseries, Edmonton, showed a miscellaneous group, including *Cinerarias*, scented-leaved *Pelargoniums*,

* In the *Index Kewensis* these two names stand for distinct species, but herbarium specimens show them to be merely forms of *S. nigrum*.

dwarf Roses, Azaleas, and an assortment of choice Ferns, including many crested, plumose, and other forms of hardy species. (Silver Flora Medal.)

Mr. W. P. HORTON, Seaford, Sussex, made a show of ordinary greenhouse plants.

The ST. GEORGE'S NURSERY CO., Harlington, Middlesex, contributed a striking display of Cyclamens. Especially fine were the varieties Princess of Wales and Princess May. The variety Brilliant is one of the darkest crimson-coloured Cyclamens. (Silver-gilt Banksian Medal.)

Messrs. JARMAN & Co., Chard, Somersetshire, showed Cinerarias of the Stellata-Cactus strain, tall and of straggling habit.

In view of the exhibition held by the Perpetual-Flowering Carnation Society on the following day, several specialists in this flower made attractive exhibits. Messrs. HUGH LOW & Co., Bush Hill Park, Enfield, put up a similar display to the one they arranged last year, having a round, open kiosk arranged very prettily with Carnations in vases and relieved with greenery. Baskets were suspended from the roof portions, and at intervals arose pillars crowned and entwined with blooms. The same firm also showed species of Acacia, Genista elegans, Grevillea alpina, Boronias, Chorizema ilicifolium, and other greenhouse plants. (Silver-gilt Flora Medal.)

Mr. F. BURNETT, Guernsey, made a very beautiful exhibit with Carnations, having very large and excellently-coloured blooms of all the best kinds. Particularly good were Enchantress, Mrs. H. Burnett (pink), Britannia (scarlet), White Perfection, and Aurora (buff yellow flaked with red). (Silver-gilt Banksian Medal.)

Carnations were shown in large numbers by Mr. W. H. PAGE, Tangle Nurseries, Hampton, in his customary manner, along with Lilies. (Silver-gilt Banksian Medal.)

Mr. LANCASHIRE, Guernsey, made a striking feature with the variety Rose Doré, a bloom of regular form, 3 inches in diameter, with the edges of the florets deeply dentate. (Silver Banksian Medal.)

Messrs. C. B. BROOKS & Co., Worthing, Basingstoke, showed flowers of varieties of Primula sinensis, amongst which were many very fine kinds. We were especially impressed with the large, white Queen Alexandra, Brilliant King (a fine shade of crimson), and Orange King varieties.

Messrs. ROBERT SYDENHAM, Ltd., Tenby Street, Birmingham, again showed the value of fibre for cultivating bulbous plants in vases without drainage material.

Messrs. CARTER, PAGE & Co., 52, London Wall, E.C., showed cut blooms of Violas in great variety under names.

Mr. GEO. REUTHE, Keston, Kent, again showed varieties of rare and interesting shrubs, including species of Rhododendron, together with hardy flowers and spring bulbs, of which Irises and Crocuses were a feature. (Bronze Flora Medal.)

Messrs. BARR & SONS, King Street, Covent Garden, London, W.C., also showed spring flowers, including Anemones, Hepaticas, Irises, Helleborus orientalis, of which were seen some with spotted flowers; Fritillaria citrina, Saxifraga burseriana, Crocuses Harlequin and Blue Celeste, two excellent varieties; Iris Krelagii, with claret-purple flowers, and Rosmarinus officinalis prostrata.

Several trade firms displayed rock-gardens arranged with seasonable flowers. A very large exhibit of this type was shown by Messrs. JOS. CHEAL & SONS, Crawley, Sussex. (Silver Banksian Medal.)

Messrs. BAKER'S, Wolverhampton, also showed an exhibit of this kind in which were seen Sarracenia purpurea in flower, the interesting Sanguinaria canadensis, and some well-bloomed Primulas, P. denticulata being prominent.

Messrs. T. S. WARE, LTD., Feltham, Middlesex, set up a rock-garden, and planted it with dwarf Conifers, Alpine plants, Crocus, Chionodoxa, Thymus of species, &c., and showed likewise new and old varieties of Primula obconica. (Silver Flora Medal.)

Miss ALICE SMITH, The Bungalow, Barnham, Bognor, showed hardy flowering plants in trays filled with soil and masked with real bark. We

noted a rich, crimson-coloured, double-flowered Primrose named Mme. Pompadour.

Messrs. G. & A. CLARK, Nurserymen, Dover, illustrated on the floor how an amateur could produce effects by a combination of flower beds and borders with rockwork and cocoanut fibre refuse.

Messrs. J. PLED & SON, The Nurseries, West Norwood, London, S.E., showed succulents in variety growing in small pots, Primulas of various hardy species, Lachenalias, &c. This firm likewise exhibited a collection of cut blooms of perpetual-flowering Carnations. (Bronze Flora Medal.)

Lord CLARENDON, Watford (gr. Mr. C. Harris) showed blooms of Violet La France of large size and great length of flower stalk.

The Misses HOPKINS, Mere Gardens, Shepperton-on-Thames, arranged Alpine flowers in a temporised rock-garden, a feature being coloured Primroses. (Bronze Banksian Medal.)

Varieties of Clivia miniata were shown by Messrs. JOHN LAING & SONS, Forest Hill, London, intermixed with fine-leaved Aralias, Chlorophytum, Ficus radicans variegata, Cocos Palms and Ferns. The best of the Clivias was the variety Charming, rather larger and better coloured than the type.

Messrs. WM. BULL & SONS, King's Road, Chelsea, showed a few Hippeastrums set off by Dracænas, Aralia triloba, A. Veitchii, Eugenia myriophyllum, Codiaëums, and other stove foliage plants.

AWARDS.

Begonia Saturne.—A very dwarf-grown, fibrous-rooted Begonia, with bright-green leaves, tall, stout flower-stalks and pale-pink flowers. The plants are exceedingly free bloomers. "Saturne" is probably a variety of *B. hydrocotylifolia*, a well-known Mexican species. Shown by Messrs. CANNELL & SONS. (Award of Merit.)

Carnation Rose Doré.—A very large rose-coloured tree Carnation, with fringed florets. The blooms are not sweet-scented, but they have the advantage that they do not split the calyx. Shown by Mr. W. H. LANCASHIRE, Guernsey. (Award of Merit.)

Cineraria stellata.—Messrs. SUTTON & SONS exhibited a group of dwarf plants of the stellate type of Cineraria. The plants were of dwarf habit, and they had magnificent heads of large flowers, in which the segments were rolled, giving them an appearance that is termed Cactus-like. An Award of Merit was deservedly awarded the strain.

Crocus Sieberi versicolor.—A very brightly-coloured variety of this species. The three outer segments are feathered with purple on white, almost as occurs in Tulips. The three inner segments are white, but the interior base of the flowers is yellow and the stigmata deep orange. Shown by Mr. G. REUTHE. (Award of Merit.)

Pteris aquilina congesta.—A plumose variety of the common Bracken, growing about 1 foot or 14 inches high. The pinnules are more than usually developed, and the fronds therefore have a congested appearance. Shown by Messrs. H. B. MAY & SONS. (First-class Certificate.)

Rose Rhea Reid.—This is a hybrid Tea Rose of soft rose colour with a slight purple tint in it. The blooms have plenty of substance, but, as forced, they have no perfume. The variety has a free-growing habit, and blooms freely. Shown by Mr. G. W. PIPER, Uckfield Nurseries, Sussex. (Award of Merit.)

Narcissus Committee.

Present: H. B. MAY, Esq. (Chairman), and Messrs. A. R. Goodwin, G. H. Engleheart, W. T. Ware, E. M. Crosfield, Charles T. Digby, J. T. Bennett-Pöe, F. Herbert Chapman, Joseph Jacob, Wm. Poupert, R. Sydenham, W. Goldring, P. R. Barr, G. Reuthe, A. Kingsmill, R. W. Wallace, Christopher Bourne, G. W. Leak, James Walker, and Charles H. Curtis (hon. secretary).

Messrs. CARTWRIGHT & GOODWIN, Kidderminster, staged a collection of Narcissus. The group was arranged in the shape of a crescent, the flowers being excellent examples. Among the more notable varieties were Evangeline, a chaste and beautiful creamy-white flower with

lemon-coloured cup; Seagull; Blood Orange, with a fiery-coloured crown; Fairy Queen, a variety of Leedsii group; the bold and beautiful Weardale Perfection, Victoria, Gloire de Leiden, Mrs. H. J. Veitch (a fine yellow Ajax), Salamander, of the Engleheartii set, with fine, spreading crowns, and Queen Sophia that resembles a pale form of the well-known variety Will Scarlett. The peerless Mme. de Graaff and the drooping Johnstonii Queen of Spain were also shown in excellent condition. (Silver-gilt Banksian Medal.)

Messrs. R. H. BATH, LTD., Wisbech, displayed a large collection of Narcissus and Tulips grown in ornamental bowls in moss-fibre and shell. This was one of the finest exhibits of the kind we have seen. Some of the larger bowls were furnished with two or three dozen handsome flowers. Notable kinds were Sir Watkin and Emperor. Neither the stature of the plants nor the size of the flowers had in the least suffered by this system of culture, and, indeed, this remark applies to the entire collection. The Daffodils included Weardale Perfection, Gloire de Leiden, Gloria Mundi, and Victoria, together with varieties of the Poeticus type. Of Tulips we noted Brutus, Joost van Vandel, Vermilion Brilliant, Duchesse de Parma and Prince of Austria. (Silver Flora Medal.)

Messrs. ROBERT SYDENHAM, LTD., Birmingham, also displayed a variety of bulbous plants grown in moss-fibre. They included Narcissi Glitter, Victoria, Queen of Spain, Mrs. Thompson, Odorus rugulosus obvallaris, C. J. Backhouse and others.

Messrs. BARR & SONS, Covent Garden, W.C., displayed a group in which we noticed Mrs. Moorland Crosfield (a very fine bi-colour), Admiral Togo, Admiral Makaroff, Janet Image, Hamlet, a fine yellow Ajax, Barri conspicua, Duke of Bedford, and Firebrand. The last-named variety has a brilliantly-coloured cup. Messrs. BARR also staged a very excellent collection of Darwin Tulips in many of the leading varieties. (Silver Banksian Medal.)

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair), and Messrs. Jas. O'Brien (hon. secretary), Harry J. Veitch, de B. Crawshaw, H. Little, W. Boxall, F. J. Hanbury, J. Forster Alcock, Stuart Low, F. Sander, J. Charlesworth, W. H. Hatcher, J. Cypher, A. Dye, H. G. Alexander, W. P. Bound, H. A. Tracy, Gurney Wilson, J. Wilson Potter, W. Bolton, F. M. Ogilvie, R. G. Thwaites, and A. A. McBean.

Colonel G. L. HOLFORD, C.I.E., C.V.O., Westonbirt, Tetbury (gr. Mr. H. G. Alexander), showed remarkable examples of fine cultivation in a grand specimen of Cymbidium Lowioeburneum "Westonbirt variety," with 19 flower-spikes bearing altogether 91 flowers, and a still larger plant of *C. eburneo-Lowianum* with 32 spikes of 155 flowers, the largest spike having seven blooms. A Cultural Commendation was given to the gardener, Mr. H. G. Alexander. (Silver Flora Medal.) Colonel HOLFORD also showed *Lælio-Cattleya Tarquinius* (L.-C. callistoglossa × C. Schilleriana), a very brightly-coloured hybrid; *Cattleya Trianae* Empress of India, a clear white flower with bluish-mauve front to the lip; *Lælio-Cattleya Tigris* (L. Cowanii × L.-C. Dominiana), and other fine hybrids.

Messrs. J. & A. A. McBEAN, Cooksbridge, were awarded a Silver-gilt Flora Medal for a group rich in Odontoglossums, which they cultivate so well. The numerous forms of *O. crispum* were of the finest type, and included some magnificent white varieties; also a selection of handsomely-spotted forms. One seedling out of *O. c. Franz Masereel* was exceptionally beautiful, and showed well the markings of that deep violet-purple tint for which the parent is noted. Another variety was an improvement on the handsome *O. c. Lady Jane*, and with similar red lines on the sepals and petals. *O. Ruckerianum* Pitt's variety, *O. Pescatorei*, *O. Hallii*, and other Odontoglossums were also included in the display, the effect of the tall spikes of violet-coloured *O. Edwardii* being very striking. Various *Dendrobiums* gave further variety of colouring.

H. S. GOODSON, Esq., Fairlawn, West Hill, Putney (gr. Mr. G. E. Day), was awarded a

Silver Flora Medal for an attractive group of *Odontoglossums*, *Cattleyas*, *Dendrobiums*, &c. With them were *Lælia Jongheana* "Nellie Blanche," a fine, clear, white flower having orange-coloured ridges on the lip. We also noticed a variety of *Odontioda Goodsonia* having a uniformly red flower; *Odontoglossum crispum* Mrs. Humphrey, O. c. Ernest Henry, white blotched with violet-purple; *Cattleya Schröderæ* The Prince, &c.

Messrs. CHARLESWORTH & Co., Haywards Heath, staged a group containing *Phalaenopsis Lady Rothschild* (*intermedia* × *Sanderiana*), a pretty white flower delicately tinged and marked with rose; four fine specimens of the fragrant white *Angræcum modestum*, with long, drooping racemes; *Celogyne Sanderæ*, a pretty and rare species; *Brasso-Cattleya Digbyano-Schröderæ* Bradshawia, with clear, white flowers; a plant of *Selenipedium caudatum Lindenii*, bearing six of the curious, pouchless flowers; *Maxillaria præstans*, *Lælio-Cattleya Hypatia*, and other *Lælio-Cattleyas*; *Odontoglossum Thompsonianum* Charlesworth's variety (*crispum* × *Edwardii*), by far the best yet shown of this cross; the finely-formed, claret-purple flowers are tipped with blush-white. (Silver Flora Medal.)

Messrs. MOORE, LTD., Rawdon, Leeds, were awarded a Silver Flora Medal for an attractive group, in which were some pretty hybrid *Dendrobiums*. Very choice was *D. Austin*, a large and richly-coloured flower, and an advance on the true *D. nobile nobilius*. *D. Donnesia* resembles a very dwarf and stout form of *D. Jamesianum*, but with pure white flowers as large as *D. formosum*.

Messrs. J. CYPHER & SONS, Cheltenham, secured a Silver Flora Medal for an effective and well-arranged group of well-flowered *Dendrobiums*, having in the centre of the display fine forms of *Cattleya Schröderæ*, *C. Trianae*, and one plant of *C. Mendelii*, together with *Brasso-Cattleyas* and *Odontoglossums*. There were also examples of *Cymbidium insigne*, *Sophronitis*, *Epiphronitis Veitchii*, the singular feather-lipped *Bulbophyllum tremulum*, and the rare *Notylia bipartita*.

Messrs. SANDER & SONS, St. Albans, were awarded a Silver Banksian Medal for a group in which were many plants of botanical interest, including *Erica monostachya*, *Aërides*-like in growth, and with an upright spike of whitish flowers; also *Eria densiflora* with drooping racemes of white flowers. We also noticed the yellow-flowered fragrant *Polystachya pubescens*, *Hexadesmia fasciculata* with bunches of greenish blooms, and *Selenipedium caudatum Lindenii* (*Uropedium Lindenii*). The showier examples included *Dendrobium crassinode* and its rare variety *album*, and *Cymbidium Schröderianum*.

Messrs. HUGH LOW & Co. secured a Silver Banksian Medal for a group in which were noted *Cymbidium Holfordianum*, *C. insigne*, some showy scarlet *Sophronitis*, the dark violet *Bollea cælestis*, *Odontoglossum cordatum* Low's variety, and a selection of *Cypripediums* and *Dendrobiums*. The rare *Bulbophyllum miniatum*, with an erect spike of dark flowers with white feather-like lip, was interesting.

Mr. A. W. JENSEN, Lindfield, Haywards Heath, was awarded a Silver Banksian Medal for a select group containing his fine type of *Odontoglossum crispum* and *Cattleya Schröderæ*.

Monsieur MERTEENS, Mont St. Amand, Ghent, secured a Silver Banksian Medal for a group of hybrid *Odontoglossums*. This exhibitor displayed two plants of the clear white *Cattleya Suzanne Hye de Crom*.

Mrs. HAYWOOD, Woodhatch, Reigate (gr. Mr. H. G. Bassett), showed two hybrid *Dendrobiums*.

Mrs. TEMPLE, Leyswood, Groombridge (gr. Mr. Bristow), exhibited two light-coloured varieties of *Lycaste Skinneri*.

J. FORSTER ALCOCK, Esq., Northchurch, sent a distinct hybrid *Cypripedium* (? *bellatulum* × *javanicum*) with greenish ground colour spotted with dark purple.

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks, (gr. Mr. Stables), sent a handsome form of *Odontoglossum Lambeauianum*.

Messrs. A. J. KEELING & SONS, Bradford, sent a good *Odontoglossum nebulosum* and samples of glass tubes for storing Orchid pollen.

AWARDS.

AWARDS OF MERIT.

Brasso-Cattleya Digbyano Mendelii perfecta, from Colonel G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. H. G. Alexander).—A superb flower, with all the segments well displayed, and especially the broad, fringed lip. The ground colour is silver-white with a delicate blush-pink tint; the disc of the lip is Cowslip yellow.

Dendrobium Schneiderianum Westonbirt variety (aureum × Findlayianum), from Colonel G. L. HOLFORD.—This beautiful and fragrant hybrid has the fine form and size of *D. Findlayianum*, whereas the greater number of those previously shown have had the narrower segments of *D. aureum*. The flowers are white, with rose tips to all the segments, the disc of the labellum being deep orange colour.

Sophræ-Lælio-Cattleya Olive (S.-L. Psyche × C. Enid), from J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis).—A desirable acquisition, with flowers of good size and of a deep reddish-mauve colour with gold markings on the lip. The erect inflorescence bore three flowers. Mr. FOWLER showed for comparison the bright-red *Sophræ-Lælia Psyche* (*L. cinnabarina* × *S. grandiflora*), which, with *Cattleya Enid* (*Warszewiczii* × *Mossia*), produced *S.-L.-C. Olive*.

Fruit and Vegetable Committee.

Present: George Bunyard, Esq. (Chairman), and Messrs. Geo. Woodward, Alex. Dean, Ch. O. Walter, H. Parr, E. Beckett, A. R. Allan, J. Davis, Geo. Reynolds, J. Jacques, C. Foster, H. Somers Rivers, and C. G. A. Nix.

Mr. JOHN GARLAND, Broadclyst, Exeter, showed a large, well-coloured fruit of *Uvedale's St. Germain Pear* and fruits of *Apple Star of Devon*.

Miss C. M. DIXON, who carries on, in conjunction with other ladies, a market-garden at Elmcroft, Chichester, showed 14 pots of *Strawberry Royal Sovereign*, with ripe and ripening fruits. (Bronze Banksian Medal.)

Mr. JOHN POUPART, Rainham, Essex, showed fine samples of *Rhubarbs Linnæus*, *Champagne* and *Victoria*; selected *Seakale* and *Mortlake Giant Asparagus*. The vegetables were of good quality and such as would command the highest prices in the market. (Silver Knightian Medal.)

FORCED VEGETABLES

The competition for forced vegetables was only represented by one exhibit, although prizes were offered in three classes. In the class for six kinds, open to amateur exhibitors, the 1st prize was awarded to the Hon. VICARY GIBBS, Aldenham House, Elstree, Herts. (gr. Mr. Ed. Beckett). The varieties were the Sutton *Rhubarb* with stalks 3 feet in length, of a rosy-red colour; *Christmas Salad Chicory*, compact, strong plants fully blanched; *Twentieth Century Mushrooms*; *Selected Canadian Wonder French Beans*, the pods measuring 6-7 inches in length; *Perfection Asparagus*; and well-blanched heads of a pink-tipped *Seakale*.

THE LECTURE.

A meeting of the Fellows took place in the lecture-room at three o'clock, when Mr. R. Lloyd Praeger delivered an address on "Rock-gardens: Natural and Artificial." The lecture was illustrated by many lantern slides. These showed well-known rock plants in their native habitats, the mind of the audience being taken from the Alps to the Pyrenees, and thence to the arctic regions. Numerous illustrations were given of natural rockeries, especially some on the west coast of Ireland. Two or three pictures evidenced the astonishing force exercised by the wind on trees and hedges in that wild and exposed district. The most beautiful pictures, however, were those of some cultivated rockeries, and specially that in the Royal Botanic Gardens, Glasnevin. The lecturer, in his concluding remarks, dealt with the formation of rockeries, and some outline sketches on the sheet enabled the audience to follow him readily. Mr. Praeger pointed out how essential it is that the rains should penetrate deep into the crevices between the rocks.

PERPETUAL-FLOWERING CARNATION.

MARCH 24.—This increasingly popular Society held its sixth show at the Royal Horticultural Society's Hall, Vincent Square, Westminster, on the above date. The larger proportion of the exhibits was contributed by amateurs, but trade firms furnished some groups. The exhibits on this occasion were decidedly of higher quality than at previous shows. The blooms seem to have gained in size, form, and shades of colour. For exhibiting the blooms very tall glasses were almost universally requisitioned.

An important class was that for a group of not fewer than 12 varieties arranged on a table 10 feet by 3 feet. The use of any kind of foliage for decorative purposes was allowed. There was only one exhibit, this being staged by Mr. HAYWARD MATHIAS, Medstead, Hants., who showed Mrs. Lawson, *White Perfection*, Mrs. H. Burnett, *Britannia* (one of the best and freshest in the show), *Gladwys* (a smooth-petalled bloom of perfect form, dark crimson in tone, and having petals not too much crowded), *Winsor* (in fine form), *Enchantress*, *Rose Enchantress*, *White Lawson* and *Robert Craig*. (Gold Medal.)

A challenge cup was offered by the American Carnation Society for three vases containing novelties in Carnations sent out by American firms during 1906, 1907 and 1908. There was a good competition. The cup was awarded to Messrs. BELL & SHELDON, Guernsey, for the varieties *Winsor*, *Afterglow* and *Aristocrat*, the last-mentioned being especially good; 2nd, Mr. A. F. DUTTON, The Nurseries, Iver, Bucks., who had the varieties *Victory* (of bright scarlet colour and deeply dentated edges to the petals), *Afterglow* and *Winsor*; 3rd, Mr. C. ENGELMANN, Saffron Walden, Essex, who exhibited *White Enchantress* in good form.

COLOUR CLASSES.

These formed the most important part of the exhibition. Classes were provided for varieties of certain colours, and in each case there was a class for 36 blooms and another for 18 blooms.

White.—The best exhibit of 36 blooms was shown by Mr. W. H. LANCASHIRE, Victoria Vineries, Guernsey; 2nd, THE NEWPORT CARNATION NURSERIES, Newport, Essex. In the smaller class for 18 blooms Messrs. BELL & SHELDON won the 1st prize with *Lady Bountiful*; 2nd, Mr. C. ENGELMANN with *White Perfection*.

Blush.—Mr. W. H. LANCASHIRE, Guernsey, won the 1st prize in the larger class with grand blooms of the variety *Enchantress*.

For 18 blooms of any blush variety Mr. C. ENGELMANN was placed 1st with *Enchantress*.

Light pink, rose or salmon.—Messrs. BELL & SHELDON, Guernsey, were awarded the 1st prize in the class for 36 blooms having very bright and fresh-looking blooms of *Winsor*; 2nd, Mr. W. H. LANCASHIRE with Mrs. W. H. Burnett.

The best 18 blooms of these colours were shown by Mr. A. F. DUTTON, Iver, his variety being *Rose Pink Enchantress*; 2nd, Mr. C. ENGELMANN with *Welcome*, a flower of a pleasing tint.

Deep pink or cerise.—For 36 blooms Mr. W. H. LANCASHIRE was placed 1st for large and full blooms of Mrs. T. W. Lawson.

The best 18 blooms were exhibited by Messrs. BELL & SHELDON, who showed *Afterglow*.

Crimson (36 blooms).—1st, Mr. C. ENGELMANN, with the new variety *Carola*, of a deep tint, fair substance, and with serrated petals; 2nd, Mr. W. H. LANCASHIRE, with *President*, the flowers being smaller and less full than some others.

For 18 blooms of a crimson variety, Messrs. BELL & SHELDON were awarded the 1st prize. They showed fine blooms of *President*.

Scarlet.—The 1st prize in the larger class was won by THE NEWPORT CARNATION NURSERIES, Newport, Essex, with *Victory*, the blooms being not large but bright and of fresh appearance. 2nd, Mr. W. H. LANCASHIRE, with fine, perfect blooms of *Robert Craig*.

For 18 blooms of a scarlet variety, Messrs. BELL & SHELDON won the premier prize with *Britannia*; 2nd, Mr. D. M. COLLINS, Swanley, with the same variety.

Any other colour.—A class was provided for 36 blooms of any other colour or "fancy" than

MARKETS.

COVENT GARDEN, March 24.

[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.—E.D.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing cut flowers and their prices, including Acacia (Mimosas), Anemone fulgens, Azalea, Bouvardia, Calla aethiopica, Camellias, Carnations, Cyclamen, Daffodils, Deadstock, Eucyrtis, Freesias, Gardenias, Hyacinths, Lilacs, and Tulips.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing cut foliage and their prices, including Adiantum, Agrostis, Asparagus, Berberis, Croton, Cycas, Daffodil foliage, Ferns, Galax leaves, Hardy foliage, Honesty, Ivy-leaves, Myrtle, Ruscus, Smilax, and various other plants.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing plants in pots and their prices, including Ampelopsis, Aralia, Araucaria, Aspidistra, Asparagus, Azaleas, Begonia, Boronia, Cinerarias, and Clematis.

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

Table listing plants in pots (continued) and their prices, including Hardy flower roots, Hyacinths, Isolepis, Kentia, Lantana, Liliolum longiflorum, and Liliolum lancifolium.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices, including Apples (California, Newtown Pippin, etc.), Bananas, Cane fruit, Grapes, Lemons, Limes, Mandarins, Nuts, Peaches, Plums, and Pears.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices, including Artichokes, Asparagus, Beans, Beetroot, Brussel sprouts, Cabbages, Cardoon, Carrots, Cauliflower, Celery, Chicory, Cucumbers, Endive, Horseradish, Kale, Leeks, Lettuce, Mint, Mushrooms, Mustard and Cress, Onions, Parsley, Parsnips, Peas, Potatoes, Radishes, Rhubarb, Salsify, Savoys, Sea-kale, Spinach, Stachys, Turnips, and Tomatoes.

REMARKS.—There has been a good trade for Oranges during the past week, and their prices remain firm; Mandarines are dearer. Apples are arriving in fewer quantities, and the demand for them is somewhat smaller. Rhubarb has been scarce during the past week owing to very small consignments from the Leeds district; supplies from Essex and Middlesex have also been very small. Horseradish has risen in value. Good Savoys have sold for as much as 20s. per tally. Consignments of Egyptian Onions are expected next week. Foreign Tomatoes are received in an excellent condition. Mushrooms are cheaper. Trade generally is fair. E. H. R., Covent Garden, Wednesday, March 24, 1909.

those named. 1st, Mr. C. ENGELMANN, with Jessica, a scarlet flaked flower of large size.

For 18 blooms of any other colour or "fancy," THE NEWPORT CARNATION NURSERIES, Essex, were placed 1st with Jessica; 2nd, Mr. A. F. DUTTON, with Imperial, a scarlet flaked flower.

For 12 blooms of any variety not in commerce, 1st, Mr. C. ENGELMANN, with Carola.

LORD HOWARD DE WALDEN won the 1st prize in the class for three blooms of a white variety with White Enchantress. 2nd, Sir RANDOLPH BAKER, with the variety Sarah Hill.

For three blooms, light pink, rose, or salmon, again LORD HOWARD DE WALDEN was 1st, with fine blooms of Mrs. Burnett; 2nd, H. J. KING, Esq., Eastwell Park, Kent, with the same. The last-named exhibitor, whose gardener is Mr. J. G. Weston, was 1st for three blooms of a deep pink or cerise variety.

DECORATIVE CLASSES.

One vase of a decorative variety.—1st, Messrs. BELL & SHELDON, with a pink variety, set off by Asparagus sprays; 2nd, Mr. D. M. COLLINS, Swanley, who used a "Malmaison" variety.

A basket of market Carnations.—1st, E. J. JOHNSTONE, Esq. (gr. Mr. Paskett), Groombridge, a simple negligé arrangement of grand modern varieties in scarlet, white, crimson and pink set off by Asparagus growths.

A bouquet of Carnations.—1st, Messrs. R. F. FELTON & SON, Hanover Square, with a composition of mauve-coloured ribbon, pink Carnations, and Asparagus. It was a bouquet to be observed from one side only; 2nd, Messrs. BELL & SHELDON, with blooms of Mrs. Burnett, Asparagus trails, and blue ribbon.

Three ladies' sprays.—1st, Sir RANDOLF BAKER, Bart. (gr. Mr. Usher), Blandford, with pale pink, blush, and white Carnations and Asparagus.

There was considerable competition for six Carnations buttonholes, and the 1st prize fell to Sir RANDOLF BAKER, Bart.

GROUPS AND PLANTS.

The most important class was for a group of plants arranged on a semi-circular space measuring 25 square feet. Small Ferns or other plants were allowed as groundwork. The 1st prize was a challenge cup offered by Lord Howard de Walden. The trophy is to be held by the winner until again competed for, and a replica of the cup becomes the winner's property. The only competitor was C. F. RAPHAEL, Esq. (gr. Mr. A. Grubb), Shenley, Herts. The plants were shown in excellent condition, and staged in first-class manner. The group was awarded the 1st prize. We noticed a fine seedling "Malmaison" of a cerise tint. Others of extra merit were Mrs. Burnett, Enchantress, and Britannia.

LORD HOWARD DE WALDEN, Saffron Walden (gr. Mr. J. Vert), was the only exhibitor in the classes for six plants in six varieties, and three plants in three varieties respectively. In each case he was awarded the 1st prize.

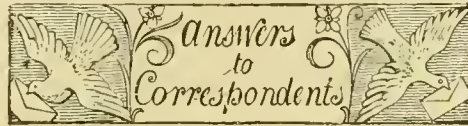
TRADE EXHIBITS.

A group of Carnations was staged by Mr. H. BURNETT, Guernsey. The group contained blooms of the best varieties, all admirably grown and well displayed. (Gold Medal). Messrs. W. CUTBUSH & SON, Highgate and Barnet, exhibited Carnations extensively, and received the award of a Silver Medal. Messrs. H. Low & Co., Bush Hill Park Nurseries, Enfield, made a capital display of cut blooms of Carnations in tall glasses, jars of earthenware, and metal bowls, in great variety, and showing good cultivation. The plants and cut blooms were arranged in a kind of circular temple. We observed a new Carnation, named Black Chief—a very free-flowering variety, and the colour that of the Old Clove. (Silver-gilt Medal.) Mr. C. ENGELMANN, The Nurseries, Saffron Walden, made a very large display with cut blooms of Carnations. (Gold Medal). Messrs. HEATH & SON, Nurserymen, Cheltenham, showed a perpetual-flowering variety named Hon. Lady Audley Neeld, a cross from a variety of Souvenir de la Malmaison with an ordinary perpetual-flowering variety. Mr. W. H. PAGE showed Carnations and other plants. (Silver-gilt Medal.) Messrs. J. PEED & SON, West Norwood, made a small exhibit of Carnations. (Silver Medal.)

Obituary.

JOHN FIDLER.—We regret to record the death of Mr. John Fidler, of Cambridge Lodge, Croydon Road, S.E. The deceased gentleman, who was 66 years of age, cultivated Cacti and other succulents, of which plants he possessed a fine collection.

C. STOCKING.—We regret to record the death of this gardener, which occurred on March 20, after a fortnight's illness. The late Mr. Stocking was, at the time of his death, gardener at Southgate House, Old Southgate. He received his first training under his father at Didlington Hall, Norfolk. Afterwards he was engaged at Floors Castle, and later at Tortworth, and other places. He was appointed gardener and bailiff at Southgate House about 10 years since. Deceased leaves a widow and four children.



* * * The Editor will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for forming Supplementary Illustrations to this Journal.

EDITOR 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 EDITOR. The two departments, Publishing and Editorial, are quite distinct, and much unnecessary delay and confusion arise when letters are misdirected.

ASPARAGUS: *Anxious.* Asparagus may be forced very well under the stage of a heated house, provided a little daylight can reach it and the roots are not allowed to become too dry. It succeeds best in a temperature of from 55° to 65° Fahr. The roots should be taken up and planted immediately on about 6 inches of good ordinary soil, covering the crowns from 3 to 4 inches in depth. Apply a thorough watering, and syringe twice daily with tepid water. Probably the best way of forcing Asparagus at this season of the year is to do so in portable frames on very mild hot-beds composed chiefly of Oak, Beech, or Spanish Chestnut leaves. The roots must be kept in very moist conditions.

BEGONIA GLOIRE DE SEAUX: *H. G.* There is no disease present in the plant. The unhealthy condition is due to excess of moisture and the need for fresh air. The Pelargoniums have also suffered from unsuitable conditions. With warm, bright weather the plants will soon grow out of their enfeebled state.

BOTANY: *G. R.* Get *The Young Botanist*, by W. Percival Weston and C. S. Cooper. You can obtain the book from our publishing department. We are unable to advise you respecting shorthand, as you have given no particulars respecting the position you fill, or expect to fill. As a rule, gardeners have not much use for shorthand.

CORDYLINES (DRACENAS) AND OTHER PLANTS: *A. E.* The Cordylines are enfeebled specimens and are not worth retaining. Propagate some healthy plants from the top shoots. The roots are in an extremely unsatisfactory condition. The Pandanus and Codiaums appear to have suffered from neglect.

"FRENCH" GARDENING: *W. S.* Write to Mr. Paul Aquatias, Tudwick, Tiptree, Essex.

HYACINTHS WITH UNHEALTHY ROOTS: *W. D.* As the soil in which the Cucumbers and Melons were grown last year was badly infested with eelworm, it should not have been used for plant culture again unless it were well sterilised.

LIMING OF FRUIT TREES: *E. M. B.* The stems of orchard fruit trees are limewashed in autumn for the purpose of destroying insect pests mainly by suffocation.

NAMES OF FLOWERS, FRUITS AND PLANTS.—We are anxious to oblige correspondents as far as we consistently can, but they must bear in mind that it is no part of our duty to our subscribers to name either flowers or fruits. Such work entails considerable outlay, both of time and money, and cannot be allowed to disorganise the preparations for the weekly issue, or to encroach upon time required for the conduct of the paper. Correspondents should never send more than six plants or fruits at one time; they should be very careful to pack and label them properly, to give every information as to the county the fruits are grown in, and to send ripe, or nearly ripe, specimens which show the character of the variety. By neglecting these precautions correspondents add greatly to our labour, and run the risk of delay and incorrect determinations. *Correspondents not answered in one issue are requested to be so good as to consult the following numbers.*

PLANTS: *H. T. H.* Dendrobium Ainsworthii and Trichosma suavis.—*W. H. 1.* Asplenium bulbiferum; 2, A. pramorsum; 3, Polystichum aculeatum; 4, Aspidium podophyllum syn. Lastrea Sieboldii.—*J. McH. 1.* Thuypopsis dolabrata; 2, Hedera Helix Roegneriana; 3, Phillyrea media; 4, Thuya gigantea.—*F. C.* Gerbera Jamesonii, Barberton Daisy.—*W. D.* Reineckia carnea variegata; 2, Heliconia metallica; 3, Dracena Goldiana.—*A. E. 1.* Streptosolen Jamesonii; 2, Agapanthus umbellatus variegatus—*Torbay.* Iris tuberosa.—*F. R. 1.* Oncidium flexuosum; 2, Pteris tremula; 3, Adiantum hispidulum.—*R. T. H.* Dendrobium cariniferum.—*Tyhe.* 1, Codiaum Langui; 2, C. angustifolium maculatum; 3, C. variegatum; 4, C. interruptum; 5, C. trilobum; 6, C. Weissmannii.—*M. A.* Odontoglossum Andersonianum of good quality, and of the variety known as "hebraicum."—*W. G. 1.* Cœlogyne flaccida; 2, Masdevallia tovarensis; 3, Cœlogyne speciosa; 4, Dendrobium Pteradii.—*J. L. S. 1.* Abies nobilis glauca; 2, Acalypha Godeffiana; 3, Hamamelis virginiana; 4, Cymbidium pendulum; 5, Cestrum fasciculatum, commonly called Habrothamnus in gardens; 6, Codiaum Queen Victoria, or a similar variety.

SEAKALE PLANTS; FLOWERING CROWNS: *J. R. B.* When the young seedling plants are taken up, the top of each, with all the crown-buds, should be cut clean off before being transplanted, so as to prevent the plants sending up flower-stalks during the summer. The removal of the crown—a very thin shilling-like slice—from each individual plant will result in the formation of several buds, and the subsequent shoots will not have a tendency to flower the first year after planting. Should any flower-stems, however, appear during the summer months on either your Seakale or Rhubarb plants, remove them forthwith.

"TAKING" BUDS OF CHRYSANTHEMUMS: *W. B.* The most suitable dates for the varieties you mention are as follow:—Nellie Pockett, middle of April, second crown buds; W. Duckham, middle of April, second crown; Mrs. Barkley, third week in April, second crown; F. S. Vallis, second week in April, first crown; Lady Ridgeway third week in April, first crown; Baron Hirsch, second week in April, second crown; Alice Byrom, natural break, first crown; Souvenir de W. Cliban, second week in April, second crown; Mrs. E. Thirkell, third week in April, second crown; Godfrey's King, second week in April, second crown; General Hutton, second or third week in March, second crown; Lady Hanham, second week in April, second crown; Lady Conyers, third week in April, first crown; Soleil d'Octobre, stop twice or three times for cut flowers, or "take" buds in the second week in April. Soleil d'Octobre is not suitable for an exhibition to be held on November 11.

VIOLETS: *E. L.* The plants show no trace of disease. The injury is due to some external cause, such as injurious fumes.

VIOLETS DISEASED: *C. D.* See reply to *T. B.* in last week's issue, p. 192.

COMMUNICATIONS RECEIVED.—*F. G. B.* (next week).—*W. A. C.*—Linnean Soc.—*C. F.*—*R. A. Rolfe*—*J. G. W.*—*E. J. H.*—*R. P. B.*—*E. S.*—*W. J. B.*—*W. M.*—*J. Whitton*—*W. W. P.*—*A. D. W.*—*A. S.*—*A. J. E.*—*E. C. P.*—*T. W. C.*—*C. G.*, Cairo—*H. N.*—*W. E. G.*—*W. W.*—*L. R. R.*—*H. A. R.*—Bere.

Potatoes.

Kents—	s.d. s.d.	Lincolns—	s.d. s.d.
Snowdrop ...	4 0-4 3	Evergood ..	2 6-3 0
Sharpe's Express ...	3 6-3 9	King Edward ...	3 0-3 3
Up-to-Date ...	3 3-3 6		
Lincolns—		Blacklands...	2 3-2 6
Royal Kidney ...	2 3-2 9	Dunbars—	
British Queen ...	3 0-3 3	Langworthy, red soil	4 9-5 0
Up-to-Date ...	3 3-3 6	Up-to-Date, red soil	3 9-4 0
Maincrop ...	3 6-3 9	Up-to-Date, grey soil	2 9-3 3
Sharpe's Express ...	3 0-3 3		

REMARKS.—Trade remains steady. Best tubers have an increased demand, and the prices all round have a slight upward tendency. *Edward J. Newborn, Covent Garden and St. Pancras, March 24, 1909.*

COVENT GARDEN FLOWER MARKET.

The milder weather has caused all flowers to develop rapidly, and the market is now overloaded with them. Trade, however, is not good.

CUT FLOWERS.

Roses of the best quality are over-abundant. Splendid blooms of Catharine Mermet were on sale on Tuesday last, but no one appeared anxious to buy them, even though offered at considerably reduced prices. Some of the best blooms of Bridesmaid are worth 4s. per dozen. Richmond, Kaiserin A. Victoria, and General Jacqueminot are favourite kinds. There are some fairly good flowers of the old Maréchal Niel, but Perle des Jardins is now a popular market yellow Rose. Carnations are of improved quality, but it cannot be recorded that their prices advance. A few special blooms realise 3s. per dozen, but 2s. is about the average price for good quality flowers. It is rarely one sees the variety Mrs. Burnett for sale late in the morning. White Perfection takes the lead as a white kind. Of Daffodils there are large quantities from the Scilly Islands and other warm climates. Best English grown flowers are not so plentiful, and during the past week their prices have advanced. Emperor still remains one of the most popular kinds. Most growers have finished with the indoor crop of Golden Spur. Sir Watkin is good; and Horsfieldii is the best bi-color. Narcissus ornatus has been selling for higher prices, but this morning supplies are larger again. Lilac is good from English and from French growers. Gardenias are more plentiful and Eucharis is procurable at lower prices. Lilioms have been making advanced prices, but it is doubtful if they will be sustained for supplies are increasing. Lily of the Valley varies greatly in value; small spikes can be had at 6s. per dozen bunches, while the best make 15s. Tulips now include some fine Darwin varieties.

POT PLANTS.

Trade has improved a little, country orders for the Easter trade making a larger demand for foliage plants. There has also been a rather better clearance of flowering plants. Azaleas are the most prominent subjects and are remarkably good this season. Ericas include E. Cavendishii, E. persoluta alba, E. Willmoreana and E. W. alba. Borenia megastigma is also seen. Marguerites, although not plentiful, are very good. Better Mignonette is seen. White intermediate Stocks, Cinerarias, Cyclamen, Tulips, and Hyacinths are all plentiful. A fresh start has been made with the sale of hardy flower roots. Pansies in flower are already seen, also Double Daisies, Primroses, Aubrietias, &c., and almost any flower roots may be procured, and Bedding plants in store boxes. Hardy climbers, fruit trees, Conifers, and other evergreens are selling better, also Roses for planting. *A. H., Covent Garden, Wednesday, March 24, 1909.*

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending March 24.

A change to warmer weather.—The recent long spell of cold weather lasted from the 7th of February to the 18th inst., or for 40 days. During that period there occurred only four days which were in any way unseasonably warm, and not a single unseasonably warm night. During the past week there have been only two warm days, and those only moderately above the average in temperature, but six warm nights. The ground is now at about a seasonal temperature, both at 1 and 2 feet deep. Rain fell on four days, but only to the total depth of less than half-an-inch. There has been some percolation on each day through both of the percolation gauges, but in gradually decreasing quantities. The sun shone on an average for only 1 hour 52 minutes a day, which is 2 hours a day short of the average duration of bright sunshine at this period of March. On one day the sun shone for 5 hours, whereas on two other days no sunshine at all was recorded. Light airs have mostly prevailed during the week. The mean amount of moisture in the air at 3 p.m. exceeded a seasonal quantity for that hour by as much as 22 per cent. A selected patch of yellow Crocuses in my garden first showed an open flower on the 18th, which is exactly three weeks later than its average date in the previous 21 years, and later than in any of those years. A selected bush of the wild Hazel first showed a female flower on the 19th, which is 29 days later than its average date for the previous 18 years, and also later than in any of those years. *E. M., Berkhamsted, March 24, 1909.*

GARDENING APPOINTMENTS.

Mr. THOS. THOMPSON, for the past 5 years Gardener to Mrs. G. T. NEWTON, at Pottersbury Lodge, Stony Stratford, as Gardener to B. C. FOSTER, Esq., Duncote Hall, Towcester, Northants.

Mr. JOHN CLARKSON, of Gunnersbury Park Gardens, previously at Welford Park, Newbury, and Bedale Hall, Yorks, as Gardener to HERBERT HARRIS, Esq., Bowden Hill Gardens, Chippenham, Wiltshire. (Thanks for 2s. sent for R.G.O.F. box.)

Mr. MAX BAUER, previously Gardener to the Rev. A. H. GRIFFITH, Lockington, Yorks, as Gardener to Capt. FARTRIDGE, Battledene, Newbury, Berks. (Thanks for 2s. 6d. sent for R.G.O.F. box.)

Mr. F. A. CHASE, for the past 4 years Foreman at Hollycombe Gardens, Liphook, Hants, as Gardener to Major ORMAN, Forest Mere, Liphook, Hants.



THE
Gardeners' Chronicle

No. 1,162.—SATURDAY, April 3, 1909.

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A SURREY SCHOOL-GARDEN.

HALE is a village situated about midway between Farnham and Aldershot. It lies on the south side of a long, barren hill, part of which is called Hungry Hill—a name very aptly describing its soil, which consists almost entirely of layers of sand and gravel. Excavations for gravel have honeycombed almost the whole of its surface, the flints thus obtained being conveyed to various parts of the country, chiefly for the purpose of making and repairing roads.

The village has a large population for a rural district, composed almost entirely of the working class, employed either as labourers in the gravel pits or as artisans in the neighbouring towns.

The Hale school gardens were commenced nearly 30 years ago. At that time there was a very large playground attached to the school, and, as my own garden was small, the school managers gave me permission in 1879 to utilise one end of the playground as a kitchen garden. The interest that the school children took in the cultivation of this strip of land, which was in no way fenced off from the play-

ground, suggested to my mind the idea of providing gardens for the elder scholars to manage themselves. Eventually the greater portion of my playground garden was divided into some 24 small plots, half of them about two-thirds of a rod each for 12 boys to grow vegetables. The remaining 12 were of still smaller area, and were given to 12 girls for the cultivation of flowers. The children eagerly took possession of the gardens and showed great enthusiasm in the work. With some help from myself they found tools, as well as seeds and manure. To sustain their interest it was decided to hold a show in August, and offer prizes for vegetables, flowers, and the best-cropped and neatest gardens. Having proved successful the first year, the show has been continued up to the present time. The simple display of those early days has grown into an extensive exhibition of school work generally, which fills our large central hall each August, and includes vegetables and flowers from more than 40 garden plots, and bouquets of wild flowers from some 150 children.

In 1892 the Surrey County Council, which was the pioneer authority in establishing and systematising a school-garden scheme, appointed Mr. John Wright, V.M.H., as the first county Superintendent of Horticulture. Mr. Wright's expert knowledge, energy, and enthusiasm soon began to make itself felt at Hale. Under his direction and advice, and with the financial aid of the County Council, the Hale gardens entered on a new phase. The old situation was given up, a larger area of the playground was enclosed and trenched, some hundreds of loads of flints removed, and the land divided into 24 small gardens, with borders for seed-beds and fruit-plots.

Unfortunately, a few years after the establishment of our County Council gardens, a portion of the land was required for the erection of new school buildings, and thus the number of gardens was reduced to twelve.

The Surrey County Council Scheme, in addition to the trenching and laying-out of the land into garden plots, also provides for:—

1. Lessons on horticulture to classes of boys during the winter season.

2. Practical gardening through the spring and summer. (The County Council supplies tools and tool-shed, manure and seeds, and its superintendent inspects the gardens three or four times in the season.)

3. Prizes for good cultivation, arrangement and excellence of crop, awarded to workers in the continuation-school gardens, according to marks given by the superintendent at his visits. The lads are also allowed the produce of their own gardens.

4. Visits (under the supervision of the superintendent or local instructors) to private and nurserymen's gardens and glasshouses in the neighbourhood for practical illustrations of the cultivation and raising of special classes of plants and flowers, showing the use of frames, and pointing out examples and effects of fertilisation, budding and grafting.

5. Lectures by the superintendent on horticulture to teachers and others during the winter season.

6. Exhibitions at Wye College to teachers for two weeks during the long holidays, in order that they may qualify as teachers of gardening at schools.

The oral lessons of the winter season are, of course, preparatory to the practical work in the spring and summer. The lessons are illustrated by blackboard drawings and diagrams and by experiments with actual objects; the pupils are required to practise the operations of potting, grafting, layering and making cuttings, and each

scholar is supplied with a notebook, in which his drawings and descriptive notes are entered.

The course includes lessons on:—

1. The soil, its formation and constituents, treatment, &c.

2. The seed, its formation, constituents, &c.

3. The plant, its life history, physiology, and food requirements.

4. Manures, natural and chemical, and their application.

5. Operations such as trenching soil, sowing seed, grafting, pruning, &c.

6. Insect pests and insecticides.

7. The special cultivation of each kind of the more important vegetables.

THE CONTINUATION SCHOOL.

The twelve plots in our Continuation-school gardens each measure rather more than a square rod. They stretch lengthwise from E. to W., so that they can be cropped with rows running N. and S. A path surrounds each garden. Our method of cropping has been:—At the beginning of the season to draw a plan of a garden-plot on a large scale, showing the order and position of the different crops, the distance separating them, time of sowing, &c., and to insist that all the gardens are planted according to the plan. A few of the most experienced boys need only such a plan to guide them in the cropping operations, but the teacher keeps an eye on them to see that they do not sow and plant too thickly. With the rest, often the simplest and most elementary operations have to be shown before the pupils can proceed with their work at all. But recently the results of the teaching of gardening in the day-school have been quite appreciable in the superior knowledge and skill shown by the boys who have been through the more elementary course.

The actual superintendence of each operation of almost every boy takes up a great deal of the instructor's time, especially if the boys are allowed to come any evening during the week for personal instruction. To obviate this as much as possible, all the boys are required to be present on Mondays and Wednesdays for the special work in hand. But as the boys are at various kinds of employment during the day, and oftentimes work at long distances from the gardens, this is not always possible; consequently, and especially during the planting season, almost every evening is utilised. Hoeing and weeding may be carried on by the boys independently of the presence of the instructor.

The main object of the garden work being educational, as many kinds of vegetables and flowers are grown as possible, generally in very small quantities, the more useful and common kinds having two rows, the less common one row, and some kinds only two or three specimen plants.

The flower borders adjoin the central path. Each border contains a standard Rose tree, and last season there were also cultivated Lobelias, Stocks, Asters, Petunias, Antirrhinums, Balsams, Mignonette, Sweet Williams, Pansies, Verbenas, Nasturtiums, and other hardy and half-hardy annuals, as well as Sweet Peas, all raised from seed, and numbers of Zonal Pelargoniums from cuttings.

During last season we paid considerable attention to the culture of Sweet Peas, and the 2nd prize for 12 varieties of Sweet Peas at the Farnham Rose Show, in the open class, was gained by the Hale Schools, against about a dozen competitors, the 1st prize being won by a professional grower.

The fruit plot lies to the south of the vegetable and flower gardens; it is cultivated in common by instructor and pupils. Among the operations carried on are:—Pruning (root as well as

branch), thinning, hoeing and mulching, and preparing and applying spraying mixtures for pests. The trees include Apples (standard, bush, and cordon), Pears, Plums, Gooseberries, Currants, and Raspberry canes.

A small greenhouse on the premises and two or three cold frames afford practice in cultivation under glass, and provide a supply of early plants and flowers to be transferred to the various gardens in the spring. The propagation of these plants and flowers has been almost entirely the work of the boys (either evening or day), who are sufficiently interested to be always ready and eager to assist their teacher during the dark evenings of early spring in the watering, sowing, and pricking-out required.

The patience and perseverance of our lads were severely tried at the commencement of the gardens on the new site. Strive as we would, we could not reach the top of the county list, the soil was so poor. But, after some years of strenuous endeavour, we had the satisfaction, in 1900, of taking the lead in the Surrey County Council gardens, and have, by continual application and more favourable circumstances, been successful in holding the position ever since.

To show the progress of steady improvement in the workmanship and skill of the pupils in the Surrey schools generally, I quote the following from the County Council reports:—

Year...	1894.	'96.	'98.	1900.	'02.	'04.	'06.	'08.
Average County mark	45	56	73	83	96	100	105	106

E. Casar, Head Master.

(To be continued.)

NOTES FROM A "FRENCH" GARDEN.

CULTURE OF MELONS.

As Melons are the chief crop in a "French" garden during the summer, the planting or sowing of spring crops is so arranged as to provide for the frames and lights being at liberty for the final plantation of the Melons. There are two batches of Melons. Plants to fruit from the end of June till the end of July are raised from seeds sown in the middle of February. They are planted early in April. The main-crop plants are raised from seeds sown from between March 15 and March 31. These later plants are put out in May, and they ripen fruits from the end of July till the first week in September. The best variety is "Prescott Small Early Frame," which is a Cantaloup, or Rock Melon. "Melon of Chypre," or "Kroumir," which is grown by some gardeners, is very hardy and suitable for late sowing.

The seeds are sown on a hot-bed 2 feet 6 inches deep when trodden. When the heat of the bed is about 70°, the seeds are set 1 inch apart, and the lights closed until the plants appear above the soil. In the case of the heat inside the frame diminishing, the manure around the outside is replaced by fresh manure. A week after the plants have appeared, another bed is prepared in a similar manner.

Melons are potted in good loam, and the pots filled up to the rim to prevent excessive dampness at the roots. When the heat of the bed is from 65° to 70°, the pots are plunged into the beds, putting 90 pots under each light. The lights are then kept closed for eight or 10 days till growth commences, when a little ventilation is given. A week before the final planting, the young Melons are stopped at the second leaf. This is done by cutting through the stem just below where the third leaf arises. By this method the stem is not so liable to split, for splitting or cracking of the stem is one of the chief causes of canker, as the disease readily spreads from a fractured spot. The cotyledons are also removed, because, if they remain on the plant, they are liable to cause delay. The beds are

prepared for the final planting as soon as the two young shoots growing from the main stem are 1 inch long. A trench 2 feet 6 inches wide and 10 inches deep is dug out of the top of the ground allotted to the culture of Melons, and the soil is carted to the end of the ground. The trench is filled again with long, strawy manure, which is well trodden down, and the centre left 3 inches higher than the level of the ground. The frames are then set straight and level, and filled with the soil taken from the trench of the next row of frames. The paths between the frames are filled with hot manure. As soon as the beds have become warm, two Melons are planted in the centre of each light, care being taken not to disturb the young roots, nor to set the plants too deeply. The lights are well covered at night and kept closed. If the sun is too hot in the middle of the day before the plants are well established, they can be shaded with mats. Afterwards ventilation may be given, and the amount may be increased as the weather becomes warmer and the plants stronger. Melons, especially those grown in the first season, require very little water prior to setting their fruits. As soon as the young shoots have reached the sides of the frames, they are stopped

early in July the lights may be left open at night. Towards the end of July, or early in August, the frames may be safely removed altogether. The fruits are left on the plants till ripe, and this condition may be determined by the base of the stalk turning white. They can then be picked and placed in a cool cellar for a few hours.

The culture of Melons will be found very simple if the following instructions are carried out:—(1) The maintenance of even temperatures; (2) the plants must not suffer a check in the seedling stage; (3) a good bottom heat must be provided when planting the Melons in their final quarters; (4) very cautious watering before the fruits have set; (5) ventilation of the frames according to the growth of the plants and the state of the weather. *P. Aquatias.*

ORCHID NOTES AND GLEANINGS.

THE GLEBELANDS COLLECTION.

The fine collection of J. Gurney Fowler, Esq., at Glebelands, South Woodford, contains the most vigorous plants in the London district.



FIG. 88.—GROUP OF VEGETABLES TAKEN FROM THE HALE CONTINUATION-SCHOOL GARDENS (OCTOBER, 1908).

to the fourth or fifth leaf. This stopping forces the plants to develop shoots, which are again stopped at the second leaf. It is the third stopping that provides the shoots which will bear the fruits. The plants must not be weakened by severe pruning, but only the shoots or leaves that are unnecessary may be removed.

The female flowers always appear later than the male flowers, and they are more numerous in plants raised from seeds that are three or four years old. The soil at the period of flowering must be kept damp, so that there will be no necessity to water the plants during the setting of the flowers. These require no artificial pollination, especially when ventilation is given. When the fruits are the size of a hen's egg, care is taken to keep the best shaped as far as possible from the collar of the plants; but, in order to obtain a few early fruits, exception may be made in some of the lights, although in these cases the fruits cannot be expected to grow to a large size. One fruit per plant is sufficient. The supply of water is increased as the fruits swell, and it is always applied in the morning. Ventilation is given whenever possible, and

They prove that if proper accommodation is given, and the plants skilfully treated, even the London fogs cannot harm Orchids. The large *Odontoglossum* house at Glebelands is one of the best appointed in Europe, and the plants leave nothing to be desired in the matter of health and flower-production. The season of that general favourite, *Odontoglossum crispum*, and its beautiful though high-priced blotched varieties, has now commenced, and henceforth, for the next few months, they will command a large amount of the attention of orchidists. At present there is the beginning of a very fine show of them at Glebelands, those in bloom showing the features of the finest type; while the blotched forms have for their best the showy *O. crispum* Carmania, and *O. crispum* Fowlerianum (fig. 90), the latter being a superb form, with uniform, deep, ruby-red blotching. Of hybrid *Odontoglossums*, none at present in bloom can compare with the unique *Odontoglossum Smithii* (Rossii rubescens × *crispum*-Harryanum) (fig. 91), which is again well in bloom. Another remarkable hybrid, *Odontoglossum* Wyonianum, of unrecorded parentage, is

blooming for the first time (see fig. 89). It is a charming white flower, with reddish-purple markings clustered in the inner parts of the segments. The collection of

does. The plants of *D. Devonianum* are also old stock.

A batch of *Cattleya Gaskelliana*, grown for several years, has a surprising number of very

rose-pink blotch on the lip. A great mass of the white *C. Warscewiczii* Madame Melanie Beyrodt promises to give a grand show of flowers, and a good effect in colour is made by *Laelio-Cattleya luminosa*, with its purple and gold-bronze flowers; the very dark rose and claret-coloured *Laelia Iona nigrescens*; *L. harpophylla*, with orange blooms on plants grown here for 20 years; scarlet *Epiphronitis Veitchii*, *Sophræla Psyche*, and other. In the lean-to house of *Dendrobiums*, the back wall is covered with *Epidendrum O'Brienianum*, with crimson and scarlet flowers, and *E. Boundii*, orange and red, both beginning a flowering which will continue throughout the greater part of the year. *B.*, March 15.



FIG. 89.—ODONTOGLOSSUM WYONIANUM FROM MR. GURNEY FOWLER'S COLLECTION. THIS HYBRID GAINED AN AWARD OF MERIT AT THE ROYAL HORTICULTURAL SOCIETY'S MEETING ON MARCH 9, 1909.

Odontiodas, including the original *O. Charlesworthii*, has, among others, the brightly-coloured *O. heatonensis* in bloom. The *Masdevallias* are beginning to make a good show, some very fine plants of *M. Schröderiana* and varieties of *M. coccinea* being in bloom, together with some of the smaller species; a specimen of *M. Chestertonii* is bearing several of its pretty flowers.

In one of the warm houses a fine specimen of the now extremely rare *Eulophiella Elisabethæ*, probably the sole survivor of the original importation, is in excellent condition; and suspended overhead is another example of the same kind in *Eulophiella Peetersiana*, which not only grows vigorously at Glebelands, but is propagated. A still more remarkable instance is to be found in the cases containing seedlings, where healthy little plants of *Arachnanthe Rohaniana*, a close ally of *A. Lowii*, raised from seeds from the plant which flowered at Glebelands some time ago, are growing satisfactorily.

The *Cypripediums* always present some bloom. It is interesting to note that the remarkable *C. Leeatum* J. Gurney Fowler, which did not make much progress after flowering at the time when it was illustrated in the *Gardeners' Chronicle*, is now robust, and one or two divisions from it have been established. In flower are *C. Beeckmannii*, varieties of *C. Euryades*, *C. Chapmanii*, *C. triumphans*, *C. Cassandra*, *C. Tityus superbum*, *C. Reginald Brade*, a very good and prettily-marked flower, and many others. Among specially good things in fine condition are *Cypripedium Thalia* "Mrs. Francis Wellesley," a charming flower, the handsome *C. F. K. Sander*, *C. Earl of Tankerville*, and *C. Aeson giganteum*.

Dendrobium Wardianum is flowering especially well. Few succeed in growing this plant for nine or ten years in the manner Mr. Davis

stout growths. *Cattleya Trianae* and *C. Schröderæ* are in bloom, one pretty variety of *C. Trianae* having pure white flowers, with a bright

THE FERNERY.

SPRING TREATMENT OF HARDY FERNS.

SINCE all the species and beautiful varieties of native Ferns are now beginning active root-action, in preparation for the unrolling of their fronds, no better time than the present can be chosen for the necessary operations of repotting, shifting, or division of the crowns for increasing the stock. The primary advantage is that, if these operations are effected before the fronds rise, there is the less chance of causing damage to the latter; a secondary advantage is that, after the long rest, the root activity is such that practically no check is experienced, such as would be likely to ensue if the fronds were well up and unfolding. It must not, however, be assumed that, because the fronds are not in evidence, the crowns will bear roughly handling. In point of fact, the fronds are snugly packed within the crowns, and if the crowns are crushed, the result may be that when the fronds unfold they will be misshapen. Another point to be remembered is that fresh roots emerge from the base of the new fronds some time before these fronds begin to elongate. These should be preserved from damage as far as possible.

As regards repotting, it is not advisable to shift a healthy Fern which has attained full



FIG 90.—ODONTOGLOSSUM CRISPUM FOWLERIANUM.

size and is already in a fair-sized pot. Ferns so established succeed well for years if supplied with sufficient water. Smaller specimens, on the contrary, which have not attained full size, naturally require shifting, and, in doing this, pots only one size larger should be used, and the new soil carefully worked down, without causing much disturbance to the roots. Dead, black roots, however, may occur if the plant has not done well, and in such cases it is better to remove these and any soured soil associated with them, and repot the plant in the same sized pot, or even, in bad cases, in a smaller one. The pots should be well drained with crocks, and the soil used should be a porous compost of half leaf- or peat-mould, half good loam, and a liberal dash of coarse silver sand. It is not well to stand the pots in saucers, as a constantly sodden state of the soil is apt to cause sourness, and, much as Ferns like moisture, in nature, nearly all of them grow in well-drained soil. "Let well alone" is a good motto for healthy, established specimens; but Ferns of the shuttlecock type, i.e., which have their fronds arranged round a central caudex or root-stock, develop their particular varietal character to much better advantage if kept to single crowns by removal of the lateral offshoots which they are very apt

rambling root-systems, whence the fronds spring separately, these are best left alone, or, if necessary, shifted *en masse* into larger pans, pan and not pot culture being preferable for these shallow rooters. For propagative purposes, pieces of the creeping root-stock, provided with a frond or two and a growing point, can be severed, and they will soon establish themselves, if planted on or close to the surface of the soil. Out-of-doors, given shelter from hot sunshine and protection from high winds, most of the species thrive in ordinary garden soil, if not of too clayey a nature. In such a case, an admixture of leaf- or peat-mould is desirable, special stations being made when planting or replanting.

Bog-loving Ferns, such as *Osmunda regalis*, should be planted low down on rockeries or banks where they can get a large amount of moisture at the roots. Lady Ferns also like plenty of moisture; but what may be termed wall or rock Ferns, such as the Spleenworts, do better in chinks higher up, or, if placed in pots, these must be extra well drained. *Blechnum spicant* is fond of humid conditions, but most of the other species, such as Shield, Buckler and Hartstongue Ferns, do well under ordinary garden conditions, and need no special study. *Chas. T. Drury.*



FIG. 91.—ODONTOGLOSSUM SMITHII IN MR. GURNEY FOWLER'S COLLECTION.

to produce. Hence, if left alone, an originally single crown, with fronds, perhaps, 3 feet or more in length, forming a handsome circlet of symmetrical form, is apt to degenerate into a bush of 2-foot fronds, intricately intermingled, and consequently losing much of their natural grace. Separation is easy enough. Each crown has its own bunch of roots, and as it is only attached to the parent by a neck, it can be prised off with a trowel or blunt instrument, and pulled away practically intact. Some Ferns, especially the Lady Fern, multiply into the bush form by a process of division or splitting-up of the main crown, rather than by lateral offsets, and in this case separation can only be safely effected when each crown has developed so far that there is a well-defined neck to it. The crowns can then be separated by making a shallow cut in the indentation between the necks, and forcing them apart by gentle pressure, when, as in the case of offsets, they will be seen to have their independent root-systems, and can be accordingly separated.

With regard to such Ferns as *Polypodium*, which do not form definite crowns, but have

A BORDER OF SUMMER FLOWERS.

I AM prompted to write about the merits of a few simple garden flowers, having in mind the appearance presented by a very artistic and pleasing border during the summer of 1908. This particular border, during the spring of the previous year, was occupied by a crop of Spring Cabbages, followed by another of Tomatos, these latter plants remaining until the first frosts appeared. The border occupied a dry situation, and was backed by a wall, which made it still drier and warmer. It was, therefore, well manured with cow dung and left rough for the winter. The ground remained in this condition until the following March and April, when it was planted with its summer flowering occupants. Many were biennials, and those that were not were treated as such, including a variety of *Hollyhock* of a soft rose shade, with semi-double flowers. These were fine, strong plants raised from seeds sown the previous May. Sweet Peas raised from seeds sown in pots the previous October and kept in cold frames throughout the

winter included the following varieties:—Nora Unwin (white), Frank Dolby (lavender), Mrs. Collier (cream), Constance Oliver (cream ground, orange-pink flush), Mrs. C. W. Breadmore (cream or buff with pink edge), Elsie Herbert (white with pink edge), Helen Lewis (orange), and Countess Spencer (pink). The clumps of Sweet Peas were placed 12 feet apart, and the back wall was clothed with tall *Nasturtiums*, including *Salmon Queen*, a very beautiful variety having salmon-pink coloured flowers, and *Fairy Queen*, whose colour ranges from pale pink to primrose. A wire at the base, and another at the top of the wall, served to attach vertical strings for the support of the growths. *Campanula pyramidalis* and *pyramidalis alba* were also employed. These were raised the previous spring in pans of fine soil. The seed was sown during March, placed in gentle warmth, and the seedlings pricked into small pots separately and planted in the open ground early in June. They were transferred to the border in the following April. *Canterbury Bells* (*Campanula medium*) were used in quantity. Those with rose, mauve and white flowers of both single and "cup and saucer" varieties were used. These were raised in the previous July, being sown in the open and pricked off in the vegetable quarters 9 square inches apart. They remained in that position until the following March, when they were planted in the border. These *Campanulas* made a glorious show during June and early in July. They were planted in blocks of separate colours sufficiently far apart to allow of placing other plants between them, so that there should be no serious break of flowers during the height of the season. *Scabious* of the variety *Azure-Farie* and blue and gold-coloured *Salpiglossis*, with the newer giant forms of *Sweet Sultan* in mauve, white and yellow shades, were the plants used to take the place of the *Canterbury Bells* when they were past flowering. The succession plants were all raised in gentle warmth, and were carefully planted and attended to until re-established. *Sweet Williams* in one variety only were used, *Pink Beauty* being the one selected. This flower was sown and treated in the same manner as the *Campanulas*. It is, without exception, the most beautiful *Sweet William*, and, apart from its great beauty, the blooms are very lasting. All the plants do not produce flowers of the same shade of salmon-pink, but they are all admired, and when in their full beauty attract the notice of visitors. Long-spurred hybrid *Aquilegias* were freely employed towards the front of the border. The seeds were sown in pans the previous May, the seedlings being pricked out in the open when large enough and transferred to the border towards the end of March. These long-spurred hybrids are very beautiful and graceful. The best plan is to treat these plants as annuals, or, rather, to raise them annually to obtain growing plants that will flower freely. They should be planted 1 foot apart: they are very scanty leaf producers, and to prevent a bare space when their flowering is over, sow, after planting the *Aquilegias*, either a double-flowered salmon-coloured variety of *Clarkia* or *Godetia Schaminii*. The annuals will take the place of the *Aquilegias* when their flowering is over. These flowers may be freely used in other portions of the border, for, provided that they are thinned to a proper distance, they are amongst the most valuable annuals. No border is complete without the graceful *Gypsophila paniculata*. This should be sown the previous spring in pots or pans, planted in the open for the summer and winter, and transferred during March to the flowering position, taking care to preserve the long, thong-like roots from injury. The plants quickly re-establish themselves after transplantation. The inflorescences are so valuable for decorative purposes, this *Gypsophila* should be grown in various positions to provide a succession of blooms. *Lupinus*

polyphyllus roseus, L. p. Somerset (a fine yellow variety), and L. p. Mørheimii (with rose and white-coloured flowers) make a stately show of flowers easily raised. The plants are from seeds sown the previous June, and transferred to the border in the following spring. Of the dwarfier plants used, the pretty Iceland Poppy, *P. nudicaule*, with orange, yellow, scarlet and white flowers, was conspicuous. The plant is treated as a biennial. A very pretty annual plant freely used upon the extreme edge of the border was *Leptosiphon hybridus* (Gilia), a most interesting plant to study. A wonderful range of colouring is to be had amongst these flowers. Pansies were freely used about the front. If an occasional plant is not of an altogether desirable colour it, being placed so embracingly near the earth, rarely clashes with other and softer shades. There are many strains of Pansies, and almost any one of them will give a fine assortment of beautiful colours. Candytuft in the newer, soft shades was very thinly sown, also the excellent white spiral variety: these annuals require much more room than is often given them. They are very lasting, and always more showy when allowed plenty of space. The small, elegant *Linarias* are also showy plants. They were massed along the front of the border in white, yellow, mauve and other shades. Even when mixed they are very pleasing. The *Mignonette* employed was raised in a little warmth in March, and pricked off into boxes and finally planted in the border in May. On many occasions we have had the finest results from such treatment, and the flowering is earlier. The variety *Machett* and the white, red and yellow giant forms are all showy, especially if each plant is allowed from 9 to 12 inches to develop. The beautiful *Nigella* "Miss Jekyll" was also judiciously used. It is one of the most charming of summer flowers. A few plants of *Larkspur* (rosy-scarlet) and *Lavatera alba splendens* and *L. rosea splendens* were also employed. These were sown in their flowering positions early in April, and were very effective in late summer. The smaller *Helianthus* of the primrose, stella, and orion types are charming in the early autumn, and continue in bloom until destroyed by frost. A few plants of the *Shirley Poppy* were also employed in the border: although of short duration, they are always admired when in flower. There were also included varieties of *Coreopsis*; some of the dwarfier-growing kinds of such colours as crimson, yellow, brown and gold formed suitable subjects for the foreground. Such was the completed list of plants employed for this floral arrangement. The greatest perfection was reached when the *Canterbury Bells*, *Sweet Williams* and *Aquilegias* were at their best. The border is no longer a flower border, but other positions have been prepared in like manner for a similar display in the coming summer. Charles Foster.

OLEARIA MYRSINOIDES.

THIS elegant shrub appears the hardiest species of the genus. The severe frosts which have been experienced both in February and March have not injured it in the least, yet the foliage of the *O. Haastii* has been severely damaged in several situations in the same garden. *O. Haastii* is one of the finest evergreen shrubs, and is especially valuable for town gardens, thriving and flowering freely in places where many shrubs fail. Whilst this plant is the best of the genus for general purposes, there is still room for *O. myrsinoides* (see fig. 92) as a neat evergreen shrub for the front row of the shrubby border. It forms a spreading bush about 2 feet high, with rigid, erect or sub-erect stems, densely clothed with hard, leathery leaves, which are 1 to 2 inches in length, glabrous above, densely tomentose beneath, and with prettily undulate, serrate margins. The

flowers are produced in the month of June, and, as may be seen from the illustration, are borne in a dense mass along the upper parts of the stem, forming a leafy, elliptic, or oblong panicle. The individual flower-heads are about an inch in diameter, the ligulate florets being pure white, those of the disc being yellow, fading with age to brown. The stamens are large, with conspicuous linear, yellow anthers.

This species is extremely variable in habit, and in the size of its flowers and leaves. Two well-marked varieties have been described. The variety *erubescens*, which is in cultivation at Kew, is a much stronger grower than the type, with leaves often 3 inches long, and with a rigid,



[Photograph by C. P. Raffill.]

FIG. 92.—OLEARIA MYRSINOIDES.

acute tip, the whole plant being more densely tomentose. The flower-heads are slightly larger, and often tinged with light purple-red; the ligulate florets are fewer in number, often only four or five in each head, and the whole plant is less floriferous under cultivation than the plant illustrated. In the variety *serrata*, the plant is dwarfier and weaker in habit, the leaves are sessile, or nearly so, usually $\frac{1}{2}$ to 1 inch long, the apex obtuse, and the margins serrate, while the plant, further, has the habit of sending up suckers at intervals, which are so weak as to require the support of Grasses and other neighbouring plants.

O. myrsinoides is a common plant in Tasmania, and occurs also in Victoria and New South Wales, growing in poor, sandy soil, or rocky, barren, scrubby places, where little else in the way of plant life can exist. The common name of "Daisy Bush" is applied both in Australia and in New Zealand to the members of this genus, the well-known *O. Haastii* being also known in the latter country, of which it is a native, under the name of "Snow-in-Summer." C. P. R.

PLANT NOTES.

NERTERA DEPRESSA.

THIS pretty plant always attracts attention when in fruit, and doubtless many would grow it who now abstain from doing so did they appreciate the hardiness of the plant and its simple cultural requirements. It was at one time freely used in carpet-bedding arrangements, but of late years it is not frequently seen. In the days when the plant was in demand, I cultivated it extensively, always dividing and repotting it in the early months of the year prior to its flowering. A cold frame was requisitioned the year round, the pots being plunged in ashes. The plants gave little or no trouble, their principal requirement being waterings overhead when growth had begun. During the flowering period this watering was discontinued, and in sunny weather the lights were removed altogether. Thus treated, the plants fruited abundantly. Much of my success I attributed to the annual division of the root-stocks that resulted in a free lax growth. When placed in a warm greenhouse, the plant is liable to become drawn, in which condition it fruits less freely. E. J.

CANARINA CAMPANULA.

IN the words of *Nicholson's Dictionary*, this is "a greenhouse herbaceous perennial of considerable beauty." In these gardens we have had a plant, three years from seed, in continuous flower from the beginning of October to the present time; so that, as this covers a period when greenhouse flowering plants are comparatively scarce, it may be termed a plant of no little value. The large flowers, which are of an uncommon colour—orange-purple, with red nerves—are solitary, at the ends of drooping branchlets, which branch immediately behind the flowers into a pair of growths, each terminated in a large bell-flower. The corollas are six-lobed at the apex, and, being of good substance, the individual flowers last for a very long time. Their peculiar colour is admirably set off by the graceful Pea green subcordate leaves. The plant grows well in a rather light soil, such as fibrous loam, with a fourth part leaf-soil, and a good sprinkling of sand. As abundant moisture is necessary during the season of growth, care should be taken to provide good drainage. The principal shoots of a plant in a 6 or 7-inch pot will be about 4 feet long, and, at this height, throw out the secondary pendulous branchlets. Unless allowed to ripen seed, which sets freely, the plant quickly dies down when its flowering is completed. At this stage, water, which has been given less copiously during the flowering season, should be withheld for a time. *Nicholson* recommends repotting the tuberous roots in January, but, as the flowering season is stated to be "January to March," this must be an error. The best time for repotting is just as the roots begin to grow. Cuttings do not root readily, but propagation may be effected by division of the root or by seeds. As the generic name implies, the plant is a native of the Canary Islands, from whence it was introduced so long ago as 1696. The specific name, *Campanula*, fittingly describes the flowers. A. C. Bartlett, *Pencarrow Gardens, Cornwall*.

COLONIAL NOTES.

WATER HYACINTH PROHIBITED IN CEYLON.

THE Water Hyacinth (*Eichornia crassipes*) is appreciated in this country as a stove plant on account of its trusses of lilac-coloured flowers standing erect from amongst the leaves. As is well known, it is an aquatic plant, having beneath the surface of the water a dense mass of roots, whilst the bases of the leaf-stalks are swollen out into large bladder-like structures, which enable the plant to float high in the water. The plant multiplies with great rapidity under favourable conditions, and since it is easily blown along by the wind, and small detached portions readily grow, it is well adapted for establishing itself and spreading when introduced to a suitable environment. That this is the case several countries have already found to their cost, and the Water Hyacinth, originally native to South America, is a serious pest in some rivers and other waterways in places as far apart as Java, Australia and Florida, where it has been introduced and flourishes to such an extent as to impede, if not actually to prevent, navigation in some localities. When once thoroughly established, it is a difficult and costly matter to keep it under control, and its complete extermination is, perhaps, impossible.

Attention was recently directed by Dr. J. C. Willis, Director of the Royal Botanic Gardens, Ceylon, to the fact that the Water Hyacinth was to be seen in a few places in the island, grown as an ornamental plant, and he pointed out the danger of allowing it to get a foothold in the colony. Ceylon has already suffered much from land plants introduced from South America, notably Lantana, "Sunflower" (*Tithonia* sp.), and the sensitive plant *Mimosa pudica*, which, between them, cover large areas. The possibility of a similar invader choking her waterways is not a risk lightly to be run. Practical effect has, therefore, been given to Dr. Willis's warnings in a recent number of the *Ceylon Government Gazette*, wherein is published a draft ordinance prohibiting, under a penalty of 200 rupees (about £13), the importation of the Water Hyacinth.

COFFEE-LEAF DISEASE IN THE EAST AFRICA PROTECTORATE.

THE fungus *Hemileia vastatrix*, closely allied to the rust of Wheat, first came into notoriety about 1880, when it was instrumental in destroying the then flourishing Coffee industry of Ceylon. It is usually known as the "Coffee-leaf disease," and may be recognised by the clusters of yellow spores which appear chiefly on the under-sides of the leaves of the affected bushes. Some idea of the material damage which this fungus has caused may be gained by noting that, whereas, in 1880, the Coffee exports of Ceylon were of the approximate value of £3,000,000, they are now only about £25,000. All through the Coffee countries of the East the pest has done great harm. In his "Revision of the Genus *Hemileia*" (*Kew Bulletin*, 1906), Masee records its geographical distribution. In the East it occurs in Ceylon, India, Java, Sumatra, Malacca, Singapore, and the Philippines. Samoa, Fiji, Mauritius, and Madagascar are other places in which it is found. The African mainland has not escaped, and in Natal, German East Africa, and in the neighbourhood of Victoria Nyanza, *Hemileia vastatrix* has been found attacking Arabian Coffee.

The northern part of the Transvaal had, until some years ago, a small but flourishing Coffee industry. This has now been destroyed by the ravages of this pest.

With the development of British East Africa, attention is being given to Coffee amongst other crops, and official action has recently been taken to guard against the introduction of the disease, which would soon make short work of

any Coffee plantations which might be raised. Recent issues of the *Government Gazette* contain notices prohibiting the importation of Coffee plants or seeds from either German East Africa on the one side, or Uganda on the other. W. G. F.

The Week's Work.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LOOER, Bart., Leonardslee, Sussex.

Planting trees and shrubs.—Any arrears in this work should be finished as speedily as possible. April is considered the best month for shifting Hollies and Conifers, but I do not think it offers any appreciable advantage over October and November.

The Rose garden.—Complete planting operations as soon as possible. Pruning will now require attention. The finest flowers are obtained from plants that are severely pruned, but although such pruning may be desirable in the case of blooms required for exhibition purposes, it does not give the best result from a garden point of view. Small shoots which are incapable of producing flowers should be entirely removed, also dead and decaying branches. The vigorous shoots should be cut back to about four or five buds, varying according to the type and variety. After the pruning the plants should be tied securely to the stakes, and if pegging down the shoots is practised this work must be seen to. When the prunings have been burned and the beds made tidy, apply a little chemical fertiliser to the beds.

Ivy on walls.—This should be clipped almost to the wall, and all rubbish removed. The young leaves will soon push forth and clothe the walls again.

Ferns.—The old fronds and rubbish may now be cleared away from these plants. It is a suitable time to afford top-dressings to Ferns, or to replant them. Some of the more tender species should have their young growths protected as soon as they appear through the soil. This especially applies to *Adiantum pedatum* and *A. Capillus-veneris*. Among the most suitable Ferns for the flower-garden are *Cyrtomium falcatum* and the variety *caryotideum*; *Cystopteris fragilis*, *C. alpina* and *C. montana*; *Allosorus crispus* (Parsley Fern), with species of *Polystichum*, *Scolopendrium*, *Lastrea*, *Polypodium*, *Asplenium*, *Blechnum* and *Lomaria*.

Bedding plants in pots.—These should be given increased room. Seedlings and cuttings should be potted as soon as they are sufficiently rooted. Sweet Peas in frames should have the lights removed whenever the weather permits, especially in the early morning, provided there is no frost. *Calceolarias*, *Pentstemons* and similar plants should be afforded sufficient room for each to properly develop. Tuberous *Begonias* are best planted out in frames, so that they may make a considerable amount of growth before they have to be shifted out-of-doors.

Annuals.—Hardy annuals should be sown as soon as the ground can be got ready for the seeds. It is a good plan to cover the seeds with some old potting soil. Among the best annuals for display are *Godetias*, *Nemophila*, *Chrysanthemum* of species, *Lupinus*, *Clarkia*, *Gypsophila*, *Saponaria*, *Calliopsis*, *Lavatera*, *Eschscholtzia*, *Centaurea*, *Poppies*, *Dimorphothea*, *Sweet Sultan* and *Linum*.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Asparagus beds.—The wintry weather has delayed the work of tidying the permanent beds, but this should now be seen to at once. The surface should be neatly raked, and the coarse soil and other material placed in the bottom of the alleys. After this work is finished, give the beds a good dressing with a suitable chemical manure. The best time to plant *Asparagus* is when the growth commences to push forth. The crowns should be planted immediately after they are lifted, it being important to prevent the roots

becoming dry, as this causes them incalculable harm. If the soil was prepared during the winter months, all that is needed now is to break it up finally, and place the crowns at a distance of about 15 inches apart, spreading the roots out evenly. Three rows will suffice for each bed. The crowns should be covered carefully 3 to 4 inches deep with very fine soil. After the planting is finished, the surface of the bed should be raked over neatly. Seeds may be sown early in April in rows placed at 1 foot apart. When the seedlings are quite small, thin them to 12 inches apart.

Forcing Asparagus.—There is still time to make one more good planting of *Asparagus* in an unheated frame. Owing to the scarcity of vegetables generally this season, this *Asparagus* will be more than usually valuable.

Peas.—Plants that have been raised under glass for planting in the open should be thoroughly hardened before they are placed out-of-doors, which should be done at the earliest favourable opportunity. If the work of transplanting is done expeditiously, the plants will scarcely experience a check. On the contrary, they will succeed better than those raised in the open garden. Any Peas that are a few inches above the ground should have stakes placed to them, and they should be netted at the same time, if birds are troublesome. A final sowing may be made under glass, and, at the same time, a few rows may be sown in the open. Peas require an abundance of ventilation when they are grown under glass, and when they have developed a reasonable number of pods the points of the leading shoots should be pinched out and all laterals removed.

Broad Beans.—Plants raised in boxes under glass should now be planted out in well-prepared ground. Sowings should also be made in the open. Broad Beans in pots should be placed where they will receive plenty of sunlight in a cool house. Afford an abundance of fresh air whenever the weather is favourable, even at night-time. Each plant should be supported by a separate stick.

Winter greens.—Make the first sowing of these vegetables on a south border.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Grafting.—About this date the stocks are generally in a suitable condition for grafting, and no time should be lost after the sap commences to rise. There are several methods of grafting, but "crown" or "rind" and "whip" or "tongue" grafting are those usually practised. In most gardens there are some healthy trees which either bear inferior fruits or crop meagrely. By grafting better varieties on such specimens, they can be converted into profitable trees, and the scions will come quickly into bearing. In the case of trees of a moderate or large size "crown" or "rind" grafting (see illustration in *Gardeners' Chronicle*, March 28, 1908) should be adopted. The branches, having been sawn off in the winter about 5 or 6 inches above the part where the graft will be inserted, should now be cut off with a sharp knife to the part itself, leaving the surface quite smooth. The scions having been taken from the border in which they have been "heeled," should be cut to about 6 or 8 inches in length, and all the buds except four on the upper part of the shoot removed. The basal portion of the scion should be cut obliquely and made so as to fit neatly in an incision which must be made in the bark of the stock. When the scion has been nicely fitted, the bark must be bound tightly against the scion with matting and the surface afterwards smoothed over with wax or grafting clay to keep out wet and air.

"Whip" or "tongue" grafting (see illustration in *Gardeners' Chronicle*, March 28, 1908).—This method is best for very young stocks and for cordon trees. Cut the stock to the required length, making the incision through a node, and slit the bark in a perpendicular direction. The base of the scion should then be prepared so that it will fit properly in the slit made on the stock. A slit is made in the stock to form a tongue, and

a similar one in the scion in which the tongue is inserted. This holds the scion and stock securely together, and the final work is to tie with matting and to cover up the juncture either with prepared grafting wax or clay. These materials about the graft should be examined occasionally, and if they are found to be cracking, the clay must be damped and made airtight. This is the more necessary during dry, windy weather.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Strawberries in pots.—These plants will require great attention in regard to watering. On no account must they be allowed to become dry at the roots, as this would affect the flavour of the fruits. Red spider, too, spreads rapidly on plants which have been allowed to flag, and, if the Strawberries are occupying shelves in fruit houses, this pest will be liable to spread to the fruit trees. Strawberry plants should be afforded liberal supplies of stimulants while their fruits are swelling, and the foliage should be drenched with tepid rain water two or three times a day. If the plants are shifted to a cooler and drier house when the fruits commence to colour, the flavour of the berries will be improved.

The orchard house.—When the fruits of Peach, Nectarine, Apricot, and Plum have set, they may require thinning. Remove first those fruits which are not in a position to obtain the full benefit of the sun's rays. In the case of Apples and Pears it will be prudent to wait till the fruits are swelling freely before thinning is practised, as large numbers of these fruits drop naturally at an early stage. At this period no severe forcing must be attempted with either the Apple or the Pear, as this would cause very many of the fruits to drop. The final disbud-ding of the shoots should now be done, and growths which are being retained may be stopped when they have made four or five leaves. Any fruitless wood not required for furnishing the tree should be cut back to a basal growth. Maintain a moist atmosphere by damping the paths, &c., and use the syringe freely on fine days. An occasional syringing with an insecticide will help to keep the trees clear of insect pests, but, should aphids appear on the leaves, fumigate the plants with some nicotine compound.

Tomatos.—If ripe fruits are required very early in the season, some of the more forward plants of the earliest batch which have set three or four trusses of fruit should be placed in a warm house and quite close to the glass. Pinch out the top of the leading shoot and remove the side growths as they appear. Give the roots a surface dressing of some rich material. Tomatos may now be frequently watered with liquid manure or some approved fertiliser. The later plants must be induced to set their fruits by lightly tapping the trellis to which they are trained. Keep the atmosphere dry, and admit plenty of fresh air when the weather permits. Shift plants of later batches into larger pots before they become pot-bound, and expose them fully to the light.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Playing fields.—The park season for hockey and football ended on March 31. During April no games of any sort are permitted on the playing fields, and this allows the turf to recover somewhat after the hard wear caused by the football and hockey teams. Opportunity is taken during March to renovate any turf that needs it, either by returfing or the sowing of grass seeds. Hoing and rolling are also performed frequently, so as to get the sward in as good a condition as possible before the summer games commence. The summer games, commencing on May 1, are cricket, tennis, bowls, and croquet. Cricket is only permitted until September 30, but tennis, bowls, and croquet may be played till the end of October. Specially-prepared lawns are allotted to each of these games.

Cricket pitches.—In thirty of the L.C.C. parks and open spaces special areas are apportioned to cricket, and these number in all nearly 500 pitches. In Victoria Park provision is made for twenty-eight matches to be played at one time. The number of clubs who apply for pitches, especially on Saturday afternoons, is far more numerous than we can cater for. Therefore a system of balloting is adopted, and the secretaries of the successful clubs are sent tickets, which have to be presented to the person in charge of the ground. Should any club fail to make use of a pitch after it has been allotted at 4 p.m., the ground is offered to another team, and there are always plenty ready to take this opportunity. The wickets must not be pitched nearer than 40 yards from any public path or roadway.

Tennis.—This is another popular game in the L.C.C. parks. Thirty-two tennis courts are provided in Victoria Park. Persons can make use of these courts free of charge. They are required to sign their names in a book which records the number of the court allotted them, and they are allowed to play for one hour, but if no other person desires the court the time is then extended to two hours. In nearly all cases, we prepare double courts, as these are mostly in demand.

Bowls.—An excellent sward is required for this game. Sweeping, rolling, and watering must be constantly practised to have the turf in a suitable condition. Persons making use of either the tennis courts or the bowling greens are required to wear rubber-soled boots. No charge is made by the L.C.C. for any games provided in their public parks and open spaces.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. Ford, Pencarrow, Cornwall.

Euphorbia.—The stock plants of *Euphorbia* (*Poinsettia*) *pulcherrima* which have been resting, should now be pruned back to firm wood, and placed near to the glass, in order that they may make sturdy, short-jointed growths to furnish good cuttings. The roots will not need water for some little time afterwards, but the plants should be syringed freely. They must not be subjected to a great heat, or they will form weakly shoots. *E. fulgens* (syn. *jacquinæflora*) requires a long season of growth, therefore the cuttings should be inserted earlier than those of *E. pulcherrima*. The shoots, being taken with a heel of the old wood attached, should be inserted in sandy soil in a propagating case so that a close atmosphere may be maintained. *E. splendens* flowers almost perpetually, but it requires the warmth of a stove.

Nepenthes.—The usual and best method of growing these plants is in hanging baskets. A suitable rooting medium is composed of two parts loam and one part Sphagnum-moss. Propagation is effected by means of cuttings of one-year-old shoots which require rooting in a considerable amount of bottom heat. Much heat and atmospheric moisture are necessary for the cultivation of *Nepenthes*, especially during summer and autumn, and no draughts of cold air must be allowed to enter the structure. Any plants which have straggly growths may have such growths shortened.

Begonia Gloire de Lorraine.—Plants which have been rested during the winter months and have been trimmed by pruning may be placed in warmth to encourage them to make fresh growths, which may be used as cuttings. They should be shaded from bright sunshine, and be given frequent syringings with clear water. Suckers will soon form from the base of the plants, and these growths make admirable cuttings. The cuttings should be potted up and placed in a warm house, but a close atmosphere is not advisable, although shade from sunshine should be provided. The best results are obtained from plants which are grown without a check.

Solanum capsicastrum.—If the berries have commenced to shrivel, the plants should be pruned and placed near the roof glass. When growth recommences, turn the plants out of the

pots, remove a portion of the old soil and re-pot them in receptacles of the same size or slightly larger.

Miscellaneous seedlings.—These should be carefully transplanted as soon as they are sufficiently large. Shade them from direct sunshine, but do not place the material so close to the pans as will create a stagnant atmosphere, this condition being the cause of damping off. Seedlings of *Begonia*, *Gloxinia*, and *Gesnera* should be shifted from the seed pan at the earliest opportunity.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Terete species of Vanda.—It is now time to return the resting plants of *Vanda Hookeriana*, *V. teres*, and the hybrid "Agnes Joaquim," to the lightest position in the warmest house. Abundance of water should now be given them, as no gain can be got from further prolonging the resting season.

Dendrobium.—Such species as *D. fimbriatum*, and its fine variety *oculatum*; *D. moschatum*, *D. Dalhousianum*, *D. clavatum*, *D. thrysi-florum*, *D. densiflorum*, *D. Schröderi*, *D. Farmeri*, *D. suavissimum*, and *D. chryso-toxum* will now be showing their flower-buds. They will need more water at the roots, and a warmer atmosphere than that in their resting quarters. On bright, sunny days frequently spray the under-sides of the leaves with tepid rain-water.

Pleiones.—The Indian *Pleiones* as *P. maculata*, *P. lagenaria*, *P. Wallichiana*, *P. præcox*, and *P. concolor* are now growing and rooting freely. They should occupy a light, airy position close to the roof glass of the *Cattleya* or intermediate house. From the present time these plants will require copious waterings and occasionally some weak liquid manure. During fine weather the under-side of the foliage should be syringed each day. The cooler-growing varieties, which include *P. humilis* and *P. Hookeriana*, and which thrive well in the *Odontoglossum* house, have now finished flowering. These plants should be repotted at once, using a compost consisting of peat, loam, and Sphagnum-moss in equal proportions, with a moderate quantity of small crocks and coarse silver sand mixed well together. For a few weeks afterwards water must be afforded sparingly.

Odontoglossum crispum.—In the cool house there are many *Odontoglossums* of the *O. crispum* section now showing their flower-spikes. Strong, healthy plants frequently produce two spikes from one pseudo-bulb, but these are too much for a plant's well-being, therefore cut off the one from the side where the leaves are shortest. Plants of *O. citrosimum* now require much water at the root. Place them in a moderately warm, moist atmosphere, and see that slugs and woodlice are not allowed to injure the tender young spikes.

Habenarias.—Such *Habenarias* as *H. militaris*, *H. rhodochila*, *H. Susanæ*, *H. carnea* and its variety *nivosa*, also the new *H. Uganda*, are now commencing to grow, and the tubers should be carefully turned out of the old soil and re-potted. When the plants are strongly grown, some of the tubers will be about 3 inches in length, and for these long thumb pots are the most suitable, on account of their depth. The tubers of *H. Uganda* are sometimes as long as 9 inches, therefore correspondingly larger pots must be used. Place one tuber in each pot, filling around the tuber to half its length with crocks, keeping the point just below the rim of the pot and above the crocks. The compost should be of fibrous loam and peat two parts, and finely-chopped Sphagnum-moss, crocks, and a little coarse silver sand, two parts. Pot with moderate firmness, just covering the top of the tuber, then place the plants in a warm, moist atmosphere, and see that the pots are kept close up to the roof glass in good light, but without exposure to strong sunshine. When the points of the new growths are seen pushing up through the new compost, an occasional spraying from a fine rose watering can is necessary, the quantity being gradually increased as the growths strengthen. An occasional spray overhead when in full growth is beneficial.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

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

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

APPOINTMENTS FOR APRIL.

SAURDAY, APRIL 3—Berlin International Exh. (to 13th inst.). Soc. Franç. d'Hort. de Londres meet.

TUESDAY, APRIL 6—Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by the Rev. Professor G. Henslow, M.A., on the "Effects of the Forces of Growth"). British Gard. Assoc. Ex. Council meet.

WEDNESDAY, APRIL 7—Roy. Caledonian Hort. Soc. Spring Fl. Sh. at Edinburgh (2 days).

THURSDAY, APRIL 8—London Branch B.G.A. lecture on "Commercial and Co-operative Gardening."

MONDAY, APRIL 12—Bank Holiday.

TUESDAY, APRIL 20—Roy. Hort. Soc. Coms. meet. and Nat. Auricula and Primula Soc. combined Show at Hort. Hall, Westminster (Prizes for Daffodils and Carnations. Lecture at 3 p.m. by Mr. Eric Drabble, D.Sc., on "Pansies"). Devon Daffodil and Spring Fl. Sh. at Plymouth (2 days). Shropshire Hort. Soc. Spring Fl. Sh.

WEDNESDAY, APRIL 21—Roy. Hort. Soc. of Ireland Spring Fl. Sh. at Dublin. Roy. Meteorological Soc. meet. Ipswich Spring Fl. Sh. Roy. Hort. Soc. Examination in General Horticulture.

THURSDAY, APRIL 22—Midland Daffodil Soc. Exh. at Bot. Gardens, Birmingham (2 days).

TUESDAY, APRIL 27—Huntingdonshire Daffodil and Spring Fl. Sh. in Corn Exchange, Huntingdon.

WEDNESDAY, APRIL 28—Nat. Auricula Soc. (Midland Sec.) Exh. Roy. Hort. Soc. Exam. of School Teachers in Cottage and Allot. Gard.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—46°1'.

ACTUAL TEMPERATURES:—LONDON.—Wednesday, March 31 (6 P.M.): Max. 52°; Min. 43°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, April 1 (10 A.M.): Bar. 29.9; Temp. 45°; Weather—Overcast.

PROVINCES.—Wednesday, March 31 (6 P.M.): Max. 51° Essex, S.E.; Min. 42° Durham.

SALES FOR THE ENSUING WEEK.

MONDAY—Hardy Border and Herbaceous Plants, Lilioms, Begonias, and other Bulbs, Azaleas, Ferns &c., at 12; Roses and Fruit Trees at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

TUESDAY—Gladioli, Begonias, and other Bulbous Plants, 55,000 Tuberoses, Numerous Hardy Bulbs and Roots, 150 cases Japanese Lilioms, &c., at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 1.

WEDNESDAY—Perennials and Border Plants, Hardy Bulbs, Lilioms, &c., at 12; Roses at 1.30; Palms, Azaleas, Bays, Ferns, &c., at 5; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

It is a fact at once significant and extraordinary that in Carlyle's anthology of Heroes the man of science finds no place. Yet history shows no nobler records of heroic devotion than those of men of science who have sacrificed their lives in the pursuit of knowledge. In the pages of some new anthology their names and deeds will be enshrined. To the priest and poet and man of letters Carlyle has paid a splendid tribute; but a like honour still awaits the scientific explorer: the man who sets out, not oblivious of risk and difficulty, to discover new lands, to chart un-

known seas, to master the secrets of the ocean's depth or those of the ocean of air, to learn, despite the shadow of death which falls across his path, the causes of disease and the means of their prevention.

In the foremost rank of this devoted band of willing martyrs to the cause of science is Commerson. To the general public Commerson is unknown: to the majority of botanists and zoologists he is little more than a name; only the specialists in systematic botany and those biologists with a feeling for and knowledge of the history of the science know the magnitude of the debt which the world of learning owes to him. Yet Commerson, during his life, brought all whom he encountered, and chiefly the great men among them, under the sway of his magnetic personality. Therefore we welcome with the greatest satisfaction the appearance of *The Life of Philibert Commerson, D.M., Naturaliste du Roi*, written by Captain Oliver and edited by G. F. Scott Elliot.

The book, like its subject, is fascinating. All its pages testify to the bond of sympathy existing between authors and subject. Himself a traveller of distinction, Captain Oliver could appreciate the indomitable courage and splendid achievement of this pioneer travelling naturalist. To the editor, as well as to the writer, all lovers of good books owe thanks, for to the judicious use of the materials which Captain Oliver, shortly before his death, put at Mr. Scott Elliot's disposal is due the admirable picture which the book presents of Commerson's wanderings and vicissitudes. Philibert Commerson was born in the Pays des Dombes, near Lyons, in 1727. He was a born naturalist. From his earliest youth he collected fishes (preserving the smaller specimens by pressing and drying them between sheets of blotting-paper), insects, and more particularly plants. He was born in a fortunate hour, in the sense that Linnaeus had cast his spell over Europe and created such enthusiasm for botany as has been known neither before nor since. Such was Commerson's enthusiasm as a collector that he spared himself no pains nor fatigue nor risks to add to his collections. Indeed, his ardour was to cost him dear, for, daring to lay hands on some specimens in the Botanic Gardens of Montpellier, he incurred the petty but potent wrath of his professor, Sauvages, who forbade him access to the gardens and blighted, as it seemed, his career at the moment when it appeared all promising.

But Commerson, though discredited by his paltry professor, continued to work alone. His fame grew. Wherever he journeyed he left behind converts to botany, who became collectors like himself and founded gardens—his botano-maniacs he called those proselytes to botanical science whom he was for ever making.

In 1766 his chance came. He was offered and accepted the post of naturalist to the exploring expedition under de Bougainville which France was sending out to circumnavigate the globe and, perchance, to found new colonies in the place of those recently lost.

During the voyage of the "Boudeuse" and "Etoile," the ships of the expedition, Commerson amassed huge collections and vast stores of observation. Much of the latter

has passed unacknowledged into the common stock of knowledge. His collections also, such as were not lost, passed into other hands: sometimes with due acknowledgment, sometimes to rot in attics.

When the voyage was nearly at an end, the "Boudeuse" and the "Etoile" having reached Mauritius, Commerson took service as botanist to that colony. After exhausting the resources of Mauritius, he explored Madagascar and brought to light many of the remarkable plants and animals of that wonderful island. From Madagascar he passed to Bourbon and, with plans of travel to India and China, returned to Mauritius. Worn out by disease due to exposure and privation, dispossessed of his office by intrigues of colleagues, but working to the last, he died in 1773 at the age of forty-six. Such, in meagre and cold outline, is the Odyssey of Commerson. His body lies in Mauritius in a forgotten grave, for the plants which he loved took him to their embrace. Near the place of his burial a little column, shaded by Eucalyptus trees, serves as a memorial. But each year, as the world comes to a saner view of the meaning of greatness and of what is worthy of pursuit by man, his reputation must increase. Though to the layman it may not mean much that he collected some 3,000 new species and 60 new genera of plants of which he himself described about 1,000, such facts will appeal to the expert. But in reading the life of Commerson, layman and expert alike can learn of the ardour, enthusiasm, courage and endurance out of which Commerson's genius was compounded.

OUR SUPPLEMENTARY ILLUSTRATION portrays the inflorescence and foliage of *Thalictrum dipterocarpum*, a new species from China, introduced by Messrs. JAMES VEITCH & SONS, through their collector WILSON, who discovered it at elevations of 4,000 to 5,000 feet. This *Thalictrum* is perfectly hardy, and forms a useful addition to the list of border plants. The foliage is glaucous-green; the panicles rise some 4 to 5 feet high, producing in a lax manner a number of small, rose-purple flowers. The plant succeeds best in a sunny position, and enjoys a rooting medium containing plenty of gravel. An Award of Merit was given to this plant by the Floral Committee of the Royal Horticultural Society, at the meeting held on August 18, 1908.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will take place on April 6. At 3 p.m. a lecture on "Illustrations of the Effects of the Forces of Growth" will be delivered by the Rev. Prof. G. HENSLOW, V.M.H.

HORTICULTURAL COLLEGE, SWANLEY.—The annual meeting of the Swanley Horticultural College for Women was held, by permission of Miss BALFOUR, at 4, Carlton Gardens, London, on March 24. The chairman, Sir JOHN COCKBURN, in moving the adoption of the report and balance-sheet, laid stress on the admirable work done by the College in meeting the two great requirements of the day, viz., rural education and the higher education of women. Mr. CHARLES BATHURST, in seconding the resolution, drew attention to the great and growing demand on the part of local educational authorities for teachers qualified to give instruction in nature study and school gardening, in both elementary and secondary schools.

* *The Life of Philibert Commerson*, by the late Captain S. Pasfield Oliver, R.A., and edited by G. F. Scott Elliot, F.L.S., F.R.G.S. (John Murray.) 10s. 6d.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, April 26, when a paper will be read by Mr. E. H. BLAKE (Fellow), entitled "Some Notes on Warming and Ventilation." The chair will be taken at 8 o'clock.

HORTICULTURE AT THE WHITE CITY EXHIBITION, SHEPHERD'S BUSH.—Mr. J. JACQUES has again been appointed chief of the horticultural department at the White City Exhibition. The arrangements for the season are not complete, but it is probable that there will be some flower shows on an extensive scale.

THE "WOOD" FUND.—Since our last issue Mr. GEO. MONRO has received the following sums:—Mr. W. H. PRATT, Kingston-by-Sea, £1 1s.; Mr. F. E. SPARKES, Worthing, £1 1s. The total amount received is £87 10s.

"BOOK OF PRUNING, GRAFTING AND BUDDING."—The author of this instructive little work is well known as a successful gardener and cultivator of fruit, who has occupied the office of chief horticultural instructor for the county of Worcester for 18 years. He was one of the pioneers of allotment and cottage gardens in that county: his experience in all branches of practical gardening is exceptional, and his authority beyond question. We have nothing but unstinted praise for his admirable book of instructions on pruning, grafting, and budding, not only on fruit trees, but also on Roses and numbers of hardy-flowering shrubs and climbing plants. The author recognises how imperfectly pruning is understood and practised by many cultivators, and how essential it is, in order to obtain complete success, to know how, when, and why certain operations must be performed. We all know how neglect of pruning and unskilled pruning cause mischief that is irreparable, reduce the annual produce of orchards and gardens, and, in many cases, extinguish all chances of profitable returns. The various chapters on pruning for wood, for form, for restriction, and for better and more fruit, which are brief, but to the point, are rendered intelligible to beginners by means of simple diagrams and illustrations. Particulars of the best methods of pruning and training standard, bush, and pyramid trees are given, and also the formation of cordons, both single and double, half-standards, goblet, and espalier trees, from the first year from the bud or graft, is explained. The pruning and seasonable treatment of the Plum, a very important Worcestershire fruit, is described in some detail. Root-pruning and top-pruning, and what they bring about, are described. We are told, on the authority of Professor BAILEY, that, in the fruit-growing areas of the U.S.A., the soil, for a depth of several feet, is of an equally good quality, that the trees are allowed to take their natural habit, and fruiting comes naturally with the maturity of the tree. Unfortunately, our soils, as well as those of most parts of Europe, are less favoured, hence the need for such books as Mr. UDALÉ'S.

CEDAR WOOD FOR CIGAR BOXES.—It has recently been stated in the public Press that the supply of Cedar wood is becoming scarce and that all cigar boxes except those for the most expensive brands will in future be made of paper. This statement would appear to refer to Cuba or Havana cigars only, and, if so, would consequently refer only to the wood of

Cedrela odorata, which, though not a true Cedar, is the source of the Cuban and West Indian Cedar of commerce. Years ago many buyers of Havana cigars were guided in their choice of a cigar almost as much by the character of the wood of which the boxes were made as by the appearance of the cigar itself; but even when it could be proved that the boxes were made of the native Cedar, it was no proof that the cigars were Cuban make. Logs of Cuban Cedar were at that time imported into Hamburg, where they were cut up and made into cigar boxes, ready to receive the so-called real Havanas, which were also made in Germany, so that the deception was complete. But the question as to the use of paper for cigar boxes is one that might be met by the continued use of one or the other of the numerous woods which are known under the common name of Cedar, for, beside the species of *Cedrela* just referred to, there are others furnishing woods more or less similar, and notably *Cedrela Toona*, a large tree from 50 to 60 feet high, found throughout the hilly districts of Central and South India to Burma and also in Java and Australia. In India it is known as the Toon or Indian Mahogany tree, also as the Moulmein Cedar, under which name the wood is known in England. It is similar in general appearance to West India Cedar, and is much used in India for furniture and Tea boxes, and in Australia, where it is known as Australian Cedar; it is greatly valued for cabinet work. There are some splendid examples of this wood in the Kew museums. From the close relationship that exists between these so-called Cedars and the mahoganies of Tropical America, Cuba and the Gambia, it might naturally be expected that the woods should have some similarity. This is the case, though the *Cedrelas* are for the most part softer woods than those either of the genus *Swietenia*, which is the source of Tropical American mahogany, or of *Khaya*, from which the Gambia mahogany is derived. All these species belong to the order Meliaceæ, as does *Soymida febrifuga*, a large tree of Central and Southern India, the wood of which is known as Red or Bastard Cedar, though the wood is totally distinct from that of species of *Cedrela* or even *Swietenia* or *Khaya*, being hard, heavy, and of a dark colour. The wood of the true Cedar, or Cedar of Lebanon (*Cedrus Libani*) differs considerably from that of the *Cedrelas*, as all coniferous woods do. It is of very little use for any purpose, though that of its closely-allied species the *Deodar* of India (*C. Deodara*) is very much used for many purposes of construction in India, such as sleepers for railways, bridges, &c., as well as for furniture. Other coniferous trees known as Cedars are *Juniperus virginiana* and the allied species *J. bermudiana*, from both of which the soft, easily-cut wood used for making lead pencils, and known as pencil Cedar, is obtained. Amongst many other plants to which the name of Cedar is applied, we may mention the white Cedar (*Thuja gigantea*), the New Zealand Cedar (*Libocedrus Bidwillii*), and the yellow Cedar of America and Canada (*Chamæcyparis nutkaensis*). From amongst some of these it might be possible to find a substitute for *Cedrela odorata* without resorting to paper pulp for cigar boxes.

PUBLICATIONS RECEIVED.—*Journal de la Societe Nationale d'Horticulture de France.* (Paris: 84, Rue de Grenelle).—*The Agricultural Gazette of New South Wales.* (February.) (Sydney: Department of Agriculture). Price 6d.—*Beautiful Flowers and How to Grow Them.* Part XI. Edited by Horace J. and Walter P. Wright. (London: T. C. & E. C. Jack). Price 1s. net.—*Nuovo Giornale Botanico Italiano.* (Gennaio, 1909.) *Memoire della Societa Botanica Italiana.* (Firenze: Via Jacopo de' Diacceto, 10).—

Garden Design. With an introduction by Rowland E. Prothero. (London: John P. White, 134, New Bond Street, W.).—*The Handy Book on Pruning, Grafting, and Budding,* by James Udale. (Evesham: W. & H. Smith, Ltd.) Price 1s. 6d. net.—*The Balance of Nature and Modern Conditions of Cultivation.* A practical manual of animal foes and friends for the country gentleman, the farmer, the forester, the gardener, and the sportsman, by George Abbey. (London: George Routledge & Sons, Ltd.) Price 7s. 6d. net.—*Board of Agriculture and Fisheries Agricultural Statistics, 1908.* Vol. XLIII., Part I. Acreage and live stock returns of Great Britain, with summaries for the United Kingdom. (London: Wyman & Sons, Ltd., 109, Fetter Lane, Fleet Street, E.C.) Price 6d.—*University of Illinois Agricultural Experiment Station, Urbana.* December, 1908. Circular No. 126: Food requirements of growing and fattening swine, by Wm. Dietrich, Assistant Chief in Swine Husbandry. January, 1909. Circular No. 127: Shall we use natural rock phosphate or manufactured acid phosphate for the permanent improvement of Illinois soils? by Cyril G. Hopkins, Chief in Agronomy and Chemistry. January, 1909. Circular No. 128: Abstract of the proceedings of the conference on animal tuberculosis at the University of Illinois, October 15, 1908.—*The Book of Nature Study,* edited by Bretland Farmer, D.Sc., F.R.S. Vol. III. (London: The Caxton Publishing Co., Clun House, Surrey Street, W.C.).—*Catalogue of Sweet Pea Names.* National Sweet Pea Society. Price 6d.

VEGETABLES.

ONIONS FOR MARKET.

A SURREY farmer writing to me the other day mentioned that, having sold the produce of half an acre of Onions for £11, he was so satisfied with his crop that he proposed to sow an acre of Onions this year. That far more than £22 per acre could be made from Onions grown under different conditions than are adopted in ordinary field culture, there can be no doubt, and as it is evident that there is a market for Onions, it is a matter for surprise that more of those bulbs are not grown. At the present moment, in towns, at any rate, consumers are dependent on Spanish or Portuguese Onions, which are worth 2d. per pound. In many of the rural districts, even so early as the late autumn, Onion consumers are largely dependent for their supplies on the Brittany peasants, who hawk Onions from place to place. The other day Mr. E. Beckett exhibited at the R.H.S. meeting some superb Onions, weighing from 28 to 30 ounces each.

If Onions are planted 12 inches apart each way, no fewer than 270 bulbs per rod are needed. This quantity should, if the ground has been deeply worked, well manured, and the variety be Ailsa Craig, give quite 200 lbs. weight. This yield, sold as cheaply as 1s. per 14 lbs., would yield, roughly, 15s. per rod. But even if the crop sold for 10s. per rod, the return per acre would be £80, and it would be interesting to learn what crop could excel that in value from the same area of land. To obtain this quantity of Onions some 2 lbs. of seed would be required to be sown in frames early in February. This amount of seed would furnish the 43,500 plants needed. The ground should be trenched, and have mixed with it 20 loads of good farmyard manure per acre. The entire cost, including cultivation of soil, manure, seed, and planting, should not exceed £30; while the additional cost of harvesting and marketing the crop would be about £10 more, and this would leave a profit of £40. This does not allow anything for rent, or salemen's commission, nor for the frames; but a succeeding crop of early white Cabbages would be sufficient to defray those charges, and admit of a part payment of the cost of the frames. A. D.

* *The Handy Book of Pruning, Grafting, and Budding,* by James Udale, Horticultural Instructor for Worcestershire since 1891. Printed and published by W. & H. Smith, Ltd., Journal Press, Evesham. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd., Stationers' Hall Court, E.C. Price 1s. 6d. net. Second edition.

STACKPOLE COURT, PEMBROKESHIRE.

Owing to the enterprise of the Great Western Railway Co. in opening their new route to Ireland, via Fishguard, Pembrokeshire has been brought in point of time much nearer to the Metropolis and the large inland centres.

In the southern part of the county it is strange to find that, judged by their language and customs, the people are neither Welsh nor English. The district is sometimes spoken of as "Little England beyond Wales." This thrifty, clean, but reserved community, whose dwellings are mostly built of mud and wattle, are the descendants of Flemish settlers, who were allowed on certain conditions to occupy this peninsula.

Some four miles seaward from the town of Pembroke is the extensive estate and mansion of Earl Cawdor, whose family's connection with the county is by no means modern. A castellated mansion existed at Stackpole at a very early date, possibly on the site, or near to, where the great-great-grandfather of the present Earl built Stackpole Court. The mansion overhangs a beautiful artificial lake, which is spanned by an elegant stone bridge, and commands a view of a most delightful landscape, including

Bluebells, &c., and canopied, but not too densely, by a variety of trees. A winding path leads to a tennis ground formed of concrete: this was previously a battery ground, and from here the north front of the residence is entered by a massive archway.

A pair of old Spanish guns, dated 1754 and 1756, guard the front entrance. Escallonias, Hydrangeas, and Myrtles are planted on the spacious lawn, and there is a fine specimen of Fraxinus Ornus, and also a large Cockspur Thorn (*Cratægus Crus-galli*), the branches of which have arched over and sweep the ground, forming a tent with no entrance. Fine Yews, Copper Beeches, and a number of large evergreen Oaks, whose branches arch and depend in such a manner as to suggest vaulted chambers, are also met with. On the lawns are many large evergreen Oaks, magnificent gnarled Limes, huge Silver Firs, and big trees of English Oak and Sycamore. One of these last-mentioned has a straight stem of 30 feet to the first branch. Other notable trees are Pinus Lambertiana (60 feet), a beautiful specimen of Sequoia sempervirens (probably planted 60 years ago and now 60 feet high), Tulip trees, Planes, Abies Smithiana, Cryptomeria japonica (50 feet), Cupressus Lawsoniana (50 feet in height and 35 feet in

and produce annually large crops of Peaches, Nectarines, Plums, Figs, &c.

Grapes are also well grown by Mr. Fisher; one vine, 90 feet long, planted with Black Alicante and Muscat of Alexandria varieties, was, on the occasion of my visit, a magnificent spectacle. A vine of Black Alicante, worked on a stock of Mrs. Pince, produces Grapes which have an appreciable flavour of the Mrs. Pince variety. Gros Colmar flourishes finely, in company with the Muscat of Alexandria. I have also seen Foster's Seedling in fine form in this garden.

Of the very large walled-in kitchen garden and its crops of fruits, flowers, and vegetables much might be written, but I will leave that aspect of the garden; suffice it to say that everything shows the same excellent order and cultivation as is seen in the parts I have more fully described. *A. P. Rowler.*

THE WISTARIAS.

The genus *Wistaria* is small in point of numbers, containing only four or five species. The best of these is the common *Wistaria*; but the other members of the genus are worthy of notice, as they flower at different times, and are distinct in habit and in the colour of their flowers. The genus was named after Caspar Wistar, an American scientist, who lived about a hundred years ago. The following are the most distinct species for garden purposes:—

W. CHINENSIS.—One of the most useful and largest-growing climbers, the branches of *W. chinensis* attain a spread of upwards of 300 feet in course of time, with a stout, woody stem, 6 inches or more in diameter. It can be used in a variety of ways; as an outdoor climber for covering walls, pergolas, or old tree stems; and in the conservatory it can be grown in pots or tubs as a small standard, or trained in balloon shape on hoops. When used for indoor decoration, the plants should be spurred back after flowering, and be liberally treated during the following growing season. The leaves of *W. chinensis* are pinnate, consisting of nine to eleven pale green leaflets, nearly glabrous on their upper surfaces, but having the veins on the lower sides covered with fine hairs. The Pea-shaped flowers are borne in pendulous racemes, a foot or more in length; they are comparatively large, and of a pale purplish-blue colour, fading to nearly white in the centre of the flower. The variety *flore albo* has white flowers, but is a rather shy bloomer; *flore pleno* has double flowers, which last a considerable time in bloom; *macrobotrys* has longer racemes of a paler colour than the type; and *foliis variegatis* has leaves irregularly marked with white, but has no great decorative value. *W. chinensis* is a native of China and Japan, and was first introduced from the former country in 1816.

W. BRACHYBOTRYS.—This plant has been classed as a form of *W. chinensis*, but, for garden purposes, it is distinct. It is a comparatively rare plant in Japan in a wild state, but is frequently met with in cultivation in that country. The leaves resemble those of *W. chinensis* in size, but they are of a deeper green. The rich purple flowers are borne in racemes little more than 6 inches in length, and open about the middle or end of April. The plant is of dwarfer, bushier habit than *W. chinensis*, and is well adapted for pot culture.

W. FRUTESCENS.—A native of the United States, and a fairly strong-growing climber, with bright green pinnate leaves, glabrous on the upper surfaces, except on the midrib, which is downy, as also are the undersides and the young stems. The flowers are of a light purplish-blue, thickly clustered on short racemes, 4 inches to 6 inches in length. In the variety *alba* the flowers are white, and in the variety *magnifica* the racemes are upwards of a foot in length. It is superior to the typical form when well grown. *W. frutescens* and its

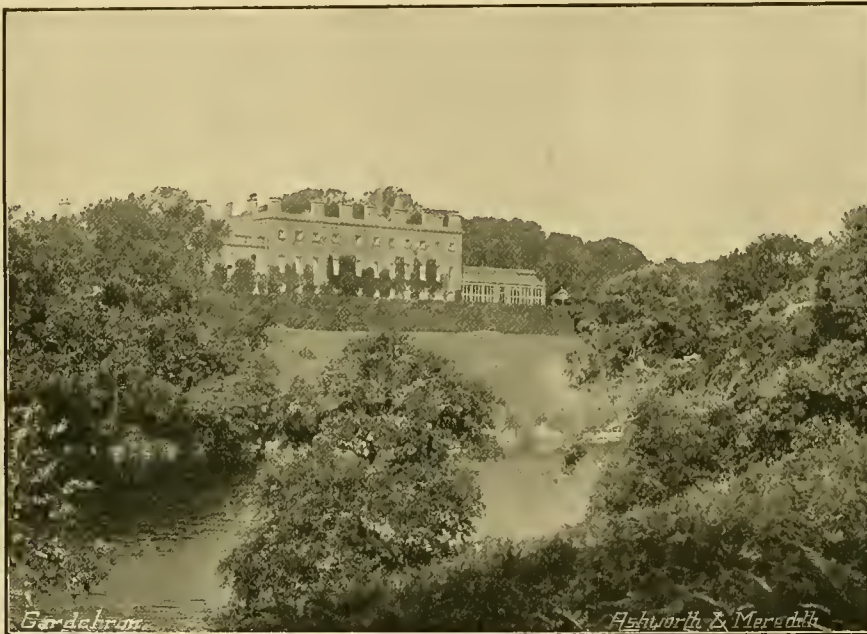


FIG. 93.—STACKPOLE COURT, PEMBROKESHIRE, THE RESIDENCE OF EARL CAWDOR.

woodland, lake, and park. A wide terrace on the south front runs the length of the house, which is about 360 feet, and a flight of steps leads to a further terrace extending 200 or more feet. The tender plants that thrive in the pleasure grounds, and particularly on this terrace, betoken the mild character of the climate. Standing unprotected in the grounds are such plants as *Agapanthus umbellatus*, *Fuchsia gracilis*, *Escallonia exoniensis*, *Chimonanthus fragrans*, *Calycanthus floridus*, and *Pittosporum Tobira* (a plant of this tree is about 15 feet high and 18 feet in diameter). There is a remarkable plant of *Magnolia grandiflora*, having a massive stem, gnarled by age, and filling a large space on the wall of the residence. Banksian Roses, too, of great size, flourish, with *Garrya elliptica*, *Photinia serrulata*, *Buddleias*, *Magnolia Soulangiana*, *Honeysuckle*, &c. A spacious winter garden adjoins the mansion. Climbers such as *Cobea scandens* and *Bougainvilleas* lightly drape the roof, Palms and other suitable plants furnish the floor, whilst carved figures and vases stand in prominent positions.

A charming woodland is entered from the terrace. It is planted with native Ferns, the commoner varieties of Daffodil, Winter Aconite,

diameter). The Hartstongue Fern (*Scolopendrium vulgare*) grows plentifully under the towering trees, and in the hedgerows. Continuing in this direction, a spot that was once a flower-garden is reached. Such plants as *Phormium tenax*, *Gunnera scabra*, *Ginkgo biloba*, and *Benthamia fragifera* are met with in this old flower-garden. The *Benthamia* flowers and fruits freely: one specimen is 35 feet high. Other plants of interest are *Quercus glabra* and *Juniperus japonica aurea* (a good plant of this golden Juniper), *Laurus nobilis*, *Cupressus Lawsoniana lutea*, grand specimens of Oriental Plane, and Tulip tree. At a short distance is a group of nine gigantic Beech trees, forming a circle, their heads a dome, and constituting a grand natural temple.

The glass structures at Stackpole are extensive, and well furnished with plants such as the requirements of a large establishment necessitate. Carnations and Chrysanthemums are numerous and successfully grown; Roses in pots are a feature.

Mr. W. B. Fisher, who has had the care of these gardens for many years, is a most successful fruit grower. The fruit trees, both out of doors and under glass, are excellently trained,

varieties bloom some three weeks later than *W. chinensis*.

W. JAPONICA.—This species is a strong-growing climber from Japan, but is comparatively rare in this country, and can be best described as one of the least ornamental of the genus. The white flowers are individually small, borne in short racemes, and sometimes do not open properly.

W. MULTIJUGA (W. GRANDIFLORA).—Though *W. multijuga* has been ranked as a form of *W. chinensis*, it is, for garden purposes, distinct. The leaflets are more numerous than those of the latter species, and are individually smaller. They are bright green, and glabrous on both surfaces. The flowers, nearly blue with touches of white, are disposed laxly in racemes 2 feet to 3 feet in length. It forms a good successor to *W. chinensis*, blooming some two or three weeks later. The variety *alba* resembles the type, except that the flowers are pure white.

All the *Wistarias* thrive in any deep, well-drained garden soil, provided it is not too dry. A dressing of well-rotted manure and old mortar rubbish may be worked into the soil at the time of planting, but it should not be placed directly about the roots, and an occasional soaking of water can be given with advantage the first season after planting. Like most leguminous plants, *Wistarias* make long, wiry, deeply-descending roots, which, while enabling them to withstand prolonged drought when once established, also render them difficult to transplant, for which reason they are nearly always grown in pots. Propagation is effected by layering, the young plants, as a rule, taking two years to root. They can also be increased by seeds, which must be procured from abroad, as the plant rarely ripen seeds properly in this country. *J. Clark, Bagshot, Surrey.*

DENDROBIUM SPECIOSUM.

This evergreen Orchid is a native of Eastern Australia, whence it was introduced to this country in 1824. It is a well-known garden plant, and forms one of the most showy of cool greenhouse Orchids. The culture of the plant is simple, its principal requirements being a period of rest, without undue shrivelling of the pseudobulbs, after the growths have been formed. The photograph from which our illustration at fig. 94 was prepared was kindly sent us by Mrs. Dukinfield H. Scott, East Oakley House, Oakley, Hants., who photographed the plant on January 2. Mrs. Scott states that the plant was brought from New Zealand about 10 years ago, and, although it was afforded every care, for many years it failed to flower. In consequence of this, it was (in 1908) neglected, and placed in an out-of-the-way position on a dry shelf, where it received little attention. But, under these conditions, the plant developed several fine flower-spikes, and has done so again this year. It is well known that a plant possessing a rich rooting medium and plenty of moisture will often develop vegetative at the expense of floral organs; whilst in a starved condition, the same plant will often hasten to produce a crop of flowers.

FORESTRY.

TIMBER PLANTING IN GREAT BRITAIN.

At the meeting of the Royal Society of Arts, on March 24, a paper on "Afforestation and Timber Planting in Great Britain and Ireland" was read by Dr. J. Nisbet. The chairman, Sir Charles Dilke, in introducing the reader of the paper, expressed himself in favour of the systematic planting in this country of Oak and Ash, and, perhaps, of other hard-wooded trees. He considered that the experiment of growing Douglas Fir in Scotland is promising; but held that it had not yet been proved that the

planting of coniferous trees in this country would be profitable.

Dr. J. Nisbet, in the course of his introductory remarks, referred to the fact that, during the last 25 years, no fewer than four committees and commissions have been appointed by Government to deal with the question of forestry in the United Kingdom. Dealing with the report of the last of these bodies—the Royal Commission on Coast Erosion (see *Gardeners' Chronicle* (pp. 56 and 60, Jan 23), he expressed the opinion that the view taken by this commission that afforestation would provide a considerable amount of work for the unemployed is somewhat too sanguine, and preferred the more moderate statements of the Irish Forestry Committee. This committee reports that, in its opinion, forestry cannot be considered as a specific for curing the evil of unemployment; but that, with the growth of forestry, employment would be provided for the agricultural population in the vicinity of the forests.

Like the chairman, Dr. Nisbet criticised adversely the financial calculations published in the report of the recent commission, and, whilst declaring himself strongly in favour of timber planting in these islands to the utmost extent possible, pointed out that a great national scheme of afforestation should rest on broader



FIG. 94.—DENDROBIUM SPECIOSUM.

and surer economic bases than those indicated in the report. Nevertheless, he claimed that afforestation ought to prove a sound and remunerative investment if made prudently and on a large scale.

Unlike the chairman, who pinned his faith to the planting of hard-wooded trees on suitable ground, Dr. Nisbet looked rather to satisfactory results from the planting of coniferous and soft-wooded timber on waste lands and poor pastures. In support of the need for home-grown supplies of such timber, he cited figures giving the rate of increase of the imports of coniferous wood for such purposes as pit-props and pulp-making. Dr. Nisbet took a gloomy view of the possibility of finding the money for financing a big scheme, but suggested that, by selling some of its estates, which bring in an income of over £500,000 per annum, the Commissioners of Woods, Forests and Land Revenues might, with the consent of the Treasury, provide the necessary capital.

As to available and suitable land, Dr. Nisbet considered that the estimate of the recent commission of 6,000,000 acres for Scotland was altogether too high, and dissented from the suggestions of the commission as to the mode whereby the State should acquire land for the purpose of timber planting.

In concluding his paper, Dr. Nisbet reassured those who fear that extensive forests

will increase the rainfall, impair the climate, or affect the national character.

In the discussion which followed, Sir Herbert Maxwell insisted on the importance of an ample and reasonably cheap supply of timber, stated that he did not take so pessimistic a view of the economic aspect of the question as that expressed by Dr. Nisbet, and insisted on afforestation as a means of keeping the rural population on the land.

Mr. H. J. Elwes, F.R.S., concurred in Dr. Nisbet's criticisms of the report of the Royal Commission, and Professor J. B. Farmer pointed to the need of proper practical education in forestry.

The chairman, in concluding the discussion, pointed out the need for further information with respect to the possibility of growing profitably the Douglas Fir. He drew attention to the fact that, along the shores of the Mediterranean, the poorer sorts of coniferous timber grow in abundance, and referred to the excellent progress made by the Dean Forest School of Forestry.

TIMBER FOR HOME USE.

MUCH is written from time to time in the *Gardeners' Chronicle* as to the advantage of planting trees for profit. After 30 years' experience on this estate I have come to the conclusion that little money can be made in a lifetime by the aid of forestry. At Swanmore the soil is of a varying character—some being nearly pure clay. On other parts of the estate, even in the same field as the clay, chalk occurs within 8 inches of the surface. The bulk of the land is high and generally dry: the average rainfall is 30 inches, and the altitude is 400 feet above sea-level. A stranger would say Swanmore is just the place to grow timber for profit when looking at the foliage on the Elm trees, and the growth annually made by the Larches, which grow from 2 feet to 4 feet in a season up to 15 years old. Corsican Pines grow from 18 inches to double that in one season.

The natural tree here is Beech. Oak and Ash grow slowly, but produce timber of excellent lasting quality. The undergrowth in the woods is mainly Hazel, which is used for sheep hurdles, hoops for casks, &c. The local custom with the underwood is to cut it in breadths at 10 years old. Its value ranges from 10 shillings to £3 per acre. A few years since the same wood could be sold for £5 per acre. Now that hoops imported from France can be bought cheaper at Bristol than they can be sent from here to Bristol, the industry is destroyed. It will be seen from the above that in the natural wood crop there is but little remuneration after 10 years waiting. A plantation of Larch growing here up to 15 years would delight a stranger, as the trees grow luxuriantly and without a speck or blemish upon them. After that time the dreaded Larch disease affects them: a blotch here and there allows of the oozing out of the sap, leaving a big scar, which, as all foresters know, is detrimental to a timber tree.

Various reasons have been advanced to account for this disease—spring frost, situation, insects, and want of other forest trees amongst the Larch. My opinion, based upon the experience gained here, is that it is due to a lack of preparation of the soil at the time of planting. Generally our subsoil is a hard pan of an exceedingly inert character, which, in its natural state, does not admit of a quick percolation of water. Thus the soil is cold during winter and spring, causing a check to growth. But while the roots of the trees are in the upper layer of soil, they are not greatly influenced by the wet and cold subsoil. That this theory is reasonable is proved by Larch trees growing well upon deeply-trenched soil after having been planted 30 years, and with no trace of disease.

Because of this disease the planting of Larch is no longer practised here. Fortunately, other

Conifers beside Larch have been planted, commencing in 1878 with Spruce and Austrian Pines. Two years later a plantation of Corsican Pine (*Pinus Laricio*), Austrian Pines (*Pinus L. var. nigricans*), Scotch Fir (*Pinus Sylvestris*) and Spruce (*Picea excelsa*) was made, the different species being in separate blocks to test the suitability of each. From this plantation we are now cutting valuable material for estate use, particularly for repairs and building purposes.

The Spruce furnishes trees 30 feet long and 12 inches in diameter at the base, which, by the aid of a circular saw, are cut into useful boards. From the Corsican Pines we cut rafters 8 inches by 2 inches, and also boards, which are easily worked. As this timber is planed very easily, and gives a smooth surface, the boards are valuable for use indoors. From the Austrian Pine and Scotch Fir we obtain similar material, not so free from knots, as these trees do not grow with the same luxuriance as does the Corsican Pine. My regret is that we did not plant more trees of *Pinus Laricio* and Spruce instead of so many Larch. In all 500,000 Conifers have been planted here during the last 30 years. In the autumn of 1885, 2,000 plants of *Thuja Lobbii* (syn. *gigantea*) were put in alternately with Larch as an experiment to test the relative growth of each kind of tree. The soil is stiff and moist. Growth was rapid from the start; here and there a Larch headed the *Thujas*, but on the whole the latter kept ahead, until now all the Larch have been cut, leaving the *Thujas* which are 25 feet high. They form a very fine plantation, judged by external appearances, but I am in doubt as to whether the timber will be of much value. Some specimens cut on this estate furnished wood which was very light and soft, although the trees were 30 years planted.

If this age were trebled, *T. Lobbii* might furnish desirable timber. My conclusion is that the best trees to plant for profit during the lifetime of an owner are the Corsican Pine, Spruce, Scotch Fir, Austrian Pine, and Larch. Although I have said little in favour of Larch, I find the trees useful for supplying llop poles and materials for pergolas, pillars (for training Roses), and fences, &c. Larch is a useful tree on an estate, but when we are told how valuable it is for timber without discrimination as to site and conditions of soil, climate, &c., I do not hesitate to say such teaching is against all practical experience. *E. Molyneux, Swanmore Park, Bishop's Waltham.*

TREES AND SHRUBS.

TOWN PLANTING.

PROBABLY no work connected with horticulture requires more judgment and good management than the planting of trees and shrubs in urban districts. The materials and soil of which streets and town gardens are usually formed are ill fitted for sustaining a healthy condition in trees and shrubs for any length of time. This fact, coupled with the impurities of the atmosphere in densely-populated centres, has to be constantly borne in mind. In more favourable districts all that is necessary is to open a pit of sufficient size to contain the roots of the tree or shrub to be planted, but in towns the soil, often hard as iron and composed mainly of refuse building materials, contains but little plant food. For many years past careful observations have been made, not only in London, but in Glasgow, Liverpool, Manchester, and Warrington as to which trees and shrubs succeed best in the most smoky localities of each town, and it is mainly by tabulating these different experiences that satisfactory information on the subject has been obtained. Coal smoke from the chimneys in the larger and more crowded centres of industry is no doubt bad enough, but when we have to contend with an atmosphere

that is largely impregnated with the outcome from chemical, gas or iron works the difficulties to be encountered are correspondingly increased. When compared with Continental cities—Paris, Brussels or Berlin—where tree-culture is carried out most successfully, the atmosphere of British towns is impregnated to a far greater extent with noxious fumes. Dry and confined areas, particularly where excessive heat and atmospheric impurities are present, are decidedly the worst, while open and high-lying districts, though in the centre of a town, offer fewer difficulties.

That certain trees and shrubs succeed best in particular towns is a well-known fact, and the smoke-proof London Plane is by no means the best tree for some of the colliery districts; in Sheffield, for instance, its place is largely taken by the Canadian Poplar. In Manchester the Lime would appear to thrive best, after which the Elder, Thorn, and Plane succeed in the order named. The variegated-leaved Sycamore and the Horse Chestnut are favourites where the smoke from collieries is most offensive. But many such cases could be pointed out, and even in the case of bedding plants certain species succeed best in particular localities. In the gardens about the Royal Mint, and where exposed to the deleterious fumes from gold-refining works, *Fuchsias* do remarkably well; indeed, the dwarf edging variety, *Golden Treasure*, thrives so well that advantage has been taken of the fact to propagate the stock annually required for some of the parks from cuttings taken at the Mint. In the East End of London the Creeping Jenny (*Lysimachia*) thrives well as a window plant, while in the chemically impure atmosphere of Lambeth one of the *Veronicas* is the favourite plant for indoor culture. The *St. John's Worts* (*Hypericum*) do not as a rule thrive well in London, yet around the Tate Gallery, which is only divided by the river from the Lambeth pottery district—the worst in the metropolis for atmospheric impurities—one species at least flourishes amazingly, and has produced flowers in abundance for many years past. In Chancery Lane, at the Record Office, the common Ivy, Bladder Senna and *Yucca* do best. In other parts of London the pretty white and blue varieties of *Campanula isophylla* are largely grown. It is a somewhat strange fact, too, that some varieties of trees and shrubs succeed better than the type species in smoky localities, as witness the London Plane (a variety of *Platanus orientalis*), variegated-leaved Sycamore, fastigate Poplar, two varieties of *Pyrus*, Weeping Elm, Weeping Ash, and several varieties of *Acacia*, notably *Robinia pseud-acacia inermis* and *R. pseud-acacia Bessoniana*.

Amongst shrubs we have the dwarf Holly, golden *Euonymus*, *Privet*, *Ribes*, double-flowered *Gorse*, *Euonymus radicans variegata*, and others. With Grasses, too, some curious experiences might be related. At the British Museum, the Yarrow has completely ousted the Grasses from the plots in front of that building, and in the moat of the Tower of London several Grasses that succeed in less smoky parts of the metropolis quickly die out. Near the main entrance to the Tower of London, and close to Billingsgate Fish Market, considerable difficulty was experienced in getting the Plane trees established, though in the matter of soil and choice of strong, sturdy specimens everything that could be thought of was accomplished. At last it was found that the drip from the fish carts was the cause of the evil, and a remedy was quickly found. In another garden, where dust, smoke and soot are plentiful, a species of *Lychnis*, the common Marigold, and Rye Grass seem to positively revel. In situations almost constantly subjected to the sulphurous fumes of the railway engines near Camden Town, and in the poorest of soils, the *Poa annua* would appear to be quite at home. The chemical fumes from the pottery works at Lambeth are well known to act injuriously on vegetation gener-

ally, but the Mulberry, Sycamore, Turkey and Evergreen Oaks thrive as well there as they do in any other part of the metropolis. With the largely increased use of coal gas for cooking purposes the atmosphere of certain districts of London has, however, become much less smoky than was the case a few years ago, and in consequence vegetation generally succeeds better. This is especially the case in some of the low-lying districts adjoining the Thames, where the "slot" system of providing gas for cooking purposes has caused a great decrease in the consumption of coke and coal, with a corresponding reduction of the attending evils of smoke and soot. In one of the poorest parishes many of the inhabitants have taken advantage of the facilities offered by the gas company in the matter of cooking by means of gas provided by the "slot" system, which, in comparison with coal, has been found not only cheaper, but cleaner and handier to use. According to a competent authority, the smoke nuisance has, in consequence, become greatly abated, and with the purer air the cultivation of window and other plants, as well as trees and shrubs, has been to some extent simplified. The electrification of the Underground Railway has also had a beneficial effect on vegetation. *A. D. Webster.*

FUCHSIAS.

A VAST number of varieties of *Fuchsia* have been distributed within the last 20 years, yet many of the older kinds still hold their own, while comparatively few of the newcomers have passed into general cultivation. New varieties, therefore, do not usually excite much interest, but there are exceptional cases. This was well illustrated last year at the Holland Park Show, where Messrs. Cannell & Sons put up a group of distinct varieties, which were a source of great interest. These particular varieties of German origin suggested, in their general appearance, that three species had played a part in their production, namely, *F. corymbiflora*, *F. fulgens*, and *F. triphylla*. At all events, the varieties formed a distinct group, and I am informed that there is now considerable demand for them.

This success should encourage raisers to experiment with some of the other species of *Fuchsia*, for there are many beautiful kinds that do not appear to have been yet employed by the hybridist. This is particularly noticeable among the vigorous-growing species, such as are seen to great advantage when treated as roof plants. It might be urged that the progeny of these would be of too straggling a growth to become popular; but, in crossing with a compact-growing kind, this difficulty might be obviated. A good illustration of this is to be found in the hybrids between *F. corymbiflora* and *F. triphylla*, which inherit a good deal of the compact habit of the last-named parent.

One of the first hybrids that stand to the credit of the late John Doiny was a *Fuchsia*, namely, *F. Dominiana*, obtained by the crossing of *F. serratifolia* and *F. splendens*. This hybrid, which, 40 years ago, was very popular, appears to have almost, if not quite, dropped out of cultivation. The plant produces its long-tubed, rosy-scarlet flowers during the greater part of the year.

The two species that contributed to its raising are now very uncommon, perhaps the more generally met with being the Mexican *F. splendens*, with curious, yet showy, scarlet and green flowers. It is also questionable whether further use might not be made of *F. corymbiflora*, certainly one of the most showy of all *Fuchsias*, and its striking variety *alba*, in which the tube of the flower is white. This was raised about 50 years ago at the Versailles Nursery, Hammersmith, from which, at that time, many of the Continental novelties found their

way into this country. Though somewhat less vigorous than the typical form, this white-flowered variety of *F. corymbiflora* forms a desirable companion to it.

A strong, rambling-growing species has been long grown at Kew under the specific name of *dependens*; it is very handsome when trained up the roof of a greenhouse. The flowers are borne in long peduncled clusters; they are tubular in shape and nearly 3 inches long. The tube is of a deep, rosy red, but the petals are of a scarlet tint. Some of the tiny-flowered species are well worth growing for their intrinsic merit, while they might prove valuable for hybridising. Such are *F. bacillaris*, *F. microphylla*, and *F. thymifolia*.

Of curious kinds, especial mention may be made of the New Zealand *F. excorticata*, of which a large specimen, almost a tree in stature, formed one of the earlier occupants, now many years ago, of the Temperate House at Kew. The flowers, borne often on the old wood, are of a dull, reddish colour, with purple petals, while the anthers are bright blue, and the stigma yellow—a strange combination. Another curious feature is the manner in which the old bark peels off, hence the specific name of *excorticata*.

A second New Zealand species, *F. procumbens*, is totally unlike any other member of the *Fuchsia* family in general cultivation. Its habit is well expressed by the specific name, as its slender stems are long and creeping. They are clothed with roundish leaves, half an inch or so in diameter, while the flowers are erect, bell shaped, and in colour green, red, and yellow. The large, reddish-purple berries of this *Fuchsia* form a very notable feature. When grown in a suspended basket, *F. procumbens* is seen to considerable advantage.

Lastly come the hardy *Fuchsias*, to which much attention has been directed in late years. There are now many different forms of this section, a goodly number having been raised by M. Lemoine, of Nancy. Nearly all these hardy *Fuchsias* are now regarded as forms of *F. macrostemma*, whereas, at one time, many of them were assigned specific rank. *W. T.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

EXHIBITING CARNATIONS.—At the recent exhibition of the Perpetual-Flowering Carnation Society, the displaying of unsupported flowers on yard-long stems did not produce the best effect. Flower-stems of the variety *Enchantress* were describing a complete arc, and, with bowed heads, the full beauty of the flowers was hidden from view. Those of *White Perfection* were in a worse condition, for many of the rigid stems had snapped off at the level of the vase. The flowers of both these varieties as shown were of the largest size, and apparently too weighty for the stalks to hold them erect. The schedule required the flowers to be shown as grown; but, whether pot or bench grown, the flowers were, in culture, undoubtedly supported by wires, strings, hoops, or sticks. That the Society recognises supports to flowers in some circumstances was evidenced in the non-competitive groups, some of which received high awards. The schedule might be framed to make the use of wire supports optional; but, by allowing points in favour of its non-use, the Society could continue to encourage the development of the self-supporting stem. *E. H. Jenkins.*

LIGUSTRUM NEPHRITICUM.—This is mentioned in *Petro van Musschenbrock's Elementa Physica*, second edition, published at Leyden in 1741. He there refers to a curious optical property of an infusion of the wood, that of showing different colours with change of position of the illumination or of the eye: "id quoque conspicuum est in infuso Ligni Nephriticæ, quod pro diverso tam oculi, quam lucis situ, alio colore apparet." This at once suggested fluorescence to me, and Mr. Jackson's note on p. 187

confirms my conjecture: quinine solutions are standard examples of fluorescent substances. The suggestions in a previous letter that the wood is that of *Moringa* is clearly ruled out if, as stated, this tree was only introduced in 1759, 18 years after van Musschenbrock's book. *John H. Shaxby, Wynnstow, Llanishen, Glamorganshire.*

—A specimen of this wood exists in the Museum of the Pharmaceutical Society of Great Britain, in Bloomsbury Square, in a collection of drugs that dates back to the middle of the 18th century. The wood appears to have been well known, and used during the 17th and 18th centuries. It was official in the Edinburgh Pharmacopœias during the greater part of the 17th century, but so far as I can learn its botanical source has not yet been determined. According to *Pomet (1748)* it was brought from New Spain, chiefly from the kingdom of Mexico, where it is called "Coatli" or "Tlapalcypatli," and is described as having the mode of growth of our Pear tree, with leaves like Chick Peas, but much smaller. The wood is described as having a bitter taste and giving a blue colour to water in which it is infused. *Lemery*, erroneously, I think, refers it to the tree which yields oil of Ben (*Moringa aptera*). *Lunan*, in *Hortus Jamaicensis*, refers the Nephritic tree to *Unguis-Cati (Pithecolobium Unguis-Cati Benth.)*, but as he states that the bark is used in kidney disease, it is probably not identical with the Mexican wood. *Lewis*, in his *Materia Medica (1768)*, gives a definite account of its appearance and properties. He describes it as an American wood "brought to us in large, compact, ponderous pieces without knots; the outer part of a whitish or pale-yellowish colour, and the medullary substance of a dark brownish or reddish colour. When macerated in water for half-an-hour or an hour it imparts a deep tincture, appearing when placed between the eye and the light of a golden colour, in other situations of a fine blue, a property in which it agrees with the Ash tree and differs from all other known woods. The wood has a bitterish, somewhat pungent taste, and when rasped emits a faint aromatic odour. The blue, aqueous infusion was used as a common drink in kidney and urinary diseases, and was said to possess the advantage over other remedies of not causing irritation." *John Hill*, in his *Materia Medica (1751)*, enters into more detail concerning the plant that yields it. He says, "The tree which affords it is the Coatli of Hernandez, and grows to the height of our Pear tree. The leaves are small and oblong, not exceeding half-inch in length or a third of an inch in breadth; they are not notched at the edges, and are green above, with a few hairs scattered over them, but of a silvery-grey underneath. The flowers are small and of a pale yellow and oblong shape, and they stand in spikes. The cup they stand in is divided into five segments, and is covered with reddish down." This is the best description of the tree that can be collected from what has hitherto been written of it. *Hernandez (1651)*, under *Coatli*, remarks, on p. 119, "E. genere leguminum esse colligitur, non tantum ex foliis ciceris sed ex eo quod apud nos Genista vim habeant ad calculum pellendum, et reliqua fere omnium leguminum genera." He was, therefore, obviously of opinion that it is the wood of a leguminous tree. Perhaps this description may enable some Mexican botanist who reads this note to recognise the plant that yields the Nephritic wood, and thus solve another of the many problems in ancient *Materia Medica* that still await investigation. *E. M. Holmes.*

GRISELINIA LITTORALIS.—I agree with the remarks of *F. M.*, p. 196, upon this shrub. As its name implies, *littoralis* means a plant which pertains to the seashore. I advise its inclusion amongst collections of shrubs. When planted by itself it forms a beautiful specimen shrub, and is as handsome as any other known to me. Its beauty is in the pale yellowish-green stems and leaves; its flowers are of no great merit, they are small and of the same colour as the foliage. As a hedge plant, I am more than convinced that it has no equal amongst all the hedge plants in existence. Where *Ligustrum ovalifolium* fails to keep evergreen, the *Grisealinia* succeeds. Here, in the extreme end of North Lancashire, against the Irish Sea coast, I find this shrub most hardy. I am planting

more than 1,000 young plants of my own raising in our new public park, and I am also propagating it in thousands for future uses. *Grisealinia littoralis* stands clipping as well as either *Thorn* or *Privet*, and, by planting either in double or treble rows, it forms an impenetrable fence very quickly. I agree with Mr. Elgar in his remarks on *Cupressus macrocarpa* as a hedge plant; but I would advise him to try the *Grisealinia* also for this purpose. *Victor H. Lucas, Gardener to Borough Council, Barrow-in-Furness.*

THE TEMPERATURE OF RESPIRING PLANTS.

—In your interesting leader on this subject (*Gardeners' Chronicle*, March 27), there seems to be a slight omission, inasmuch as no mention is made about the relationship of temperatures to the absorption of oxygen, with increase of carbonic acid gas expired. It is said that "the leaves of such plants as Apple and Hornbeam actually kill themselves by the high temperatures," which may in part "be ascribed to wound-fever." But will not the actual cause of death in closed vessels be rather suffocation? Unless oxygen be artificially supplied, respiration must sooner or later cease when the vessel will be full of CO₂. It has long ago been shown by *MM. Bonnier and Magnin (Ann. des Sci. Nat., xix., p. 253, 1884)*, experimenting on respiration in darkness, that, when no photosynthesis can take place, the increment of CO₂ expired goes on *pari passu* with the increase of heat; so that the curve of the volumes of CO₂ expired is a parabola. This means that there are no maxima and minima, but that the plant will increase its respiration till it dies. It would seem to be rightly suggested by the writer that cut ends of shoots bearing leaves could hardly cause wound-fever in the latter; at least, it does not seem that such has been proved. But, as the heat due to respiration was confined, it would naturally go on accumulating, like that in a greenhouse exposed to the sun, and this increase of temperature would react, increasing the respiration, till death ensued. If the flasks were exposed to light, a certain amount of photosynthesis would take place; but the abnormal conditions would seem to so increase the respiration to an abnormal extent as to outweigh any slight and contrary effects the process of assimilation might produce. If the preceding has any practical value, it means that, in a closed glass-house, with insufficient ventilation and a superabundance of plants, there may be an accumulation of heat from the sun, or artificial overheating, together with the respiration, which would still further enhance the respiration abnormally, and so, perhaps, injuriously. *George Henslow.*

"THE ORCHID STUD-BOOK."—One or two remarks upon this work (see p. 184) call for a reply. It is said "The authors' rules, indeed, are opposed to the spirit of one of the Vienna recommendations, viz., Art. 50, &c.," but the name that may not be changed or modified is a name given in accordance with the rules of binomial nomenclature (though of faulty construction). It had already been provided (Art. 26) that the said name must be binomial, and, as *De Candolle* originally remarked, "Names or forms of nomenclature which are contrary to a rule cannot in practice be maintained." How can an author evolve order out of chaos, to use your appropriate phrase, if he is to be bound hand and foot by half-a-dozen conflicting systems of nomenclature? The reference to the "yet more arbitrary but in the long run more logical proposals now before the Scientific and Orchid Committees of the R.H.S." is quite beside the point, for that sub-committee was appointed to deal with multigeneric hybrids (none of which have yet flowered), and it has endorsed the system of naming generic hybrids followed (not originated) in the *Stud-Book*, which is that of its earlier Nomenclature Committee, printed in the Society's own *Plants, &c., Certificated by the Society* (p. 210), under the heading, "The Naming of Orchids for Garden Purposes." The authors are members of that sub-committee, and it is no secret that they both strongly supported the proposal now put forward by it as the provisional recommendation for adoption in the naming of multigeneric hybrids. With one exception, the rules objected to are not ours. That exception is the one stating that secondary hybrids should as far as possible

be dealt with uniformly with primary ones, i.e., that seedlings from the same capsule, or of the same parentage, should be treated as forms of one. It was drawn up at a time when the difficulty of dealing with secondary hybrids was imperfectly realised, and is still the system largely in use. But the authors are fully aware of the difficulties entailed, as is shown by the paragraph entitled "Secondary and More Complex Hybrids," on pp. v., vi. of the Preface. The original idea was to deal with primary hybrids only, but it was felt that this plan would greatly curtail the utility of the work, and with the decision to include them came the conviction that the advantages of a uniform system altogether overbalanced its disadvantages. The description of our rule respecting specific names, that such names are "Latin, Greek or Græco-Latin" is erroneous. It reads "Latin or classical, consisting of a single word—the use, however, of two short words being permissible where they can be connected with a hyphen." And many names are adopted which are not even classical. The objection to the modification of *Cattleya* × *Lady Ingram* into *C. × Ingramiæ* need not have been written, if the Orchid Committee had carried out the Society's own rules. At p. 210 (aforementioned) we read: "The Orchid Committee should decline to recognise any unauthorised name, or any name that is deemed unsuitable, or one which is not applied in uniformity with the preceding rules." We have only carried out the rule that the Orchid Committee neglected to apply when they gave the plant an Award of Merit. It may be that the hybrids included under *Lælio-Cattleya* × *Fournieri* will have to be re-examined, and had we discovered that the one called *Berthe Fournier* was only a synonym of the earlier *L.-C. × Lucila*, we should not have hesitated to refer to it as a synonym, as has been done in numerous cases. We cannot hope to have detected every error, and in the attempt to remedy some of them may have fallen into others of our own, which will have to be corrected later on, but to have made "a definite step towards the evolution of order out of chaos" is to have achieved something. *R. A. Rolfe.*

THE "BURBANK" POTATO.—From time to time we hear of what our American cousins term the Burbank "creations," but it is rare that full details reach us such as are vouchsafed in an article before us published in the *Weekly Examiner* from San Francisco. The article deals mainly with the financing of Mr. Luther Burbank on a colossal scale to enable a group of American millionaires to supply the world in a wholesale way with the fruits of Burbank's creation; such, for example, as the spineless Cactus, destined to supply the starving millions of India with succulent food, and, by virtue of selective cultivation, to replace both Beet and Sugar-cane in the production of sugar and alcohol. The Burbank Potato, however, seems to rank first "as the advance agent of a challenging army of marvellous productions of plant life." This Potato "has conquered the earth, and is practically the only one grown on the American continent from Alaska to Mexico." Since its introduction, "Burbank has estimated that enough Burbank Potatoes have been grown to pave a street 200 feet wide entirely round the world at the equator." "Last year alone 14,000,000 bushels were produced with the Burbank label." That "Burbank has given to the world a new botany," and that "Burbank has gone beyond nature" are examples of the encomiums launched upon the "plant wizard" of Santa Rosa; but the most curious and remarkable feature of the whole report is that in another part, preceding these wonderful statistics, it claims to be "the first announcement of the discovery of this Potato, the secret of which has been kept so closely that, although it has been for years 'a household word all over the West,' even the people of Santa Rosa know nothing about it." It is obviously as difficult to reconcile these two statements as it is to comprehend the fact that our horticultural and agricultural experts are ignorant of the multitude of other Burbank creations, which are constantly cropping up in print, but never in our gardens or orchards. It is to be hoped, however, that the millionaire combination will see to it that, while supplying the "world," the expectant British Empire may not be so entirely ignored in the future as in the past. *C. T. D.*

ANEMONE TRAVERSII.—Mr. Gumbleton has drawn my attention to an error in my reference to this plant on p. 179. I have transposed the colours; it is the type plant which is white, and the variety *elegans* rose. My error is inexcusable, as it was through the kindness of Mr. Gumbleton that I became possessed of the variety *elegans*, which has bloomed beautifully in my garden. *S. Arnott, Sunnymead, Dumfries.*

SOCIETIES.

ROYAL HORTICULTURAL

Scientific Committee.

MARCH 23.—*Present:* Mr. E. A. Bowles, M.A., F.L.S., F.E.S. (in the Chair); Sir Daniel Morris, K.C.M.G., Dr. Rendle, Messrs. R. H. Curtis, G. Massee, J. Douglas, H. T. Güssow, J. T. Bennett-Poë, W. Fawcett, A. Worsley, F. J. Baker, G. Saunders, and F. J. Chittenden (hon. secretary). Visitors: Messrs. F. W. Smith and G. Wilson, F.L.S.

Roots of Sweet Peas dying.—Mr. MASSEE reported that he had examined the roots of the Sweet Peas sent to the last meeting and had found that the cortical cells and root hairs were all killed and browned. He thought they were perfectly free from any disease due to insects or fungi, but had probably been injured by some injurious substance in the soil, or by some fertiliser. Possibly peaty soil with Sphagnum had been used, and humic acid had caused the damage.

Parsnips from wild stock.—Mr. F. J. BAKER showed some roots of Parsnips of the sixth generation from the wild plants. The roots were of good size, although grown on poor land, and had lost the greater part of the tough woody fibre of the original stock. In form they showed a near approach to the well-known "Hollow-crown" type of Parsnip. Mr. BAKER said there was just a possibility that the plants had in one generation been crossed with pollen from cultivated plants. He found the roots far less liable to rust than the ordinary plants, though they were not entirely free from it.

Orchid malformations.—Mr. GURNEY WILSON showed malformed flowers of *Odontoglossum Harryano-crispum* on behalf of Mr. W. BOLTON, of Warrington. There appeared to be symmetry about the multiplication of parts in these flowers, and Mr. Wilson remarked that, as in the present case, when a portion is removed from an established plant, in the next season it is not very unusual for the older portion to bear malformed flowers, while the portions removed bear normal flowers. He also showed a flower of *Selenipedium caudatum* var. *Lindenii*, from Messrs. CHARLESWORTH. In this variety the labellum is not slipper-shaped as in the type, but is replaced by a very long and tapering petal entirely similar to the two lateral petals; there are also three fertile stamens. The variety was figured by Reichenbach (*Lindl. Orchid. Linden*, 28, 1846), under the name of *Uropedium Lindenii*. The form occurs wild.

Gummosis in Lemon.—Mr. WORSLEY showed a branch of a Lemon with leaves beginning to shrivel, attacked in its lower portion by gummosis, a considerable mass of gum exuding from the stem, and the bark being browned all round for a considerable distance. It was remarked that in some cases gumming of trees had been found to be associated with the presence of a fungus, and often appeared to start at a wound, but in the present case no wound could be discerned. Sir DANIEL MORRIS said that in Florida the gumming usually occurred in the trees where they had been budded, and Mr. FAWCETT said he had seen trees affected in a manner similar to that shown by Mr. WORSLEY's example in the West Indies, where the disease was thought to be associated with too liberal manuring with nitrogenous manures, or with heaping earth around the stems. The disease was treated by cutting out the affected portion and dressing the wound with tar.

Eucrosia bicolor.—Mr. J. T. BENNETT-POË showed flowers of this peculiar plant from Miss WILLMOTT's garden. The plant was figured in 1817 in the *Botanical Register*, t. 207.

Grease bands.—Mr. WALTER VOSS reported that no winter moths of any kind had been caught on the grease bands placed on the fruit trees at Enfield since the end of November.

Diseased plants.—Mr. MASSEE showed a piece of a Rose stock attacked by the fungus *Leptosphaeria diplocladia*, a well-known fungus on the stems of the Dog Rose and rarely attacking the cultivated varieties. In this case 15,000 bushes had been affected. Mr. MASSEE also showed shoots of Apple affected by the winter stage of the Apple scab, *Fusicladium dendriticum*. Mr. MASSEE also showed a branch of Pear which had been damaged by hailstones in the summer. The wounds had healed, and were now free from danger of attack from fungi, but the circular places which had been damaged by the stones had dried, and were sunken and black.

LINNEAN SOCIETY.

MARCH 18.—Miss Sibyl Longman gave the substance of a paper, communicated by Prof. Keeble, Sc.D., entitled "The 'Dry-Rot' of Potatoes," illustrating her account by diagrams. She pointed out, as the result of her researches, that the disease of the Potato tuber, known as "dry-rot"—due to the fungus *Fusarium Solani*, is not necessarily preceded by "wet-rot," but may be set up in sound tubers by inoculation with spores or mycelium of *Fusarium Solani*, which species is not a parasite of the resting tuber only: it may also attack and kill the shoots of Potato plants. The fungus, which probably exists as a widely-distributed saprophyte in the soil, infects the growing Potato plant through the root; it also spreads from tuber to tuber during the storage and diseased tubers may produce diseased plants. Heat sterilisation of the resting Potato tuber, with respect to *Fusarium Solani*, is impracticable, for the death-temperature of the fungus is higher than that of the Potato. A pycnidial stage occurs in the life-history of *Fusarium Solani*, which should therefore be placed in the highest group of the Fungi Imperfecti, the Sphaeropsidaceæ and not, as is the case at present, in the Hyphomycetes.

An animated discussion followed, in which Mr. G. Massee stated that various forms were usually found in conjunction with the fungus described, and alluded to Bernard's theory of tuberculation being always dependent upon some species of *Fusarium*. The debate was continued by Mr. A. D. Cotton, by Prof. Keeble, who mentioned that Miss Longman's cultures had been derived from a single spore, from a hanging drop, and upon material sterilised according to modern bacteriological methods, and by Mr. Arthur W. Sutton, who invited Prof. Keeble and the author of the paper to determine specially healthy Potato plants in the Reading trial grounds, so that their tubers might give rise to an immune race. To these remarks the author briefly replied.

The second paper, by Mr. A. S. Horne, B.Sc., F.G.S., "On the Structure and Affinities of *Davidia involucreta*, Baill.," communicated by Prof. J. B. Farmer, F.R.S., was, in the absence of the author, explained by Dr. Otto Stapf, F.R.S.

The paper dealt with the structure and affinities of a genus referred by various authorities to the natural orders Combretaceæ, Cornaceæ, and Hamamelidaceæ. The investigation, carried out under the direction of Professor J. B. Farmer, was made upon material brought by Mr. E. H. Wilson from Szechuen in 1904. Evidence was advanced in favour of interpreting the inflorescence as consisting of a number of congenitally-fused, apetalous, multi-staminate, male flowers, or of male and, in addition, a single, obliquely-situated, apetalous, hermaphrodite flower with epigynous stamens arranged in series. From a detailed study of the flower, ovary, ovule and seed, the author is inclined to believe that *Davidia* is distantly related to *Alangium* and *Nyssa*, and still more distantly related to the *Araliaceæ*, and that the genus occupies a somewhat isolated position owing to having pursued an independent course of development from the plexus of primitive groups which included the ancestral forms of the *Araliaceæ*, *Nyseeæ* and *Alangieæ*.

In the discussion which followed Prof. F. W. Oliver, F.R.S., the general secretary, Mr. R. Morton Middleton, and the President took part.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 18.—*Committee present:* Messrs. E. Ashworth (chairman), Thorp, Cowan, Ward, Warburton, Sander, Upjohn, Shill, Keeling, Holmes, Ashton, Cypher, Parker, and P. Weathers (hon. sec.).

A. WARBURTON, Esq., Haslingden (gr. Mr. Da'gleish), was awarded a Silver-gilt Medal for a group of *Odontoglossums*. First-class Certificates were awarded to *O. crispum* Luci-Marie, *O. crispum* variety Hofer; *O. × ardentissimum* variety Vanguard; *Cattleya Schröderæ* variety Ulixes (an intensely dark-coloured flower with a rich velvety lip), and *C. Percivaliana* var. Little Gem. *Odontoglossum crispum* var. Brutus was voted an Award of Merit.

The Rev. J. CROMBIEHOLME, Clayton-le-Moors (gr. Mr. Marshall), received an Award of Merit for *Cypripedium × apiculatum* var. atratum.

J. McCARTNEY, Esq., Bolton (gr. Mr. Holmes), was awarded a Silver Medal for a group of *Cattleyas* and *Lælias*. *Cattleya Trianae* var. Lucifer and *C. T.* var. Fascinator received Awards of Merit.

R. ASHWORTH, Esq., Newchurch (gr. Mr. Fletcher), obtained Awards of Merit for *Odontoglossum × Lambeauianum* var. Fletcheri and *O. × L.* var. Ashlandense. Another fine plant in this exhibitor's group was *O. × ardentissimum* var. album.

J. T. CLIFTON, Esq., Lytham (gr. Mr. Float), was awarded a Silver Medal for a group consisting principally of *Dendrobiums*.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate (gr. Mr. Collier), made a handsome display with *Dendrobiums*.

O. O. WRIGLEY, Esq., Bury (gr. Mr. Rogers), displayed *Lycastes* in variety and some well-grown plants of *Lælia Jongheana*.

H. J. BROMILOW, Esq., Rainhill (gr. Mr. Morgan), was awarded a Silver Medal for a group of *Cypripediums*. *C. × Alcibiades* var. Illustrious was awarded a First-class Certificate.

Z. A. WARD, Esq., Northenden (gr. Mr. Weatherby), staged a group of *Odontoglossums* in variety. *O. crispum* var. Meteor received an Award of Merit.

Messrs. J. CYPHER & SONS, Cheltenham, were awarded a Silver Medal for a group, amongst which were several good hybrid *Cypripediums*.

Messrs. HUGH LOW & Co., Enfield, were awarded a Silver Medal for a miscellaneous group.

BRITISH GARDENERS' ASSOCIATION.

At the last meeting of the association, Mr. E. F. Hawes in the chair, 41 new members were elected, bringing the total membership to 1,473.

It was decided that the annual general meeting of the association should be held at the Essex Hall, Essex Street, Strand, W.C., on Wednesday, May 26, at 7 p.m., the second day of the Temple Show.

(LONDON BRANCH.)

THE next general meeting takes place on Thursday, April 8, at 8 p.m., when Mr. R. Lewis Castle will give a lecture on "Commercial and Co-operative Gardening."

The first annual meeting of the branch will be held on Wednesday, April 14, at 8 p.m. Members of the association only will be admitted at this meeting.

PERPETUAL-FLOWERING CARNATION.

MARCH 24.—The annual dinner of this society was held at the Hotel Windsor on the evening following the show; Mr. J. S. Brunton presided over a company of about 30 members and friends. A letter from the president, Lord Howard de Walden, was read regretting his inability to be present at the dinner, and a similar communication was received from C. F. Raphael, Esq., a vice-president.

The President's Challenge Cup and the Silver Cup given by the American Carnation Society were handed to the winners.

After the usual toasts had been submitted, a discussion on "The Value of the Carnation as an Amateur's Flower" was opened by Rev. J.

Jacob. The speaker emphasised the value of scent in flowers, but of this attribute the present varieties of perpetual-flowering Carnation were lacking. He urged the society to withhold their First-class Certificates from new varieties that were scentless. Mr. R. F. Felton thought a much more effective display could be obtained in the various classes if the schedule permitted the use of supports for the flowers, as in many cases the stems were too weak to hold themselves erect. The general opinion of the meeting was that the use of wire for supporting the flowers was not desirable.

TORQUAY DISTRICT GARDENERS'.

MARCH 25.—The society held a highly successful spring show in the Bath Saloons, Torquay, on this date. The entries were nearly double those of last year, and, considering the lateness of the season, the exhibits reached a high standard of perfection. The show was favoured with fine weather, and the attendance of visitors was exceptionally large. One of the features of the exhibition was a display of Orchids by Sir JOHN EDWARDS-MOSS, Roby Hall, Watcombe. Much of the success of the show was due to the nurserymen's exhibits, many trade firms staging collections of spring flowers. Messrs. BARR & SONS, King Street, Covent Garden, London, showed a collection of Daffodils, including Peter Barr, Firebrand, Ariadne, Isolde, Cherry Ripe, Salmonetta, Mountain Maid, Strongbow, Cygnet, White Queen, and White Lady. The DEVON ROSERY, Torquay, had a very attractive stand, containing cut Roses, Azaleas, Freesias, Tree Carnations, Spiræas, Anthuriums, Acacias, Boronias, Crotons, and Palms. Messrs. R. VEITCH & SON, Exeter, staged *Phœnix Rœbelinii*, *Dracænas*, *Erica Veitchii*, *Thyrsacanthus rutilans*, *Primula Kewensis*, *Rehmannia angulata*, *Magnolias*, and a collection of rock plants. Messrs. W. H. SMALE & SON, Torquay, showed *Cinerarias*, *Pelargoniums*, *Hyacinths*, *Calceolarias*, *Clivia miniata*, *Nicotiana Sanderæ*, and *Cycas revoluta*. Mr. J. HEATH, Kingskerswell, showed a collection of Violets, comprising several new seedlings, including one named *Devonia*, a variety having large, deep-purple flowers.

Obituary.

GEORGE HARRIS.—We regret to record the death of Mr. G. Harris, late gardener to Mrs. Rowley-Conwy, Bodrhyddan, North Wales, after a brief illness, at the age of 65 years. After serving for a period of seven years in Kew Gardens, Mr. Harris, in 1866, took charge of Bodrhyddan Gardens. Here he remade the flower gardens and did much to improve and beautify the place generally. The funeral took place at Dysarth on March 19, amidst many manifestations of sorrow. Deceased was the oldest member in the North Wales district of the National Fire Brigade's Union. Firemen attended from many towns and lined the route to the churchyard.

WILLIAM ROUPELL.—The late Mr. William Roupell, whose death at Streatham was recorded on March 25, was a well-known visitor at the meetings of the Royal Horticultural Society. He took an active interest in gardening matters, and was a successful fruit cultivator, especially of Grapes. He often exhibited produce from his orchard at Harvey Lodge, Streatham, before the Fruit and Vegetable Committee. Mr. Roupell was a strong supporter of the gardening charities and gave much of his time to advocating their claims. He was the president of the Streatham, Brixton, and Clapham Horticultural Society, many of whose members attended the funeral, which took place on Monday, March 29. The first portion of the service was held in the church with which Mr. Roupell had been connected for many years, and the interment took place afterwards at Norwood Cemetery.

DEBATING SOCIETIES.

DEVON AND EXETER GARDENERS'.—At the last meeting of this association, held at the Guildhall, Exeter, a paper by Mr. G. Camp, Culver House Gardens, Exeter, was read by the chairman, Mr. Andrew Hope, the subject being "Arches, Pergolas, and Pillars." Roses and Clematis were recommended as suitable subjects for clothing such structures, which are best made of Oak or Pine in preference to iron. A list of suitable climbing Roses and Clematis was given. After the reading of the paper the chairman referred with regret to the impending departure from the district of Mr. T. Slade, Pollimore Park, and Mr. J. Coutts, Killerton, both of whom had been of great service to the association. A. H.

WARGRAVE AND DISTRICT GARDENERS'.—A paper on "The Culture of Violets" was read at a recent meeting by Mr. James Knight, of Thistledown Gardens, Sbiplake. Mr. Knight makes a speciality of these plants, and he therefore gave his personal experiences. He explained the methods of cultivation he employs from the preparation of the ground to the time the plants are in flower. A good discussion followed. Mr. Knight showed some excellent clumps of violets in full bloom, as well as a number of bunches of flowers as prepared for market.

BOURNEMOUTH & DISTRICT GARDENERS'. A meeting of the above association was held at the Avenue Restaurant, on March 16, with Mr. Reeves, hon. treasurer, in the chair. A paper on "British Orchids" was read.

CROYDON & DISTRICT HORTICULTURAL.—At the meeting of this association held on Tuesday, March 16, at the Sunflower Temperance Hotel, Mr. P. F. Bunyard, F.Z.S., gave a lecture on a trip to North Uist. The lecturer showed a picture of the double white Pheasant's Eye *Narcissus* growing in large quantities. Some very good views of birds, birds' nests, and eggs were also shown.

CARDIFF GARDENERS'.—The fortnightly meeting of the above society was held at St. John's Schools on March 16, when Mr. Mountney, vice-chairman, presided. A lecture was given by Mr. Cobb, the Pyffryn Gardens, Cardiff, on "Summer Bedding." The various methods of summer bedding were explained and much useful information was given.

REDHILL, REIGATE AND DISTRICT GARDENERS'.—A meeting of this association was held on Monday, March 22. Mr. Bound presided over an assembly of about 50 members. Mr. Duncan, Merstham House Gardens, read a paper on "The Culture of Vines." The lecturer described the best kinds of vinerias, the proper soil to use in forming the borders, the making of the border, the watering, top dressing, the pruning of the vines, and the painting of the rods in winter.

READING AND DISTRICT GARDENERS'.—A large number of the members of this society met in the Abbey Hall, Reading, on Monday, March 22, when Mr. T. J. Powell, of The Gardens, Park Place, Henley-on-Thames, gave a lecture entitled "The Value of System in the Cultivation of Fruit." The president, Mr. Alderman Parfitt, occupied the chair. One of the best discussions that has ever taken place in the Abbey Hall followed the lecture. As an object-lesson in good storing Mr. Powell staged 42 dishes of Apples in excellent condition.

BATH AND DISTRICT GARDENERS'.—A meeting of this society was held on March 22, when Mr. W. T. Rich read a paper on "Hardy Herbaceous Plants." The lecturer described the simplest and best methods of preparing a border for perennial plants, and enumerated suitable varieties for planting. He also described the methods of planting, watering, and the summer work generally for these plants.

KINGSTOWN GARDENERS'.—At the concluding meeting for the session of this society, a lecture on "Maures," illustrated by lantern slides, was delivered by Mr. L. J. Humphrey, of the Department of Agriculture. After pointing out the objects sought to be attained by the use of maures, the lecturer spoke of the various chemical maures available, and pointed out that the results of experiments had shown that garden methods of manuring might frequently be modified with advantage. J. M'D.

BRISTOL AND DISTRICT GARDENERS'.—A meeting of this association was held on March 25. Mr. W. E. Budget occupied the chair. Mr. Bailey, a representative of the Reading Association, gave a lecture upon "Propagation by Layering," with a practical demonstration. Mr. Bailey said layering could be practised with *Ampelopsis*, *Aristolochia*, *Clematis*, *Begonia*, *Honeysuckle*, *Wistaria*, *Aucuba*, *Ceanothus*, *Weigelia*, *Cotoneaster*, *Garrya*, *Ivy*, *Ilex*, *Heaths*, *Magnolia*, *Rhododendron*, and *Azaleas*.

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. G. PEARCE, late of Boycott Manor Gardens, Buckingham, as Gardener to Lord HUNTINGFIELD, Heveningham Hall, Yoxford, Suffolk.

Mr. ROBT. WELLWOOD, for 2½ years Gardener to G. H. LEATHER, Esq., at Wyther House, Kirkstall, Leeds, as Gardener at Fylde Farm School, Poulton-le-Fylde, Lancashire.

Mr. H. E. GRIBBLE, for many years Gardener at Wynyard Park Gardens, as Gardener at Seaham Hall Gardens, which he will supervise in addition to the gardens at Wynyard Park.

Mr. W. SUTTON, for the past 4 years and 8 months Foreman at Latimer Gardens, Chesham, as Gardener to the Hon. Mrs. DOUGLAS PENNANT, Lillingstone Dayrell, Buckingham.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending March 27, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The weather was generally very unsettled, with much cloud and frequent falls of rain, but certain parts of Scotland were less rainy than other districts. A good deal of fog or mist prevailed on the coast and at some places inland early in the week. Thunder was heard at Dublin on Saturday afternoon.

The temperature was above the average except in Scotland E., but the divergence from the normal was not large. The highest of the maxima were recorded on rather variable dates and ranged from 59° in England N.W. to 50° in Scotland E. The lowest of the minima, which were registered at most stations either on the 21st or 27th, varied from 25° in England S.E. and Scotland E. and W. to 30° in England E. and N.E., and to 33° in the English Channel. The lowest grass readings reported were 13° at Llangammarh Wells, 20° at Buxton, Newton Rigg, and Dublin, and 21° in several other isolated localities.

The mean temperature of the sea.—Except on the south-west coast of England and Ireland the water was colder than during the corresponding week of last year. The actual values for the week ranged from 48.5° at Seafield and 47.7° at Plymouth to about 41° along the east and north-east coasts of Great Britain generally, and to 39.2° at the Shipwash Lightship.

The rainfall was much less than the normal in Scotland N., and rather less in Scotland W., but above it in all other districts, the excess being large in several parts of England and the south of Ireland.

The bright sunshine was less than the average over the whole kingdom, except in Ireland N. The percentage of the possible duration ranged from 31 in England N.W., and 30 in Ireland N. and the English Channel, to 22 in the Midland Counties, 17 in Scotland N., and 13 in Scotland E.

THE WEATHER IN WEST HERTS.

Week ending March 31.

Another moderately warm and wet week.—The day temperatures, as in the previous week, were as a rule only about seasonable, whereas the night readings were with one exception high for the time of year. On the warmest day the temperature in the thermometer screen rose to 57°, which, although only 6° above the average maximum for the end of March, is nevertheless the highest reading as yet recorded here this year. The ground temperatures have been slowly rising during the week, and are now about average at 2 feet deep, and one degree warmer at 1 foot deep, than is seasonable. Rain fell on all but one day, and to the total depth of 1½ inches. That the ground is now thoroughly saturated is shown by the fact that of that amount 5 gallons of rain-water have already come through the bare soil gauge, and 4½ gallons through that on which short grass is growing. The sun shone on an average for 2½ hours a day, which is 1½ hours a day short of the average duration for this period of the year. On three days no sunshine at all was recorded. At the beginning of the week the wind continued high, and in the windiest hour the mean velocity reached 19 miles—direction W.S.W. The average amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by as much as 10 per cent. A selected patch of *Chionodoxa Luciliae* growing in my garden came first into flower on the 19th, which is 11 days later than its average date for the previous 22 years, and later than in any year for 14 years. An Early Rivers Peach, growing on a south wall, came first into blossom on the 31st, or eight days later than its average date for the previous 23 years, and the latest date, with one exception, since 1895. E. M., Berkhamsted, March 31, 1909.

SCHEDULES RECEIVED.

Croydon Chrysanthemum show, to be held on Wednesday and Thursday, October 27 and 28, at the Adult School, Park Lane, Croydon. Secretary, Mr. W. B. Beckett, Woodcote, Smitham Downs Road, Purley.

Women's Agricultural and Horticultural International Union's show, to be held in the Royal Botanic Gardens, Regent's Park, on Wednesday, July 21. Secretary's address, 61, Lower Sloane Street, S.W.

Kent County Chrysanthemum Society's annual exhibition at the Rink, Blackheath, S.E., to be held on October 27 and 28. Secretary, Mr. Fox, The Gardens, The Cedars, Lee, S.E.

Southend-on-Sea and District Horticultural Society's summer show to be held on Tuesday and Wednesday, July 6 and 7; and Chrysanthemum show to be held on Tuesday and Wednesday, November 2 and 3. Both exhibitions will be held in the Palace Hotel, Southend-on-Sea. Hon. secretary, Mr. C. W. Limmer, 177, Cambridge Road, Southend-on-Sea.

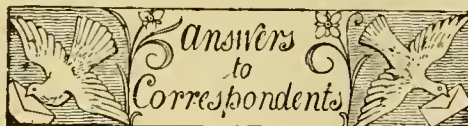
Bolton Horticultural and Chrysanthemum Society's twenty-third exhibition to be held on Friday and Saturday, November 19 and 20, in the Albert Hall, Bolton. Secretary, Mr. George Corbett, Heaton Grange Gardens, Bolton.

Sutton Rose Society's twenty-eighth annual exhibition, to be held on Saturday, July 3rd, in Manor Park House grounds. Hon. secretaries, Mr. E. L. Dixon, Silverley, Sackville Road, Sutton, and Mr. F. J. Borland, Stalheim, Brunswick Road, Sutton.

Bradford and District Chrysanthemum Society's twenty-third exhibition to be held on November 12 and 13, in St. George's Hall, Bradford. Secretary, Mr. H. Spencer, Horton, Park, Bradford.

National Dahlia Society's exhibitions, to be held on Thursday and Friday, September 2 and 3, at the Crystal Palace, Sydenham, S.E.; and on Tuesday and Wednesday, September 21 and 22, at the Royal Botanic Gardens, Regent's Park, N.W. Show superintendent, Mr. E. F. Hawes, Royal Botanic Gardens, Regent's Park, London, N.W.

Societe Royale d'Horticulture et de Botanique de Gand, 17th exhibition, to be held on October 30 and 31, and November 1.



* * * The Editor will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for forming Supplementary Illustrations to this Journal.

EDITOR 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 EDITOR. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

ABUTILON VITIFOLIUM FAILING TO FLOWER: H. N. Give the plants less water at their roots, maintain a dry atmosphere and raise the temperature of the house in which they are planted.

BETTER EATING ONCIDIUM CONCOLOR: W. T. The insect is one of the common weevils. These creatures feed at night-time and hide during the day. Hunt them with a light or trap them with slices of some vegetables such as Carrot, Potato, &c.

CRICKETS IN A GREENHOUSE: W. H. R. Place jars or bottles partly filled with beer or some sweet spirit about the house. A more effectual method of destroying these pests is by the use of poisons. "Phosphor paste," borax powder, or arsenic mixed with some food, such as Potatoes, &c., will kill them.

DOUBLE DAFFODIL: A. H. The abnormal condition, resulting in twin flowers, is termed fasciation, and is due to a fusion of growth. We frequently receive examples showing fasciation. In the issue for March 20, p. 192, there is a notice of a spike with three blooms.

FIGURE OF 4 TRAP: F. G. B. This is a very simple trap (see fig. 95) for the destruction of small animals such as mice. It is made with three pieces of wood, and either a brick, slate, or slab of stone, as the "fall." It is necessary that the pieces of wood used be thin so as not to impede the brick or slate when it falls. Pieces of ordinary plasterers' laths are suitable for the purpose. The upright (B) is pointed at one end like a chisel, and this fits into a groove in another piece (E), which in its turn fits into a groove in the trigger or bait stick (F). The

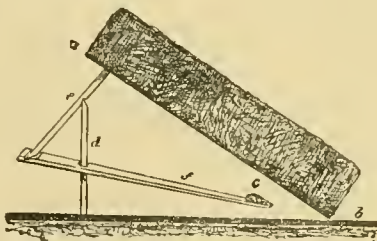


FIG. 95.—FIGURE OF 4 TRAP.

sticks are arranged in equilibrium supporting the brick or slate (A), and as soon as the animal or bird destroys the balance by nibbling at the bait (C) the whole collapses. A slab of stone or thick slate (B) is sometimes placed beneath the trap when the ground is soft. For mice, a bait of cheese or bread may be used. In plantations where game is present, pheasants are liable to be caught by these traps and killed.

MICE DAMAGING SHRUBS: W. C. The creature which is damaging your shrubs is no doubt the common wood mouse (*Mus sylvaticus*), which often nibbles the bark from trees in the orchard and kitchen garden. Mice may be killed by placing in their holes some moistened bran or meal, to which some white arsenic has been added. If poultry is present, a temporary enclosure of wire netting should be put up where there are most mice, and where it is practicable to feed them for a short period. This will draw large quanti-

ties to the feeding-place, and they can be killed in this manner. The surplus poison can be dug in the ground, and the netting, if necessary, removed to a different part of the garden and used again in the same way.

NAMES OF FRUITS: L. R. Russell. 1, King of Tompkins County; 2, Northern Spy; 3, Minchull Crab.—H. A. R. 1, Lady Lennox; 2, Norfolk Stone Apple; 3, Gooseberry Pippin.—Brev. Beauty of Kent.—W. K. 1, Byford Wonder; 2, Tower of Glamis; 3, Dredge's Fame; 4, Baldwin.

NAMES OF PLANTS: R. L. 1, *Picea excelsa* Clan-brassilliana; 2, *P. e.* variety laxa; 3, *Cupressus obtusa tetragona aurea*; 4, *C. o. aurea*.—F. H. *Odontoglossum Adrianae*, a natural hybrid between *O. crispum* and *O. Hunnewellianum*. Your flower approaches the *O. crispum* more than ordinarily.—W. B. 1, *Brunfelsia* (*Franciaea*) calycina; 2, *Spiraea Van Houttei*; 3, *Abutilon Fire Fly*; 4, *Jasminum pubescens*; 5, *Prunus sinensis flore albo pleno*; 6, *Pieris floribunda*.—A. R. 1, *Colygone flavida*; 2, *C. corrugata*; 3, *Oncidium pubes*; 5, *Pleurothallis rubens*; 5, *Ornithidium ochraceum*.—H. H. B. 1, *Adiantum formosum*; 2, *Asplenium lucidum*; 3, *Adiantum cuneatum gracillimum*; 4, *Pteris hastata*.—E. F. *Rhododendron Countess of Haddington*, a hybrid of the *R. fragrantissimum* section.—F. S. & S. *Smilax aspera*.

ODONTOGLOSSUM LEAF SPOTTED: F. H. Damaged leaves such as you send do not always indicate disease. Insect pests are often the cause of the injury, or it may be due to some accident during fumigation or spraying. But the most frequent cause of this leaf-spotting is the retaining of the foliage on the plants for a much longer period than would be the case were they growing in their native habitat. It is chiefly a matter of climatic influence. You will find that it is the older leaves which are invariably affected. These would fall from the plant in its native habitat, and cultivators, who are aware of this, assist nature by removing such foliage about half an inch above the pseudo-bulb as soon as signs of decay appear. In a collection of *Masdevallias* at least double the number of old leaves that are required are usually allowed to remain on the plants. The same applies relatively to many other Orchids of the more or less evergreen class. Remove all unsightly leaves at once.

SEWAGE FARMS: Cairo. Mr. W. D. Scott Moncrieff, The Red House, Laleham, Staines, recently gave an address on this matter before the members of the Royal Horticultural Society. No doubt he will be willing to give you information on the subject.

STERILISING SOIL: Wessex. Many experiments of sterilising soil are being conducted at the present time, and in some cases a marked increase of the yield of a crop has been obtained as a result. But before the method of sterilising soil can be advocated in practice, further and more extensive trials are required, especially in determining, in the case of heat sterilisation, the proper temperature to which the soil should be subjected. Certain bacteria are killed at a much lower temperature than others; for example, the nodule organism is destroyed at the comparatively low temperature of 70° C. It has yet to be shown whether methods of partial sterilisation are always productive of good results. The whole question opens up a very interesting field for experiment. Much information on sterilisation, and also the use of antiseptics for the purpose, may be obtained in the *Abstracts of the Journal of the Chemical Society* for 1907-8.

WOOLLY INSECT ON FERN ROOTS: W. C. The roots are infested with *Ripersia terrestris*, a pest allied to the mealy bug. Make holes in the soil of the pots with a piece of stiff wire and pour in each a small quantity of bisulphide of carbon. Vaporite would also be effectual in ridding the plant of this pest.

COMMUNICATIONS RECEIVED.—A. J. P.—Wessex—B. D. J.—X. Y. Z.—J. S. H.—W. H.—Old Reader—F. H.—Anxious—A. S.—W. J. B.—H. M.—A. & B., Ltd.—E. M.—A. D.—F. M.—J. D. G.—W. E. B.—H. L. & Co.—J. R. J.—D. R. W.—S. & G.—G. H.—S.—A.—C.—F.—W. C.—J. G. W.—W. B.—R. P. B.—E. C.—W. M.—G. H.—W.—E. H. J.—F. B.—W. E. G.—D. Frères—W. B. H.—Canon C.—D. G. & Co.—W. B.—W. S.—T. H.—A. C.—T. S.—A. Bros., Ltd.—D. R.—A. S.—S. F. & Co., Ltd.—G. P.—A. R.—T. D. W.—F. C. E.—Scott—A. B.—W. W.—F. Son & S.



Thalictrum dipterocarpum; a new Chinese species.

COLOUR OF FLOWERS, PALE PURPLE.



THE

Gardeners' Chronicle

No. 1,163.—SATURDAY, April 10, 1909.

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DEFORESTATION IN NEW ZEALAND.

IN the *Gardeners' Chronicle* for November I described the conditions existing in the North Island. The following remarks therefore relate exclusively to the South Island. The soil is not so rich as that in the North Island, but the climate is drier, colder and more bracing. There is less rainfall, that on the east coast being comparatively light, whereas on the west coast the heavy fall is limited to the small strip of country between the watershed and the Pacific Ocean. We find, in fact, the same conditions as in Fiji. The range of mountains which runs down the west coast condenses all the moisture-laden clouds of the Pacific and dry winds sweep the eastern portion of the Island. The mixed forest, therefore, of still further reduced Polynesian affinities, is limited to the north-western, rainy slopes of this chain, and the *Nothofagus* forest of South American affinity clothes the shady sides of the endless spurs and outliers of the main range up to a height of 4,500 feet. This is the winter snow level on the lower ranges, but in the Mount Cook district, where the mountains range from 9,000 to 12,300, 5,000 feet is the level of perpetual snow. The plants of this montane region of winter snow show mostly South American and Antarctic

affinities with adaptation to wind-swept, dry conditions and constantly shifting foothold from rapid disintegration of the shaly rock of which these mountains are composed.

The mixed forest of the west coast is too soaked with moisture to burn easily, and is therefore comparatively safe from bush fires; but all the best trees are being rapidly cut out by saw mills wherever a railway is accessible, as is the case on the line from Greymouth to Otira, where every station represents a saw mill. Rimu, I believe, is the principal timber that is in demand. The chief industries along the west coast, where sea transport is generally available, are saw-milling, coal and gold mining. The natural forest growth, if worked on scientific principles, would form a magnificent asset to the resources of any country. As it is, in such mixed forest, each kind of tree is limited in numbers, and when cut without regard to age, only the old and aborted specimens are left standing, and the forest is, in consequence, unable to regenerate itself. The resulting thinning alters the prevailing conditions as to light, moisture, and wind, and allows of the ingress of rabbits, which devour all young vegetation, and so prepare the way for an army of alien herbaceous plants and shrubs, including Blackberries, Sweetbriar, Gorse and Broom, which luxuriate in the virgin soil. Fungal diseases attack the weakened, indigenous trees, which will have no further chance to re-establish themselves, so that all commercial value in wood, which forms one of New Zealand's exports and its chief scenic charm, goes into the pocket of the first man who comes to enjoy the unrestricted exploitation of the virgin forest.

The *Nothofagus* forest begins on Cook Straits from Picton to Nelson, a country of narrow valleys and ridges, running up in a few cases to 6,000 feet, the tree level being about 4,500 feet. *Nothofagus fusca* and *N. Menziesii* clothe the lower slopes, with *N. Solandri*, the handsome *N. Cliffortioides*, and sometimes *N. Menziesii* running up to the winter snow line, where they dwindle to dwarfed and windswept examples. These Beeches are all evergreen, of typical Beech habit, showing the horizontal branching and dorsiventral leaf adjustment, with the mottled smooth stems of our European *Fagus*, also the glinting light, and mossy undergrowth, so characteristic of Beech woods. *Nothofagus fusca* has herbaceous leaves and would probably be deciduous in Europe. *N. Menziesii* has small, serrated, dark-green, coriaceous leaves which, when young, are of a tender, delicate green, contrasting delightfully with the older foliages. *N. Solandri* has also very small, coriaceous leaves and is very near to *N. Cliffortioides*, of which a male tree in flower almost equals in charm the much-praised *Rata* (*Metrosideros robusta*). The small, leathery leaves are dark green on their upper and pure white on their lower surfaces, which are seen a good deal, so that with each branch bearing its terminal bunches of red stamens which form the male flowers, the effect is most fascinating. On the slopes of the Dun Mountain, near Nelson, in December, this Beech was flowering profusely. The fruits of all these Beeches are very small, about half an inch across, and, nesting amongst the leaves towards the end of the branches, add to the charm of the trees in the autumn. Thanks to the kindness of

Mr. F. C. Gibbs, of Nelson, a most enthusiastic botanist, I was enabled to appreciate the salient features of the barren Dun Mountain, and to ascend Ben Nevis, a peculiarly interesting expedition, as the top of that mountain (about 6,000 feet) is above the tree level, and therefore shows the bare cap of the winter snow line, which characterises the higher peaks. The view extends over a vast expanse of wooded mountains and valleys. Mr. Gibbs' knowledge of this district is unrivalled, and his excellent work on these ranges has not only added many new and interesting species to the New Zealand flora, but has led to interesting and otherwise unattainable observations on prevailing edaphic and ecologic conditions, his interests not being limited to botany, but including geology as well.

An unexplained feature of the Dun Mountain range is the so-called "Mineral Belt," which winds like a red thread through the mountains, and can not only be followed distinctly from a commanding height, but is recognisable by its colour and characteristic plants when it is struck unexpectedly on the slopes. It forms a definite break in the forest, as trees do not grow on it. Dwarfed shrubs, like *Hymenanthera crassifolia*, *Pittosporum rigidum*, *Aristotelia fruticosa*, and *Gnidia*, all show the spreading habit, with tortuous, interlaced, and almost leafless stems of their ultra xerophytic form. The santalaceous *Exocarpos Bidwillii*, with *Phyllocladus alpinus*, were also flowering in December, as well as certain herbaceous plants, like the fine *Euphrasia Munroi*, *Notothlaspi australe*, *Colobanthus quitensis*, *Muehlenbeckia axillaris*, *Claytonia australasica*, all plants of open mountain regions, with *Pimelea Suteri*, which is only known on the Dun Mountain.

Disafforesting is proceeding as vigorously in this district as elsewhere. Along the Maitai Valley there originally existed an interesting mixed forest, the last remaining patch of which Mr. Gibbs was making strenuous efforts to have reserved. Here again clearing exposes the shaly soil, which nothing but trees can bind together. There is very little surface soil even in the forest, undergrowth being limited to Ferns and Mosses, the evergreen foliage forming but little humus. The results of wholesale clearing in such country are seen in the arid sheep runs of Central Otago. Not only the rainfall, but the storage of water in the soil must be ultimately affected by this reckless tree-felling.

From Nelson the journey south is down the Buller river, which runs north to south and forms a convenient highway to the central portion of the island. It is a tedious two days' coach drive following the river banks, through Beech forests, which, however, are being cleared rapidly, as good alluvial soil exists by the river bed.

The upper portion of this valley is characterised by enormous numbers of water-worn boulders. The very hills are formed of them, and in clearings resulting from old mining operations they lie like huge cannon balls, one on the top of the other. Forces sufficient to cause such denudation must have been terrific. Nature has since been busy covering up the traces with luxuriant forest growth, the destruction of which will simply re-create the original barrenness. In many sections along the road the thin covering, about a foot thick,

formed by the roots of the trees and undergrowth, resting on the rounded boulders, was very evident.

In early December *Loranthus tetrapetalus* was wonderfully effective, the profuse and brilliant red blossoms showing up even on the slopes of distant hills. It forms regular bushes on the Beech trees, some being quite 8 feet high, and broad in proportion.

About Longwood the river bed widens into the flat, shingly bottom so typical of the rivers of the South Island, where the beds shift from season to season, or even after each "Fresh." Under natural conditions the forest trees bind the shingles together; in the case Kahikatea, as can be seen by the wretched remains of the few survivors. Now Blackberries have taken possession of acres of this river bed.

The Otira Gorge running east forms part of the great highway between the east and west coasts, at about the centre of the South Island. Once through the Gorge we enter the country of dry, rainless winds and tussock plains be-

Canterbury Plain, the district which, together with the Hawkes Bay and Gisborne districts in the North Island, comprises the best agricultural land in New Zealand. These plains stretch in unbroken monotony down the East Coast, running up to the dividing range, having been formed, in fact, from the denudation of that range. The detritus has been carried down by the rivers, which are still active in this respect, their beds shingling out to an immense breadth, with ever-shifting channels.

How far the comparison holds I cannot say, but Darwin's descriptions of Southern Patagonia seem very suggestive of this country, which was originally wooded and intersected, I believe, by large swamp areas. It is now cut up by long, straight roads running at right angles to each other, and enclosing rectangular paddocks bordered by Gorse hedges, with a possible variation of an equally symmetrical plantation of Eucalyptus, *Pinus insignis*, or even Larch. Each plantation is enclosed by two hedges, which ring the changes on *Cupressus macrocarpus*, *Pinus pin-*

of Guildford, Kingston, and Wimbledon; whereas now there are 88 day-schools at which instruction in practical horticulture is given, the approximate number of scholars receiving such teaching being 1,500, not counting those in the three boroughs mentioned. The Board of Education, recognising the importance of this subject in the elementary school curriculum, has recently appointed a special inspector to superintend and control the instruction throughout the country.

Our day-school gardens are arranged on a plan very similar to that of the continuation-school group, with the exception of the cottage garden plot, which is simply divided into two by a central path. The 28 plots are smaller than the plots worked by the older boys, the majority of them being only 24 feet by 8 feet. The aspect, like that of the aforementioned group, is good, but the soil is still very poor, although it is improving. The general outlines of the method of instruction vary little from those of the evening class. Two hours or more a week are set apart in the school time-table for the subject.

The indoor study of this subject lends itself freely to co-ordination with other school lessons. With us, it not only forms the basis of drawing and composition exercises, but the teaching of arithmetic, mensuration, and the drawings of plans to scale is connected more or less with it.

Our method in teaching the junior boys, i.e., those cultivating the 28 small gardens, is to gather a group round a certain plot, and then show them practically how to perform the particular operation in hand, each pupil subsequently putting the instruction into practice in his own garden. All the "whys" and "wherefores" that every teacher would, of course, require are deduced during the brief lesson. A garden line is stretched directly across the whole set of plots for the guidance of the pupils, and the special crop is then sown, or planted in line, so that continuous rows of the same vegetable, broken only by the paths, are carried across the section from north to south. This gives a regular and orderly appearance to the group, and is helpful in assessing and comparing the value of the crops and workmanship.

The cottage-garden plot is, I believe, a new departure in school horticulture in this part of the country. Nearly 20 square rods of land are cultivated in common by the senior group of 14 boys, on a scheme suitable for a cottage garden. During the season numerous consultations by teacher and scholars are held as to the most useful crops for a cottager to grow, the general arrangement and rotation to be followed, the special treatment required, and the area to be devoted to each crop.

For purposes of reference, all the day-garden boys keep notebooks, in which are recorded brief accounts of each day's work, specially—

- (1) Date of sowing or planting of each crop.
- (2) Particulars as to cultivation and depth of sowing.
- (3) Date of harvesting the crops, with a record of the time each has occupied the ground.
- (4) Quality and quantity of produce, &c.

The above is additional to the labelling of each kind of vegetable with the date of sowing or planting.

In connection with this course of instruction, the boys keep a daily register of (1) outdoor temperature (maximum and minimum), (2) rainfall, (3) direction of wind, (4) general condition of weather, and (5) the reading of the barometer. Summaries also are worked out for the month and year. By the girls, in the same register are also entered during spring and summer Nature notes and observations, chiefly on wild flowers. Fourteen of our elder girls have also a small flower-garden each.

In conclusion, I may say, that, as far as my experience extends, the influence of the gardens is distinctly for good. It helps to make school life, and afterwards adult life, healthier and happier. *E. Casar, Head Master.*



FIG. 96.—BOYS AT WORK IN A SURREY SCHOOL-GARDEN.

tween bare tussock hills, yellow even in the beginning of December; all sheep runs, the grass burnt off every year, and rabbits ubiquitous. Here one shrub, *Discaria Toumatou*, or "Wild Irishman," holds its own. It is a veritable mass of thorns (arrested branches), with inconspicuous, green leaves and white flowers. It grows singly in the wide, river beds, on sheltered mountain slopes and in the plains. Otherwise not a tree is visible; that would mean fewer sheep to the acre, and the unfortunate animals in the blaze of the sun find such shelter as they may under the *Discaria*.

It is a familiar sight to see them crowding under what can be only shade in their imagination, and it makes one question whether it is really advantageous, or is merely an atavistic idea inherited from ancestors accustomed to more luxuriant conditions. These places must all have been wooded at some time not far distant. Nothing else could account for the extraordinary paucity of herbaceous plants, of which *Craspedia uniflora* is one of the few which occurs in any quantity on the plains.

By Broken River the hills run out, and here the remains of Beech forest are evident. Once past the river we sweep out on the so-called

aster and Eucalyptus species as wind screens, and finally one of Gorse.

Fortunately, the railway runs all down this East Coast, and also up the principal valleys for a certain distance. *L. S. Gibbs.*

(To be continued.)

A SURREY SCHOOL-GARDEN.

(Concluded from page 210.)

DAY-SCHOOL GARDENS.

The Board of Education first recognised practical gardening as a special subject entitled to receive monetary grants in elementary day-schools in 1895, but the subject does not appear to have been taken up with any enthusiasm in the country till quite recently. In Surrey very little was done previous to 1903, when the County Council took control of elementary education; but since then, through the liberal scheme adopted by the Surrey Education Committee, and the encouragement given by H.M. Inspectors, progress has been rapid. In 1901 and 1902 the number of day-schools in the county giving instruction in this subject was only seven, including those of the three boroughs

NOTONIA GRANTII.

THIS handsome succulent received the above name from a very imperfect specimen collected on Speke and Grant's expedition to discover the sources of the Nile. It was discovered in the Mozambique district in 6° 50' S. latitude,

plant has very handsome orange-scarlet heads. The species has been identified with *Cacalia semperviva*, Forsk., from tropical Arabia, and applying the rules of priority for specific names, Ascherson has named it *Notonia semperviva*, under which designation it is likely to remain in some Continental botanic gardens. Senecio

the *Kew Bulletin* for 1897, under the name *Senecio* (*Kleinia*) *nyikensis*, where the author has:—"ad *S. longipedem*, Baker, *somaliensem magis accedit.*" Whether this is really specifically different, and also in cultivation, it is difficult to say, but I believe the name has been given to a cultivated plant. There are several dried specimens at Kew bearing the name of this *Notonia*, all of which are more robust than ordinary *N. Grantii*, as introduced by Miss Edith Cole from Somaliland, and first raised from seeds by Mr. Lynch, Curator of the Cambridge Botanic Garden.

It may be asked what is the difference between *Kleinia* and *Notonia*, as genera, and the answer is that it is limited to the latter having the branches of the style terminating each in an ovate appendage. It seems, therefore, that if one is reduced to *Senecio* the other should follow.

Notonia Grantii is a free-growing and free-flowering subject. *W. B. H.*

NOTES FROM A "FRENCH" GARDEN.

WE are now preparing beds for the planting of Endive. The ground is well manured and levelled previous to the placing of the frames or the cloches in position. Thirty-six Endives are planted under each light, and the same number under four cloches.

The young plants will not be ready for the final planting before the middle of April, as the cold weather has somewhat retarded their growth. Great care must be taken with this crop, as the plants are liable to run to seed when they have been checked in their early stages.

Part of this batch of plants may be reserved for planting outside at the end of April.

We are now planting *Cos Lettuce Hardy White* in the open, allowing a distance of 18 inches between the rows and 14 inches from plant to plant. Where plenty of space is available, one row of *Cos Lettuce* and one row of *Cauliflower* may be planted, as this system admits of the ground being cropped for a longer period.

The Lettuces in the hot-beds must now be cleared off to make room for the young Carrots which require to be thinned and weeded. When the weather permits, ventilation may be given, especially if the Cauliflowers are growing freely.

The Cauliflowers are now planted among the Lettuces *Passion* and *Little Black Gott* in the cold frames, and also in the open, 2 feet apart each way. This planting has been delayed on account of the ground being in an unfavourable condition.

The *Cos Lettuces* planted under the cloches are growing well; they will require careful attention as the weather gets warmer. Mats are spread over the lights when the sun is shining brightly to prevent the "heart" from becoming soft. These mats are also used at night time whenever the thermometer falls to freezing point.

The Celery sown in the middle of March is just breaking through the soil. Fresh air is given whenever possible to prevent "damping off," which is so prevalent at this stage of a plant's development.

We are pricking off the seedling Tomatos intended for planting later as an intercrop between early Potatos. They will be planted at the end of May. One hundred and sixty of these seedlings are planted per light; early next month we shall transplant them a second time, allowing only 100 per light.

Turnip seed sown in the middle of March is pushing through the seed bed. Ventilation will be freely afforded whenever the weather permits in order to prevent the Turnip roots becoming spindle-shaped. *P. Aquatias.*



FIG. 97.—NOTONIA GRANTII: FLOWERS ORANGE-SCARLET.
(From specimens exhibited by Messrs. James Veitch & Sons, Ltd.)

and is the *Kleinia* sp. of Speke's *Nile Journal*, p. 638. In a note attached to the original specimen in the Kew Herbarium, Colonel Grant describes the flowers as blood-red or port-wine coloured. The colour varies; the cultivated

(*Kleinia*) *longipes*, Baker, in *Kew Bulletin*, 1895, p. 217, is reduced to *Notonia Grantii* in the *Botanical Magazine*, wherein the plant is figured, tab. 7691. A very similar plant was subsequently described by Mr. J. C. Baker in

HARDY FLOWER BORDER.

EUCOMIS PUNCTATA.

Of the ten or more species of *Eucomis* the above is almost the sole representative in ordinary gardens. In many parts of the country it is hardy, and when given good treatment, the bulbs throw up such strong spikes as to astonish those who know it only as a plant growing in 6 or 7-inch pots in a greenhouse. To be seen at its best, *Eucomis punctata* should be grouped. When thus disposed the flower-spikes gain in dignity and impressiveness what they lack in floral beauty. As an outdoor plant, it is well adapted for use in such narrow borders as those in front of glasshouses, or at the foot of a wall. It thrives best in a light, rich, deeply-worked soil, and the bulbs should be planted at a depth of 4 to 5 inches, where they will be safe from most frosts. For pot culture, it is best to use a rich soil, and grow the plants at the cooler end of the greenhouse; they would do well in an unheated house. Abundance of water is necessary until the flower-spikes reach full size, and when the pots are full of roots, liquid manure may be given freely. The greeny-brown flowers open during June and last for a long time. Whilst the tuft of leaves which the spike surmounts would look incongruous if associated with brightly-coloured flowers, it seems singularly in keeping with *Eucomis*, and gives the plant a distinct character. *A. C. Bartlett.*

NOTICES OF BOOKS.

* PRONUNCIATION OF PLANT NAMES.

As stated on the title page, this handy little volume has been reprinted from its original issue in the closing months of 1908, and forms an admirably well-adapted volume for a young gardener or a plant lover to slip into his pocket for reference at odd moments. The work has too recently appeared in this journal to need much description, for its plan and performance must be familiar to all our readers. Prepared in the first place by the Rev. Charles Butler, M.A., we have the assurance that each instance of pronunciation has been carefully considered, and if we venture to criticise, it must be owned that the Editor has disarmed criticism in advance by stating the lack of definite rules which would be admitted as valid by all, and that ordinary usage has been allowed full weight, even when it contradicts etymological principles.

It may be conceded at once that the largest collection of generic and specific names, accented and marked for pronunciation is that produced by the late Rev. Percy Myles, and included in the fourth volume of Nicholson's *Dictionary of Gardening*. But in this storehouse of facts usage has been set aside, and correctness alone followed; it is therefore too hard for the practical man to follow without incurring the charge of being pedantic. On the other hand, in the latest edition of Johnson's *Gardeners' Dictionary*, 1894, which might be held to embody the general usage, the plan of marking the accent fails to show whether the stressed vowel is short or long. The little work under review is therefore an improvement, and is more convenient in many important respects than its predecessors.

There are some misprints, but they are few, compared with the total number of names given. Our eye has fallen upon certain names which are not familiar, such as *Agate* (Agati?), *Mohoe*, *Nola* and *Personia* (not *Personia*, which is also given). Such slips as *Fadgenia* for *Fadenia* and *Leptaleum* for *Leptaleum* are due to the printer misreading copy, and would probably not mislead the reader.

We would, however, protest against the value of one J being given to such words as *Leucojum*,

Najas, *Serjania*; these should, strictly speaking, be printed *Lencoium*, *Naias*, *Seriania*, but the mediæval confusion of I with J and U with V has persisted in some Continental printing offices to the present day.

There is still another point on which we could write much, but must confine our remarks to a very succinct statement. Many generic names are derived from personal names—how should these be pronounced? Theoretically, we suppose, they should conform as nearly as may be to the name of the eponymous hero. Sometimes that is practicable; in this volume we have "Ko-hu'-ni-a" for *Colquhounia*, and *Stokesia* for *Stokesia*, but not *Reevesia*; why not? We should prefer *Dön'-i-a* to *Dö'-ni-a*, because the genus was named after Don; *Neel'-ya* for *Neillia*, named after Patrick Neill, of Edinburgh; *Nip-hof'-i-a* after Kniphof, *Ra-o-mür'-i-a* after Réaumur—the accent is often forgotten. *Forskahlia* is badly represented by "fors-kähl'-i-a," for Linnæus emphasised the sound of the second syllable by publishing the genus as *Forskolea*.

The retort may be made that it is impossible for the ordinary reader to be prepared to give proper expression to names drawn from various languages. Whilst that is true to a large extent, we venture to think that when the proper pronunciation is well known, we should endeavour to give effect to it, a statement to which most will agree, the difficulty being as to how far we can give currency to local pronunciation. *B. Daydon Jackson.*

* THE BOOK OF THE COTTAGE GARDEN.

THE author is a gardening enthusiast, and he is in rebellion against the prevailing taste in laying out and planting a garden, whether it be that of the wealthy or the comparatively poor. He asks if "the growing of produce for the table, the culture of flowers, so that their blossoms may be gathered to brighten dingy rooms, the providing of lawns for tennis and croquet, the laying-out of ornamental grounds that we may live amid trim, orderly surroundings—are the considerations that from time immemorial have quickened in the minds of men and women of refined instincts the love and need of a garden?" "If so, it means that our gardens are not gardens at all, but merely pieces of cultivated land, which combine the material possibilities of market establishments with the facilities of recreation grounds." But supposing, after all, that these things are not so; that the cottage garden is not garden craft in its crudest and most elementary aspect, and far from being an attempt to ape the splendours of more pretentious gardens, is in reality our nearest approach to the ideal. And that this presumption is not false but true is exactly what the author hopes to prove, so far as the limit of this book will allow, at the same time showing the possibilities which the small country garden offers in the way of achieving real and lasting beauty by the simplest and most natural means.

Tended with the utmost care, or, as is sometimes the case, left to work out unaided Nature's scheme of floral design, these little gardens are often models worthy of much consideration. Their simplicity disarms criticism, the homely flowers are like old friends, their fragrance stirs us with memories which are not awakened by the same flowers grown in the gardens of the rich.

The cottage-garden paths are moss-grown, have no spotless gravel spread over them, and creepers of many kinds drape porch and eaves in a natural way. "Bedding out" is not practised, but borders are filled with a goodly company of hardy plants, which greet the seasons as Nature intended. No one troubles to remove the fallen leaves and petals; they drop to earth to nourish the plants that gave them life. "Many such a garden might teach lessons that great gardeners should learn, and are pretty

* By Charles Thonger, author of *The Book of Garden Design, The Book of Rock and Water Gardens, &c.* Crown 8vo., pp. 90. London: John Lane, The Bodley Head, New York: John Lane Co.

from Snowdrop time till the Fuchsia bushes bloom nearly into winter," as W. Robinson wrote in the *English Flower Garden* 40 years ago.

The author is a great believer in thorough preparation of the land before laying turf or sowing Grass seeds, and he inclines to the latter method, although a lawn may be longer in becoming perfect in smoothness and finish. Full instructions are given on lawn making, and these are to the point.

The cottage garden is, first and foremost, a home for flowers, and we want them in profusion, in variety at all seasons, excepting mid-winter. The summer display must be the brightest, because, in this grey climate of ours, we long for colour and warmth. The hardy flower border is the best for the cottager.

Information in regard to planting and the species to plant is given in detail. The work is liberally illustrated, and the chapter on Roses will help the reader to clear away the mystery surrounding much that is written about them. No plants are easier to cultivate than Roses; but there are some sections which the small grower would do well to avoid.

TREES AND SHRUBS.

THE BAYFORDBURY PINETUM.

BAYFORDBURY, the seat of Mr. H. Clinton Baker, is situated two or three miles south of the town of Hertford. It is notable among the country houses of the south of England in containing the famous series of portraits of members of the Kit-cat Club. This club, it will be remembered, was founded in 1688, by the leading Whigs of the time.

To gardeners, however, the interest of Bayfordbury is of another kind, for in its demesne is contained one of the finest private collections of Conifers in England. Not only does the fine development of the individual specimens make it attractive to those who love trees for themselves alone, but the richness of the collection in species and varieties renders it particularly interesting also to the botanical student and connoisseur. This pinetum was well known to the late Dr. Masters, in his day the leading authority on Conifers in Great Britain, and frequent references to it may be found scattered through his published papers.

The Bayfordbury pinetum appears to have had its beginning in 1763, when 10 Cedars of Lebanon were planted to commemorate the building of the house. It is on record that the young trees, then 9 inches high, had been raised from seeds produced by the famous Uvedale Cedar at Enfield. These trees (see fig. 98) are now probably the noblest of their kind in Hertfordshire, a county by no means deficient in fine Cedars. They stand on the lawn not far from the house, and the largest of them has a girth of 27 feet 6 inches at 1 foot from the ground. This particular tree branches low down, but a second, with a better defined trunk, is 20 feet 6 inches round at 5 feet from the ground, whilst a third is but a few inches less.

Seventy years later, when the travels of Douglas in Western North America had attracted attention to some of the most marvellous tree growth in the world and had created a great interest in Conifers in England, the fine development of these Cedars (the largest of which was already 17½ feet in girth) appears to have suggested to the late Mr. W. R. Baker the idea of forming a comprehensive pinetum at Bayfordbury. A situation within easy distance of the house, but separated from it by a picturesque valley, was selected in 1837, and about 10 acres of this was planted the following year. J. C. Loudon, then at the height of his fame as a landscape gardener and writer on arboriculture, assisted in an advisory capacity. The collection was made as complete as was possible at that period, but during the severe

winter of 1844, when 37 degrees of frost were recorded, many of the more tender species from Mexico and elsewhere perished. A similar misfortune happened in 1860. All this time, however, the genuinely hardy species—and these are the only forms that really matter—were thriving admirably in the fine soil and air of Bayfordbury. The founder of the pinetum lived to watch and tend his trees for nearly 60 years. He died in November, 1896, at 87 years of age.

It is a happy instance of heredity in tastes that his grandson, the present owner, should be an enthusiastic student and cultivator of this family of trees. Through his efforts, the collection has been very much augmented in recent years, so that at the present time it is practically complete in species hardy enough to thrive in

species dealt with is to be given, so that a collection of plant portraits will be available practically complete so far as arborescent species of Conifers hardy in the British Isles are concerned.

The following are brief notes on the more remarkable specimens. The Lebanon Cedars, from their size and history, stand first in interest, but, following them closely are several examples of the Redwood—*Sequoia sempervirens*—one of which is 75 feet high and 10 feet 3 inches in girth. This and other slightly smaller trees of this species are noteworthy for the finely-butressed base of the trunk; they were planted in 1850. The companion species, *S. gigantea* or *Wellingtonia*, is 94 feet high. A singularly impressive tree is one of *Pinus ponderosa*, just over 100 feet high, erect and stately,

Scrub Pines of North America, *P. inops*, planted in 1842, is 48 feet high; *P. mitis*, 34 feet; and *P. pungens*, 33 feet. The Sugar Pine (*P. Lambertiana*) is 64 feet high, and has twice produced its remarkable cones.

There is no more interesting tree in the collection than *Pinus tuberculata*. This species is one of those that produce an enormous crop of cones and retain them on the branches for several years. Few specimens in the British Isles show this characteristic so strikingly as that at Bayfordbury. On a portion of a branch 3 feet long I have counted more than 40 cones; they are rather narrow and tapering, 4 inches or so long, and produced in whorls of three to six.

It will thus be seen, even from this small selection, that the exotic Pines make a very remark-



FIG. 98.—CEDARS AT BAYFORDBURY, HERTFORDSHIRE.

the climate of Hertfordshire. Such, in brief, is the history of the Bayfordbury pinetum. A fortunate circumstance in connection with it is the existence of records, made by successive owners, of the planting, development, and various events connected with individual trees.

An important work is in course of preparation by Mr. Clinton Baker, assisted by Mr. A. B. Jackson. It is to consist of two quarto volumes containing a description and illustration of every species of Conifer in the Bayfordbury collection, with historical notes on the specimens. These volumes promise to be more complete on the pictorial side than any other work on the subject yet published. An illustration, natural size, of the foliage and cone (or fruit) of every

its straight, tapering trunk measuring 9 feet 4 inches in circumference at the base. There is also at Bayfordbury the curious and now uncommon form of this Pine, with yellowish shoots and foliage, once known as *Pinus Parryana*. A Corsican Pine is 98 feet high, and there is a fine group of its variety *Pallasiana* with the characteristic erect side branches. A specimen of *Pinus Coulteri*, which grew not far from the house until its death a few years ago, must have been one of the very finest in Great Britain; from its trunk planks 2 feet 9 inches wide were cut (see *Gardeners' Chronicle*, March 28, 1885). The uncommon *Pinus resinosa* is represented by two notable specimens 54 feet and 50 feet high respectively. Of the curious

able assemblage. Yet no nobler tree exists at Bayfordbury than a Scots Pine, growing some distance from the pinetum proper, in a wood of Oak and Ash. The tree is now 95 feet high, with a beautiful, clean, smooth trunk, 9 feet 7 inches in girth at breast high, and clear of branches for 50 feet from the ground.

Among the Firs, a notable example is *Abies cephalonica*, planted in 1847, and now 70 feet high and 7 feet in girth. *A. Lowiana*, often erroneously called *lasiocarpa*, is about the same size; the true *A. lasiocarpa*, a rare species, is represented by a tree 13 feet high. *A. magnifica*, planted in 1850, is 55 feet high, with the perfectly erect, tapering trunk, and having the narrow, pyramidal form characteristic of the species

wherever it thrives well. Of the true *Abies Mariesii*, one of the rarest of all Firs, there are several young specimens. The ordinary Douglas Firs are not of unusually fine development, but the collection possesses a very striking pendulous variety, over 60 feet high. Among Larches, the most notable tree is a specimen of *L. dahurica*, 61 feet high, that produces cones abundantly.

The fame and interest of the pinetum tend, perhaps, to make one overlook the attractions of the "hardwoods" at Bayfordbury. But there are many that claim admiration. The common Oaks, Field Maples, and Yews would in themselves give distinction to any demesne. The American Oaks, too, are good, especially *Quercus rubra*, *Q. Phellos*, and *Q. palustris*, as are several trees also of the hybrid *Q. Turneri*, of semi-fastigate habit. Another interesting tree, similar in form to the last mentioned, is the fastigate variety of the curious Whitebeam tree, *Pyrus pinnatifida*, forming a crowd of erect, slender branches, and 35 feet high. Two fine old trees of *Cratægus tanacetifolia*, one of the most attractive of all Thorns in flower beauty, and producing large yellow haws, having a rather Apple-like flavour, probably date back to the time of Loudon, who was a great admirer of Thorns, and planted them largely. Another fine flowering tree is *Arbutus Menziesii*, the "Madroño" of the Californian forests, 25 feet high, which bears annually, not only flowers, but fruits. *Ulmus campestris viminalis*, that curious Elm, with small leaves and very slender twigs, is represented by a variegated form 30 feet high—one of the most effective of garden trees that have no beauty of flower.

Mr. H. Clinton Baker was one of the first to appreciate the present shortage in the supply of suitable Willow timber for the making of cricket bats. On the banks of the River Lea he has a prosperous plantation of Willows well on the way to a marketable size. *W. J. B.*

The Week's Work.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Perpetual-fruiting Strawberries.—There are about half-a-dozen varieties of this type of Strawberry in general cultivation. The first that attracted attention was the one known as St. Joseph. This was afterwards crossed with Royal Sovereign, one of the progeny being the well-known St. Antoine de Padoue variety, which has fruits larger and of better flavour than those of St. Joseph. A variety of later introduction is Laxton's Perpetual, which, with the other two described, constitute the best varieties for planting. Another which is sometimes included in this class is Louis Gauthier. This bears large, white, or bluish-white fruits. The plant is a vigorous grower and a prolific fruiter. As the name perpetual-fruiting indicates, these Strawberries will fruit over a very extended period; but it is best to pluck off the flower scapes during the time the ordinary Strawberries are in fruit, so that the energies of the plants may be conserved until August and September. They will then give a succession of good fruits, and, if a little protection is afforded them during unfavourable weather, the supply will be maintained late in the season. I adopt the following treatment for these Strawberries. They are planted in a sunny position on ground trenched and heavily manured the previous winter. In the early spring the ground is afforded a good dusting of wood ashes, lime and soot, well mixed with the upper soil. Strong runners are planted 2 feet apart either way. This amount of space is necessary in order that the air may circulate freely about the plants during the dull days of autumn. Should the weather be dry after planting, water is afforded until the roots are established. The plants grow strongly, and before the hot weather sets in they are afforded a mulching of decayed manure. It is essential that copious waterings should be given whenever the ground is dry. By the end of May or June, the plants commence to develop their

flowers; but, as stated, these, together with any runners, are picked off as soon as they are detected. This stopping is practised till the end of July, after which date the trusses of bloom are allowed to develop. At that stage the bed receives a soaking of manure water, or a dressing of artificial manure, which is washed into the soil by copious waterings. After these manurial stimulants have been applied, clean straw is placed around the plants. If extra fine berries are desired, the trusses are thinned of most of their flowers. The fruits are supported on twigs or wire supports that are sold for the purpose by the sundriesmen. Slugs are fond of these fruits, and must be guarded against.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Early pot vines.—As soon as the Grapes on pot vines, which were started into growth in the autumn, commence to colour, less moisture will be needed in the atmosphere. Discontinue the afternoon damping, and, as the Grapes approach to ripeness, keep the house quite dry. This, however, does not apply to the roots, which must be liberally supplied with moisture, but manurial stimulants must be gradually withheld as the fruits become ripe. Admit plenty of fresh air in theinery during fine weather, both through the top and bottom ventilators. The top ventilators may be allowed to remain open a little during the night-time. The lateral shoots may now be allowed to grow unchecked.

Early permanent vines.—Examine the bunches for any further thinning which should be done before the berries become too crowded. In the case of Black Hamburg variety, nothing much is needed beyond the removal of a few of the seedless berries. If the foliage has covered the whole of the trellis-work, the lateral growths must be kept in check by pinching. Guard against mealy bug, and should mildew appear dust the affected parts with flowers of sulphur. A little of this substance should also be placed on the hot-water pipes.

Mid-season vines.—The stopping and regulating of the shoots will need attention. Should the vines be very close to the glass, extra care will be needed in tying the laterals. This work is best done either at the end of the day or during dull weather, as at such times there is less danger of the shoots being damaged. As soon as the fruits have set and it can be determined which are the best bunches, remove any that are not required. The thinning of the berries must not be delayed, as they swell quickly at this season of the year; when they are crowded, the thinning cannot be accomplished so evenly or well. After the vines have passed their flowering stage they will probably need watering; this is a suitable time to give them a good soaking with liquid manure.

Cherries in pots.—Established trees which are carrying a good crop of fruits must be top-dressed with some rich compost. They should also be watered two or three times a week with liquid manure, or be given chemical manures. The syringe must be used freely during fine weather, and the paths, &c., damped frequently in order to maintain a moist atmosphere. An occasional syringing with soft soapy water assists to keep the Cherry-fly in check. Guard against a small grub which will be found inside curled leaves. These pests will later attack the fruits and cause much damage to the crop. If it is desired to hasten the ripening of the fruits this may be done by closing the house earlier in the afternoon, but on no account afford excessive fire heat at night-time. When the fruits are ripening the syringing must be discontinued, and a free circulation of air permitted to prevent the fruits from cracking.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Climbers.—The shoots of climbing plants in greenhouses require to be frequently thinned, in order to produce the best results in flowering. Weakly shoots should be at once removed, and the others regulated so that there is no overcrowding. Seedlings of such subjects as *Momordica*, *Lagenaria*, *Luffa*, *Trichosanthes*, *Cucumis sativus* and other tropical gourds can be potted into large pots or may be planted out in mounds of soil placed on the stages. The

soil can be hidden by dwarf trailing plants such as *Selaginellas*, *Panicum variegatum*, and *Episcia fulgens*. Ornamental gourds grown under glass require a similar treatment to that afforded Cucumbers.

The Rose house.—Established trees are growing freely and will be benefited by occasional applications of tepid manure water. When the weather permits, the foliage should be syringed twice daily with clear water until the flower-buds are showing colour. Spraying in the afternoon must be practised on fine days only, and under such conditions that the foliage becomes quite dry before dusk. Avoid a high temperature in the house at night-time. Fumigate the house once a week to keep green fly in check. Pot Roses in flower should be removed to a house with a dry atmosphere. Place fresh batches of pot Roses in the forcing house for successional blooming.

Tree Carnations.—The young plants must not be allowed to suffer a check through having their roots potbound; they must therefore be transferred to larger receptacles as soon as they have filled the smaller pots with roots. The stopping of the shoots is a much-debated question. Many persons recommend the first pinching of the shoots whilst the plants are in the small pots. Other growers claim that plants which are not stopped until they are established in 5-inch pots and about 8 or 9 inches high produce a greater number of strong-flowering shoots than those that are stopped earlier. At whatever stage the pinching of the shoots is done it must be after the plants have recovered from the disturbance of repotting.

Jacobinias.—Cuttings of these plants should be inserted in light sandy soil. As soon as the cuttings are rooted they should be potted singly into small pots, and shifted subsequently to larger receptacles as required. The best inflorescences are obtained from plants which have not stopped. Large specimens may be obtained by placing into one large receptacle all the cuttings rooted in a single pot.

Campanulas.—*Campanula isophylla* and its varieties may be divided, or, if large specimens are required, potted on into larger pots. These plants should be grown under a cool treatment. Seeds of *C. pyramidalis* should be sown now to provide plants for flowering next year. The strongest plants of last year's raising will soon require repotting. Good results are obtained when this *Campanula* is wintered on an outside border and potted up just before the flower-spikes appear.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Hollies.—These should be pruned, lightly forked at the roots and given a top-dressing of rich soil and manure. Specimen plants on lawns or terraces will require to be trimmed very carefully in order to preserve their shape. They are best cut with a knife of a pair of sécateurs; when a pair of shears is used, many of the leaves are cut in halves. For trimming large hedges of Holly shears should be used. There is a large number of varieties of this evergreen shrub and nearly all of them are worthy of places in the garden.

Ornamental Maples may now be planted. The dwarf-growing varieties form excellent groundwork to tall-growing Liliums, which should be planted as pot specimens.

The herbaceous border.—Complete any planting that has been delayed by the unfavourable weather. *Ostrowskia magnifica* is a very handsome and distinct border plant. It is impatient of disturbance at the roots and should, if possible, be planted from a pot. *Monarda didyma* forms a fine subject for the mixed flower border. The *Inulas* provide a very effective display during the late summer and autumn months. They prefer a somewhat moist situation. *Rudbeckias*, *Thalictrums*, *Epimediums*, and the newer varieties of *Michaelmas Daisies* are all attractive when in flower at the end of the summer.

Mistletoe.—This plant may be made to grow upon the Apple, Poplar, Thorn and Lime, by making a crack or crevice in the bark and inserting the seeds, afterwards plugging the cavity with a piece of cotton-wool. This precaution is necessary or birds and mice may carry off the seeds.

Annual climbers.—Hardy varieties may be sown in small pots. These include *Tropæolum*, *Maurandya Barclayana*, *Convolvulus*, *Ipomœa*, and *Ecchremocarpus*. Gourds may also be raised for training over poles, arches, or old walls. Another excellent plant for this purpose is *Mandevilla suaveolens*. If it is desired to shift *Tropæolum speciosum*, a deep hole should be made about the roots, which descend very deeply in the ground. This *Nasturtium* may be planted on the north side of a wall or tree, in which situation it succeeds very well.

General work.—Remove any protecting material placed about tender plants, and top-dress their roots with fresh, rich soil. Camellias and Palms are benefited by bonemeal and soot, which should be lightly forked in about their roots. Make trim the shrubberies, beds, and borders, pruning and staking the plants and then forking the soil. Place a fresh stake to any plants that require it. The stakes will last much longer if the parts that enter the soil are either dipped in pitch or charred; the ends may also be treated with sulphate of iron, and when dry immersed in strong lime water.

The Alpine garden.—Many *Primulas* are easily raised from seeds, including *P. capitata* and *P. pulverulenta*. Afford a little top-dressing of loam, leaf-soil, bonemeal and soot to *P. rosea*, *P. japonica* and others of a similar type.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Catasetum, *Cynoches* and *Mormodes* are not only curious and interesting plants, but many of the species, when well cultivated, produce handsome spikes of flowers that have a decorative value; some of their blossoms are fragrant. The following are amongst the best plants of these genera from a garden point of view:—*Catasetum Russellianum*, *C. splendens*, *C. s. imperiale*, *C. s. punctatissimum*, *C. s. leucanthum*, *C. O'Brienianum*, *C. tabulare*, *C. Darwinianum*, *C. Bungeothii* (pileatum), *C. B. Lindenii*, *C. B. aurantiacum*, and *C. B. Randii* (all of these have received either a First-class Certificate or an Award of Merit from the Royal Horticultural Society). Among the *Cynoches* may be enumerated *C. pentadactylon*, *C. maculatum*, *C. peruvianum*, *C. Egertonianum*, *C. chlorochilon*, and *C. versicolor*. The best of the *Mormodes* include such beautiful species as *M. luxata*, *M. l. eburna*, *M. Rolfeana*, *M. pardina*, *M. buccinator*, *M. Wendlandii*, *M. badia*, and *M. Lawrenceana*. These plants enjoy a long rest during the winter months, but they are now commencing to grow, and will require immediate attention. As soon as the young growths are seen pushing from the base of the pseudo-bulbs, the plants should be turned out of the old compost, especially if it consists of ordinary peat and moss. Cut away the dead roots to within 2 inches of the pseudo-bulbs; the portions of roots which remain will be found useful when fixing the pseudo-bulbs in the new soil. Last year our plants were potted in the following compost, in which they grew exceedingly well, and produced strong spikes of bloom:—*Osmunda* fibre and *Polypodium* fibre in equal parts cut up moderately fine and mixed well together, with the addition of small broken crocks. No *Sphagnum*-moss was used. Owing to the lasting qualities of the compost, very few of the plants will need re-potting this season.

Repotting.—We use ordinary flower-pots, with three holes drilled at equal distances just under the rim, to which suitable copper wire handles are attached. These handles are about 12 or 15 inches in length, according to the size of the pseudo-bulbs. The pots are filled with material for drainage purposes to about a quarter of their depth, clean, broken crocks being employed. The plants are potted firmly, with the base of each young growth a trifle above the rim of the pot, to guard against damping. All long, heavy pseudo-bulbs should be securely tied to the wires to keep them in position. For several weeks after repotting, water must be afforded sparingly, as very little moisture is necessary until the growths are well advanced; but as soon as the roots have obtained a firm hold of the compost, they will need copious waterings. The plants should be suspended well up to the roof glass of the East Indian house. One of the main conditions of success is a quick development of the growths.

Temperatures in the various houses.—East Indian house, 65° to 75°; *Cattleya* house, 60° to 70°; the intermediate house a trifle lower; and the cool or *Odontoglossum* house, 50° to 60°. The lower temperatures given are for night-time, and the higher for mid-day. The Mexican house should be about 55° at night, and rise during the day, by sun's heat, to 80° or 85°, at the same time plenty of ventilation should be afforded. The *Odontoglossum* house should have plenty of fresh air admitted when the weather is mild; the other houses will require a moderate amount of ventilation throughout the day. In all the houses we leave the bottom ventilators open a trifle at night-time whenever the weather is favourable. All the houses must now be damped down at least once in the morning and again during the afternoon.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. Vicary Gibbs, Aldenham House, Elstree, Hertfordshire.

Spinach.—This has proved a most valuable green vegetable this winter, as the plants have almost entirely escaped injury from frosts. A little chemical manure and a dusting of soot about the roots, with frequent hoeings of the soil, will do much to assist the growth and improve the edible qualities. Sowings of Spinach should be made frequently on borders facing south or west.

Chinese Artichokes (*Stachys tuberosa*).—This Artichoke, when properly cooked, forms a valuable addition to our list of autumn and winter vegetables. To produce the best tubers, it needs careful cultivation. The plant does best in a light, sandy loam, which should be enriched with well-decayed manure and leaf-mould. If the tubers are not already planted, this should be done at once, placing them in rows 12 to 18 inches apart, allowing 9 to 12 inches between the plants in the rows. Planting may be done with a dibber, or the tubers may be placed in deep drills made with a hoe. On heavy land, it is advisable to place about the tubers a quantity of old hot-bed manure or some well-decayed leaves.

Globe Artichokes.—Remove the material that has been placed about the plants for protection, and apply a quantity of cinders or ashes about the roots. This, with plenty of farmyard manure, should be forked into the ground between the rows. Suckers which were potted up in autumn and have wintered in pots should be planted on well-prepared ground at a distance of 4 feet from row to row, and 3 feet between the plants.

Chicory.—This is a valuable salad plant, as well as an extremely useful vegetable for cooking. Ground intended for growing Chicory should be deeply trenched and well manured during the winter months. Two sowings should be made, one during the present month and another in May. Sow in drills drawn 1 foot apart.

Cabbages.—The ground about the plants should be deeply and constantly hoed. Draw the soil up to the stems to prevent the wind from blowing them about. Cabbages are benefited in spring by occasional applications of quick-acting manures.

Cauliflowers.—Autumn-raised plants should now be planted in their permanent quarters. These give much the finest heads, although many persons depend on plants raised from seeds sown in the spring. Two reliable varieties are *Walcheren* and *Magnum Bonum*. To ensure a succession, plant in different aspects and at intervals.

THE APIARY.

By CHLORIS.

Robbing.—When the supply of nectar is short, bees resort to robbing their weaker neighbours. As the weather of late has been cold and wet, there will probably be much robbing this season.

How to detect robbing.—The scene of the trouble is on the alighting board near the entrance. When all is well within the hives, bees alight and pass in with their load, and nothing like strife is seen. But when robbing is being carried on there is a great commotion. The bees are seen struggling together in twos and threes, or even more, and rolling to the ground tightly embraced, and there will be found many dead bees on the ground near the hive.

How to cure it.—The first step is to ascertain the cause. Perhaps it is due to the carelessness of the beekeeper, who has spilled some of the syrup whilst feeding; it may be a general shortness of food; or it may be that a hive is queenless. A colony without a queen does not offer a very determined stand against marauders. Having found the cause and remedied it, the next thing is to guard against further trouble. If robbing be discovered in its early stages, it may be easily checked by closing the entrances, so that only one bee can pass in or out. Some time ago I heard of an excellent device. A beekeeper had been much troubled with robbing, and nothing he did had any effect. He eventually placed a square of glass before the entrance, which made it possible for bees to pass in and out at the sides, but the robbers flew against the glass and failed to find the entrance.

Painting hives.—Those who failed to paint their hives last autumn should do so now as speedily as possible. First rub the hives with glasspaper to ensure a smooth surface. Mix the paint as follows:—1 lb. of white lead mixed in unboiled linseed oil and a little turpentine (boiled linseed oil causes paint to blister). Strain the paint through a piece of muslin, or an old stocking, working it through with the brush. If a colour be desired (white reflects the heat best) a little sienna will give a stone colour; the addition of red lead will produce a pink tone, and a slate tint is produced by adding lamp black. Remember in applying the paint that the object is not to put on as much as possible, but to apply a thin, even coat. This will take time, but it will be time well spent. Give two coats, and after the first is applied stop any holes or crevices with putty.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Seats.—A plentiful supply of seats is necessary in every public garden. They should be placed in positions where good views are obtained, or in shady spots, such as beneath trees, or against a shrubbery. The type of seat that is principally used in the London parks consists of three iron castings, one at either end and the other in the centre, to which wooden seat-rails are secured by means of small galvanised bolts. The largest of these seats is formed with 13 wooden rails, each of which is about 2½ inches wide and 1 inch in thickness. A smaller seat is sometimes used, which only takes four laths—two for the back and two for the bottom. Another type of seat is made from old Oak timber, such as may be had from the ship-breaking yards, the wood being bolted to a galvanised iron frame. This timber is very durable and requires no painting, an occasional coating of boiled oil being all that is necessary. Rustic seats, formed of branches of trees, are, when properly constructed, strong, and harmonise with their surroundings. One of the best places for a rustic seat is around the bole of a large tree near to the pathway. Such seats are best made in a circular or octagonal shape, with dividing arms, so as not to allow a person to recline at full length, this being prohibited in the L.C.C. parks. All the seats are free to the public, except in a few places where folding chairs are specially provided at a small charge.

Fences.—In addition to the proper safeguarding of the shrubberies, fences are necessary for such temporary purposes as enclosing a piece of worn turf, preventing a beaten track being made across the grass, and protecting the verges, &c. To stop people treading on the grass edge, iron posts, about 15 inches high, are fixed alongside the pathway at intervals from 6 to 9 feet, and through these are strained a flexible wire. Another form of dwarf fence is sometimes used, with standards 2 feet in height, set in concrete, and bearing two strands of wire about 14 inches apart. A strong post with a cog-wheel arrangement for straining the wire is provided at intervals. The common five-bar hurdle is used largely in the case of shrubberies; unclimbable fences are placed in spots which require careful protection. This latter kind of fencing is made in 6 feet lengths, and can be had from 3 feet 6 inches to 5 feet in height. Although termed unclimbable, small boys often surmount it.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

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

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

Illustrations. The Editor will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but he cannot be responsible for loss or injury.

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

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Herbaceous and Border Plants, Lilliums, &c., at 12; Roses at 1.30; Palms, Azaleas, &c., at 5; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

Choice Established and Imported Orchids in large variety. Orchids in flower and bud. At 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—46.7°.

ACTUAL TEMPERATURES:—

LONDON.—Tuesday, April 6 (6 P.M.): Max. 52°; Min. 43°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Wednesday, April 7 (10 A.M.): Bar. 30.2; Temp. 55°; Weather—Sunshine.

PROVINCES.—Tuesday, April 6 (6 P.M.): Max. 52° Cambridge; Min. 43° Scotland, E.

The great International show of the present year is now being held in Berlin, in the presence of a considerable number of foreign visitors. Every effort has been made to get together such an exhibition as cannot fail to have an influence on the development of German horticulture, and in this endeavour the Prussian Horticultural Society has been successful. A prodigious amount of work is connected with an event of this kind, and the most skilful organisation is necessary, therefore those societies which have already held similar exhibitions have most valuable experience to work upon. Except for occasional events which have taken place in France, most of the International horticultural displays for years past have been made in Belgium by the Ghent Botanical and Horticultural Society. The interval of five years between the successive shows gives time for the perfecting of the organisation and leads to unqualified success. Here, in Germany, there has been no serious attempt at any great show during the past twenty years, though it will be remembered that as recently as four years ago a smaller show was held at Düsseldorf. In these circumstances the Prussian Horticultural Society is entitled to our congratulations, for it is certain that the gathering together of the exhibits from other nations has a first-rate educational effect upon the home cultivators in any country, however skilful they themselves may be in horticultural practice.

The present show is divided into 31 sections, each of which was judged by a separate group of jurors. There were 150 jurors, including representatives from

France, Belgium, Holland, Sweden, Russia, Denmark, Italy, and England. Such an exhibition needed a very large covered area, and the Society was fortunate in obtaining the two magnificent buildings at the Zoological Gardens. These have only been erected during the past two years, and were designed for this and similar purposes. They are lofty, and, in addition to the floor space of the main buildings, there are spacious galleries, separate rooms and annexes, all of which are utilised for the display of the exhibits. The area covered is 12,000 square metres, or about 2½ acres. The rent that has to be paid for the buildings during the fortnight the exhibition will remain open is 50,000 marks, or about £2,500. Beside providing this sum the Society offered prizes amounting to the value of 70,000 marks, or £3,600. The wall at one end of the first building is decorated with a painting representing the Kaiser's residence at Corfu, and the effect has been enhanced by reproducing in front of the painting some of the external features of that island (see fig. 100). The Kaiser, who, with the Kaiserin, visited the exhibition on Wednesday, appeared to be keenly interested in this representation of the famous Achilleion. The Imperial party was escorted through the exhibition by Mr. Otto Beyrodt, one of the vice-presidents. The same building contains most of the Indian Rhododendrons, stove plants and similar exhibits, the other building being used principally for the hardier plants.

Of the exhibits themselves it may be said that they more than equal expectation; but, at the same time, there is little, if anything, superior to what is usually seen in England. Probably about two-thirds of the exhibits have been contributed by German exhibitors, and one-third by those of other nationalities. Altogether there are 420 exhibitors. Belgium contributes most of the fine foliage plants, including the excellent group from the Van Houtte Nurseries at Ghent. The Dutch Bulb-Growers' Society have produced a striking colour effect with their Hyacinths and Tulips, and Holland also exhibits a considerable quantity of vegetables and salads, which are in every respect creditable. From France there are choice Orchids from Mons. Lambeau, hybrid Gerberas from Mons. Adnet, Cinerarias from Messrs. Vilmorin, Andrieux and Co., and various growers have sent cut Carnations, collections of fruit, vegetables and salads, which latter exhibits are amongst the best in the show. Particulars of most of these classes will be found in the report on another page, but we may draw special attention to the hybrid Gerberas. Flowers of some of the earlier hybrids have been seen at the Temple shows in London, but we have never seen such a presentment of their infinite variety and beauty as that now shown by Mons. Adnet. The development of this plant must be highly gratifying to Mr. Lynch, who, we believe, raised the first hybrids at the Cambridge Botanic Gardens.

England is represented by but few exhibits of which the chief are Orchids from Messrs. Charlesworth and Co., Carnations from Mr. C. Engelmann and Mr. G. Lange, and Pelargoniums from Messrs. H. Cannell and Sons. For various reasons, the horti-

cultural trade between Germany and this country is not equal, for instance, to that between ourselves and Belgium, and even in respect to the actual trade it may be said that we are usually the purchasers rather than the sellers. This fact may explain in some measure the comparative indifference on the part of British growers on the present occasion, but we believe that, in the event of the Berlin authorities holding a similar show again, our own people, amateur as well as trade cultivators, will be found to be more willing to send exhibits.

One of the surprises which the exhibition offers is the extraordinary number of hardy fruits that are staged, mainly by German cultivators. No such extensive display has been seen at an exhibition in England so late in the season as April, though smaller collections of no less excellent preservation and quality have been exhibited even at the Temple shows. These exhibits at Berlin may be taken to show that fruit preservation is well understood generally by cultivators, and that this question of preservation is an important matter to be studied if the culture of hardy fruits is to be made profitable. It was appropriate, therefore, that the Crown Prince and Princess should offer a special prize for the best collection.

Indian Azaleas were well shown by Mr. T. J. Seidel, of Dresden, who was the principal exhibitor of these plants. The uncongenial weather of the present spring, however, has been much against these and other plants that in more favourable circumstances would have appeared to better advantage. Englishmen were impressed with the excellence both of the Cyclamens and of *Primula obconica*. We have never seen such fine displays of *Primula obconica* as those at Berlin. The development of this plant has been of an extraordinary character; in the varieties exhibited the colours ranged from white through mauve, pink and red to the deepest crimson, whilst in some varieties the flowers measured as much as two inches across. Cyclamen cultivation is evidently well understood in Germany, the groups of these plants in the exhibition being remarkable for their unusually large and finely-coloured flowers produced in the greatest profusion.

Like most of the Continental shows, the Berlin Show is remarkable for the good taste evinced in the arrangement of the exhibits. In this respect, though not in the excellence of the individual classes, the Berlin Show is superior to the exhibitions to which we are accustomed in this country. In Berlin each several exhibit contributes to the general harmony. There is but little need for stages, since most of the plants are bedded out in natural groups. The pots for the most part are hidden, there are no obstructive labels, and any architectural features in the building that were considered inelegant are either draped with pleasing colours or covered with branches of Spruce.

Contributions to the scientific side of the exhibition are made by the State schools at Geisenheim and Dahlem.

Nothing could exceed the hospitality extended by the Prussian Horticultural Society to the foreign guests. On April 1st the

judges assembled at 8.30 a.m., and were addressed by the Presidents of the Society and jury. After the adjudication of the prizes the jurors were entertained at luncheon. On the following morning at ten o'clock the exhibition was formally opened by the Crown Prince and Princess. In the evening the foreign guests and others attended a performance at the Royal Opera. On Saturday evening they, to the number of about 300, were entertained at a banquet in the buildings of the Zoological Gardens. The President and others welcomed the guests in appropriate speeches, and responses were made by representatives of each country. Sir Daniel Morris, K.C.M.G., who represented the Council of the Royal Horticultural Society, replied on behalf of England and expressed regret that English exhibitors were not better represented. He related a few facts concerning the Royal Horticultural Society, and said that English horticulturists desired to have friendly relations with those in Germany and all other countries. On Sunday and Monday there were organised excursions to the Imperial Gardens at Potsdam and the Imperial Botanic Gardens at Dahlem.

The hope was expressed at Berlin that, in the near future, England would take steps to organise an International exhibition. We commend the proposal to the consideration of the Council of the Royal Horticultural Society. Many in this country would welcome an opportunity to show their appreciation of the generous hospitality extended to Englishmen on many occasions.

OUR SUPPLEMENTARY ILLUSTRATION represents a flower of the fine hybrid between *Lælia Jongheana* and *Cattleya Dowiana aurea*, raised by Mr. H. G. ALEXANDER, Orchid grower to Colonel G. L. HOLFORD, C.I.E., C.V.O. This hybrid gained a First-class Certificate at the Royal Horticultural Society's meeting on February 23 this year. Although, in point of form, the features of *L. Jongheana* can be traced in the flower, it is evident that the influence of the more ample *C. Dowiana aurea* has predominated. In the matter of colour, however, the yellow of the *Cattleya* has been suppressed by the rose tint of *Lælia Jongheana* in the manner often seen where yellow and rose have been crossed with each other. The flowers of *L.-C. Pizarro* are of very fine substance, of a bright purplish-rose colour, darkest at the base, whence a series of gold-coloured lines extend to the front.

NATIONAL AURICULA AND PRIMULA SOCIETY (SOUTHERN SECTION).—The annual exhibition of this Society will take place at the Horticultural Hall, Vincent Square, Westminster, on Tuesday, April 20, in conjunction with the fortnightly meeting of the Royal Horticultural Society.

HOW THE AMERICAN GOOSEBERRY-MILDEW SPREADS.—An outbreak of this disease having occurred at Eaton, in Norfolk, Mr. GARNSEY, the chief inspector of the Board of Agriculture, made several visits to the district, and, in consultation with Mr. J. WARD, the local inspector, traced one case to its source. A workman employed in the garden of a private owner took some cuttings, which he reared in his own garden. These developed mildew. On inquiry of the owner of the bushes, it was found that he had obtained them from a firm in Essex.

BRITISH GARDENERS' ASSOCIATION.—We learn from *The Journal* of this association that the sub-committee appointed by the council to consider the question of a garden to which unemployed members might be drafted, has met on several occasions, and discussed the matter from all points of view. Whilst desirous of doing everything possible to assist members who are out of employment, the sub-committee is unable to recommend any definite scheme to the executive council, owing to the great financial responsibility that would be involved. The sub-committee is of opinion, however, that such a scheme could be carried on with greater advantage if conducted either as a limited liability company, or privately, the association having a number of places at its disposal for members during their period of unemployment. If a conveniently-situated piece of freehold land could be purchased at a reasonable price, a gentleman would be willing to buy the land, and to let it to the association on such annual terms as would ultimately render it the property of the association.

THE "BOTANICAL MAGAZINE."—In the issue of this work for the current month, the following plants are illustrated and described:—

IMPATIENS HAWKERI, tab. 8247.—This plant was at one time rather extensively cultivated in gardens, but it suffered so frequently from the attacks of the *Begonia mite* (*Tarsonymus*), that it is now rarely met with. It was introduced by Messrs. BULL, of Chelsea, in 1886, and in the same year a full-page illustration of the plant was given in the *Gardeners' Chronicle*, p. 760, June 12. The plant requires a warm temperature, with plenty of atmospheric moisture.

MICROLOMA TENUIFOLIUM, tab. 8248.—This is the Coral Limber of South Africa, a pretty *Asclepiad*, having waxy, Hoya-like blossoms, produced in axillary bunches. A note on the plant by Mr. W. E. GUMBLETON is given in the *Gardeners' Chronicle*, February 1, 1908, p. 79. This gentleman received three plants from Port Elizabeth, and furnished the material from which the *Botanical Magazine* plate was prepared. The flowers produced on specimens cultivated in greenhouses in this country are not comparable with those developed in the plant's natural habitat.

ARBUTUS MENZIESII, tab. 8249.—This is one of DAVID DOUGLAS'S introductions, and, although he first sent plants home in 1825, the tree has never become common in gardens. There are, however, a few fine trees in this country; one at Bassett Wood, near Southampton, is nearly 50 feet high. One of the most interesting features of the tree is its smooth, cinnamon-coloured stems and branches. In common with most *Ericaceae* plants, this *Arbutus* succeeds best in a rooting medium of peat, and, failing that, a sandy loam.

STROPHANTHUS PREUSSII.—This tropical climber is a native of the regions of the Gold Coast and the Congo. The inflorescences form terminal cymes, the individual flowers having long tails to the corolla lobes, as much as 12 inches long. The flowers are pale orange, the filiform appendages being red. The anthers also are red. The specimen figured was raised from seeds forwarded to Kew in 1902 by Mr. W. H. JOHNSON, from the Botanic Station at Aburi, Gold Coast.

ANTHURIUM TRINERVE, tab. 8251.—This species is nearly allied to *A. violaceum*. It is one of the few *Anthuriums* which are attractive on account of the bright colour of their fruits. In this instance the berries are lilac-coloured. The plant is not the same as *A. trinervium* of Kunth, a plant which has much larger cordate leaves than those of *A. trinerve*.

METROPOLITAN PUBLIC GARDENS ASSOCIATION.—In the twenty-sixth annual report are given detailed lists of the work which the Association has carried through during the past year, and of the various projects which it has on hand, together with an account of several new parks, recreation grounds and extensions to existing open spaces in the acquisition of which it has assisted. Amongst these may be mentioned the Barking Road recreation ground at East Ham—which was opened on July 15 by H.R.H. Princess LOUISE, Duchess of ARGYLL—and an addition of 12 acres to Ruskin Park. Trees have been planted in many thoroughfares, including several miles of streets in East Ham and Walthamstow; seats have been placed in existing gardens, open spaces, and public pathways; and prizes have been given in connection with window-gardening competitions in various parts of London.

RUSKIN PARK, CAMBERWELL.—Twelve acres of adjoining land have been added to this recently-acquired park, largely through the instrumentality of the Bishop of SOUTHWARK, a vice-chairman of the Metropolitan Public Gardens Association, and Mr. F. TRIER. The Association contributed £400 to the purchase fund. The total cost of the land was £24,000, of which one-half was contributed by the London County Council, £1,000, £2,000, and £750 by the Camberwell, Lambeth, and Southwark Borough Councils respectively, and £500 by the City Corporation, the remainder being obtained from voluntary sources. The purchase has still to be completed. The ground will be laid out and maintained by the London County Council, and is intended especially for the playing of games.

THE ISLAND OF ST. HELENA.—In a paper read before the members of the Royal Society of Arts, Mr. JOHN C. MELLIS, M.Inst.C.E., F.G.S., stated that St. Helena presents some extremely interesting problems in natural history, which, up to the present time, have completely puzzled the most able scientists. The indigenous flora of St. Helena comprises 77 different kinds of plants, locally known as "Cabbage-trees," "gumwood," "red wood," "dog wood," "scrubwood"; and also 26 kinds of tree and smaller Ferns. Some 50 of these plants are peculiar to the island, and cannot be regarded as specific allies of any other plants. A peculiar feature connected with them is that, with scarcely an exception, all the flowering plants produce pure white blossoms. There are some 20 varieties of marine fish which are peculiar to the locality. Some 20 species of land shells are indigenous, and have not been met with elsewhere. Thirteen of the 20 have already become extinct, and are now found only in a dead state on the surface of the ground, where the native vegetation has disappeared. Out of a total of 203 species of beetles found on the island, some 129 are true aborigines, and have been found nowhere else on the globe. How did these plants and insects originate? How did they get to this remote and isolated spot, and why are they gradually becoming extinct? The gradual dying out of the native plants has been attributed to the introduction of exotic plants and goats, which, in the one case, have overgrown and killed the native vegetation, and, in the other, have destroyed the young plants; but anyone who has studied the subject on the spot cannot fail to arrive at the conclusion that these reasons are wholly insufficient to account for the facts. Change of climate may possibly be a contributory cause of the passing away of this wonderfully interesting, indigenous flora and fauna. That such a change has occurred is very probable, seeing that the island was, at some remote period, much larger and more elevated than it is at present.

THE ROSARY.

CULTURAL NOTES FOR APRIL.

THE severe weather of February and early March killed many Roses in all parts of the country; whilst many which were not killed outright have been badly injured. All damaged shoots must be cut back to sound wood, pruning to a prominent outside bud. Although this severe pruning may appear a great sacrifice of growth now, it will result in the formation of strong shoots that will do much to place the bushes once again in a good condition. In late districts, the second and third week in April will be soon enough to start pruning dwarf Roses that will furnish a supply of early blooms. The damage caused this winter has shown the value of thinning out all weakly and unripened shoots during the summer and autumn months, thus enabling those which remain to become well ripened and hard enough to escape damage by cold. Long, well-ripened shoots of dwarf Roses may be bent carefully down to within 6 inches of the soil and secured by pegs.

All materials placed about the bushes for protection and soil that has been earthed up about the stems should now be removed. There will be many vacancies to be made good amongst the plants, and these will be better supplied by pot plants that have been wintered in cold frames. All newly-planted Roses, as well as those which are established, should have fresh mulchings of fermented manure placed over their roots, and the manure should be lightly covered with soil. Mulching should also be applied to cuttings, and if the soil about these has been loosened by the frost, it must be made firm again by treading.

Any plants that have lost their bottom branches should be cut hard back. This will cause the dormant buds at the base of the stem to break, and thus furnish a number of new growths. This remark applies especially to pillar and climbing varieties. These new growths will be stimulated if a top-dressing of some rich soil and manure is given the plant.

ROSES INDOORS.

The last batch of dwarf Roses intended for forcing should now be placed under glass. If submitted to gentle forcing, they will be in bloom just prior to the Roses in the open. It will suffice if artificial warmth is afforded during the night-time only, allowing the thermometer to reach 65° or 70°. During the daytime, ventilation can be freely afforded, and plenty of moisture sprinkled about the house. The ventilators should be closed early during the day, so as to avoid the necessity for too much fire heat during the night-time. Directly aphid is detected on the foliage, fumigate with some nicotine compound. This pest may be kept in check by syringings of clear water; but do not moisten the foliage when the sun's rays are shining directly on them. Red spider is another pest of Roses indoors; but this may be kept down by damping and syringing with clear water. The repotting of plants grafted last autumn and winter should now be completed. They will not need much attention, except staking and fumigating. When the temperature in the house reaches 60°, the top ventilators may be opened. A considerable number of the cuttings will now be well rooted, and should be potted into 4 or 4½-inch pots. They should be plunged in a new hot-bed, prepared in advance, which will also serve for the rooting of other cuttings. The old hot-beds should have linings of fresh manure placed around them in order that the heat may be maintained. These cuttings must be carefully shaded and watered. It will be advisable to cover the frames at night-time with mats, to assist in maintaining the requisite degree of warmth. The plants that have furnished these cuttings should be hardened off gradually, so that they may be placed outside, where they will

remain throughout the summer to mature their new shoots. Afford them a warm, sunny position, and they will form excellent subjects for early forcing next winter. Pot Roses used for forcing should be discarded after the third or fourth year, as, after that period, they produce inferior blooms. Where Roses are required in quantity early in the season, it is desirable to have the plants potted up in the late spring—the present being the proper time—so that the plants may be well established by the autumn.

Roses planted in borders under glass should be given an abundance of fresh air during the daytime, and the ventilators may remain open a little during the night. After the end of April, artificial heat may be dispensed with; but it is advisable to maintain sufficient warmth in the houses at night-time to keep the air in circulation. If the air becomes stagnant, the plants are liable to mildew, especially if the atmosphere is kept very humid. Do not neglect to fumigate the plants whenever aphid is detected. A mulching of manure spread over the roots will assist the plants with their last crop of flowers, which will be ready for cutting during May. After that month the houses may be thrown wide open, and, if the lights are removable, they may be taken off entirely. J. D. G.

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

CULTURE OF CUCUMBERS.—Mr. E. H. Jenkins states (p. 193) that "before the Cucumber disease (*Cercospora melonis*) became prevalent, it was possible to maintain a continuous supply of fresh Cucumbers from May to September inclusive," adding that "he had cut, from plants raised in April, superb young fruits in October," remarking that "unfortunately this cannot be done to-day, owing to plants becoming a prey to the leaf-spot." Before and since the appearance of *Cercospora melonis* a continuous supply of fresh Cucumbers has been maintained annually in many private and market-garden establishments not only from May to September inclusive, but from the end of February to the end of the following January, and this, too, in market-garden Cucumber houses, and without the aid of bottom heat, the plants being simply set out on small ridges, consisting of light, loamy soil and half-rotted stable manure in equal parts formed on the floor of the house. In the case of Cucumbers grown for market three plantings are made during the year, in order to have a continuous supply of fruits. I have cut excellent Cucumbers from the same plants for a period extending over 15 months, the plants being grown in boxes 2 feet long, 1 foot deep, 9 inches wide at the bottom, and 12 inches wide on the top. They were placed over and within a few inches of a flue in the back wall of a three-quarter span Pine stove and within 2 feet of the roof glass. The plants were fed liberally with top-dressings and artificial manure, &c. Moisture was applied to the roots three or four times a day during hot weather, including frequent waterings of liquid manure. The growths were kept well thinned out and stopped, the old wood being cut out from time to time to make room for young growths. Since the disease-resisting Cucumber has been introduced into market nurseries, the "spot" disease has practically become a thing of the past. In the fourth paragraph of Mr. Jenkins's article, he says "that, disastrous as the results of this fungal disease are, cultural errors are responsible for a loss equal, if not, indeed, greater, than that caused by the fungus," adding "this is all the more to be regretted, because it is preventable." The cultural errors referred to by Mr. Jenkins are the "uniform advice of Calendar writers to stop the leading shoots of the young plants at 3 feet or when they have reached the third wire." I fail to see anything wrong in this advice, seeing that Cucumber houses erected for market purposes are, as a rule, the same width and height. Mr. Jenkins avers "that young Cucumber plants should be allowed to grow unchecked until they have reached to within 1 foot of the ridge in a house

10 or 11 feet wide and 7 or 8 feet to the ridge." He considers stopping of the young plants to be "wrong in principle and in practice." Long experience convinces me that this principle is right, and that Mr. Jenkins is wrong. All engaged in growing Cucumbers for market stop the young plants at the third or fourth wire of the trellis, to induce the plants to send out fruit-bearing laterals and to bear fruit fit for marketing weeks earlier than would otherwise be the case, thereby obtaining higher prices for the earlier fruits. After an interval of a few days a fresh leader pushes from each plant, and this is stopped when it has attained to a length of about 2 feet. Fruit-bearing laterals follow this stopping in due course, and a few more wires of the trellis are clothed with healthy growths. In due time the young leading shoots are stopped once more midway between the top wire of the trellis, and within a short time the latter will become furnished throughout with healthy foliage and a profusion of young fruits in various stages. H. W. W.

ONIONS FOR MARKET (see p. 217).—I am surprised that the cultivation of such a profitable vegetable as the Onion is not carried out on a much larger scale than it is in this country. A. D. advises sowing the seeds in frames early in February, and afterwards transplanting the seedlings in their permanent quarters, 12 inches apart. Is this a better system than sowing the seeds in the open, 10 inches between the rows, and afterwards thinning to the same distance from plant to plant? Would the small Onions removed in thinning and sold as spring Onions for salads, &c., compensate for the extra labour and seeds. A. D. mentions the variety Ailsa Craig, and if that variety only were grown, his practice would be the best, for this Onion does best raised under glass and transplanted. But are there not other good varieties which, if cultivated as I suggest, would yield a crop quite equal in weight to that of Ailsa Craig grown as A. D. suggests? The expense of the frames is considerable. S. J. Martin, *Craig Wen Gardens, Menai Bridge, Anglesey.*

—The system of culture advocated by A. D., on p. 217, for the raising of large Onions for market, I carried into effect a few years ago. Ten tons of Onions were grown as described last week, the variety being Cranston's Excelsior. I found, however, that the only large demand for English Onions is in the case of those of the white Spanish type, such as Rowsham Park Hero, the best of that class perhaps. Instead of making £60 per acre, we realised no more than was sufficient to pay the expenses of planting-out, cultivating, harvesting, and burning those unsold. The Dutch growers flooded the market with Onions at £2 10s. per ton. In any case, white Spanish is the only type that should be sown in the open. Thomas Kitley, *Oldfield Nurseries, Bath.*

THE DECLINE OF WOODLAND INDUSTRIES.—It is correct, as Mr. Webster points out on p. 195, that rural industries are vanishing rapidly. In the case of underwood, this was formerly worth £6 per acre, but now 30s. is the top price. To spend time and labour in making the material into faggots is now useless, as there is little demand for them. Coal has superseded wood for brick burning and steam for bread baking. Hurdle-making is also a declining industry. The only remedy I can see is to clear the woods and grow more agricultural produce. Hop poles were in much demand a few years since, but many of the hop plantations have been grubbed up, whilst wire and coconut fibre string have largely superseded the use of poles as supports. Those who wish to grow timber for use on estates or for selling should plant Corsican Pines and Spruce Fir in batches by themselves in rows 5 feet by 4 feet. Keep the trees free from rank undergrowth and vermin. Remove the lower boughs as they die, and in 30 years' time much valuable material will be available for home use. E. Molyneux.

GRISELINIA LITTORALIS (see pp. 196 and 221).—Recently in a South Coast nursery I saw rows of well-grown plants of *Griseelinia littoralis* 4 feet high planted in a light soil killed by the recent frosts. The nurseryman was greatly regretting this mishap, as he had on his books numerous orders for this plant. E. M.

BERLIN INTERNATIONAL SHOW.

(See also page 232.)

APRIL 2-13.—The great international horticultural exhibition organised by the Prussian Horticultural Society was opened by their Imperial Highnesses the Crown Prince and Princess of Germany on Friday, April 2. Their Imperial Majesties the Kaiser and Kaiserin had visited the exhibition two days earlier and before the exhibits were perfectly arranged. In the following report we deal only with the exhibits in a general manner, indicating the most important features. No attempt is made to study each individual class or to enumerate all the prize-winners.

Another exhibition will be opened on April 7, composed of florists' exhibits, and it is expected that the Kaiser and Kaiserin will again visit the show on that day.

The three principal special prizes, namely, that offered by the Emperor, that by the Crown Prince, and the large exhibition Gold Medal offered by the Prussian Horticultural Society were awarded by ballot of all the jurors. The result of the ballot was as follows: The Emperor's prize for the best exhibit of culture in the show was given to Mr. DONNER, Tuttingen, for an exhibit of Carnations; the Crown Prince's prize for the best group in the show to Mr. ADOLF KOSCHEL, Charlottenburg; and the Society's large Gold Medal for the most decorative exhibit to the DUTCH BULB GROWERS' ASSOCIATION for their parterre of Hyacinths.

ORCHIDS.

For an international exhibition, the display of Orchids was disappointing. Germany was represented chiefly by Mr. OTTO BEYRODT, Berlin, whose speciality is the production of Orchid blooms for market. His group contained a collection of *Odontoglossums*, among which we noted some good forms of *O. excellens*, *O. formosum*, and *O. harvengtense*, some of the most useful of *Cattleyas*, and a number of well-flowered *Oncidium concolor*.

The chief collections came from Belgium, France, and England, that from F. LAMBEAU, Brussels, being by far the largest, and it contained a considerable number of the choicest kinds. Among his *Odontoglossums* were fine forms of *O. excellens*, *O. altum*, *O. crispum* J. N. Whiteley, *O. Lambeauianum*, bearing a spike of nine perfect flowers, *O. crispum* Von Armin Czicwen, and *O. crispum* Kronprinz Wilhelm, in which the whole flower is coloured deep chocolate brown, the sepals, petals and lip all having a narrow margin of white. Some first-rate varieties of *Cattleya Schröderæ*, *Miltonia Bleuana*, *Brasso-Cattleyas*, *Lælio-Cattleya Digbyana* crosses, *L.-C. Dominiana Kaiserin Augusta Victoria*, bearing a huge flower coloured rich rose purple, with an enormous crimson maroon lip; *Cymbidium insigne*, and *Cattleya nivea*.

From Mr. CHARLES MARON, Brunvy, came a large collection of choice Orchids, among which were many of his own hybrids, chiefly *Cattleyas* and *Lælio-Cattleyas*, and two large beautifully-flowered plants of *Cattleya intermedia alba*.

Messrs. CHARLESWORTH & CO. sent a small collection of their best, among which we noted two good varieties of *Odontoglossum Ossulstoni*, one bearing a spike with about 40 flowers, *O. Pescatorei* Duchess of Westminster, *O. ardentissimum virginale*, four *Odontodas*, *Cattleya Empress Frederic*, and various *Cypripediums* and *Brasso-Cattleyas*.

PALMS, FERNS, AND OTHER FOLIAGE PLANTS.

There were no very large collections of Palms, Cycads, &c., such as are seen at the great Belgian exhibitions, nor were there many exceptional specimens. The plants generally consisted of marketable specimens of convenient size for use in ordinary room decoration, and good in quality. The best collection of big specimens was exhibited by the SOCIÉTÉ ANONYME HORTICOLE, Ghent (Louis van Houtte Père). It contained many first-rate examples of Aroids, Cycads, *Dracænas*, Palms, and Bromeliads, as well as flowering plants such as Orchids and *Hippeastrums*, and, arranged across the end of the

great hall, the group was particularly striking. A collection of 50 Palms from FLANDRIA, Bruges, contained beautiful examples of *Phoenix Roëbelinii*, *Cocos*, *Rhapis*, and the yellow *Latania*. We have never seen better plants of *Cocos Weddelliana* than those shown by "LE LION," Ghent; they were from 3 to 6 feet high, and in perfect condition. There were very few collections from amateurs, the best being a large display of *Dracænas* shown by FRAU GEHEIMRAT SPINDLER, Spindlersfeld, who also showed a collection of *Crotons*, which were well grown, but poor in colour. *Nepenthes* were poorly represented, and the Ferns consisted chiefly of *Adiantums*, several groups of *A. tenerum* Farleyense being good in quality. Other Ferns were entirely of the easily-grown, popular market kinds. There were collections of *Rex Begonias* and *Caladiums*, but the plants were small and unfinished. There were groups of Palms, *Aspidistras*, and other foliage plants, which had been supplied by the Berlin florists and arranged as much for the purpose of embellishing the exhibition building as to show the kind of plants employed and the method of ar-

BORNEMANN, Blankenburg, also showed a fine group of *Clivias*. There were good collections of Bromeliads, but they were not fully in flower. The best groups were shown by Mr. FIRMIN DE SMET, Ghent. We were under the impression that these plants were specially favoured by German gardeners, and were therefore disappointed to find them so poorly shown by German exhibitors. The handsomest specimen Bromeliad was a magnificent example of *Tillandsia zebrina*, shown by Mr. FIRMIN DE SMET. *Begonia Gloire de Lorraine* was shown in the very pink of condition, perfect little specimens about 18 inches high and wide, and simply spheres of bloom. These came from Messrs. STRAHL & FALCKE, Berlin. Another group of equal merit came from Dr. BAARDSE, Aalsmer, Holland; the plants, although only about a foot high, were perfect examples of good cultivation, and consisted of the four best varieties, viz., *Caledonia*, *Lionel Rothschild*, *Turnford Hall*, and the type.

Anthuriums were exhibited by L. VAN HOUTTE PÈRE, Ghent, whose group of forms of *A. Scherzerianum* contained a selection



FIG. 99.—DUTCH BULB-GROWERS' EXHIBIT AT THE BERLIN SHOW.

range ment practised by the German decorators, among whom Messrs. J. C. SCHMIDT and ADOLF KOSCHEL are leaders. Of this character was an annexe of the building, which had been fitted up to appear like a conservatory and tastefully furnished with Palms, Azaleas, Ferns, Lily of the Valley, &c. An ornamental fountain, with coloured lights playing on the water, served to heighten the effect, which was decidedly German.

STOVE FLOWERING PLANTS.

Hippeastrums have become popular garden plants in Germany, and there were some large groups shown. Most of the seedlings were not of extra merit, falling short of the standard set by Col. Holford, Messrs. Ker & Son, Messrs. Veitch, and other home breeders and growers. The best collection came from "Labelliflos," Voorschoten, The Hague, whose group of 100 seedlings contained many that would hold their own among the best of those raised in England. L. VAN HOUTTE PÈRE also sent a collection of *Hippeastrums* of good average merit. *Clivias* were well shown, the quality of the flowers and size of the heads being first-class, but the plants were in every case limited to a single growth with one head of flowers. The best collection was from Messrs. STRAHL & FALCKE, Berlin, some of their seedlings being remarkable for colour and fullness of flower and for exceptional width of leaf. Mr. G.

of well-grown examples of the best varieties; from the same exhibitor came a group of hybrid Anthuriums of fair merit.

"DUTCH" BULBS.

The chief display of "Dutch" bulbs, by which term we mean such plants as Hyacinths and Tulips, was made in the second of the large halls.

As in the Casino building at Ghent, a bridge, from which views could be obtained of the whole exhibition, connects the two buildings. The bridge was covered with Spruce branches, somewhat too heavily to get the best effect, but, nevertheless, providing a good background for the exhibits as seen from the extreme ends. In front of the bridge in the second building was the chief display of bulbs. The collective exhibit of Hyacinths from the DUTCH BULB GROWERS' ASSOCIATION, and the exhibit of Tulips from Mr. E. H. KRELAGE, Haarlem, were arranged and planted in a design by Mr. F. J. Goemans, a Dutch landscape gardener and an old Kewite. The entire exhibit represented a terrace flower garden such as might be planted in front of a dwelling-house. The area thus covered was 360 square metres, and about 20,000 bulbs were employed in the decoration. The beds were planted with red, blue and pink Hyacinths of different shades, and the Tulips (Mr. E. H. KRELAGE) in round beds near

the margin of the greensward, which was somewhat inadequately represented by moss. The design also included two large oval beds of pink Astilbes (*Spiræas*), such as *Queen Alexandra* and others, contributed by Messrs. GEERT VAN WAVEREN & KRUYFF, Sassenheim. The general effect was exceedingly good, and gained for this firm the special prize offered for the most decorative exhibit in the entire exhibition.

The German exhibits of the same type were not displayed so well, and compared unfavourably with those from Holland.

ROSES.

The principal exhibits of Roses were made by Mr. ADOLF KOSCHEL, Charlottenburg. He had a large number of plants, disposed as if planted in a rosery, and representing standard plants and other forms of training, whilst the varieties included the most popular kinds for the purpose. Still, the cultivation was not equal to that which we see at home from such expert growers as Mr. Mount, of Canterbury. Mr. KOSCHEL was awarded most of the important prizes in this section, including a special prize for the best exhibit.

LILY OF THE VALLEY.

An exhibition in Berlin in April would certainly be incomplete if it failed to represent the industry in Berlin crowns of Lily of the Valley. This popular flower was not only well represented, but it could be seen in one form or another

GERBERA HYBRIDS.

Mr. R. ADNET, Cap d'Antibes, France, exhibited a most elegant and wonderful collection of varieties of Gerbera. In a recess in the gallery containing the more important of the French exhibits was a triangular bed, the floor of which was covered entirely with growths of *Asparagus Sprengeri* pegged down on the bed level. Thickly dotted over this green carpet were green tubes, each containing blooms of Gerbera and a spray or two of *Asparagus*. In the centre of the bed was placed a bamboo stand 6 feet in height, with receptacles from base to top furnished with flowers and greenery. The effect was delightful. But the chief interest lay in the large number of varieties displayed. From pure white there were shades all through yellow and orange-rose, red and rich crimson. A large portion of the space was devoted to one charming variety of a shade of rose or red and quite new to us as a tint in Gerbera hybrids. The first hybrids were raised by Mr. LYNCH in the Cambridge Botanic Garden, and Mr. ADNET obtained his first plants from Cambridge.

Mr. HENRY A. DREER, 714, Chestnut Street, Philadelphia, U.S.A., exhibited two plants of a new variety of *Nephrolepis exaltata*, known as "*Schöelzelii*." The pinnules were very plumose, but scarcely so congested as in *N. e. Todeoides* and some other earlier raised sorts.

Mr. FIRMIN DE SMET, Vinderhoute, near Ghent, Belgium, exhibited several fine varieties

and full as those of Pink Pearl and the individual flowers of similar form and size, their charm being enhanced by the colour of the buds, a rich red, which sets off the blush and pure white of the fully expanded flowers. Being hardy in England, this variety is certain to take a front place among *Rhododendrons*, whilst for forcing in pots it has every good quality. The same exhibitor sent a collection of hybrids from *R. Aucklandii*, one of which is exactly like Pink Pearl, with the margins of the petals elegantly crisped and waved. This unnamed seedling was labelled as having been "sold to Royal Gardens, Kew," so we may hope to see it later. There were numerous groups of the ordinary *Rhododendrons* from German, Dutch and Belgian raisers, but we saw nothing among them that may not be seen in the collections of English growers, and the plants, in size and finish, were inferior to many seen at a Temple Show. The principal exhibitors in addition to Messrs. C. B. VAN NES & SON, were T. J. SEIDEL, Dresden; Messrs. KOSTER & SON, Boskoop; RICHARD GÜNTHER, Berlin, and D. & J. KESSEN, Aalsmer, Holland.

AZALEAS.

The whole of the central area of the principal exhibition hall was filled with large groups of *Rhododendron indicum* (*Azalea indica*), the effect of which was magnificent. The principal exhibitor was Mr. T. J. SEIDEL, Dresden, the leading grower of Azaleas in Germany. His group of big standards contained many splendid examples, and as he grafts his Azaleas on *Rhododendron Cunninghamii*, they are characterised by vigour and, at the same time, looseness of growth, the heads being less table-like than those of the big plants grown by the Belgians. Other exhibitors were Messrs. OTTO PLATZ, Charlottenburg; STRAHL & FALCKE, Berlin; HENRICH KRÜGER, Rohrbeck; ADOLF KOSCHEL, Berlin; and LOUIS VAN HOUTTE PÈRE, Ghent. The last-named exhibitor sent a collection of 200 sorts, which fully maintained the reputation of the Belgian growers of Azaleas. In another part of the hall there were collections of smaller plants of Azaleas, such as the florists in Germany turn to account in making up baskets, &c., for room decoration.

Among new Indian Azaleas shown by Mr. T. J. SEIDEL was one labelled "*Herme*." This plant has semi-double or double flowers of clear pink colour, the petals being margined with white. It is a very attractive variety, and it is likely to become popular. The exhibit was purchased by an American grower.

CACTACEOUS PLANTS.

Most of the cactaceous plants were shown in a room, on the walls of which were scenes representing characteristic habitats of this type of plant. The specimens were not shown on a stage as pot plants, but the pots were plunged in moss litter or similar material, and, for the most part, were planted and grouped in the manner in which they occur in nature. But the most quaint were certainly the least natural examples, consisting of certain species with others grafted upon them. Amongst the chief exhibitors were Mr. JOH. WEISE, Somersfeld, Frankfurt; Mr. RICHARD TUCHTENHAGEN, Waidmannslust; RICHARD GÜNTHER, Friedrichsfelde, Berlin; and ALBERT WAGNER, Leipsic.

CARNATIONS.

The winter-flowering Carnations, for which valuable prizes were offered, were represented by large collections, including two from England, viz., those sent by G. LANGE, Hampton, and C. ENGELMANN, Saffron Walden. They were in fine condition, and, indeed, constituted one of the chief attractions of the exhibition. Souvenir de la Malmaison Carnations in pots were shown by GRAF MANFRED VON MATUSCHKA, Silesia. Though they were small plants, each bearing but one flower, they were, nevertheless, greatly admired, and received the Emperor's prize for the best exhibit in the show.

LILACS.

Among the plants that are forced for their flowers, the Lilac occupies a very important place in Germany. There were numerous large groups of plants from 3 to 5 feet high, well



FIG. 100.—REPRESENTATION OF THE ACHILLEION.
The Kaiser's residence in Corfu.

in almost all parts of the exhibition. Passing for the moment the smaller exhibits in the collections of miscellaneous plants, a word is deserved by the display of flowers made in a room in one of the galleries. Imagine a room measuring 40 feet by 70 feet filled with Lily of the Valley! The flowers were contributed by various growers, and for the greater part were forced in boxes in a similar manner to that practised by the market growers, and the boxes, packed closely together in the centre of the room represented a huge bed of flowers. At the sides of the room were pillars, globes and other fanciful shapes covered with the white, fragrant blossoms. This was effected by covering the shapes with moss held in place by wire netting and inserting the Lily crowns in the moss before forcing.

SOME NOVELTIES.

IMPATIENS HOLSTII NANA LIEGNITZIA.—A group of plants exhibited under this name by Mr. OSKAR OTTO, Leignitz, appeared quite distinct from the form of this species known as "*nana*" in this country. Each plant was in a 4-inch pot, and was not more than 6 inches above the top of the pot, yet in some cases there were 20 shoots, and each little specimen was perfectly covered with the fiery-red flowers. *I. Holstii* has been considered to have too coarse a habit, but in this variety it is entirely changed.

of *Vriesia*, one known as *V. Mdle. Suzanne de Smet*, obtained from a cross between *V. mirabilis* and *V. van Geertii*, was remarkable for the richly coloured bracts; the flower had not expanded, but this hybrid and others will be valuable.

CORDYLINA (DRACENA) BRUANTII VARIEGATA is a plant we saw at the Ghent Show last year. Mr. EMIL VERCAUTEREN, Melle-lez-Gand, Belgium, showed two dozen plants, which varied in size from 6 inches high in 3-inch pots to 3 feet in 7-inch pots. The variety is one of very great merit, most of the leaves are green with liberal variegation of yellow, and the brown tint of *C. Bruantii* is seen in the youngest leaves. It is a perfect plant for vase ornamentation, but we are informed that the variety, which originated as a sport, is very apt to revert to the type. Probably, the beautiful plants now exhibited were selected from a very large batch.

RHODODENDRONS.

The best exhibits in this section were from the Dutch growers, and Pink Pearl was a long way ahead of everything else, the plants being large and well grown and beautifully flowered. What is known as White Pearl was shown in lovely condition by Messrs. C. B. VAN NES & SON, Boskoop, Holland. This proves to be a much better *Rhododendron* than had hitherto been supposed, the trusses being quite as large

furnished with foliage and sturdy racemes of flowers in perfect condition, the whites being quite equal to the coloured forms. The Dutch growers had also sent quantities of Lilac, both plants and cut flowers. The art of forcing Lilac so that the flowers do not lose in substance and are all open at the same time does not appear to be known in England, at any rate, we have not seen such examples of forced Lilacs as are to be met with in Berlin.

MISCELLANEOUS GROUPS.

Mr. OTTO BEYRODT, Berlin, made an elaborate display with Japanese dwarf trees backed by Rhaps and other Palms, and arranged more or less on the plan of the Japanese garden, with stone lanterns, bronze cranes, and other figures disposed among the Conifers, Acers, &c.

Mr. L. SPÄTH, Berlin, arranged a collection of hardy Conifers, Rhododendrons, and other evergreens to enhance the effect of the painted scene which occupied the whole of the stage back and represented the house and garden of the Emperor at Corfu.

A novelty at horticultural exhibitions consisted of a collection of tropical economic plants sent by Mr. LOUIS VAN HOUTTE PÈRE, Ghent, who has for many years cultivated most of the plants which are grown in tropical countries for their fruits, medicines, fibres, and other properties.

Mr. E. NEUBERT, Wandsbek, near Hamburg, showed a large ground exhibit containing Palms, Azaleas, and forced Lily of the Valley. The

crowns and roots of various ages, as well as fruits and cleaned seeds of Asparagus, Lettuces, Cauliflowers, indeed, most kinds of vegetables and salads. There were good examples of forced Lilac, flowering plants of Tree Carnations, &c.

MM. VILMORIN, ANDRIEUX ET CIE., Paris, had a bed planted with a good strain of Cineraria, but not better than may be seen in England. Mr. B. CARRIAT, Antibes, showed the best Carnations, and Mr. L. FÉRARD, Paris, had a group of plants of double-flowered Daisies (*Bellis perennis*), some of whose blooms had a diameter of 2½ inches, but were of a heavy, somewhat unattractive appearance.

Mr. G. DEBRIE, Paris, exhibited some imposing decorations with *Lilium speciosum*.

EXHIBITS AND VISITORS FROM ENGLAND.

It has been stated already that Messrs. CHARLESWORTH & Co., Bradford, sent a fine exhibit from England. Mr. C. ENGELMANN, Horneybrook Nursery, Saffron Walden, contributed a grand lot of Carnation blooms, exhibiting these in several classes and gaining prizes.

Another exhibit of Carnations was sent by Mr. G. LANGE, Hampton, Middlesex, who also gained prizes.

Messrs. H. CANNELL & SONS, Swanley, Kent, had an exhibit of flowers of their choice Zonal Pelargoniums, including the following varieties: Berlin and Vesta (scarlet), Snowdrop (white), Sydney (pink), Mauretania (white, with pink

Some of the plants, including several shown in a glass-covered case, are the most developed of any of this type we have seen. The flowers are circular in outline, and 4 inches across. The petals are duplicated, and the colour of a particularly fine variety is pink, with deep crimson "eye."

Mr. H. KIAUSCH, Nurseryman, Zehlendorf, Berlin, showed a large number of Cyclamens as part of a varied exhibit. The Cyclamens were in groups, with the effect that they appeared to be planted in scroll-like beds, around which many small plants of *Adiantum cuneatum* represented a greensward. A variety of Cyclamen, similar in tint to what is known in this country as "Salmon Queen," has larger flowers than this type, and is a distinctly good variety.

PRIMULA OBCONICA.

This plant was shown, like the Cyclamens, in great groups, and in excellent quality. The strains were among the most developed we have seen, the flowers surpassing in size and colour anything yet exhibited in London. Some of the flowers have a colour similar to that of Crimson King in *Primula sinensis*, and the variation is becoming as great as in the Chinese species. Some of the best collections were contributed by the following exhibitors:—Mr. BENJAMIN NIEMETZ, Rixdorf, Berlin, Mr. GEORG ARENDS, Ronsdorf, L. FÉRARD, Paris, Messrs. STRAHL & FALCKE, Berlin, and Mr. J. MENSING, Aalsmer, Holland.

FRUITS AND VEGETABLES.

Hardy fruits constituted one of the surprising features of the exhibition. Although the season was so late, table after table contained hundreds of dishes of Apples, Pears, and Quinces. At no time have we seen such a large display in England at a similar season of the year. Reference has already been made to fruits and vegetables contributed by the French growers, and emphasis should also be laid upon the exceedingly creditable nature of the exhibit of hardy fruits made by the city authorities of Berlin. The Pears and Apples were uncommonly good, and the high quality was maintained throughout a very extensive exhibit. The fruits of Ribston and Cox's Orange Pippins, for instance, were sufficiently good to exhibit at any place in the world.

A collection of Apples and Pears from Holland contained some fruits which had probably been kept in cold storage. It would be difficult otherwise to account for the excellent specimens of Beurré Diel Pears still in perfectly sound condition. Of Apples, we noticed fruits of Cox's Pomona and Bismarck equal to any seen in England. The Dutch growers also contributed a large exhibit of vegetables, including many varieties of Cabbage, Leeks, Carrots, Kale, Beet, Brussels Sprouts, Radishes, Endive, and Turnips. Lettuces were very fine, and they were staged as growing. Cucumbers were remarkably good, and included specimens of the white-fruited variety.

In numerous competitive classes there were, in addition to those we have noticed, a very large number of fruits of most excellent quality.

ROYAL HORTICULTURAL.

APRIL 6.—At the fortnightly meeting held on Tuesday last, practically the whole of the available space in the Hall was fully occupied by varied, bright and beautiful groups. Forced spring-flowering shrubs constituted one of the finest features and were staged magnificently by several growers. Exhibits of Roses and Carnations were not numerous, but the quality was especially fine. Orchids were handsome and varied in character. A magnificent display of these plants by Messrs. ARMSTRONG & BROWN received a Gold Medal.

The FLORAL COMMITTEE granted three Awards of Merit to novelties; the ORCHID COMMITTEE gave four First-class Certificates and five Awards of Merit; whilst the FRUIT and VEGETABLE COMMITTEE granted an Award of Merit to a variety of Rhubarb.

At the 3 o'clock meeting in the lecture-room the Rev. Geo. Henslow lectured on the "Effects of the Forces of Growth."

Floral Committee.

Present: Mr. W. Marshall (Chairman), and Messrs. C. T. Drury, J. Green, G. Gordon,



FIG. 101.—THE GREAT HALL, BERLIN EXHIBITION.

word Neubert is formed across a groundwork of *Nephrolepis Whitmannii*.

Mr. F. HENKEL, Nurseryman, Darmstadt, the only exhibitor of aquatic plants, had a very interesting collection, most of the species being shown in great glass jars.

Mr. WILLIAM PFITZER, Stuttgart, showed varieties of *Begonia semperflorens*, including Pfitzeri, Triumph and others varying in their colours, but apparently of good habit for bedding purposes. His *Myosotis* "Ruth Fischer" and Zonal Pelargonium "Wilhelm Pfitzer" are also novelties.

Mr. HEINRICH KRÜGER, Berlin, exhibited Polyantha Roses and standard plants of *Genista fragans*.

SOME OF THE FRENCH EXHIBITS.

We have already referred to some of the French exhibits, including Orchids from M. MARON, and the Gerberas from M. ADNET. Another important contribution from France consisted of fruits, vegetables and salads exhibited by various growers. The fruits included excellent samples of Black Alicante, Gros Colmar and other varieties of Grapes, including many of the vineyard sorts in addition to the choice dessert kinds. In addition to Grapes, there were ripe Cherries of extra good quality, ripe Pineapples, Figs and Plums—ripe, although staged on March 31. Considerable quantities of forced Asparagus of various kinds, also

marking), Naples and Sir F. Hanbury (crimson), Paris Shell (white, with picotee edge), and Cactus Prince (a single, red variety, with narrow petals). The only other exhibit from England was a collection of plant illustrations from the *Gardeners' Chronicle*, Ltd.

The following gentlemen officiated as judges: William Watson, Stuart H. Low, Louis Sander, S. T. Wright, and R. Hooper Pearson.

Sir Daniel Morris, K.C.M.G., attended as a member of the deputation from the Royal Horticultural Society, but Mr. Harry J. Veitch, who was also appointed in the same capacity, was unable to travel to Germany owing to indisposition.

CYCLAMENS.

We have never seen Cyclamens better exhibited than at Berlin. There were numerous exhibits of big groups, and but little to distinguish one collection from another so far as quality is concerned. First prizes have been won by the following exhibitors:—Mr. F. SCHNEIDER, Potsdam, J. C. SCHMIDT, Erfurt (four 1st prizes), H. KIAUSCH, Berlin, and OTTO PLATZ, Charlottenburg. Most of these collections and others that gained 2nd and even 3rd prizes represented excellent strains of this popular greenhouse flowering plant.

Mr. J. C. SCHMIDT, Erfurt, showed a strain of fringed Cyclamens, known as the "Rokoko."

J. Douglas, J. F. McLeod, J. Jennings, W. Howe, H. J. Cutbush, C. Dixon, A. Turner, C. E. Pearson, W. P. Thomson, E. H. Jenkins, W. J. James, J. Hudson, G. Paul, C. R. Fielder, W. J. Bean, J. W. Barr, and R. C. Notcutt.

Messrs. J. VEITCH & SONS, LTD., Chelsea, arranged an attractive group of shrubs, in which *Pyrus floribunda* *atrosanguinea*, *P. Malus Scheidekeri*, *Prunus triloba*, *Forsythia suspensa*, *Wistaria sinensis*, *Laburnum vulgare*, and *Cytisus præcox*, with *Rhododendrons caucasicum album*, *Blanche Superbe*, and *Mons. Thiers* were conspicuous. Plants of *Azalea indica* sent from the Chelsea nursery were magnificently flowered and made a blaze of colour. *Civias*, *Anthuriums*, *Boronias*, *Gerberas*, *Hippeastrums*, and the blue *Hydrangea Hortensia* were also well shown by Messrs. VEITCH & SONS. (Silver-gilt Flora Medal.)

Mr. F. Anderson (gr. to Mrs. C. BISCHOFFSHEIM, Warren House, Stanmore) contributed a number of well-grown and flowered plants of *Lachenalia tricolor*. (Bronze Banksian Medal.)

Handsome-leaved *Caladiums* were the feature of a group sent by Messrs. J. PED & SON, West Norwood. Many of the leading varieties were represented, and the foliage was beautifully coloured. This firm showed also groups of Alpines in pots, and a few Cacti. (Silver Banksian Medal.)

Messrs. R. WALLACE & Co., Colchester, exhibited one of the miniature rockeries which have become so popular at exhibitions. *Fritillarias*, *Anemone pulsatilla*, *Daphne Cneorum majus*, *Iris reticulata*, *Primula rosea*, *Viola gracilis*, and various *Crocuses* helped to make a bright and interesting display. (Silver Flora Medal.)

The flowering shrubs arranged by Messrs. W. M. PAUL & SONS, Waltham Cross, were wreathed in blossoms. *Pyrus angustifolia* fl. pl., *P. Scheidekeri*, *Ceanothus Veitchianus*, and *Pyrus Malus floribunda*, were especially fine. A few *Camellias* added interest to the group. (Silver Flora Medal.)

One of the handsomest exhibits in the Hall was a group of forced shrubs arranged by Messrs. R. & G. CUTBERT, Southgate. The plants were varied, splendidly grown and grandly flowered. There were *Wistarias*, *Lilacs*, *Azaleas*, *Pyrus*, *Magnolias*, *Laburnums*, and several other kinds. (Silver-gilt Flora Medal.)

Mr. L. R. RUSSELL, Richmond, arranged a group of much interest, for it was practically restricted to single and double *Lilacs*. All the best varieties were shown in splendid condition, and the plants varied considerably in shape. (Silver Banksian Medal.)

Messrs. H. B. MAY & SONS, Upper Edmonton, showed a small but interesting group of Ferns. *Polypodium Knightiæ*, *P. Mayi*, *P. hastæfolium*, with several *Davallias*, *Lomarias* and *Adiantums* were noticeable. Miniature *Roses* in pots came from the same firm, and included *Phyllis*, *Mdme. Lavasseur*, *Princess Ena*, *Baby Dorothy*, and *White Pet*. Messrs. MAY also showed a few *Clematises*, and the scented-leaved *Pelargonium Clorinda*. The fragrance is sweet and the flowers fine. (Silver Flora Medal.)

Mr. H. C. PULHAM, Elsenham, Essex, arranged a small rockery, in which were seen a few plants of interest. Mr. J. T. Tubbs (gr. to Miss ALEXANDER, Oakbank, Seal, Sevenoaks) sent cut *Roses*, *Mignonette*, and *Violas*, all well grown and delightfully fragrant. (Silver Banksian Medal.)

Mr. W. H. PAGE, Tangle Nursery, Hampton, arranged a most artistic group of *Carnations*, *Roses*, and *Liliums*. There were splendid *Carnations* including *Red Lawson*, *White Lawson*, *Britannia*, *My Maryland*, *Enchantress*, *Mrs. T. W. Lawson*, and *Winsor*. The *Roses* included *Mrs. W. J. Grant*, *Frau Karl Druschki*, and *Captain Hayward*. (Silver Flora Medal.)

The Misses HOPKINS, Mere Gardens, Shepperton, arranged a bright miniature rockery of Alpines. Flowers of *Primulas*, *Fritillarias*, *Hepaticas*, *Anemones*, *Primroses*, and *Daisies* were charming. (Silver Banksian Medal.)

Single *Cinerarias*, arranged in blocks of distinct colours, were contributed by Messrs. SUTTON & SONS, Reading. The plants were clean and healthy, and carried splendid flowers. This firm sent also three hybrid *Freesias* that were distinct and fragrant. (Silver Banksian Medal.)

The rock plants shown by Messrs. G. JACKSON & SON, Woking, were not numerous, but these were excellently grown and flowered. The blue *Primrose* was very fine, as were *Primula denticulata*, *Scilla sibirica*, *Arabis alpina* with variegated foliage, and single white and blue-flowered *Hepaticas*. (Silver Banksian Medal.)

The plants shown by Messrs. PAUL & SON, The Old Nurseries, Cheshunt, were few in numbers, but of interest. Fine features were *Roses Lady Godiva* and *Snowstorm*, *Deutzia gracilis carnea*, *Cytisus Daisy Bell* and *C. Firefly*, with *Daphne Mezereum atro-rubrum* and *D. M. Paul's Snow White*.

Messrs. R. GILL & SONS, Falmouth, sent a wonderful collection of trusses of *Rhododendrons*, all from the open. The varieties were numerous and the quality very fine.

A bright feature of the varied group arranged by Mr. G. REUTHE, Keston, was a central mass of fine *Rhododendrons*. *Hepaticas*, hardy *Primulas*, and *Saxifragas* were also interesting, and all the plants were well grown. (Silver Banksian Medal.)

A considerable number of grandly-flowered plants of *Primula verticillata* were shown by Sir EVERARD HAMBRO, Hayes Place, Hayes (gr. Mr. Grandfield).

Mr. ROBERT SYDENHAM, Tenby Street, Birmingham, contributed a charming group of *Narcissi*, *Freesias*, *Hyacinths*, and *Lily of the Valley* grown in moss fibre.

Messrs. CARTER, PAGE & Co., London Wall, arranged a bright exhibit of *Pansies* and *Violas*. The varieties were numerous and the colours rich.

Winter-flowering *Carnations* in grand form were staged by Messrs. HUGH LOW & Co., Bush Hill Park. Some of the finest varieties were *White Perfection*, *Helen Gould*, *Britannia*, *Winsor*, *Harlowarden*, *Jessica*, *Beacon*, *Black Chief*, *Enchantress* and *Mikado*. The same firm sent also splendidly-grown *Erica persoluta alba*, *Boronia megastigma*, *Acacia Drummondii*, and *A. armata*, with other plants and *Roses*. (Silver Flora Medal.)

Pyrus malus floribunda, *Wistaria sinensis alba*, *Prunus triloba*, *Azaleas* in variety, *Cerasus Watereri*, *Lilacs* in variety, and *Magnolia Haleana* were conspicuous in one section of the group arranged by Messrs. W. CUTBUSH & SON, Highgate. The second section was devoted to hardy plants, including *Primulas*, *Hepaticas*, and many others. A third group from this firm was composed of winter-flowering *Carnations* in variety. Some of the best were *The President*, *Enchantress*, *Marmion*, *Victory*, *Britannia*, *White Perfection* and *Robert Craig*. (Silver-gilt Banksian Medal.)

THE GUILDFORD HARDY PLANT NURSERY, Milmead, Guildford, displayed *Ericas*, *Hellebores* and other hardy plants in variety.

Mr. GEORGE PRINCE, Lougworth, Berks., had some beautiful *Roses*, including *Prince de Bulgarie*, *Mrs. Sophia Neate*, *Maréchal Niel*, *Antoine Rivoire*, *Climbing Mrs. Grant*, *Catherine Mermet*, *Richmond* and *Lady Roberts*. (Silver Flora Medal.)

Messrs. H. CANNEL & SONS, Swanley, contributed a collection of *Begonias*, among which were *B. manicata aureo maculata*, *B. nitida*, *B. gigantea rosea* and *B. Erfordia*. The same firm displayed *Star Cinerarias*, *Grey Friar*, and *Gem of the Stars*. (Silver Banksian Medal.)

Messrs. T. S. WARE, LTD., Feltham, arranged a rockery containing *Spiræa confusa*, *Anemone fulgens Suttonii*, *Saxifraga Elizabethæ*, *Fritillaria aurea*, *Chionodoxa sardensis*, *Primula denticulata alba*, *Hepaticas* and many others. (Silver Banksian Medal.)

Rambling *Roses* from Messrs. FRANK CANT & Co., Braiswick Nurseries, Colchester, made a very attractive group. Some of the brightest were *Mrs. F. W. Flight*, *Leuchtstern*, *Aglaiä*, *Trier*, *Joseph Billard* and *Debutante*. (Silver Banksian Medal.)

Major LISTER, Haywards Heath (gr. Mr. F. Baker), sent a small but magnificent group of *Hippeastrums*. (Silver Banksian Medal.)

Messrs. G. & A. CLARK, LTD., Dover, had a rockery in which were growing hardy plants of dwarf stature with a few taller-growing subjects of interest.

Messrs. WHITELEGGE & PAGE, Chislehurst, contributed a bright collection of splendidly-grown *Cyclamen latifolium*.

Mr. H. BURNETT, Forest Road, Guernsey, sent some superb *Carnations*, including *Enchantress*, *Fortuna*, *Britannia*, *White Perfection*, *Mikado* and *Marmion*. (Silver Flora Medal.)

Messrs. BAKERS, Wolverhampton, had a miniature rockery containing several bright and interesting Alpine plants. (Bronze Flora Medal.)

GROUP OF CARNATIONS.

Competition was invited for a group of winter-flowering *Carnations* to cover an area of not less than 100 square feet. The class was open to amateurs only. The only exhibit was arranged by Mr. A. T. PASKETT (gr. to E. H. JOHNSTONE, Esq., Burr's Wood, Groombridge). This group received the premier award, which included the Veitch Memorial Medal, the R.H.S. further honouring it with a Silver Banksian Medal. Some of the best varieties were *Enchantress*, *Rose-pink Enchantress*, *Sarah Hill*, *Afterglow*, *Beacon*, *White Perfection*, *Britannia*, and *Mrs. T. W. Lawson*.

AWARDS.

Hippeastrum Marcus (J. VEITCH & SONS, LTD.).—A deep crimson variety of perfect form. (Award of Merit.)

Hippeastrum magnificent (R. KER & SON).—Rich crimson centre, with cream-coloured, reflexed tips to the segments. (Award of Merit.)

Saxifraga apiculata alba (GUILDFORD HARDY PLANT NURSERY).—A pure white form of a well-known plant. (Award of Merit.)

Narcissus Committee.

Present: Mr. H. B. May (Chairman), and Messrs. W. Poupert, J. Walker, J. Jacob, W. A. Milner, G. W. Leak, G. Reuthe, C. Dawson, A. M. Wilson, R. Sydenham, H. A. Denison, F. H. Chapman, P. D. Williams, E. M. Crosfield, W. W. Fowler, A. R. Goodwin, C. T. Digby, E. A. Bowles, R. W. Wallace, P. R. Barr, H. Backhouse, J. de Graaff, J. D. Pearson, A. Kingsmill, W. Goldring, and C. H. Curtis.

Miss F. W. CFREY, Lismore, Co. Waterford, staged a beautiful collection of *Narcissi*, including representatives from practically all sections. An incomparabilis flower named *Tita* was most attractive, owing to the brilliance of the colouring in the crown.

Messrs. JAS. CARTER & Co., High Holborn, constructed a rock-garden, in which the occupants were practically all bulbous plants. By far the finest feature was the splendid central group of *Daffodil King Alfred*.

The lateness of the season was exemplified in the groups of *Daffodils*. These were comparatively few in numbers, but Messrs. BARR & SONS, Covent Garden, made an excellent display with many of the most popular varieties and a few novelties. The same firm sent a small group of *Hellebores* and boxes of Alpine plants in bloom. (Silver Banksian Medal.)

A very charming group of *Narcissi* was arranged by Messrs. CARTWRIGHT & GOODWIN, Blakebrook, Kidderminster. Very fine were *Brigadier*, *Castele*, *Orangeman*, *Evangeline*, *Weardale Perfection*, *Beacon*, *King Alfred*, *Citron*, *Cresset*, and *Crown Prince*. (Silver Flora Medal.)

Messrs. LILLEY'S, Guernsey, arranged a group of *Narcissi* in considerable variety, with beautiful crown *Anemones*.

Mr. CHARLES DAWSON, Rosemorran, Gulval, Penzance, sent a considerable number of seedling *Narcissi*, several of which were of decided promise, and also some named varieties. (Silver Banksian Medal.)

Tulips constituted the outstanding feature of the group from Messrs. R. H. BATH, LTD., Wisbech. *Chionodoxas* in variety were also splendidly shown from the same source.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the chair), and Messrs. Jas. O'Brien (hon. sec.), de B. Crawshay, H. Little, W. Boxall, J. Forster Alcock, F. J. Hanbury, W. Waters Butler, H. J. Chapman, W. P. Bound, F. M. Ogilvie, R. G. Thwaites, W. H. Hatcher, J. Cypher, J. Charlesworth, H. G. Alexander, H. A. Tracy, H. Ballantine, A. Dye, Gurney Wilson, J. Wilson Potter, and W. Cobb.

The most notable exhibit in the Hall was a group of Orchids staged by Messrs. ARMSTRONG & BROWN, Tunbridge Wells. The exhibit extended the entire width of the Hall, and it was awarded a Gold Medal. The centre of the group was composed of fine plants of *Cymbidium Woodhamsianum*, *Odontoglossum Ossulstonii*, *O. amabile*, *O. ardentissimum*, and fine forms of *O. crispum*, among which were several good blotched forms. On either side of these were selections of good hybrid *Dendrobiums* and varieties of *D. nobile*. There were also about 200 finely-flowered plants of the pure white *D. nobile virginale*.

Col. G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. H. G. Alexander), exhibited *Dendrobium Magda magnifica* (*Melanodiscus Rainbow* × *nobile nobilium*), *Cattleya Robert de Wavrin* (*Schilleriana* × *Schröderæ*), and others. (See Awards.)

Messrs. CHARLESWORTH & CO., Haywards Heath, were awarded a Silver Flora Medal for a select group in which was a magnificent plant of *Cœlogyne pandurata*; also several varieties of *Odontioda Lutetia*, a very dark form of *Lælio-Cattleya Dominiana*, L.-C. Marathon, *Odontoglossum Lambeauianum*, and other *Odontoglossums*, *Brasso-Cattleyas*, *Phaius Norman*, *Trichopilia suavis*, and the white *T. Backhousiana*, &c.

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), was voted a Silver Flora Medal for a group in which the best plants were *Odontoglossum Lambeauianum* Goodson's variety—a very dark form, and a new *Odontioda*. (See Awards.) The rest of the group was comprised of good *Odontoglossums*, *Cattleyas*, *Odontioda Bradshawia*, &c.

Messrs. J. & A. A. McBEAN, Cooksbridge, secured a Silver Flora Medal for a group of fine *Odontoglossums*. In the centre was a plant of the richly-blotched *Odontoglossum crispum* *Ashworthianum*, appearing in better form than ever before seen. Other good blotched forms of *O. crispum* and a superbly-flowered specimen of *O. fascinator* were also noticed in this group.

Messrs. SANDER & SONS, St. Albans, were awarded a Silver Flora Medal for a group in which were *Odontoglossum Rolfeæ album*, a very remarkable white form of this favourite hybrid; *Cattleya Schröderæ Princess Mary of Wales*, and C. S. Magali Sander, both handsome novelties, *Angræcum sesquipedale*, some good *Odontoglossums*, *Lælio-Cattleyas*, &c.

Messrs. JAS. VEITCH & SONS, Chelsea, showed a group in which fine forms of *Cattleya Schröderæ* were prominent. With these was a grand variety of *Brasso-Lælio-Cattleya Veitchii*; also the fine *Cypripedium Countess of Carnarvon*. (Silver Flora Medal.)

Mr. A. W. JENSEN, Lindfield, Haywards Heath, was awarded a Silver Banksian Medal for a selection of his fine type of *Cattleya Schröderæ* and some blotched forms of *Odontoglossum crispum*.

Messrs. HUGH LOW & CO., Enfield, were awarded a Silver Banksian Medal for a group containing *Dendrobium crassinode*, *D. primum*, *D. Jamesianum*, *Cattleya Schröderæ*, one named "Ayesha" having a violet-purple zone on the lip.

Monsieur MERTENS, Mont St. Amand, Ghent, was awarded a Silver Banksian Medal for a group of showy hybrid *Odontoglossums*, including varieties of *O. percultum*, *O. amabile*, *O. laudatum*, *O. Lambeauianum*, *O. Lawrenceanum*. This exhibitor also displayed a plant of the white *Cattleya Suzanne Hye de Crom*.

R. G. THWAITES, Esq., Chessington, Streatham (gr. Mr. Black), showed a fine selection of varieties of *Dendrobium Thwaitesiae*, *D. Chessingtonense*, and other yellow hybrid *Dendrobiums*.

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), again showed the superb *Odontoglossum triumphans Lionel Crawshay*; also a selection of his pretty hybrid *Odontoglossums*.

Sir TREVOR LAWRENCE, Bart., K.C.V.O., Burford (gr. Mr. W. H. White), showed two plants of the fine white *Cœlogyne Sanderæ*, each with three flower-spikes; *Lycaste Smeeana*, *Maxillaria variabilis*, and the very singular *Megaclinium Bufo*. (See Awards.)

Messrs. J. CYPHER & SONS, Cheltenham, staged a group of showy *Dendrobiums* and other Orchids.

Major LISTER, Warninglid Grange, Haywards Heath, showed a good variety of *Cymbidium insigne*.

J. S. MOSS, Esq., Wintershill, Bishop's Waltham, sent *Odontoglossum Kenchii* (*O. Kegejani* × *O. Denisonia Mossia*), an attractive cream-white flower speckled with chestnut-brown.

J. FORSTER ALCOCK, Esq., Exhims, Northchurch, sent *Cypripedium Chapmanii nigrescens* and C. Wm. Lloyd *superbum*, both darker in colour than other forms.

FRANCIS WELLESLEY, Esq., Westfield, Woking (gr. Mr. Hopkins), showed *Cattleya Trianae Marie Fedorovna*, a very charming silver-white flower, slightly tinged with lavender colour, and with violet front to the lip. It is a very distinct and beautiful flower of fine shape.

J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis), showed *Odontoglossum Arnoldii*, a beautiful hybrid of unrecorded parentage, and allied to that previously shown as *O. caloglossum*. The sepals and petals are of a deep claret-brown colour, with silver margin; the lip marbled with purple. Also *O. crispum Winnie*, a good blotched variety.

J. S. BERGHEIM, Esq., Belsize Court, London, showed *Megaclinium falcatum*.

W. THOMPSON, Esq., Walton Grange, Stone (gr. Mr. Stevens), exhibited *Odontoglossum crispum Harryanum Regina* and *O. Ossulstonii nigrum*, both very finely flowered.

AWARDS.

FIRST-CLASS CERTIFICATES.

Cattleya Schröderæ The Baron, from Col. G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. H. G. Alexander).—An unique variety, which had previously secured a First-class Certificate, but which was withdrawn on account of a flower not being available for sketching. The plant is illustrated in the *Gardeners' Chronicle*, June 3, 1905. The peculiar salmon-orange disc of the lip contrasts finely with the Peach-blossom tint of the flower.

Odontoglossum percultum Cookson's variety, from NORMAN C. COOKSON, Esq., Oakwood, Wylam (gr. Mr. H. J. Chapman).—A model flower with broad segments that are heavily blotched with claret-purple colour.

Cattleya Schröderæ Irene, from Mr. A. W. JENSEN, Lindfield.—A noble flower, delicately tinged with lilac, the very large, fringed lip having a deep yellow disc.

Odontioda Ernest Henry (O. Queen Alexandra × O. Noezliana), from H. S. GOODSON, Esq.—A fine novelty nearest to *O. Charlesworthii*, but having deep mahogany-red flowers with orange crest.

AWARDS OF MERIT.

Odontoglossum Dreadnought (Prince Albert × Sceptum), from Messrs. SANDER & SONS.—Flowers large, yellow, heavily marked with reddish-brown, the crimped yellowish labellum having a large chestnut brown blotch.

Odontoglossum Sylvia Westonbirt variety (cirrhosum × Rolfeæ), from Colonel G. L. HOLFORD (gr. Mr. H. G. Alexander).—A pretty hybrid of the *O. elegans* form with yellowish flowers blotched with chocolate-purple.

Odontoglossum crispum Angela, from NORMAN C. COOKSON, Esq. (gr. Mr. H. J. Chapman).—A large flower, heavily blotched with purple.

Cattleya Schröderæ Alexandra James, from W. JAMES, Esq., West Dean Park, Chichester.—Flowers large, blush white, with orange disc to the lip.

Lælio-Cattleya Frederick Boyle var. Kerchova.—Flowers uniformly blush white. From Sir TREVOR LAWRENCE, Bart.

BOTANICAL CERTIFICATE.

Megaclinium Bufo.—A very remarkable, large species, with a stout, upright inflorescence, the upper part of which is a blade-like rachis, densely spotted with purple and bearing up the mid-ribs a single row of curious brownish flowers on either side.

Polystachya rhodoptera.—A slender species, bearing on the upper part short spikes of yellowish flowers tinged with rose. Both shown by Sir TREVOR LAWRENCE, Bart., K.C.V.O. (gr. Mr. W. H. White).

Fruit and Vegetable Committee.

Present: Mr. George Bunyard (Chairman); and Messrs. A. H. Pearson, C. G. A. Nix, H. S. Rivers, J. Harrison, A. Dean, E. Beckett, F. Perkins, A. R. Allan, J. Davis, J. Lyne, G. Hobday, G. Kelf, J. Jacques, O. Thomas, J. McIndoe, G. Wythes, J. Vert, W. H. Divers, and P. D. Tuckett.

Messrs. J. VEITCH & SONS, Chelsea, exhibited several splendid specimens of Lettuce Veitch's Golden Queen, also French Frame Black Crêpe, a particularly fine Cabbage variety. This firm also included in its group Radishes Extra Early Forcing Turnip, Early Gem and French Breakfast as well as Cucumber Veitch's Sensation. (Silver Banksian Medal.)

A splendid collection of Oranges was exhibited by Messrs. THOS. RIVERS & SON, Sawbridgeworth. There were plants in flower and fruit, as well as gathered fruit of many varieties, including Egg, Brown's, St. Michael's, Navel, White, Seville, Acbilles, Sustain and Excelsior. There were also Citrons in grand condition. (Silver-gilt Knightian Medal.)

Mr. T. E. DAWES, Syderstone, King's Lynn, showed Rhubarb Challenge—a variety of immense length of petiole and rich colour.

Mr. F. HARVEY (gr. to the Rt. Hon. Lord MONSON, Burton Hall, Lincoln) exhibited some choice Apples, including Beauty of Kent, Cox's Orange Pippin, Bramley's Seedling, Lane's Prince Albert, King of the Pippins, and several others. (Silver Banksian Medal.)

Messrs. SUTTON & SONS, Reading, staged a collection of Lettuces, including Golden Ball, French Tom Thumb, Nonesuch, Improved Tom Thumb, Early Paris, Commodore Nutt and Little Gem. The same firm also showed seeds of garden Peas. (Silver Banksian Medal.)

AWARDS.

RHUBARB CHALLENGE (*T. E. Dawes*).—A grand variety for early use. The stalks are long, thick and exceptionally rich in colour. (Award of Merit.)

COLLECTION OF SALADS.

There was a competitive class for a collection of three salads, two varieties of a kind being permissible. Mr. E. Beckett (gr. to the Hon. VICARY GIBBS, Aldenham House, Elstree, Herts.) was the only exhibitor, and received the premier prize. There were Lettuces Sutton's Forcing, and Sutton's Golden Ball, Radish Sutton's Forcing, French Breakfast, Cucumber Sutton's Peerless, Onion, Mustard, Cress and Chicory.

Obituary.

BENJAMIN SIMONITE.—We regret to record the death of this well-known florist at 38, Derwent Street, Park, Sheffield, on March 29. Mr. Simonite was a most successful cultivator of Auriculas, Carnations, Picotees, and Tulips. Brought up to follow his father's craft—that of a table-blade forger—he worked with Messrs. Joseph Rodgers & Sons, Sheffield. His delight, however, was to be amongst flowers, and he retired from table-blade forging some 28 years ago, and gave his entire attention to his favourite occupation. His success in the raising and cultivating of Auriculas was phenomenal. "The workman florist," as he was occasionally called, raised his flowers under difficult conditions, his garden being in one of the most smoke-ridden districts of Sheffield. Amongst the many excellent Auriculas which he raised was the beautiful green-edged Rev. F. D. Horner. Talisman was also raised by him, and, later still, James Hannaford, which at its best may be regarded as a green George Lightbody. Frank, often called Frank Simonite, grey edge, Heather Bell, white edge, Mrs. Douglas, a charming blue self, and Ruby, a fine red self, are other noted Auriculas raised at Rough Bank. Mr. Simonite pursued his occupation up till about three weeks ago, when he was taken ill and gradually sank, death taking place early on Monday, March 29. He was 74 years of age, and is survived by a son and daughter.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending April 6.

A cold and dry week.—The last two days have been moderately warm for the time of year, but previous to this the day temperatures were rather low. The nights were all cold, and on each of them the lowest temperature indicated by the exposed thermometer was below the freezing-point. On the coldest night 13° of frost were registered. The ground is at the present time 1° colder than is seasonable, both at 1 and 2 feet deep. No rain has as yet fallen this month. The ground, however, still remains moist below the surface, as small amounts of rain water still continue to come each day through both percolation gauges. The sun has shone on an average during the last 6 days for nearly 7 hours a day, or for 2½ hours a day longer than is usual at this period of April. On the sunniest day the record amounted to nearly 11½ hours. Light airs have, as a rule, prevailed, the direction being principally 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 14 per cent.

MARCH.

Very cold and extremely wet and sunless.—This was the coldest March since 1901, or for eight years. The days proved, as a rule, much more unseasonably cold than the nights. Again, the first half of the month was very cold, whereas during the last twelve days the temperature, particularly at night, was above the average for the time of year. On the warmest day the temperature in the thermometer screen rose to 57°, which is a very low extreme maximum for March. On the other hand, on the coldest night the exposed thermometer indicated 19° of frost, which is the lowest extreme minimum temperature in March for 12 years. Rain, snow, or hail fell on as many as 23 days, and to the aggregate depth of 9½ inches—which is 1½ inches in excess of the average for the month. In the last 54 years there have been only four other Marches with as heavy a rainfall. The sun shone on an average for only 2 hours 18 minutes a day, which is 1 hour 24 minutes a day below the March average, and the smallest record for that month during the last 23 years. This was on the whole a calm month. In fact, on the one very windy day the mean velocity for the windiest hour only reached 19 miles—direction W.S.W. The average amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 9 per cent.

OUR UNDERGROUND WATER SUPPLY.

With March, came to an end the winter half of the present drainage year. The total rainfall for those six months fell short of the average quantity by nearly 5 inches, which is equivalent to a loss of 111,070 gallons on each acre in this district. At the same time last year there was an excess of 54,970 gallons per acre. *E. M., Berkhamsted, April 6, 1909.*

ANSWERS TO CORRESPONDENTS.

ANTS: *H. K.* Ants may be destroyed by pouring boiling water in their burrows. The fumes of bisulphide of carbon or vaporite will also destroy them. An arsenical poison prepared by Messrs. Alex. Cross and Son, Glasgow, known as the Ballikinrain Ant Destroyer is to be recommended.

APPLE-GROWING IN ENGLAND FOR PROFIT: *A. S., Cincinnati, U.S.A.* The conditions of Apple-growing in this country and in America are totally different. We do not advise you to come back from America in the hopes of making a successful venture of Apple cultivation. In the first place, the cost of production in this country is very much greater than in America, chiefly because of rent, rates, and taxes. Although it may appear that the carriage would account for a great loss of profit in shipping from America to England, this is not so, as fruit is brought thousands of miles by sea almost as cheaply as we can send it to various parts of our own country. The reason why American Apples are so largely imported into this country is that they arrive at a season when the home crop is finished, and, as Apples have always a demand here, they meet with a good market.

BRANCHES OF SHRUBS FOR FLOWERING IN WATER: *D. Mason.* Branches of the following shrubs, if cut in winter and placed in a warm greenhouse, with their ends in water, will furnish a display of blossoms:—Flowering Almonds, Peaches, Cherries, and Plums, notably *Prunus cerasifera* var. *atropurpurea* (syn. *Pissardii*), *P. triloba* flore pleno, and *Pyrus floribunda*. The common Apple, Pear, Peach, Cherry, and Plum may also be treated in the same manner. Other plants suitable are *Daphne Mezereum*, *Staphylea colchica*, *Magnolia*, *Spiræas*, *Cornus Mas*, *Dentzia gracilis*, and *Lilacs*. Keep the shoots in a warm, dark place, with their ends in warm water, till the flower-buds are prominent, when they should be brought into the light. Change the water at intervals. In addition to splitting the stems, the outer bark near the base of the shoot should be removed in order to expose some of the xylem or water-carrying tissue.

EVERGREEN AMPELOPSIS (VITIS): *Warsash.* There are no hardy, evergreen species of Ampelopsis, but there are several tender, evergreen species of Vitis, one of which may be the one to which you refer. Botanically, Ampelopsis is a synonym of Vitis. The following species are evergreen, but they all require the protection of a plant house:—*V. antarctica*, *V. capreolata*, *V. hypoglauca*.

FLOWER SHOWS IN 1909: *Australian.* You will find the dates of all the important London and provincial flower shows given in our Almanac published with the issue for January 2. The most important exhibitions in London are held by the Royal Horticultural Society. Other exhibitions are held in the Royal Botanic Gardens, Regent's Park. Important provincial shows include those at Shrewsbury, Birmingham, York, Wolverhampton, Hanley, and Saltaire.

FOREIGNERS AND THE R.H.S.: *G. B., Clermont-Ferrand.* Fellowship of the Royal Horticultural Society is open to persons of all nationalities. A foreigner may exhibit plants at the Society's meetings. They should be sent to the secretary, carriage paid, and be despatched so as to reach the officials a day before the show. Only in very exceptional circumstances does the Society undertake to return plants sent from abroad, per the secretary, for exhibition.

GRUBS IN SOIL: *A. Richmond.* The grubs are young "leather jackets," or the larvæ of the common crane-fly. If they are attacking root crops or herbaceous plants, we would recommend the application of Paris Green (poison) at the rate of 3 ounces to 20 gallons of water. The roots around the crown of the plant should be thoroughly soaked, and the mixture kept well stirred. Try the effect on a few plants first, and, if found successful, apply the mixture to the whole crop. The usual method of trapping with squares of turf placed in the ground near infested plants has met with a certain amount of success, as also has the application of Kainit.

IRISH YEW FROM SEEDS: *J. S. H.* The Irish Yew is generally increased by means of cuttings or by grafts, but it can be raised from seeds. A percentage of the seedlings develop the fastigate form, the remainder reverting to the common Yew. As a rule, the seeds germinate freely, but they sometimes require 12 months to do so. You should experience no difficulty in growing a common Thistle in a pot. Obtain an ordinary flower-pot, fill it with moderately heavy soil, and sow the seeds.

LIQUID MANURE: *A. B.* Weight for weight, animal urine is twice or three times as rich in plant-food as are the solid excrements. For example, the urine of the horse contains, per ton, 42 lbs. of nitrogen, 33 lbs. of potash, and 17 lbs. of lime. The urine of the cow contains 11 lbs. of nitrogen, 31 lbs. of potash, and 3 lbs. of lime. The urine of the pig is the weakest of the animal manures, and contains, per ton, but 8 lbs. of nitrogen, 4 lbs. of potash, 1 lb. of lime, and 29 lbs. of phosphoric acid. On comparing these figures, it will be seen that neither the urine of the horse nor cow contains any phosphoric acid, while that of the pig contains a large quantity. In common practice, therefore, it is advisable to mix 4 ozs. of superphosphate to each gallon of urine, then to dilute the whole with three times the quantity of rain-water. Liquid manure has a powerful influence upon all vegetable life, and should, therefore, be applied to garden vegetables just after a rainfall. There can be no question that the time of active growth in both roots and branches is the proper time for using liquid manure, and for fruit-bearing plants when the fruits are beginning to swell, that is, soon after they are set. Another point of importance is that, as a rule, the slower growth a plant naturally makes the less able is it to utilise strong liquid manure. A good dose of weak liquid manure applied once a week in the active growing season is much better than strong manure applied at longer intervals.

MOSS: *D. R.* The moss is a very common and abundant species, *Brachythecium purum* (syn. *Hypnum purum*). The synonym is the older and better-known name. It is useful for placing over crocks in seed boxes before filling them

with soil, as it assists the free formation of roots in the seedlings. This moss does not absorb water so readily as Sphagnum, and is not to be recommended as a substitute for Sphagnum in Orchid culture.

NAMES OF PLANTS: *A. B.* 1, *Lonicera Standishii*; 2, *Prunus Laurocerasus* var. *colchica*; 3, *Tsuga canadensis*; 4, *Picea orientalis*; 5, *Libocedrus decurrens*; 6, *Cupressus sempervirens* var. *A. C.* Scented-leaved Pelargoniums: 1, *tomentosum*; 2, *radula*; 3 and 4, *crispum major*; 5, *crispum minor*; 6, *ardens minor*; 7, Mrs. Kingsbury; 8, Pheasant's foot; 9, Purple Unique; 10, Scarlet Unique; 11, *quercifolium* var.; 12, Prince of Orange. You send more than six. A small donation to the R.G.O.F. would be appropriate.—*R. B., Cork.* 1, *Goldfussia isophylla*; 2, send in flower; 3, *Bryophyllum calycinum*; 4, *Platyloma flexuosa*; 5, *Peperomia argyrea*; 6, *Abutilon Savitzi*; 7, *Asparagus virgatus*.—*J. G.* 1, *Cupressus Lawsoniana erecta viridis*; 2, *Andromeda floribunda*; 3, *Elaeagnus pungens medio-aurea*; 4, *Berberis stenophylla*; 5, *Diplopappus chrysophyllus*; 6, *Cornus Mas*.—*J. W.* *Diplopappus chrysophyllus*.—*J. M.* *Cornus Mas*.—*H. J. W.* 1, *Cœlogyne flaccida*; 2, *Dendrobium nobile*; 3, next week; 4, *Sparaxis grandiflora*; 5, *Cupressus funebris*.—*India.* 1, *Cirrhopetalum Roxburghii*; 2, *Aerides odoratum*; 3, *Oberonia* species (send again when in flower); 4, *Aerides multiflorum* (roseum); 5, *Rhynchostylis* (*Saccolabium*) *retusa*; 6, The bulb resembles *Hæmanthus*, send when in flower.—*N. E. B.* *Franciscea Hopeana*.—*R. H.* 1, *Oncidium flexuosum*; 2, *O. barbatum*; 3, *Masdevallia triangularis*; 4, *Pleurothallis rubens*; 5, *Polystachya pubescens*; 6, *Ada anrantiaca*.—*Foveman.* 1, *Odontoglossum triumphans*; 2, *Oncidium candidum*; 3, *Pteris tremula*.

NUMBER OF PLANTS KNOWN TO SCIENCE: *X. Y. Z.* It is probable that upwards of 200,000 species of plants are known, and of this number it is estimated that 136,000 are flowering plants.

PLANTS FOR PLACING BETWEEN STEPPING STONES: *A. H. T.* The following is a list of plants suitable for growing between stepping stones:—*Arenaria balearica*, *Alyssum montanum*, *Antennaria dioica*, *Arabis procurrens*, *Armeria alpina*, *Aubrieta deltoidea* var. *Campbellii*, *Aubrieta deltoidea* var. *taurica*, *Bellium bellidioides*, *Campanula pulla*, *Campanula Portenschlagiana*, *Cotula squalida*, *Draba aizoides*, *Draba bruniaefolia*, *Erinus alpinus*, *Gentiana acaulis*, *Geum montanum*, *Hypericum reptans*, *Linaria alpina*, *Lysimachia nummularia*, *Mazus pumilio*, *Mesembryanthemum pomeridianum*, *Mesembryanthemum pyropeum* *Nocca alpina*, *Papaver alpinum*, *Paronychia argentea*, *Phlox subulata* vars., *Polygonum capitatum*, *Pratia angulata*, *Saxifraga hypnoides*, *Sedum album* or *S. anglicum* or *S. dasyphyllum*, *Veronica Teucrium* var. *dubia*, and *Waldsteinia trifolia*.

SEAKALE FOR A PERMANENT BED: *Anxious.* Seakale plants which have been forced may be used for making a permanent bed; but these will not be nearly so satisfactory as young crowns. If you decide to plant the old stools, the roots should be cut off level at the crown, and, as the shoots develop, all but the strongest should be removed. *Cerastium tomentosum* is the one usually employed for carpet bedding.

VIOLAS AND CALCEOLARIAS: *Anxious.* *Violas* and *Calceolarias* should be planted where they are intended to flower by the end of April. For both plants it is best to select a position where they will be shaded from the sun for a couple of hours during the middle of the day.

WEED IN LAWN: *T. S.* The plant is one of the *Cerastiums*, probably *C. alpinum*. Apply nitrogenous manure to the lawn. These will favour the growth of the Grasses, and they will in time crowd out the weeds.

COMMUNICATIONS RECEIVED.—*T. H.*—*R. B.*—*W. W.*—*S. E. L.*—*A. McC.*—*R. B.*—*T. W. W.*—*J. M.*—*T. H.*—*S. A.*—*G. H. A.*—*S. F. & Co.*—*Wessex*—*F. E. S. & Co.*—*G. P.*—*A. S.*—*J. D. W.*—*A. E. S.*—*A. D.*—*Mrs. S. E.*—*W. W.*—*W. E. G.*—*A. O. W. D.*—*J. D. G.*—*D. R. W.*—*E. M.*—*Chloris*—*W. B. H.*—*J. B.*—*F. M. A.*—*S. W. E.*—*F. H.*—*Col. H.*—*T. H. C.*—*T. W. C.*—*A. W. S.*—*J. V. & Sons*—*W. H. W.*—*W. J. W.*—*H. W. W.*—*W. E. B.*—*A. D. W.*—*F. B.*—*E. H. J.*—*R. P.*—*B. F. M.*—*W. M.*—*C. F.*—*J. H.*—*S. & G.*—*S. A.*—*H. Y.*—*A Southern Grower*—*A. C. Co.*—*J. G. W.*—*E. S.*—*W. R. P.*



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PERPETUAL-FLOWERING CARNATIONS.

CONTRARY opinions are sometimes expressed as to the behaviour of certain varieties of tree or perpetual-flowering Carnations; the two English-raised sorts, Mrs. H. Burnett and Britannia, in particular have been much discussed. Many growers complain that these varieties being so subject to disease (*Helminthosporium echinulatum*), it is better to discard them altogether in favour of others having stronger constitutions. I am bound to admit that these sorts are particularly liable to this fungus disease, but it may at least be useful to relate my own experience with them, and I do so in the hope that it may prevent others from ceasing to cultivate them, for they are admittedly very charming varieties. The best way to preserve these sorts from disease is to keep the plants under glass at all times, or, failing this, they should be placed in such a position out-of-doors that they can be easily protected from rains and ungenial weather. Exposure to rains is the most frequent cause of failure. The usual practice, especially with plants required to flower during winter, is to place them out-of-doors as soon as they have become established in their flowering pots. This practice I have followed myself, but

have always housed them again before the advent of autumnal rains. Last year we housed our plants in the middle of August, and they were thus preserved from the torrential rains experienced in the latter part of that month and in September. The plants have succeeded so well since that time, I feel certain it is due mainly to this one point in their culture. But I have further reason for believing that indoor culture is essential in the case of the two varieties already mentioned. We have plants here that were placed out-of-doors during the summer of 1907. These were not taken indoors until nearly the end of September, and they quickly showed signs of disease. I have no faith in the many advertised remedies and therefore every infested leaf was picked off the plants and destroyed by burning. This treatment caused the plants to appear very shabby for that season, but it was persevered with, and in the following season (1908) the plants being continuously in bloom, they were kept under glass. At the present time there is no disease noticeable on these old plants. Some younger plants that were placed out-of-doors as usual, have again suffered to a much greater extent than other varieties. These young plants in their turn will be kept inside during the coming season, and I feel sure they will rapidly improve in condition.

Out-of-door treatment in this country is not likely to be so successful as it has proved in the United States. Whether the more humid condition of the atmosphere in these Isles has something to do with it or not, the fact is impressed on me by the study of the collection under my own charge. Not only does this and that variety succeed better, but all the plants improve in the second season if they remain under glass. The blooms I send the Editor along with this note were obtained from old plants that have been continuously under glass for the last 18 months. [These were excellent examples.—EDS.]

Another mistake that inexperienced cultivators make is that of over-manuring their plants. Carnations do not require anything like the amount of manure sometimes given them in the early stages of growth, but it is admitted that when the pots are full of roots, and the plants in robust health, artificial manure may be given in small quantities, and the results will justify the treatment.

After several years' experience with them, I find that some of the earliest varieties are still the best. Lady Bountiful (pure white), though not so solid and heavy as White Perfection, is an exquisitely-formed flower, and is very free; I do not find White Perfection so good in these respects. Harlowarden, crimson, is still the best of its colour, and its general behaviour here is very satisfactory.

Hannah Hobart, not often seen on the showboards, is a very good grower, and it produces blooms of exquisite form, with rounded edges. It is deeper in shade than Mrs. T. W. Lawson and is more effective when seen in artificial light than in daylight. Jessica, one of the best of the flaked varieties, is a splendid grower, as are also Aurora and Oriflamme, of the same class.

Longer experience with Nelson Fisher confirms my earlier experience that this variety is not a good doer, though I am aware it succeeds well with some cultivators. Floriana, though small, has a good habit, and

produces excellently-formed flowers, but it is not so suitable for blooming in winter as some varieties. Plants of Lord Rosebery make straggling growth, but this variety has good crimson blooms. Neither Aristocrat nor Elliott's Queen have succeeded here as we expected them. Winsor is a beautiful variety, but dwarfer in habit than most others. Fair Maid has a very floriferous habit, and the colour of the flower is a beautiful shade of pink; it is not suitable for exhibition. Enchantress and its various sports are always favourites. Neither White Lawson nor Reliance are particularly good in this collection. Mikado, being a deep shade of heliotrope, is a favourite colour with many. Robert Craig makes satisfactory growth, and the flowers are bright scarlet. Flamingo and Crusader are also good scarlet varieties. Concerning some of the newer varieties complaints are made that the blooms are thin, but many of these varieties will be likely to improve under cultivation. Any plants of these winter or perpetual-flowering Carnations that become leggy may be cut back to the old wood. If the roots are kept rather dry the old stems will produce an abundance of young shoots in the course of a few weeks, and they can be grown into large plants for another season. Such treatment may be desirable in cases of rare or valuable varieties. J. G. Weston.

ORCHID NOTES AND GLEANINGS.

CŒLOGYNE PROLIFERA.

ALTHOUGH not a showy species, this rare *Cœlogyne* has interesting features. The pseudo-bulbs, which are nearly as large as those of *C. cristata*, are distantly placed on a stout, scaly rhizome, and bear one or two petiolate, lanceolate leaves. The inflorescence rising from the apex of the mature pseudo-bulb is about 9 inches in height and clothed with closely-fitting bracts on the upper part, from which the flowers proceed, after which the bracts are shed, leaving those not furnished with flowers still in position. The flowers, which are 1 inch across, have rather broadly-lanceolate, light sepia-brown sepals, and narrow, linear, abruptly-recurved petals. The base of the lip and column are white, with the same greenish-yellow tint which suffuses the whole flower; the front is sepia brown, with a narrow yellow margin, two elevated lines running from the base. It flowered with Mr. James O'Brien.

CATTELEYA TRIANÆ "MARIE FEODOROVNA."

CATTELEYA TRIANÆ varies more than any of the large-flowered Cattleyas in the colour of its flowers, and if any importation is of the best type, all are worth growing. But the proportion of distinct forms worthy of varietal names is small, and hence the great value of good ones. Under the above name, one of the most charming forms is blooming in the gardens of Francis Wellesley, Esq., Westfield, Woking (gr. Mr. Hopkins). It is an ideal florists' flower, all the segments being broad and regularly arranged. The sepals are white; the petals, which, when expanded, are 7 inches from tip to tip and nearly 3 inches wide, are silvery white, without any trace of colour when placed in the shade, but showing a faint lavender tint when looked at in a bright light. The base of the lip is white and the front violet, with a slight rose shade; the disc is orange-coloured, with thin white lines. It is very interesting, but expensive, to make a collection of these fine varieties of Cattleya. O'B.

RIBES MENZIESII.

This elegant little species of Ribes is a true Gooseberry with an armature much more formidable than that of a Red Rough variety. The flowers are not showy, but they persist until the crimson berries have nearly attained their full size. It is a native of North-west America, growing 4 to 6 feet high, and quite hardy in this country. The generic name Ribes has been displaced by Grossularia by some American botanists.

Ribes Menziesii is recorded as having been introduced into Great Britain in 1830, and there is a figure of a flowering branch in the *Botanical Register*, 1847, vol. xxxiii., plate 56, bearing this name; but Mr. Coville, author of a recent monograph of the genus, cites it for this species with a doubt. The small crimson flowers are represented as borne in twos and threes. *W. B. H.*

COLONIAL NOTES.

AN ENGLISH GARDENER IN KELOWNA.

WE have received the following communication from Mr. Charles E. Stiff, late gardener to Sir Daniel F. Goddard, Oakhill, Ipswich:—"My wife, family, and myself have spent nearly a year in this lovely orchard city of the Far West. Kelowna is comparatively a new city; its name means 'Grizzly Bear.' About 60 years ago there was a French Roman Catholic mission in the district. The members subdued the Indians, intermarried with them, and turned these hunting grounds of the Rocky Mountains into a cattle ranch. We are situated 1,100 feet about sea level, on a flat tableland of 35 square miles, sheltered by surrounding Rocky peaks and Selkirk ranges. English settlers started a fruit-growing industry. The trees were brought on the backs of mules, and this district finally developed into one of the noted fruit lands of British Columbia. Much of the 35 square miles of this rich fruit land is already under cultivation, and the cultivation is of the highest order. The spraying, cleansing, training, and pruning of the trees are extraordinarily well done. The amount of sunshine is very great, and the mountain air is bracing. The natural irrigation by seepage of mountain spring water, which percolates through tablelands to the Okanagan Lake, causes the trees to grow splendidly. Plum and Apple trees make branches averaging some 10 feet; whilst the leaves are large, clean, and of a rich, dark green, reminding one of highly-fed Chrysanthemums. Fruit is produced in such abundance as I have never before witnessed. A severe thinning of the fruits of all trees is carried out, the result being handsomely-coloured fruits of great size and colour. I feel some pride because trees I pruned produced the two boxes of Apples (Grimes' Golden) which won the 1st prize at Spokane, U.S.A., and were sold in the show for \$25 each. The boxes contained 40 lbs. weight each. We grow Apples, Pears, Plums, Prunes, Grapes, Peaches, Apricots, Nectarines, Quinces, Strawberries, Tomatos, Melons, Cucumbers and all ordinary vegetables, and Indian Corn, which is eaten largely whilst green. The Japanese Plums and Prunes in some 15 varieties have afforded me this last season an interesting study. I have inspected various orchards, and find that the trees have not suffered from cold, notwithstanding the temperature has been as low as 14 degrees below zero. The very dry climate, the incessant sunshine, and constant care of the trees in disbudbing and thinning, secures hard, ripened wood that frost fails to harm. Kelowna is a city corporate, with mayor, town council, aldermen, and about 1,500 people. We have our cargo and passenger boats on the lake. The city is lighted by electricity; there are waterworks, a fire brigade, brickfields, cement works, saw-

mills, cigar factories, two newspapers, four churches, hospital, &c. The lake covers an area of four miles by two miles, and is really a bay of the much larger Okanagan Lake. As regards the labour market, there are no opportunities for emigrants, excepting a few first-class mechanics." *Charles E. Stiff, Kelowna, Okanagan Valley, British Columbia.*

PLANT NOTES.

HIPPEASTRUM PARDINUM.

ALTHOUGH there exists many excellent garden hybrids of Hippeastrum, some of the true species are well worthy of inclusion in a collection. Hippeastrum pardinum is an exceedingly pretty and most distinct member of the family. It is one of the Veitchian introductions, having been sent home by their collector, Richard Pearce, while travelling in South America in the autumn

which the different forms of Hippeastrum are still known in many gardens. In the same year that it first flowered, namely, 1867, *H. pardinum* was distributed by Messrs. Veitch at a price of two and three guineas each. It is interesting to note that another new plant of that year was *Oplismenus Burmannii*, a popular variegated Grass, sent out as *Panicum variegatum*, which is the name still generally applied to it. Hippeastrum pardinum was soon employed by the hybridist in the production of new varieties, but it was never extensively used for that purpose. The Supplementary Illustration to the *Gardeners' Chronicle*, April 27, 1907, portrays the variety Queen of Spots, raised by the late Dr. Bonavia, of Worthing. This was the result of a cross between *H. pardinum* and a garden variety. The influence of the first-named parent can be plainly seen in the progeny.

The cultural requirements of *H. pardinum* are much the same as those of the ordinary forms.



FIG. 102.—RIBES MENZIESII: FLOWERS AND FRUITS CRIMSON.
From specimens supplied by Mr. Smith, Newry.

of 1865. This Hippeastrum first flowered at Chelsea in the spring of 1867, and was distributed into commerce in the same year. At the time of its blooming, it was thus described in the *Gardeners' Chronicle*, March 30, 1867:—"It is perfectly distinct from all known kinds of Amaryllis, and is remarkable for its form, which is spreading, with scarcely any tube, so that the whole inner surface is displayed, and for its colour, which reminds one of the spotted varieties of Calceolaria or Tydæa, so closely is it covered with small dots, more or less confluent, of crimson red on a cream colour ground."

Although this was written 42 years ago, it is just as applicable now as it was then, and very little can be added thereto. The markings of the flower show a considerable amount of variation, some flowers having the red portion disposed in small blotches rather than dots. To this form the varietal name of *superbum* has been applied. It will be noted that the plant was at first referred to as an Amaryllis—a name by

CALCEOLARIA BURBIDGEI.

WELL-FLOWERED standards of this plant were exhibited at the meeting of the Royal Horticultural Society on March 23, which demonstrated how valuable the plant is for grouping purposes in a greenhouse. *Calceolaria Burbidgei*, as is generally known, was raised by the late Mr. F. W. Burbidge, at Trinity College Gardens, Dublin. Its parentage is rather a puzzle, for Mr. Burbidge, with whom I have discussed the matter many times, always regarded it as a hybrid between *C. deflexa* (*C. fuchsiae* of gardens) and the strong-growing *C. Pavonii*. I pointed out the resemblance between the hybrid and the well-known *C. amplexicaulis*, and stated that, judging by appearances, I should select this species and *C. Pavonii* as the parents. Mr. Burbidge said this could not be the case, as *C. deflexa* was the seed-bearer. The *Kew Hand List* agrees with my theory, as it is thus recorded: "*Calceolaria Burbidgei*, garden hybrid, *amplexicaulis* × *Pavonii*." *W.*

THE ROCK GARDEN.

THE WAHLENBERGIAS.

This genus of Campanulaceæ was named in honour of George Wahlenberg, of Upsala, the author of *Flora Laponica*. Our native species, *Wahlenbergia hederacea*, was formerly known as *Campanula hederacea*. It is a pretty, creeping plant, preferring a cool, lightly-shaded position, its natural habitat being a damp position amongst short grass and other herbage.

Most species of *Wahlenbergia* succeed well in gardens, and are free in flowering. Any difficulties experienced in their culture can generally be traced to unfavourable positions and faulty planting. They require the protection of a stone or rock, placed so as to direct the water to their roots, and yet to protect the foliage from actual contact with the damp soil. The rooting-medium should be rich in plant food and of a good depth, liberally mixed with stone chips and some crushed chalk. Into this staple the roots readily enter, for they will always find it moist during periods of drought. Ample drainage must be provided when preparing the site. In spring a light top-dressing is beneficial, whilst in autumn a quantity of crushed stone placed around the collar of the root-stock lessens the danger of decay from damping. Provided that these conditions are obtained, then a hot, sunny position is best. Do not allow any coarse plant to encroach upon them. Their habit is very dwarf, therefore plant them so that they will be seen to the best advantage when in flower. The following species are some of the most suitable for garden purposes:—

WAHLENBERGIA SERPYLLIFOLIA (SYN. *CAMPANULA SERPYLLIFOLIA*) (see fig. 103).—The growths of this species form a miniature carpet, and develop small Thyme-like leaves. Each prostrate shoot terminates in a solitary, purple-violet, bell-shaped blossom, upturned to the sky. It is a charming plant, especially when in flower in June.

WAHLENBERGIA PUMILIO is a silvery-leaved plant, requiring full exposure to sunshine. It forms a tufted mat of close-set stems, having narrow, pointed, silver leaves. From the shoots arise the big, upturned, pale purple flowers, the inflorescences being solitary. The plant is beautiful either in or out of flower, as the foliage is conspicuous by reason of its silvery-grey appearance.

WAHLENBERGIA SERPYLLIFOLIA VAR. DINARICA (SYN. *PUMILIORUM*) (see fig. 104).—This is a larger and less neat-habited plant than either of the foregoing. The plant flowers with great freedom, producing numbers of its solitary inflorescences from the middle till the end of June. The foliage is long, narrow, and less silvery than that of *W. pumilio*, and forms a loose mat of grey leafage.

WAHLENBERGIA DALMATICA.—A species having purple-violet flowers, formed in terminal, crowded heads. The foliage is long, narrow, and pointed, the leaves from the root-stock forming small rosettes.

WAHLENBERGIA GRAMINIFOLIA.—This species resembles *W. dalmatica* in the clustered flower-heads, which, in this instance, are purple. The leaves are narrow and grass-like.

WAHLENBERGIA TENUIFOLIA.—A distinct species, though generally confounded with *W. dalmatica*.

WAHLENBERGIA KITABELII is the only other species common in gardens. Both *W. tenuifolia* and *W. Kitabelii* belong to the group having terminal clustered flower-heads, and in either plant the colour of the flowers is a shade of purple.

All the species and varieties are extremely sensitive to the effects of damp in winter. Slugs are exceedingly partial to the crowns and young leaves in springtime. *Thomas Smith, Walmsgate Gardens, Louth.*

DEFORESTATION IN NEW ZEALAND.

(Concluded from page 226.)

WHEN once we leave the coast-line the soil is poorer, the surface soil decreases as the watershed is reached, and there are the bare, brown sheep runs again over the plains and the outlying ranges, which run up from 4,000 to 5,000 feet.

Not a tree is to be seen, except small groups of Poplars and Willows, which mark distant stations, and the inspiring *Discaria*, associated with *Olearia virgata* of less pronounced habit, but with pleasing, sweet-scented flowers.



FIG. 103.—WAHLENBERGIA SERPYLLIFOLIA: FLOWERS PURPLE-VIOLET.

As we ascend higher, say, to 1,500 or 2,000 feet, *Aciphylla Colensoi* becomes an important constituent of the "herbage," and occurs in association with *Epilobium tenuipes*, *Vittadinia australis*, *Tillæa purpurata*.

Very striking is the total absence of herbaceous leguminous plants from the native flora. *Carmichaelia Petriei*, a wiry shrub whose branches were chewed down to white, fibrous tufts by grazing animals, occurred sparsely, but the Clovers of European herbage would not grow in such conditions, where alien plants are limited to what we should call weeds of dry places, and are transported by sheep.

These plains, thanks to the agency of man, run up to the foot of Mount Cook, and, as far

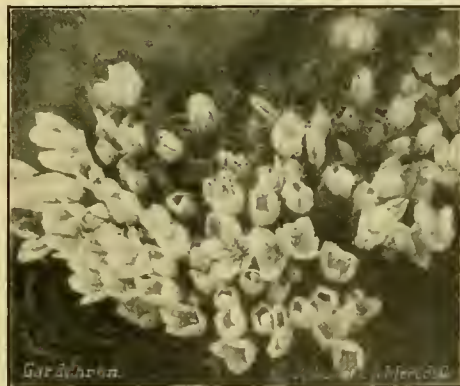


FIG. 104.—WAHLENBERGIA SERPYLLIFOLIA VAR. DINARICA: FLOWERS PALE LAVENDER PURPLE.

as I could make out, they constitute the sub-alpine meadows of New Zealand ecologists. Older settlers assured me that many finer varieties of grass have been burnt out, which is not surprising, owing to annual fires, together with the constant grazing by sheep and rabbits.

All the way from Lake Pukaki to Lindis Pass the soil had become so acid that in many places it only grew *Rumex acetosella* and *Raoulia aus-*

tralis, the latter an invaluable plant, but one that was pointed out to me with contempt as disdained by sheep, and even by rabbits.

It forms a flat carpet of Axminster texture, often two or three yards in circumference, grey green in colour, studded by its yellow, rayless, composite flowers. The root system is extraordinary, every branchlet produces roots, and every node sends down long anchor roots, besides the primary one. There could be no better agent for binding shifting shingle or forming a humus layer on old river beds and terraces. The mass of black soil about its often-charred remains testifies well to the plant's pertinacity, as well as to the settler's scorn.

From Omarama, where the desert-like *Acæna Buchanani* abounds, many beautiful streams are passed, but their banks are as devoid of vegetation as their waters are teeming with trout.

It is a three days' drive from Mount Cook to Lake Wanaka, and for the whole way there is no native tree to be seen. I was told there was "bush" in the "back country," so that it must once have existed in the front, but this country of huge sheep runs, where every station has to keep a gang of rabbiters, tells its own tale. Deer have also been introduced, and are increasing to a large extent, much to the disgust of the run holders, whose property is all leasehold; for where there is little enough for the sheep and rabbits, the deer are naturally not welcome guests. Round about Lake Hawea and on the Clutha river, where farming is carried on, expensive deer-fencing is not an acceptable charge to the occupiers. In the Cromwell plain *Hypericum gramineum* and *Gentiana antipoda* were the only striking native plants; both species afford evidence of poor soil, and there was nothing to suggest a richer spring flora.

At Lake Wanaka, one of the most charming of the large lakes of the South Island drainage system, there was the same baneful deforestation, sheep-run bareness and poverty of soil. The mountains in the background show up green, for the runs have not got so far back yet, the country being practically unexplored. *Hypericum gramineum* and *Pimelea sericeovillosa*, a cushion of hairiness, as the name implies, were very general. Around Pembroke introduced trees were growing freely.

Again, from Wanaka to Queenstown, up the tedious Cardrona valley and over the Crown range at an altitude of 4,000 feet, nothing but Tussock and *Aciphylla Colensoi* is seen as the level rises. Dropping over the range, the general deforestation reveals the interesting glacial terminal moraines of Lake Wakatipu, and some farms show up green on the apparently unpromising slopes of the Remarkables.

The mountains surrounding Lake Wakatipu, the deepest and largest of the Southern Lakes, are all bare and recall the Alpes Maritimes of the even nearer mountains of Savoy and Dauphiné.

In deeper gulleys the bush has survived, the green lines forming a grateful contrast to European eyes, but all round the lake a greener fringe shows the Bracken area, which marks what was formerly forest. Some woods which still clothed the slopes at the head of the lake were burnt down during my stay there through the carelessness of trippers. It is now necessary to go 11 miles up the Dart Valley to Paradise before reaching virgin forest. Here tree-clad valleys radiate out, making a beautiful contrast with the snow-capped summits, but tourists are plentiful there every year, and the sheep farmers are gradually encroaching.

South of Lake Wakatipu are Lakes Te Ano and Manipouri which form part of the great Government reserve, and their welcome forest growth is consequently protected. It is, however, the steepest of granite country, and an excessive

rainfall, by encouraging a perfect covering of luxuriant moss alone, permits the growth of trees in the crevices and fissures.

Down the Clinton and Arthur Valleys this covering, with the trees and ferns it holds together, can be seen washed off in sheets during heavy rains, and the granite walls which line these narrow valleys are one series of cascades, providing a magnificent sight. Avalanches also sweep the slopes in winter, continually necessitating the alteration of the track to Milford Sound. Such country could not pasture a goat, much less a sheep, and no economic factors have been sacrificed by its reservation, as it would be impossible to treat it even as a forest reserve, though as a sanctuary for the undisturbed perpetuation of the flora and fauna of the country, it is admirably adapted.

Forest Officers, who replant as necessity arises. But India is in the happy position of being able to treat questions of national importance from a scientific rather than a party standpoint. In New Zealand the Government alone can act in the matter, as for economic reasons the private owner is helpless and the mere occupier different. Labour costs 10s. a day, and is difficult to obtain at that, therefore private enterprise is discouraged. *L. S. Gibbs.*

ARAUCARIA IMBRICATA.

AMONGST the whole of the Coniferæ there is no more stately or ornamental tree than a well-grown specimen of the Chili Pine, *Araucaria imbricata*. Unfortunately, it only succeeds in this

ceed?" He further states: "The finest *Araucaria* I have ever seen in England or elsewhere is in the gardens of Ben Rhydding Hydropathic Establishment, on the Yorkshire hills. Of this I enclose a photograph"—(reproduced at fig. 105). "Its green branches touch the ground, and it is perfect in its symmetrical form. This is of the drooping kind. Only a few yards away is one with upturned branches, which is practically a skeleton. In all parts of the garden the one variety seems to thrive, and the other has this tendency to cast its branches. Presumably, soil that suits one variety does not suit the other."

The only two types of this tree generally known are those differing in sex. With rare exceptions the trees are unisexual, only a few instances being known (as at Bicton and Pencarrow) of male and female cones appearing on the same tree. It was thought that male and female trees differed in habit, the female being the handsomer and larger tree. But this theory has not stood the test of experience, and the habit of an *Araucaria imbricata* cannot be said to give any indication of its sex. Soils sometimes vary greatly in small areas, and it is not unlikely that the root medium in the case of one tree is quite different to the other, even in such a short distance as described by our correspondent.

A MARKET FRUIT-GROWER'S YEAR.

RAIN or melted snow was measured at my station on 19 days in March, amounting to nearly 4 inches, as compared with three and less than a quarter of an inch in February. The month of March, one of the most important periods of the year for farming and gardening, has been practically lost this season. Severe frost and snow in the first and third weeks of the month, and rain nearly every day in the rest of the period rendered the land unworkable, and it was only in stolen opportunities that some early Potatoes and Peas were planted in a free-working soil. As a period of wasted time for workmen employed on the land, March was one of the worst months in my experience. The unfortunate circumstances prevented the finishing of digging (forking) in the fruit plantations, although some of it was done when the land was far too wet, for the sake of finding a job for the workmen.

Although vegetation made up a little for lost time in the last fortnight of March, so that it was not as extremely backward at the end of the month as it was in the middle, it is still much behindhand. Records have been taken with respect to certain trees, shrubs, and flowers in 16 seasons. For the last 10 years they have been made in the same place near the south coast, and previously for six years at a point about 50 miles to the north. The only season in the last 10 in which vegetation was as backward at the end of March as it has been this year was in 1901. A few examples may be given. Yellow Crocuses were in full bloom on March 21, whereas they were in flower on March 6, 1894, and some were in blossom as early as January 31, 1898. Double yellow Daffodils, of which only a few were blooming at the end of last month, were as forward on February 28, 1903, and were in full beauty on March 15, 1906, while in most other years of the 16 they were well out by the end of the latter month. Wallflowers, not at all in bloom at present, began to flower on the first day of March 1903, and a few were gathered as early as January 31, 1908. The Almond had no flower-buds burst at the end of last month, showing backwardness approached in only four seasons out of the last 16. It was in full blossom on February 22, 1898, and on March 1, 1903.

Turning now to fruit trees and bushes, Gooseberry leaf-buds were only just generally bursting on March 31, while at the corresponding date in 1903 and 1905 the bushes were fully in blossom,



FIG. 105.—FINE SPECIMEN OF ARAUCARIA IMBRICATA.

Isolated reserves here and there are of no use from a physiological, economic or rainfall point of view. In a naturally-wooded country like New Zealand the question should be treated as a whole on some recognised plan drawn up by competent forest officials who have been trained not only in the great schools of Nancy, Munich, and the magnificent economic forests of France and Germany, but also in the management of virgin forest, which under scientific guidance has achieved such a success in India.

There, above 5,000 feet, the forest is secure, for no clearing is allowed.

In the Teak forests of Burma, in order to prevent risk of fire, no felling is allowed in the dry season. Every tree to be felled is marked by the

country in exceptional soils and situations, and specimens such as is shown in fig. 106, with the lower branches decayed, and a ragged head, are as common as a well-furnished tree such as is presented in fig. 105. The tree appears to flourish well for a time, until its roots reach some unsuitable medium, and then decay of the lower branches sets in. There may be other causes for this failure of the lower branches. A correspondent who sends the photographs now reproduced, suggests that there are two types of the tree, one with stiff side growths, and the other having branches that sweep downwards. He writes:—

"It appears to me that when one of these types with upturned branches, for instance, fails, the other, with drooping branches, may suc-

and in several other seasons they have been half out in leaf by the middle of March. In 1895 and 1896 they were in nearly full foliage by February 8. The buds of Black Currants were as generally bursting at the beginning of March in 1903, 1904, and 1906 as they were this season at the end of that month. For Red Currants, which are a little later developing than Black, a similar comparison holds good. Peach trees in the open were in full bloom on March 20, 1894, March 21, 1896, March 25, 1903, and March 31, 1899 and 1902. No variety of Plum has shown blossoms up to the time of writing, whereas there were a few out at the end of March, 1905, and the trees were in full bloom at the corresponding period of 1903. In 1899 early Pear buds were open, showing clusters of flower-buds, as early as February 20, which was quite exceptional; but in 1897, 1898, and 1902 they were in the same stage on March 24, while the trees were in full blossom on March 31, 1903. This year not a bud had burst by the end of last month. In only three out of the 16 seasons have Apple buds burst by March 31 or a few days earlier, and this season they are less behind the normal stage of development than most other kinds of fruit. Out of nine years in which notes on the development of the Cherry have been made, a few blossoms were seen by the end of March in 1903 alone. This year there was no close approach to blooming at that date.

BENEFIT OF LATE FLOWERING IN FRUIT TREES.

This lateness of flower development in fruit trees is a great safeguard, and, so far as my observation is a guide, it seems probable that there will be a productive season for most kinds of fruit, if late frosts do not cause injury. It is too early to judge as to bush fruits or Strawberries, but Apples, Pears, Plums, and Cherries are well studded with fruit-buds. For the first time in the ninth season from planting, my Rivers's Early Prolific Plums promise a great profusion of blossom. Other varieties were much quicker in coming into full bearing. The outlook for Cobnuts and Filberts is doubtful, as the great majority of the catkins appear to have been killed by frost. On some trees nearly all are quite brown, and no pollen can be shaken from them. The female blossoms are only just fully out, and the question is whether there are enough male blossoms to provide pollen to fertilise the ovules.

One important operation of the past month was that of looking carefully at all Black Currant bushes, picking off the big buds, or cutting off shoots containing many, and uprooting badly infested bushes. In a plantation containing Lee's Prolific, now in the ninth season from planting, many big buds were found; but in nine acres of Boskoop Giant, planted partly in the autumn of 1905 and partly in 1906, less than a pint of big buds was found. Yet more than half of these bushes were raised from cuttings on a piece of land less than 100 yards from the plantation that contained the infested bushes of Lee's Prolific. This seems to indicate either that the mites do not migrate any considerable distance, or that Boskoop Giant is more nearly immune from attack than is commonly supposed. It is true that the infested plantation was looked over twice in each season to remove bad bushes and to pick off isolated big buds, but this did not entirely prevent the spreading of the attack in the plantation itself. The planting of cuttings so near to the infested bushes was a piece of thoughtlessness, and it is fortunate that the results were less disastrous than might have been expected. It is further to be observed that nearly all the big buds found in the young plantation were on 200 bushes which were purchased to supply a deficiency in the number raised at home, although they showed no signs of mite when received.

The pruning of Plums last month disclosed more fully than passing observation had done the remains of injury among trees of

Victoria caused by the immense crop of 1907. This variety is naturally prone to develop shoots that curve over towards the ground, and a great weight of fruit upon the branches increases the tendency. Pruning to upright buds has been persistently pursued, but the heavy cropping of 1907 and the moderate yield of 1908 have done much to counteract the result of such cutting. The Victoria Plum can hardly be pruned too severely in the early years of growth. In Pond's Seedling there is a converse habit of growth even more difficult to correct. The branches have an exasperating tendency to grow towards the centre of the tree, in spite of pruning back to buds which point outwards. Attacks of aphid, however, are partly accountable for unshapely



FIG. 106.—POOR SPECIMEN OF ARAUCARIA GROWING CLOSE TO THE TREE ILLUSTRATED AT FIG. 105.

growth in my trees of this variety. In a younger and more exposed plantation, not affected at present by aphid, and on stronger soil, the trees of this Plum are more vigorous and shapely.

The grafting of Apple stocks, usually done in the latter part of March, was postponed till April, as the lateness of vegetation led to the supposition that the sap would not be running freely enough to render the work thoroughly successful.

Just when the Gooseberry buds were beginning to open, the bushes were sprayed profusely with a solution of lime and sulphur, 20 lbs. of each to 100 gallons of water, mainly in the hope that it will check the attack of Botrytis men-

tioned last month, and partly as a preventive to a possible attack by birds. As to this latter trouble, this season appears to be one of rare immunity from bud injury by birds. Whether this immunity is due to the presence of other food than buds, or to the scarcity of bullfinches is uncertain. The former explanation seems improbable, considering the severity of the weather in parts of February and March and the occasional covering of the land with snow. Most of the few bullfinches noticed were shot, but these are not the only budgeaters, and why other kinds of birds hardly touched the buds of Gooseberries or Plums is a mystery. The only considerable trouble from birds experienced this season was in connection with a few Gooseberry bushes at the top of a small plantation close to the homestead, where sparrows abound. These invariably destroy most of the buds, in spite of applications of distasteful washes. In my home orchard birds began to eat the buds on some choice Plum trees, notwithstanding the double washing with lime, sulphur, and caustic potash referred to last month; but the mischief was stopped by the killing of four bullfinches, by tying sheets of newspaper to many of the branches, so that they would blow about and make a rustling noise, and by setting up a couple of guys in the orchard. *A Southern Grower.*

TREES AND SHRUBS.

CUPRESSUS MACROCARPA.

ALTHOUGH this Cupressus is a fast-growing tree, I doubt if it is so suited for a hedge plant as *Thuja Lobbii* (*gigantea*). This latter tree has none of the defects pointed out by Mr. Elgar on p. 196, such as dying off suddenly and suffering from drought in a light soil. This winter has proved that *Cupressus macrocarpa* is not so hardy as was believed. One large tree at Swanmore has many injured limbs, and a nurseryman on the south coast informs me that many plants of this Cupressus in his district have been killed to within 6 inches of the ground.

Tbuya Lobbii grows fully 2 feet or even 3 feet annually when in a vigorous condition. It is not injured by pruning or clipping, and plants with large side boughs will break back into fresh growth close to the main stem after pruning. The foliage assumes a pleasing bronzy hue in the autumn. *E. M.*

VEGETABLES.

EFFECTS OF COLD WEATHER.

HARDY SPROUTING KALE.—Last year I spoke in high terms of this Kale as being one of the most productive varieties amongst several other well-known and extensively-cultivated kinds. This year it has not only maintained that reputation, but has proved by far the hardiest Kale. The severe frosts experienced during the past winter have in many instances killed several plants of some of the well-known kinds, while scarcely a plant of the hardy sprouting variety has been injured. Without this variety we should have been short of a supply of green vegetables.

DWARF GEM BRUSSELS SPROUT.—I am more than pleased with my plants of this variety. The Sprouts are medium in size, very solid, and abundant. We also cultivate a quantity of the Wroxtton variety, which generally furnishes a large supply of solid Sprouts.

BROCCOLI.—No matter whether early or late varieties, or whether they were planted on firm, or very firm, land, the greater number of this vegetable have been killed. Those remaining will

be very small in size. The warm weather of autumn favoured a late growth, and the stems were too tender and sappy to withstand severe frost. Our best plants are those that were heeled over, and these are only moderate in quality.

YOUNG CABBAGE plants have not been injured in the least, but older plants, which usually produce nice sprouts at this season, have fared badly. *H. Markham.*

THE FERNERY.

THE LIFE CYCLE OF A FERN.

EVERY living organism, plant or animal, in the course of its existence, passes through more or less complex changes, and it is these changes which form what is termed its life cycle. Thus, the butterfly or moth, commencing with the egg, proceeds as a caterpillar to become a chrysalis, and within this a wonderful metamorphosis takes place, so that eventually the form of moth or butterfly which laid the egg is reproduced and the cycle is completed. There are far more complicated life cycles than this; even man himself, simple as his life cycle may appear to be, passes through a wonderful series of prenatal stages of development. In the plant world the life cycles are comparatively simple; there are no such transformations as those described. Flowering plants produce, in conjunction with their flowers, embryo seeds, which, being fertilised by the pollen, become capable of reproducing the parental plant direct, so that the cycle is simply seed, plant, and seed again, without any intermediate changes. Non-flowering plants, such as Ferns, Mosses, Horsetails, Fungi, and other genera termed cryptogams, because their modes of fertilisation are concealed, have a longer chain of phases. Taking the Ferns as exemplifying the general principle, the non-production of flowers prevents the production of seeds in the same way as flowering plants, but the equivalents of flowers and seeds are produced before a new generation of Ferns arises, and this involves a lengthening of the life cycle in the following way. Instead of seeds, there are minute reproductive bodies termed spores. These are produced in immense numbers in little capsules on the fronds, and when ripe the capsules burst and scatter their contents far and wide. The spore then, under congenial conditions, swells, bursts its tiny shell, protrudes a rootlet from a contained green cell, which multiplies itself by fission, and in time forms a small, green, heart-shaped scale attached to the soil by a multitude of hair-like rootlets. It is underneath this scale that two sets of organs are formed, one consisting of spherical bodies attached by a short neck and the other of larger, bluntly-conical hollow projections, at the base of each of which is what is practically an embryo seed embedded in a thickened part of the scale. The spherical bodies then burst and send forth into the dewlike moisture present under proper conditions on the underside of the scale, a number of extremely minute tadpole-like organisms, which swim actively about and make their way eventually to the embedded seeds and fertilise them. This done, the seed grows and perfects itself, finally budding forth into a frond-bearing Fern like the original parents which bore the spore. The normal life cycle of the Fern is thus: spore, scale (prothallus), sexual apparatus, seed, and Fern. It has, however, been discovered that this sequence of phases is varied in every conceivable way in the varietal Fern form. Thus, in some Ferns the cycle is spore, scale, and non-sexual bulbil, which produces the Fern by a short cut (apogamy). In other Ferns the spore is dispensed with and the scale is produced direct either on the back of

the frond, where the spore should be, or by simple extension of growth of the frond points (apospory). When this occurs, in most cases the cycle is Fern, scale, sexual apparatus, seed, and Fern again, but in one case it is shortened to Fern, scale, Fern, the Fern being produced by a non-sexual bud (apogamy and apospory combined). Even this short cut, however, is equalled by one recorded case where the scale bore spores without fronds being produced, the cycle then being spore, scale, spore, and the Fern, as we know it, was entirely left out. These are all variations of the cycle, which includes some phase of the scale stage, which represents only the two so-called alternatives of generation peculiar to Ferns and their allies, but there is in addition the capacity of reproduction by direct bulbil growth on the fronds, which bear the Fern without any intermediate stages at all. It is to be noted in this connection that there do not appear to exist in Ferns any arrangements for securing cross-fertilisation such as are so prevalent in flowering plants proper. Flooding at the critical period certainly tends to distribute the fertilising bodies beyond the area of the scale which bore them, and cross-fertilisation has been effected purposely and accidentally in that way; under normal conditions, however, self-fertilisation is almost certain to occur, and as cross-fertilisation is undoubtedly a potent factor in evolution of new types, we may see in this disability the reason why the Ferns of the present day so closely resemble those of the far-distant Coal Age in all essential points, while flowering plants have become so much more diversified. Ferns, however, as we have seen, have apparently done their best to vary the monotony of normal reproduction to the utmost, and have reproduced themselves by every conceivable variance of the life cycle. *Chas. T. Drury, V.M.H.*

The Week's Work.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Late Muscat vines.—These vines are now approaching the flowering stage. Examine the borders, and if the soil is approaching dryness apply a good watering with tepid water. Attend to the necessary stopping of laterals before flowering commences, but unless the shoots are touching the glass they need not be tied down to the trellis until the fruits have set. The atmosphere must be kept dry during the time the vines are flowering; therefore, if there are any pot plants in the house they had better be removed. If the bunches in former years have failed to set their berries properly it will be advisable to dust the flowers with pollen obtained from some free-setting variety, such as Black Hamburg. The pollen may be collected on sheets of paper and applied to the flowers by means of a camel's hair brush or a rabbit's tail. When the berries have set and have commenced to swell, the borders should be thoroughly soaked with diluted liquid manure that has been made tepid. Do not be in a hurry to cut off the surplus bunches until it can be determined which are the best to allow to ripen. A medium-sized bunch of compact build is to be preferred to one that is larger but straggling. Thinning must be attended to as soon as the berries are large enough, and some of the bunches will require the shoulders looped up neatly with a piece of raffia. Bunches with large shoulders must not be severely thinned, especially towards the top. During the operation of thinning keep the scissors clean, as neglect of this often disfigures the berries. When thinning is finished, some artificial fertiliser should be sprinkled over the borders and lightly forked in. Afterwards apply a good dressing of farm-yard manure, and directly after this a good watering with tepid water. The atmospheric temperature of theinery at night-time should range from 65° to 70°. During genial weather fresh air should be admitted early each morn-

ing, and in the day-time the heat may be allowed to rise gradually to 85° or 90°. Sudden fluctuations of temperature may be prevented by giving proper attention to the ventilation. Muscat of Alexandria Grape is very liable to attacks of red spider. As a preventive the hot-water pipes may be dusted with flowers of sulphur when they are very hot. At other times the atmosphere must be kept moist by frequently damping the floor. If the pest does appear, sponge the leaves with a weak mixture of soft soap and sulphur in water. Should it be necessary to shade the foliage to prevent scorching by the sun's rays, mix a little slaked lime in water and syringe this on to the glass.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Dendrobiums.—The numerous species and hybrids of these plants have for several months past provided a pleasing display of flowers in the warmer plant houses. Those plants which bloomed early will require attention in the matter of repotting, an operation that should be carried out when the young growths are but a few inches high. At this stage the plants produce fresh roots, and these delight in a sweet, fresh compost. Such erect, strong-growing kinds as *D. nobile*, *D. Juno*, *D. Ainsworthii*, *D. Wiganii* and *D. Domini* thrive well in pots, provided the compost is so light and open that moisture passes quickly away. The more slender and pendulous-habited varieties, including *D. Pierardii*, *D. lituiflorum*, *D. primulinum*, *D. cetaeum* and *D. crepidatum*, should be planted in pans or pots that can be suspended from the roof. When repotting, very great care must be taken to prevent the roots being injured. Overpotting is detrimental to healthy growth. The *Dendrobiums* at Burford last season did exceedingly well in the following compost:—*Os-munda* and *Polypodium* fibre in equal parts, with a moderate quantity of *Sphagnum*-moss, chopped up finely and well mixed together, with sufficient small crocks to keep the mixture porous. The moss should be cut up much smaller than the Fern material. Seedling *Dendrobiums* grow freely and blossom well when potted in this compost. In their case, the pots or pans should be half filled with potsherds for drainage purposes, and the plants should be potted firmly. Directly potting is finished, a few stakes should be inserted, and a number of pseudo-bulbs tied to them to keep the plant secure in the pot. If this is deferred until later, there is a risk of injuring the young roots.

Treatment of old plants.—Any large specimens that have deteriorated should be turned out of the pots, trimmed, and repotted into as small pots as can be conveniently used. For the first few weeks after repotting the soil should be kept on the dry side, and it is better to apply the water around the rim of the pot than in the centre. Later, when the young growths have made roots, increased moisture may be given, both in the soil and in the atmosphere. When thoroughly established and growing freely, an abundance of water may be given, and the foliage sprayed with tepid rainwater at closing time on warm, sunny afternoons. The majority of *Dendrobiums* should be accommodated in the warm East Indian house, but if such a structure is not available, an ordinary plant stove will suit them. Some species, including *D. sulcatum*, *D. subclausum*, *D. glomeratum*, *D. Jerdonianum*, *D. Falconeri*, and its variety *giganteum*, thrive best in a somewhat lower temperature than that maintained in the East Indian house, a suitable place for them being the *Cattleya* or intermediate house. Others that do better in a still cooler temperature are *D. rhodostoma*, *D. sanguinolentum* and *D. speciosum* (these may be placed in the Mexican house); *D. Jamesianum*, *D. Wattianum*, *D. infundibulum* and *D. longicornu*. The blue-flowered *D. cœleste* (*Victoria Regina*) grows well when suspended in a light position in the *Odontoglossum* house. Plants of *D. nobile* type can be easily propagated by laying the pseudo-bulbs which have not flowered on *Sphagnum*-moss in a hot propagating case, or they may be laid on the surface moss of pots containing such plants as *Aerides* and *Vandas*.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Fruit prospects.—The recent severe weather has had the beneficial effect of retarding the development of the fruit-buds, and, should no late frosts occur when the blossoms are expanded, we may expect a bountiful crop of all fruits. The worst results happen when, February and March having been mild and genial, wintry conditions prevail just after the trees have started into growth. Fruit trees and bushes appear extremely promising. Apple trees are bristling with plump flower-buds, whilst Cherry, Plum and Pear trees are all satisfactory. Strawberries have withstood the severe weather well; very few of the plants have been killed, and in the case of both young and old plantations the crowns are starting rapidly into growth.

General work.—The work of transplanting, pruning and spraying is finished. Disbudding and pinching the shoots and thinning the fruits will next claim attention. The first tree that will need attention in this respect is the Apricot. The flowers have just commenced to open, and, with a continuation of bright, sunny weather, the blooming period will soon be over. After this the growths will soon advance sufficiently to allow of disbudding and pinching. The trees should be examined at intervals of a few days, for the work must be done regularly, it being a mistake to remove a large number of the shoots and buds at one time. Shoots that are in unsuitable positions for training may be removed entirely, or pinched back to form spurs, according as is required. Extra care must be taken when regulating the shoots of young fruit trees: do not commit the common error of overcrowding the tree with growths.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

The rock-garden.—Seedlings of the various plants which are raised annually may now be planted on the rockery. Of Saxifraga there is an endless variety. Some of the best for gardens are *S. Rhei*, *S. R. superba*, *S. aizoides*, *S. Fergusonii*, *S. × Guildford Seedling*, *S. muscoides*, *S. oppositifolia*, *S. Wallacei*, *S. Boydii*, *S. Bursariana*, *S. aretioides*, *S. longifolia*, *S. Macnabiana*, *S. marginata*, *S. valdensis*, *S. Kotschyi*, *S. marginata* and *S. Rocheliana*. Amongst the *Androsaces* may be mentioned *A. coronopifolia*, *A. lanuginosa*, *A. sarmentosa*, *A. villosa*, *A. sempervivoides* and *A. Chumbyi*. These make a charming show when good clumps are formed. In order that they may appear to the best advantage, they should be planted in irregular batches. The rare *Scoliopus Bigelovii* is finely in flower at Leonardslee. It requires to be planted in a moist and shady position. Many Alpines need a deep rooting medium, delighting to ramble for a considerable distance amongst the fissures of the rocks. Slugs are apt to do much damage to bulbous plants in showery weather, and they must be sought for and destroyed. The *Erythroniums* are now making a fine display, as are also the *Narcissi*, especially *N. minimus*, *N. cyclamineus* and *N. obvallaris*. See that all shrubs growing on the rockery are pruned so as to keep them a suitable size.

Bog plants.—These should now be cleaned, and any that need top-dressing or dividing may be attended to forthwith. Any planting should be done at once. Among the more important subjects are *Inulas*, *Spiræas*, *Funkias*, *Gunneras*, *Kniphofias*, *Osmundas*, *Petasites* and *Eulalias*.

Aquatic plants.—These will now require attention, and any protective covering should be loosened. The beautiful *Caltha polypetala* may now be planted in the water. *C. palustris* and *C. monstrosa picta*, are effective when planted in masses. *Acorus calamus*, *Aponogeton distachyon*, *Butomus umbellatus*, *Cyperus longus*, *Eriophorum*, *Hippuris vulgaris*, *Lythrum roseum superbum*, *Menyanthes trifoliata*, *Orontium*, *Peltandra*, *Ranunculus*, *Rumex*, *Sagittaria*, *Scirpus*, *Zizania*, and many similar plants do well in ponds and lakes. The best method of planting aquatics is to bind their roots in some good fibrous loam and drop them into the water. The weight of the soil will keep the plant steady

till root action commences. Callas may be planted in the same manner.

Lawns and tennis grounds should be well swept and rolled previous to mowing. The verges should be trimmed. Box edgings should be clipped, and all made tidy.

General work.—Beds and borders containing spring flowering plants and bulbs must be kept clear of weeds and decaying foliage. Fork the soil lightly to give a tidy appearance. Prick off annuals as they become ready, and gradually harden those that were raised earlier. All bedding plants that are forward enough should be grown under as cool conditions as possible. *Lobelia* and plants of that class may still be boxed up and grown on in heat. Keep all the flowers picked off these plants. Place slender Hazel or Bamboo stakes to support the flowers of the taller-growing *Narcissi* of the King Alfred type, or they may break with their own weight.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Planting.—The soil is now in a splendid condition for working, therefore every opportunity should be taken to make up arrears in planting.

Potatos.—Proceed with the planting of early, mid-season and late varieties, exercising great care in the preparation of the sets as well as in placing them in the ground. Each Potato should be planted with a good, sturdy shoot, about 1 inch in length, in well-prepared trenches or deep drills. Do not use a dibble for planting Potatos. See that sufficient space, according to the variety, is allowed both between the tubers and the rows, so that, when in full growth, they will obtain the benefit of sun and air. Successional varieties in pits and frames must be earthed up when the growths are from 3 to 4 inches in height.

Caroons.—These plants require a long season of growth. They should be planted in a rich soil, and, during their growing season, be given an abundance of water at their roots. Prepare trenches, as for Celery, 2 feet deep and 2 feet wide, and, after breaking up the bottom soil, nearly fill the trench with well-decayed farm-yard manure. Do not sow the seeds until the end of April or the beginning of May, otherwise a large percentage of the plants will flower prematurely. It will be necessary to allow a distance of about 20 inches between the plants. Sow three seeds together, and when it can be determined which is the strongest of the three plants, the other two can be removed.

Celery.—Harden off the earliest plants that have been pricked out into boxes, so as to prepare them for planting out. Prick out seedlings from late sowings, putting them on a warm bed.

Winter Greens.—Sow the main batch of these thinly broadcast in beds on an open site, which should be netted to prevent birds stealing the seeds. Make another sowing at the end of this month or the beginning of May, especially of Broccoli and Savoys.

Onions raised under glass and thoroughly hardened must be planted out on well-prepared ground, at a distance of from 12 to 15 inches between the plants, and from 15 to 18 inches between the rows. Surplus plants which have not been pricked off, if planted out somewhat thickly, will be found to do well and ripen early.

Turnips.—Sow small quantities of early varieties of this vegetable once a fortnight.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Bougardias.—Robust plants may be quickly cultivated if 1-inch portions of stout roots are laid in pans of sandy soil, covered with glass, and placed over a mild bottom heat. Stem-cuttings root readily, but give more trouble, and seldom prove so satisfactory as plants raised from root cuttings. Old plants that are to be retained for another year should be pruned and re-potted after they break into growth. Shake away the greater portion of the old soil, and prune the roots so that the plants may be kept in comparatively small

pots. A suitable potting medium consists of a mixture of fibrous loam, leaf-mould, dried cow dung and silver sand. After potting, which must be done firmly, place the plants in a house having a warm, moist atmosphere.

Strobilanthes Dyerianus.—This plant should be potted in a light soil and grown in a brisk heat and plenty of atmospheric moisture. To obtain well-coloured examples, care must be taken that the plants receive no check whilst growing. Cuttings may be rooted readily.

Hibiscus rosa-sinensis and its varieties are useful either as bush plants or for training along the roof of an intermediate house. Under stove culture, they are apt to grow too freely to flower well. Although the individual flowers are evanescent, they are produced very freely, and plants of a goodly size continue in flower for a long period. It will be found more suitable to grow the double and semi-double flowered kinds under the rafters, as the weight of their flowers will cause them to hang downwards. Cuttings of this shrub root freely in heat, and quickly form flowering plants.

Cyclamens.—As it is not customary to cultivate the plants a second year, except, perhaps, in the case of any that it is especially desirable to keep, the old plants should be thrown away as soon as they cease to be ornamental. Seedlings intended for furnishing next season's flowering plants will now require larger pots. See that they are not over-potted at this stage, and keep the corms well above the surface soil, which should be similar to that used for the last potting.

Clerodendron fallax.—This plant must not be allowed to become pot-bound until it is in its flowering pot. Seedling plants of this *Clerodendron* are usually the most satisfactory.

Zonal Pelargoniums.—Cuttings should now be inserted to supply plants for autumn and winter flowering. Select good firm cuttings and insert them thinly around the sides of 5-inch pots. Place them in an intermediate house where they will soon form roots, and as soon as this takes place, pot them singly into small pots. After this is done, place the plants in a frame where they will receive plenty of light and air. For the first few days the frame must be kept closed, but afterwards, whenever the weather permits, ventilation may be afforded freely. All flower-buds must be removed until the latter part of August.

THE APIARY.

By CHLORIS.

Dysentery in bees.—Damp conditions and bad ventilation are the principal causes of this disease, which is not uncommon among bees during a wet spring. It may also be caused by giving the bees unsuitable food. When dysentery is present in a colony of bees, it may be known by (1) the bees voiding their excrement, which is of a muddy colour, on the comb and the alighting board. Bees in a healthy condition discharge their excrement when on the wing. (2) The bees appear weak and display a general loss of energy. (3) On opening the hives and raising the quilts a disagreeable odour is noticeable. The remedy consists in removing the colony to a dry, warm and well-ventilated hive. Provide the bees with some sealed honey as food, or, failing this, a syrup made with good candy, and allow the bees to remain undisturbed.

The wax moth.—The wax moth is likely to make its appearance in apiaries where the bee-keeper leaves little pieces of comb and wax lying about and empty combs in unused hives. The moths soon find these, and deposit their eggs, which hatch and thus infest the colony, the wax providing the larvæ with food. The presence of the wax moth may be detected by the presence of excreta, which resembles gunpowder. This may be observed on the tops of the frame. If the colonies are strong and the bee-keeper is vigilant, the pest may soon be exterminated.

Earwigs.—Earwigs and ants may be prevented by placing the legs of the hive in saucers containing paraffin.

Wasps.—Keep a sharp look-out for these pests and destroy any that are found.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

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

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, APRIL 20—

Roy. Hort. Soc. Coms. meet. and Nat. Auricula and Primula Soc. combined Show at Hort. Hall, Westminster (Prizes for Daffodils and Carnations. Lecture at 3 p.m. by Mr. Eric Drabble, D.Sc., on "Pansies"). Devon Daffodil and Spring Fl. Sh. at Plymouth (2 days). Shropshire Hort. Soc. Spring Fl. Sh.

WEDNESDAY, APRIL 21—

Roy. Hort. Soc. of Ireland Spring Fl. Sh. at Dublin. Roy. Meteorological Soc. meet. Ipswich Spring Fl. Sh. Roy. Hort. Soc. Examination in General Horticulture.

THURSDAY, APRIL 22—

Midland Daffodil Soc. Exh. at Bot. Gardens, Birmingham (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—48.5°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, April 14 (6 P.M.): Max. 60°; Min. 47°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, April 15 (10 A.M.): Bar. 29.2; Temp. 58°; Weather—Sunshine.

PROVINCES.—Wednesday, April 14 (6 P.M.): Max. 56° Cambridge; Min 43° Scotland, E.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY—

Herbaceous and Border Plants, Lilies, and Hardy Bulbs, Ferns, Greenhouse Plants, &c.; at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.

WEDNESDAY—

Perennials and Herbaceous Plants, Lilies, Gladiolus, and other Hardy Bulbs, at 12; Palms and Plants, Ferns, &c., Seeds, 100 dwarf trees, &c., at 4; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

THURSDAY—

Specimen Gold, Silver, Green, and other Hollies, Conifers, Rhododendrons, and other stock, at The Nurseries, High Beech, Essex, by order of Messrs. Paul & Son, by Protheroe & Morris, at 12.

FRIDAY—

Choice Imported and Established Orchids in variety, Orchids in Flower and Bud; at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

The British Flora is from time to time increased by the addition of new plant species which find their way into this country by other than natural means.

The majority of these intruders, many of them weeds of cultivated ground, appear only at intervals, and have no permanent effect upon the flora; a few, finding the conditions congenial, become established, and may even compete successfully with native plants on their own ground.

This has been the case, for instance, with the American Pondweed, or Water Thyme (*Elodea canadensis*), which was introduced into Ireland about 1836, appeared in England about 1841, and has increased so rapidly that it often proves a source of trouble by blocking streams and ditches. It is now ubiquitous in rivers, streams, and waterways all over the country, competing successfully with most British aquatic species. The plants do not fruit in this country, but they succeed in spreading, owing to their extremely

vigorous vegetative growth, branches being constantly detached and carried by the current, or other means, to give rise to fresh colonies. The success of such plant invaders depends on their adaptability to climatic conditions, and their capacity for spreading is regulated by their means of dispersal.

Local floras abound in records of plants which are either certainly aliens or are strongly suspected of alien origin; but it is comparatively seldom that anything definite is known as to their first appearance. It is, therefore, of some interest to record the appearance, or reappearance, of a little plant which is of greater botanical interest than the majority of intruders.

Azolla caroliniana is a small aquatic Fern, a member of the group of Ferns known as Hydropterids, owing to the water-habitat of the four genera included in it, only one of which, *Pilularia globulifera*, is a member of the British flora. Two of the genera, *Azolla* and *Salvinia*, are small, floating aquatics, commonly grown in botanic gardens, and more rarely in greenhouses in private gardens.

The species *A. caroliniana* is a native of the United States, and has already been recorded from streams near London as an escape from gardens. It has recently appeared in Berkshire, in a small tributary of the Thames, where it is apparently competing successfully with its neighbours.

Along the banks, where the current is slowest, *Azolla* has established itself in abundance, and in places appears to be ousting the Duckweed (*Lemna minor*), which, presumably, preceded it, and which flourishes elsewhere in similar positions. During the past summer the colonies of *Azolla* increased rapidly, and the plant now extends up the smaller ditches and rivulets for some distance. Despite the severe winter, it still appears vigorous and uninjured by the cold, although the plants show a tendency to fragment into small pieces, and the foliage has become reddish-brown instead of green. It will be a matter of some interest to see if it resumes growth in the spring, and if so, it would appear to be only a matter of time for it to spread down to the Thames and thence to other localities.

The little plants multiply freely by vegetative means, new branches being constantly formed and detached from the parent, and even if the winter should prove to have been too severe for the leafy parts, there is the possibility that sporocarps were formed and these may survive.

The appearance of such plant visitors, even when introduced by undoubtedly artificial means, as in the case of *Azolla*, leads to a consideration of the many interesting features in the constitution of the British flora, and ultimately to an examination of the factors which determine geographical distribution in general.

In his *Origin of the British Flora*, Mr. Clement Reid concludes that the present flora of Britain is entirely composed of plants which reached this country after the passing away of the more or less Arctic conditions which prevailed during the Glacial Period, and since the final separation of England from the continent of Europe is believed by geologists to have also taken place about that time, the plant species which found their

way across the Channel from Western Europe were those which possessed the most effective means of dispersal by various natural means.

It is still held by a few observers that certain isolated members of the flora, for instance, the so-called Lusitanian flora of South Cornwall and South-west Ireland, which includes several species of Heath which do not now occur wild nearer than Portugal, represent survivors from the sub-tropical flora which is known to have existed in Britain in pre-Glacial times; but since indications of Arctic conditions have been found as far south as Bovey Tracey, in Devonshire, the evidence, on the whole, seems to favour the truth of the general statement made above, that the British flora consists essentially of a selection of the species occurring also in North-western and Western Europe, which are best equipped in various ways for distribution by natural means.

It is customary to designate as alien plants such species as have been introduced through the agency of man, although their appearance may now be general throughout a large area. Such aliens may occur as escapes from gardens, as *Azolla* no doubt has done, and, in these cases, their origin is rarely in dispute.

Among many examples of this kind may be noted the red-spurred Valerian (*Centranthus ruber*), naturalised on walls and cliffs in many places in the south of England, but almost always in the vicinity of houses. It is a native of Southern Europe, and is rarely found in this country north of Birmingham.

The Lesser Periwinkle (*Vinca minor*) is regarded as a true native in the south of England, but occurs elsewhere as an escape from gardens, as does the allied species *Vinca major*.

Geranium phæum, a native in Belgium, but not occurring in Northern France and Germany, is found in many places in England, and there seems to be no geographical reason why it should not be regarded as indigenous; but it is almost invariably confined to the neighbourhood of villages, and in all recorded stations in England it is probably of garden origin.

Many other plants might be cited which have had a similar origin, and to these may be added others which appear as the result of seed impurities in imported agricultural seeds. Many of the latter establish themselves as common cornfield weeds, and some of our most familiar field and hedgerow plants belong to this class. A few alien species appear on the coast, near seaports or docks, brought as seeds in ballast or cargo.

The facts are often difficult to trace in the case of old-established weeds, the test that is usually applied being the nature of the surroundings in each case. If a plant occurs invariably associated with artificial conditions, such as are induced by cultivation, and is never recorded from a perfectly natural habitat, the case is strong against it being a native, since it would be necessary to assume that it had disappeared from the intervening areas in natural surroundings, and such cases of extinction are rare.

In all, over 900 species of such plant invaders have been recorded, of which about 330 are believed to be due to arboriculture and horticulture.

OUR SUPPLEMENTARY ILLUSTRATION gives a view of the lake in the Melbourne Botanic Garden. This botanic station is situated on the banks of the River Yarra, about a mile from the city of Melbourne. It adjoins the grounds of Government House and the Public Domain, of which it forms a part. The older portions of the garden contain numerous fine specimens of Palm, Conifer, especially *Araucaria*, various Oaks, Elms, and other deciduous trees, *Grevilleas*, of which *G. robusta* forms a splendid picture when in flower, and numerous native trees and shrubs. An extensive "Fern gully" has been formed, and this is a feature of much interest. In the lower portion of the grounds, near the river, is the beautiful lake, occupying about 14 acres, spanned in places by rustic bridges, and dotted with charming islands which, being planted with ornamental trees and shrubs, afford a very picturesque effect. A portion of the native vegetation has been allowed to remain, and this adds much to the interest of the garden. It will be seen from the illustration that *Cyperus Papyrus* grows freely around the water's edge. In fig. 107 is reproduced a photograph of a bed of succulent plants also growing in the Melbourne garden, which is under the care of Mr. W. R. GUILFOYLE.

THE FLOWERING OF THE ALMOND.—The lateness of the present season has been strikingly illustrated by the flowering of the Almond trees in the London district. The first flowers on a tree situated in a favourable position in Wandsworth, five miles south-west of London, expanded fully on Thursday, April 1, as against March 23 last year, March 20, 1907, February 28, 1906, March 7, 1905, and March 21, 1904.

ROYAL HORTICULTURAL SOCIETY. — The Council of the Royal Horticultural Society have accepted the offer of the following prizes, to be competed for in March, 1910, from the Royal (General Dutch Bulb Growers' Society at Haarlem:—Division I. (for amateurs and gentlemen's gardeners).—Class 3 (18 Hyacinths, distinct): 1st prize, £6 6s.; 2nd, £5 5s., with four other prizes. Class 4 (12 Hyacinths, distinct): 1st prize, £5 5s.; 2nd, £4 4s., with three other prizes. Class 5 (six Hyacinths, distinct): 1st prize, £2 2s.; 2nd, £1 10s., with two other prizes. Class 6 (four pans containing Hyacinths, 10 roots of one variety in each pan, the blooms of the bulbs in each pan to be of distinctly different colour to those of the other three pans): 1st prize, £4 4s.; 2nd, £3 3s., and two other prizes. Division II. (for trade growers).—Class 7 (collection of 200 Hyacinths in at least 36 varieties, grown in pots or glasses): Prize, the Gold Medal of the General Bulb Growers' Society at Haarlem. Class 8 (collection of 200 Hyacinths in 20 varieties in pans, 10 roots of one variety in each pan): Prize, the Gold Medal of the General Bulb Growers' Society at Haarlem. For Classes 3, 4 and 5 each bulb must be in a separate pot, size optional. Classes 3, 4, 5 and 6 must all be single spikes; no spikes may be tied together. Exhibitors may only compete in one of the classes numbered 3, 4 and 5. All bulbs must have been forced entirely in Great Britain or Ireland. The bulbs used in Classes 6 and 8 should be of varieties most suitable for outdoor bedding purposes.

FLORAL ART AT THE BERLIN EXHIBITION.—The display of floral designs in connection with the International Horticultural Exhibition held in Berlin, was one of more than ordinary interest. Judged from a purely artistic standpoint, the arrangements set up by M. LAUCHAUME, Paris, stood far in front of everything else. The Parisians appear to be peculiarly gifted in the

art of producing pleasing effects by means of flowers and foliage, whether it be for the ornamentation of tables, halls or rooms, or for personal adornment with sprays, bouquets, or garlands. In his colour effects, M. LAUCHAUME was often daring, but never at fault. Nothing could be richer or more elegant than a tall, loose stand fully 7 feet high built up with big leaves of red and yellow Croton, orange-coloured *Clivias*, salmon-red *Cattleyas*, large spikes of *Cymbidium*, and long, well-flowered pseudo-bulbs of *Dendrobium Wardianum*, the whole held together with fronds of *Adiantum tenerum Farleyense* and *Asparagus plumosus*. Another elegant floral trophy was composed of Yellow Arums, *Iris Susiana*, pink Roses, long spikes of *Odontoglossum* and *Phalænopsis*, with sprays of light-green Japanese Acers and Fern fronds. It is difficult to adequately describe these arrangements, they need to be seen to be properly appreciated. The Germans appear to employ flowers and foliage rather as emblems or symbols of plant lore than for their mere decorative effect. They express by means of certain flowers or leaves some emotion, as *Ophelia* did when she gave Rue and Rosemary: "There's Rosemary, that's for remembrance; pray you, love, remember." To some extent we make a like use of flowers, the wreath of Orange blossom at weddings, the Mistletoe at Christmas feasts, and the Primroses on Good Friday being of this character. Flower lore is, however, rapidly disappearing with us, and in most of our uses of flowers and foliage we are merely decorative, sentiment being unconsidered by either florist or employer. In Germany many of the floral designs have a sentimental meaning. Perhaps the prettiest is the spray of Myrtle worn on the head of the bride. According to mythology the plant received its name from Myrsine, a favourite of Minerva; and when she was changed into this shrub it was consecrated to Venus. Among the Berlin exhibits there were many dainty arrangements of Myrtle leaves and flowers. The catkin-laden branches of the Goat Willow are largely employed in wreath making. The significance of Willow is for slighted or forsaken lovers. "In love the sad forsaken wight the Willow garland weareth." It is probable that the use of Pine branchlets for garlands, crowns, wreaths, &c., has been copied from the Greeks, who wore them in their Olympian games. The use of Poppy heads, which occurred frequently in wreaths and big crosses, is difficult to understand, unless they signify eternal sleep. Juniper, Ivy, Bay, Douglas Fir, *Erica carnea*, *Daphne Mezereum*, Grey Lichen, Cypress, Lilac, and Alder all entered largely into the compositions of wreaths, crosses, columns, and shields. Lily of the Valley, Violets, Roses and Forget-me-Nots were much used in the general floral designs. There were excellent effects with Orchids, Lilies, Arums, Azaleas, Primulas, Lilac, and other favourite florists' flowers, but generally German art in this direction was not really first-class. A design in which variegated Kale leaves were used in combination with *Cattleya* flowers was somewhat grotesque. Both *Viburnum Opulus* (Snowball) and *Hydrangea* were largely used for wreaths and crosses as well as in table decorations, but invariably the flowers were only half-developed and of a soft green colour, a condition in which they appear to be preferred. *Primula obconica* was much in evidence. Stocks also were used for wreaths. Perhaps the plant most generally employed in all the compositions, whether of foliage or flowers, was *Selaginella Watsonii*; the variegation appears to please the German taste. This plant was also used to form the groundwork in the groups of plants arranged in the big exhibition halls. The principal German exhibitors of

floral designs were Messrs. STRAHL & FALCKE, Berlin, Mr. MAX BRUST, Berlin, Mr. HEINRICH KRÜGER, Berlin, and J. C. SCHMIDT, Berlin. This florists' show was opened on the 7th inst., after our report of the main exhibition had been despatched.

HORTICULTURAL CLUB.—The next house dinner of the Club will take place on Tuesday, the 20th inst., at 6 p.m., at the Hotel Windsor. Mr. E. A. BUNYARD will give an address on "The Colours of Plants."

ROYAL METEOROLOGICAL SOCIETY.—A meeting of this society will be held at the Institution of Civil Engineers, Great George Street, Westminster, S.W., on the 21st inst., at 7.30 p.m. The following papers will be read:—(1) "Percolation, Evaporation and Condensation," by Mr. BALDWIN LATHAM; (2) "The Meteorological Conditions in the Philippines, 1908," by the Rev. JOSÉ ALGUÉ.

A NEW USE FOR EUCALYPTUS TREES.—In recommending that Eucalyptus trees be more extensively planted on Sugar estates in the West Indies, the *Journal of the Jamaica Agricultural Society* mentions that the leaves possess a property which makes them useful for cleaning purposes. If the leaves are boiled, the resulting decoction will soften any incrustation of lime that may have formed, so that it can easily be removed.

RAFFIA AND RAFFIA WAX.—When Raffia, or Roffia, as it was first called, displaced the old "Cuba bast"—the inner bark of the West Indian Mahoe tree (*Hibiscus elatus*)—as a tying material for garden purposes, little or nothing was known of its origin. After a while, however, it was discovered to be the produce of the Madagascar Palm *Raphia Ruffia*, imported from the Mauritius. Raffia consists of the thin cuticle or skin of the leaf, and, notwithstanding its thinness, is very strong. The natives of Madagascar tear it into fine thread-like strips, and when dyed (chiefly in red, yellow, or black) use it for making mats. In England, Raffia has been used, and probably is used still, for making ladies' hats. In more recent time Madagascar Raffia has had competitors in some of the West Tropical African species of *Raphia*, the cuticle of the leaves of which is similar to that of the Madagascar species, both in strength and appearance. Twisted into cord, the natives use it for the making of hammocks. Judging from a recent consular report from Madagascar, the *Raphia Palm* seems to have been attracting some attention as a wax-producing species. It appears that, when collecting the leaves for preparing the Raffia fibre, the natives bring them into camps, where, after the fibre is extracted, they are left lying about, often in considerable quantities. So far back as 1905, a colonist, while examining these abandoned leaves, discovered that, when shaken, they yielded a white substance, which, upon being boiled, yielded wax. The natives were, at the time of its discovery, induced to prepare about 100 lbs. of this wax, which was offered for sale in the market, and sold in lots at 1s. per lb. The preparation of the wax has never been repeated, nor any shipment made, as it has been considered that the resultant wax is too small in quantity, and the cost too high for it to become a commercial article, a very large number of leaves being required to produce even one pound of wax. The facts prove, however, that wax is present, though it may be only in small quantities, in other species of Palms besides the two well-known sources *Ceroxylon andicum* and *Copernicia cerifera*.

THE GRAFTING OR BUDDING OF LILAC.—It may not be generally known, writes a correspondent, that Lilac worked on Privet stocks is not to be recommended for plants intended for forcing. The common Lilac, *Syringa vulgaris*, is much better as a stock, resulting, in three to four years, in fine bushes or standards fit for forcing. Besides this advantage, Lilacs on the common form live longer than those grafted on the Privet.

ing varieties of the show Auricula, Carnation, and white ground Picotees. In 1876 at Manchester SIMONITE exhibited in a competitive class for 24 Carnation blooms, and he won the 1st prize, twenty-three out of the twenty-four varieties being his own seedlings. He also exhibited Picotees at the same show, and secured eleven First-class Certificates for these flowers. At that time he was a working cutler, making table knives at his own house for the large Sheffield firms. His garden was a small strip of ground

green-edged Auricula placed into commerce by this raiser is Shirley Hibberd. Others are Henry Wilson and the Rev. F. D. Horner. There is no grey-edged flower to his credit, but he has raised many good white-edged varieties, of which Heather Bell is the best. Frank is distinct and good: both flowers have a violet-coloured ground. Venus is a good white-edged flower, but it is little known. Among self-coloured Auriculas of Mr. SIMONITE's raising still in cultivation are Ruby, a red self;



FIG. 107.—SUCCULENT PLANTS ON A ROCKERY IN THE MELBOURNE BOTANIC GARDEN.

(See page 249.)

THE LATE BEN. SIMONITE (see p. 239).—Writing on the Auricula in 1876, the Rev. F. D. HORNER penned these words:—"Where our florist fathers rested in the evening of their day is the point we start from in the morning of our own, and we should ever have this purpose before us in our floral pursuits to leave something added, something better than we found." Mr. HORNER took up the work left by his father, Dr. HORNER, of Hull, and Mr. SIMONITE took up that left by his father, JOHN SIMONITE. As early as 1873 the younger SIMONITE had done good work in rais-

ing varieties of the show Auricula, Carnation, and white ground Picotees. In 1876 at Manchester SIMONITE exhibited in a competitive class for 24 Carnation blooms, and he won the 1st prize, twenty-three out of the twenty-four varieties being his own seedlings. He also exhibited Picotees at the same show, and secured eleven First-class Certificates for these flowers. At that time he was a working cutler, making table knives at his own house for the large Sheffield firms. His garden was a small strip of ground

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NATIONAL AURICULA AND PRIMULA SOCIETY (MIDLAND SECTION).—We are asked to draw attention to the alteration of the dates of the show of this society from April 28, 1909, to May 5 and 6. This has been found necessary on account of the extreme lateness of the plants this season. The hon. show secretary is Mr. TOM J. STEVENS, 74, Harbury Road, Cannon Hill, Birmingham.

TIMBER FOR AEROPLANES.—The best wood for making aeroplanes has been found to be that of the black Spruce, *Picea nigra*. Regarding the value of British-grown timber of this tree, it may be of interest to refer to an article written by Mr. A. D. WEBSTER, which appeared in the *Gardeners' Chronicle*, February 2 and March 2, 1895, under the heading of "Quality of British-grown Coniferous Timber." "*Picea nigra*; ages (when cut) varying from 30 years to 50 years; timber nearly white, sometimes yellowish-white, soft, long of grain, very light, and readily indented. Lasts well when kept dry and in an equable temperature, but it is of little or no value, comparatively speaking, for out-of-door work." The timber referred to was grown at Penrhyn Castle, in Wales.

"CHRYSANTHEMUMS FOR GARDEN AND GREENHOUSE."*—Great advances have been made during the last few years in the cultivation of the early-blooming and decorative sections of the *Chrysanthemum*. It is not every flower lover who has the necessary skill and time to devote to the cultivation of the large show varieties. Mr. CRANE's purpose in writing this book has been to show that beautiful displays of *Chrysanthemums* may be obtained without much trouble or expense. He has revised the long lists of varieties, and the descriptive notes accompanying each variety make his list valuable. The book is comprehensive, and begins by describing various methods of propagation. Then follow accounts of outdoor culture, greenhouse culture, market culture, varieties and selections, and miscellaneous matters, such as insect pests and diseases, hints on exhibiting, window culture, &c. The market men are told that they have of late years made a great mistake in confining their attention to a few varieties, and those of Japanese origin. Mr. CRANE might, however, with advantage, have reduced greatly the number in his portentous list.

PUBLICATIONS RECEIVED.—*Familiar Wild Flowers*, by F. Edmund Hulme, F.L.S., F.S.A. New edition, with 360 coloured illustrations. (Part I.) To be completed in 43 fortnightly parts. (London: Cassell & Co., Ltd.) Price 6d.—*Trees and their Life Histories*, by Percy Groom, D.Sc., &c. (Part I.) To be completed in 13 fortnightly parts. (London: Cassell & Co., Ltd.) Price 1s.—*The Country Home*. (April.) (London: Archibald Constable & Co., Ltd.) Price 6d.—*Twenty-Sixth Annual Report of the Metropolitan Public Gardens Association for the year 1908*. Price 6d.—*Kew Bulletin of Miscellaneous Information, Appendix II*. (1909.) Containing Catalogue of the Library. Additions received during 1908. (London: Wyman & Sons, Ltd., Fetter Lane, E.C.) Price 4d.—*Ontario Department of Agriculture*. Bulletin 169: Legume Bacteria. Further Studies of the Nitrogen Accumulation in the Leguminosæ, by S. F. Edwards, M.S., Professor of Bacteriology, and B. Barlow, B.S., Demonstrator in Bacteriology. Bulletin 170: Mitchell-Walker Test Bottle. A new form of Babcock Test Bottle, by J. W. Mitchell, B.A., and W. O. Walker, M.A. (Ontario: L. K. Cameron)—*U.S. Department of Agriculture*. Miscellaneous Papers: The Orange Thrips, by Dudley Moulton. Papers on Deciduous Fruit Insects and Insecticides. The Peach-Tree Bark-beetle, by H. F. Wilson. Farmers' Bulletin 347: The Repair of Farm Equipment, by W. R. Beattie. Circular No. 108: House Fleas, by L. O. Howard. (Washington: Government Printing Office.)—*Cottage Gardens: Practical Hints on Cultivation and Management*. (Second edition.) By Colonel the Hon. R. Stapleton-Cotton. (Birmingham: Cornish Bros., Ltd.) Price 4d.—*Quarterly Journal of Forestry*. (April.) (London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd.) Price 2s.—*The Journal of the Royal Horticultural Society*.

* By D. B. Crane. Edited by T. W. Sanders. Second edition. Price 2s. 6d.

(March.)—*Botany*, by Elizabeth Healey. (London: Macmillan & Co., Ltd.) Price 1s. 6d.—*Estate Magazine*. (April.) Price 6d.—*Journal of the Kew Guild (1908)*.—*The County Council for the County Palatine of Lancaster. Education Committee, Agricultural Department*. (Farmers' Bulletin No. 13.) Summary of Experiments of the Manuring of Potatoes in Lancashire, by Edward Porter, B.Sc., F.A.C., (Glas.), and R. C. Gant, B.Sc., N.D.A., Lecturer on Agriculture.—*Beautiful Gardens and how to Maintain them*, by Walter P. Wright. Enlarged edition. (London: Cassell & Co., Ltd., La Bille Sauvage, E.C.) Price 6s.—*Lawns and Greens*, by T. W. Sanders, F.L.S. (London: Amateur Gardening Office, 148-9, Aldersgate Street, E.C.) Price 1s.

LAW NOTES.

SALE OF POISONOUS SUBSTANCES FOR AGRICULTURAL AND HORTICULTURAL PURPOSES.

THE following are the regulations under the Poisons and Pharmacy Act, 1908, issued at the Court at St. James's the 2nd day of April, 1909,† affecting the sale of poisonous compounds used in horticulture and agriculture:—

1. A licence shall not be granted to any person unless the local authority are satisfied that he is fit to be entrusted with the sale of the poisonous substances.

2. In granting licences for the sale of poisonous substances for use exclusively in horticulture, preference shall be given to nurserymen, florists, seedsmen and other persons whose business is specially connected with horticulture.

3. Applications for licences shall be in the form set forth in Schedule A. to these regulations.

4. Before sending an application for a licence to the local authority the applicant shall publish notice of his intention to apply in two newspapers circulating in the district of the local authority, and shall also send notice by registered post to the Chief Officer of Police of the Police area within which his premises are situated.

5. A licence shall not be granted until after the expiration of at least 14 days from the receipt of the application by the local authority, and the local authority, before granting a licence shall take into consideration whether in the neighbourhood where the applicant for the licence carries on or intends to carry on business the reasonable requirements of the public with respect to the purchase of poisonous substances are satisfied, and also any objections they may have received from the Chief Officer of Police or from any existing vendors of the substances to which the application relates.

6. A licence shall be in the form set forth in Schedule B. to these regulations.

7. A licence shall expire on such day in the year as the local authority fix, but may on application being made in the form set forth in Schedule C. to these regulations, be renewed from time to time for one year at a time, subject to the same provisions as in the case of the grant of a licence, except that it shall not be necessary to publish or give to the Chief Officer of Police notice of the application. The renewal of a licence shall be in the form set forth in Schedule D. to these regulations.

8. A licence may be revoked or suspended for such term as the local authority think fit, if the local authority are satisfied that the licensee has failed to comply with the requirements of these regulations or of the Poisons Acts, or that the licensee is not a fit person to be entrusted with the sale of poisons.

9. A licensee shall, on being required to do so by any officer of the local authority or any police officer, produce his licence, and any renewal thereof.

10. The fees charged in respect of the grant and renewal of a licence shall be such as the local authority may determine, not exceeding in the case of the grant of a licence, 10s. 6d., and in the case of a renewal of a licence, 1s. 6d.

† Order in Council making Regulations under Section 2 of the Poisons and Pharmacy Act, 1908 (8 Edw. 7 c. 55), as to the Sale of certain Poisonous Substances for Agricultural and Horticultural Purposes.

11. A licence shall not authorise the licensee to sell or keep open shop for the sale of poisonous substances except from or on premises (to be specified in the licence) within the area of the local authority which granted it, and for the purpose of these regulations, a municipal borough the council of which is a local authority for those purposes, and in Scotland a police burgh, shall not be treated as forming part of any county.

12. Every local authority shall keep a register of the licences granted by them for the time being in force, and any person shall, at all reasonable times, upon payment of such reasonable fees as may be fixed by the local authority, be entitled to inspect and to make copies of, or take extracts from, the register.

13. All poisonous substances shall be kept in a separate drawer or closed receptacle apart from any other goods, and poisonous substances shall not be sold upon the same premises as articles of food for human consumption unless the Local Authority are satisfied that convenient arrangements for their sale cannot otherwise be made, and in that case they must be sold at a separate counter. For the purpose of this regulation a part of a counter which is shown to the satisfaction of the Local Authority to be adequately separated from the rest of the counter shall be treated as a separate counter.

14. A poisonous substance shall not be sold except in an enclosed vessel or receptacle as received from the manufacturer, distinctly labelled with the name of the substance and the word "Poison," and with the name and address of the seller, and with a notice of the special purpose for which it has been prepared.

15. Liquid preparations shall be sold only in bottles, tins, drums, or casks of sufficient strength to bear the ordinary risk of transit without leakage. Each bottle, tin, drum, or cask shall have the word "Poisonous" indelibly printed, marked, or branded in easily legible characters in a conspicuous position apart from the label, and the label must bear the word "Poison." When sold in bottles, the bottles shall be of a distinctive character so as to be easily distinguishable by touch from ordinary bottles.

16. Solid preparations shall be securely packed in such a manner as to avoid, so far as possible, the risk of breaking or leakage from transport, and the package shall have indelibly printed, marked, or branded in easily legible characters in a conspicuous position notice that it must not be used for any other purpose.

17. All premises from or on which a licensee is authorised to sell or keep open shop for the sale of poisonous substances shall at all reasonable times be open to inspection by officers appointed by a local authority.

18. For the purposes of these regulations the expression "poisonous substances" means the poisonous substances to which section 2 of the Poisons and Pharmacy Act, 1908, applies for the time being, and the expressions "chief officer of police" and "police area" have in England and Scotland the same meanings as in the Police Act, 1890, and the Police (Scotland) Act, 1890, respectively.

PETREA VOLUBILIS.

THIS member of the Verbenacæ is a native of tropical America, and is usually cultivated as a stove plant in botanical gardens in this country. Our issue for January 13, 1900, contained a Supplementary Illustration showing a splendid inflorescence which occurred on a plant in Sir Trevor Lawrence's garden at Burford. In the same issue appeared a reproduction of a photograph received from Sir Daniel Morris, which represented a white-flowered variety in the Newcastle Plantation, Barbados, where it is known as the "White Wreath." Our present illustration (fig. 108) depicts a fine plant of the type in full bloom in the Royal Botanic Garden, Peradeniya, Ceylon, where in succeeds admirably in the open ground. The purple flowers of this twining shrub are very beautiful, and the species might well be more generally cultivated in stoves as a climber. The plant being very subject to mealy bug, this pest must be kept in check.

NOTES FROM A "FRENCH" GARDEN.

THE fine weather of the past week has been of great benefit. Watering has occupied a considerable portion of each morning, as the plants require much moisture in sunny weather, especially the Carrots. The lights are allowed to remain open throughout the day, and we shall soon leave them open a little at night-time for the purpose of hardening both the Carrots and the Cauliflowers. We shall remove the frames and lights altogether next month, when they will be required for the Melon crop. The Cauliflowers raised from seeds sown in February may be planted out-of-doors as soon as the ground is available for the purpose. The watering of

second planting are thriving well, and the more forward will soon have their shoots stopped. Those raised from the sowing made at the end of March require potting into 3-inch pots and placing in a new hot-bed. It will be noticed that the leaves of the young Melon plants placed in frames that have been freshly tarred have curled. This is due to the fumes from the tar; the remedy is ventilation and the removal of the plants from too close proximity to the boards.

Turnips are growing well, and when the nights are warm ventilation can be afforded them. The applications of water should be moderate but frequent, for the purpose of inducing a quick, soft growth, for when growth is slow and the

at about the middle of May. The principal work in progress is that of attending to the ventilation and the watering of the different crops. Mats are still required at night-time, especially for the protection of Melon plants, and for seedlings of other crops. *P. Aquatics, April 12.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

SURREY SCHOOL GARDENS.—Since Mr. Cæsar wrote (see pp. 209 and 226) his interesting description of the development of school gardening at Hale, Surrey, 10 new centres have been added, and some 200 plots formed; therefore 200 additional lads will receive garden instruction this season. The number of school gardening centres is now 100 at least. They are found only in what is termed the administrative county, which excludes boroughs like Kingston, Richmond, Wimbledon, Croydon, Reigate and Guildford. Of these I can speak for Kingston only, which has established four garden centres, each having 28 plots making a total of 112. These figures go to show that elementary school gardening is progressing. *A. D.*

PROFITABLE ONION CULTURE (see pp. 217 and 234).—There are few crops that can be grown so successfully on a large scale, on such a variety of soils, and under such varied climatic conditions, as that of Onions. One reason why Onions have not been more generally grown is the mistaken idea that it is impossible to grow them without the application of vast quantities of farmyard or stable manure; but we have been taught by Dr. Bernard Dyer and his assistant, Mr. F. W. E. Shrivell, that certainly at Tonbridge larger and more economical market-garden crops, including Onions, have been grown by the aid of chemical fertilisers than could be produced by farmyard dung alone. At the same time, their experience, now extending over several years, indicates that it is very unwise to grow Onions without dung, however liberal the supply of chemical fertilisers. Market gardeners seldom use a dressing of less than 25 tons of dung per acre, costing in round figures £10 per acre—a quantity quite insufficient to grow the best crops. They often use as much as 50 tons, costing £20 per acre in one dressing. Dr. Dyer says it had long been his conviction that such heavy dressings must be wasteful, and that market-gardeners should use smaller dressings of purchased dung and spend a portion of the money thus saved on concentrated fertilisers, keeping the balance in their pockets. This conviction did not involve any blindness to the particular virtues of dung. Farmyard dung increases the store of humus or organic matter in the soil, and thus corrects the inherent physical shortcomings peculiar in the one extreme to sandy soils and in the other to heavy clays. It is probable that the beneficial effects of dung are in a considerable degree due to its influence on the mechanical condition of the soil, rendering it more porous and easily permeable to the surface roots upon the development of which the success of the Onion crop so much depends. Something may be due to moisture and to an increased temperature of the surface soil engendered by the development of so large an amount of organic matter within it, whilst the carbonic acid evolved in the decomposition of the dung, with the aid of moisture, serve to render the mineral resources of the soil more soluble. In selecting land for Onions, it is advisable to choose soil that is not likely to be affected much in the event of a prolonged drought, therefore it should contain a large amount of humus. It is next to an impossibility to raise a profitable crop of Onions unless there is a fairly good supply of moisture when the plant is making its strongest growth; therefore, it is important that the gardener treats his soil from the start with that object in view, viz., to conserve an adequate supply of moisture for the plant to draw upon during the season of dry weather. For this purpose it is well to observe an old adage, that the watering of the Onion crop should be done in the winter.

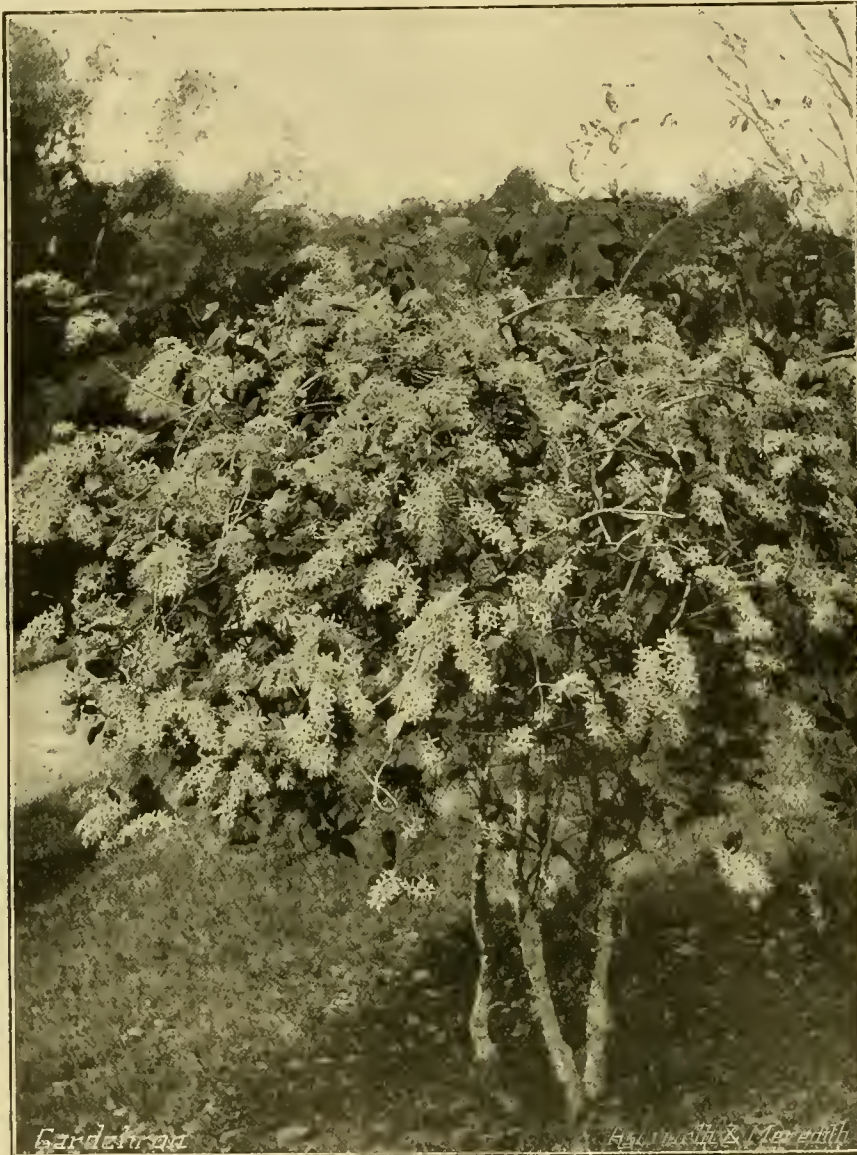


FIG. 108.—PETREA VOLUBILIS GROWING IN THE ROYAL BOTANIC GARDEN, PERADENIYA, CEYLON.

(See p. 251.)

this crop must be done very carefully. We have sown another batch of Cauliflowers of the variety Lenormand. They will be ready to plant on the ground in the open upon which the Cos Lettuces were planted last week. The Melon plants are well established in their fruiting quarters. They will require to be shaded during the middle hours of the day for a few days, after which time they will be given a little ventilation for a few hours daily. As soon as fresh growth is observable, the plants will be afforded a good watering, which is generally sufficient for two or three weeks, especially during dull weather. The young plants intended for the

tissues hard, the plants frequently run to seed. We have sown a batch of Turnip "Marteau" in well-prepared ground out-of-doors. This crop will require frequent waterings. We are cutting the Cabbage Lettuces that were grown with the Cos Lettuces under the cloches. They should have been ready by the end of March, but owing to the cold weather they are very late. The Passion Lettuces grown in the open are succeeding well; they will soon require watering. We are pricking off seedlings of Celery "Chemin" for the earliest batch. Each light contains 140 plants. The main batch from the same sowing will be transplanted in the open

That is to say, the dung, whether a large or a small quantity, should be applied and dug into the soil during the winter season, so as to be well incorporated with the land by sowing time. The artificial manures may be applied just previous to sowing the seed; this will encourage the young plants to send down their roots into the decomposing organic matter of the dung, and will tend to prevent any ill-effects of drought. The following table shows the relative economy of different systems of manuring in the growth of spring Onions at Tonbridge in 1900 and 1901:—

Annual manuring per acre.	Annual cost of manure per acre.	Weight of Onions per acre.	
		1900.	1901.
25 tons London dung ...	£ s. d. 10 0 0	tons. cwt. 8 11	tons. cwt. 10 7
12½ tons London dung ...	5 0 0	7 0	11 11
12½ tons dung, superphosphate (no potash) and 2 cwt. nitrate of soda ...	6 15 0	7 7	9 12
12½ tons dung, superphosphate (with potash) and 2 cwt. nitrate of soda ...	7 5 0	8 16	11 16
12½ tons dung, superphosphate (no potash) and 4 cwt. nitrate of soda ...	7 15 0	8 18	9 15
12½ tons dung, superphosphate (with potash) and 4 cwt. nitrate of soda ...	8 5 0	9 10	8 14
12½ tons dung, superphosphate (no potash) and 6 cwt. nitrate of soda ...	8 15 0	10 2	10 12
12½ tons dung, superphosphate (with potash) and 6 cwt. nitrate of soda ...	9 5 0	10 0	11 8
No dung, superphosphate (no potash) and 8 cwt. nitrate of soda ...	4 15 0	1 6	5 2
No dung, superphosphate (with potash) and 8 cwt. nitrate of soda ...	5 5 0	6 1	8 0

It will be seen that chemical fertilisers, used in addition to a moderate quantity of dung, produced in 1900 a highly valuable return, and that it proved advantageous in that season to use as much as 6 cwt. of nitrate of soda per acre. Even 2 cwt. of nitrate per acre, in conjunction with superphosphate, potash salts, and a light dressing of dung, gave a better yield than the heavy dressing of stable manure, showing the danger of relying exclusively upon this manure. Chemical fertilisers alone, without the aid of dung, gave much less satisfactory results than when a moderate quantity was used in conjunction with them. The great dependence of Onions not only upon phosphates and nitrogen, but also upon potash salts, is strongly shown in both years on the plot which has been throughout the experiments kept without dung. *J. J. Willis, Harpenden.*

—Having grown Onions in many parts widely separated in England, I can speak definitely of this bulb as furnishing a profitable garden and field crop, even at the low price of 2s. 6d. per bushel. In a Hampshire garden, overlying the green-sand formation, I have grown with fair thinning of the plants, three bushels to the rod, which is equivalent to £60 per acre. Of course, this is less in weight than that given by *A. D.*, who wrote of transplanted bulbs, but the cost of raising his 200 lbs. of bulbs takes a little off the total returns for the crop. I often wonder why the Englishman has need to purchase from Spain, Egypt, Bosnia, France, and other distant places Onions that he could grow easily at home. This is exactly a crop for the small holder and peasant cultivator; and there are similar ones if we would but look around. *F. M.*

—I read with interest the articles on cultivating Onions for market in the last two issues of the *Gardeners' Chronicle*. Apparently, from *A. D.*'s article (p. 217), in few ways, excepting the French system of vegetable culture, can fortunes be made so easily as by growing Onions. I can see only one difficulty, and that is in obtaining customers to buy them. Mr. Martin (p. 234) may be assured that the system of cultivation recommended by *A. D.* is to be preferred for many reasons, the cost of the frames being the only drawback. It results in a great saving of seeds, whilst sowing in frames is not dependent on the weather. The transplanted crop grows faster and therefore has a longer season for ripening, and the ground is left fallow for a longer time after trenching. This enables it to be more thoroughly worked, whilst vacant

ground can be easily kept clean of weeds. Transplanting takes longer than seed sowing, but it can be undertaken when seed sowing could not be performed. Also, there is no thinning to be done. This is an operation that is sometimes unavoidably delayed, to the detriment of the crop, and green Onions have no great value. For several years I have seen various varieties of Onions transplanted from frames and the same varieties sown direct on the bed. The ground in both cases has been treated precisely the same, but the difference has in every case been most marked, the crop from the transplanted plants being nearly double that of the other, owing to the increased size of the bulbs. *F. A. Edwards, Arlington Court Gardens, Barnstable.*

—Such communications as those of Mr. Kitley on this subject (see p. 234) constitute the despair of earnest people. They are the wet blankets of commerce and progress. Even if at one time good bulbs of English-grown Onions were not productive of high prices, may not the market methods adopted have been responsible for the unsatisfactory results. At the present time, judging by the market returns published in the *Gardeners' Chronicle*, there are no English Onions in the market, except bulbs for pickling. Spanish and Dutch bulbs are quoted at from 15s. to 23s. 6d. per case or bag. No wonder that, with no other Onions in shops or stores, I cannot purchase imported bulbs at less than from 2d. to 2½d. per lb. These are deep, globular bulbs, and not flat ones. If French peasants can sell these Onions at a profit here prettily roped, so also can home growers. It is our imperfect methods of marketing which are to be blamed. *A. D.*

FORCED STRAWBERRIES AT PIT HOUSE GARDENS, CHUDLEIGH.—I am sending a photograph (not reproduced) of Strawberries in pots as cultivated in these gardens. The plants were layered the first week in September, 1908, and the photograph was taken on March 27, 1909. Each plant is carrying from six to nine good fruits, the individual berries weighing from ½ oz. to 1½ oz. I am sending by the same post samples of the fruits. *W. Worth, Pitt House Gardens, Chudleigh, S. Devon.* [Some exceptionally fine berries were sent by Mr. Worth.—*Eds.*]

EVERGREEN HARDY VINE (see p. 240).—*Vitis striata* is a fairly well known evergreen vine. One of its garden names is *Ampelopsis semper-virens*. This member of the vine family is a native of Uruguay, from whence it was introduced in 1881. The leaves are small, digitate, thick in texture, and of a very deep green tint. The plant is not quite hardy, even in the neighbourhood of London, but it is much the hardiest of any of the evergreen vines. *W.*

FENCING IN PUBLIC PARKS.—The wooden rod hurdles used in the L.C.C. parks and open spaces must prove very expensive, considering how badly they are treated by the public. In some parks they are being replaced by a six-bar wooden hurdle, which offer good practice for vaulting by children. The unclimbable iron fencing made in 6 feet lengths would be much cheaper in the end and better for protecting newly-sown seeds, &c. When holted together they are firm and not easily knocked down. *John Carville.*

CULTURE OF CUCUMBERS.—Let me assure *H. W. IV.* that he is in error in assuming that "all engaged in growing Cucumbers for market stop the young plants at the third or fourth wire of the trellis." I do not stop the plants in the manner *H. W. IV.* describes, although a market grower of Cucumbers for many years past and one who has tried both the methods. Having experience of both ways, and a decided preference to the more natural method of culture, I ask *H. W. IV.* if he has really tried the method which in my case he condemns. The plants that I referred to as giving a continuous supply of fruits into October might have been cropped much longer. Most persons who cultivate Cucumbers on a large scale complain that the plants do not give more than one good "throw" of fruits in consequence of the weakening effects of the disease. In fact, instead of the plants bearing

continuously for months together, it is now a question of weeks. Your correspondent has recorded the interesting fact that plants have continued in fruit for 15 months, but it would be equally interesting to have details of the fuel bill and the value of the crop for the same period. The chief cultural error to which I referred was that of allowing the main stem to grow for several feet unchecked and suppressing the whole of the laterals. *E. H. Jenkins.*

SOCIETIES.

ROYAL HORTICULTURAL

Scientific Committee.

APRIL 6.—*Present:* E. A. Bowles, Esq., M.A., F.L.S. (in the chair); Prof. G. S. Boulger, Messrs. A. W. Sutton, J. T. Arkwright, E. M. Holmes, W. Hales, J. W. Odell, C. E. Shea, W. Fawcett, G. Masee, J. Douglas, F. J. Baker, H. T. Güssow, A. Worsley, J. Frazer, G. S. Saunders, and F. J. Chittenden (hon. secretary). Visitors: Messrs. E. Laxton and J. H. Drummond, F.L.S.

Gummosis in Lemon.—Mr. H. T. Güssow reported that the specimens of Lemon shown by Mr. WORSLEY at the last meeting had been examined microscopically. After dissolving the gum in warm water at each of the places where the gum exuded, a wound was noticeable extending some way into the wood. The injured portions had no connection with each other, but were well defined nearly all round the stem. The distance between the two places where gum was seen oozing out was about 4 inches. The bark was peeled off and some of the gum was transferred with a sterilised needle to a cover glass, and was diluted with distilled water. After drying and finding this preparation it was stained for bacteria, and in every preparation a large number of them were revealed. The presence of the bacteria does not certainly prove that the gumming was caused by them, but the examination plainly showed that the injury could not have been due to some cause or other within the range of the root. Mr. WORSLEY kindly sent me the root and stem of the diseased Lemon, and the roots were found to be perfectly healthy, with a good many fibres and small rootlets; the stem just above the root showed next to a thorn an injury which according to additional information from Mr. WORSLEY, had first exhibited the gumming. The specimen examined was a seedling. It is frequently the case that bacteria gain entrance in the place of grafting, and cause profuse outflow of gum in all kinds of stone fruits. A fine culture of the organisms has been made, and it will be used in infecting a young Cherry tree. The bacteria isolated from Cherries, Plums, and Peaches, which showed gumming bore great resemblance to those isolated from the Lemon. The withering and flagging, and the silvery appearance of the shoots and leaves above the place of injury are certainly the natural results of the sap-conducting vessels being clogged by the gum.

Inheritance of characters in Pea seeds.—Mr. A. W. SUTTON exhibited a long series of preparations showing the seeds of plants raised by crossing a Pea which he found growing wild in Palestine (? *Pisum arvense*), with forms of the cultivated garden Pea (*Pisum sativum*), and with bicolor-flowered Peas (*Pisum arvense*), &c. Twenty-two crosses were made in 1907, and of these four were immature in the seed in F₁ and failed to germinate; four died off before flowering in F₁; seven flowered but produced no seeds; seven only produced any seeds in F₂ (these latter were shown on cards 1 to 7). In most cases it would appear that the plants were almost or quite sterile. Cards 8, 9 and 10 were the results of crosses made between the Palestine Pea and *Pisum sativum* by Mr. DARBISHIRE, and grown at Reading. They practically confirm Mr. SUTTON'S experiments. Mr. SUTTON also exhibited a growing plant of the wild Pea from Palestine, and a plant of *Pisum quadratum* (?) grown from seeds received from Kew. This plant much resembles the Palestine Pea in all respects except the foliage. He also exhibited a collection of the various forms of seeds of the garden Pea (*Pisum sativum*), and of bicolor

blooming types (*Pisum arvense*), &c. Among the remaining cards, some which showed that when Improved William 1st, with semi-wrinkled seeds, is crossed with a wrinkled Pea, the resulting types of seed do not follow the Mendelian ratio of 3:1, were particularly interesting. This Pea contains starch grains of similar form to those which are common to those found in round seeds, and not of the form found in wrinkled seeds, so that unless the wrinkled character of the seed were unconnected with the form of the starch grains the usual Mendelian ratio could scarcely be expected. Mr. J. H. DRUMMOND contributed a series of specimens from his own herbarium and from the herbarium of the Royal Botanic Gardens, by the courtesy of the director, showing that the plant Mr. SUTTON had collected in Palestine was in all probability *Pisum humile* of Bossier, and not *Pisum sativum* or *P. arvense*.

Wild species of Asparagus and Rhubarb.—Mr. SUTTON also exhibited plants of *Asparagus* (probably *Asparagus filicinus*) and *Rhubarb* (apparently *Rheum Moorcroftianum*) sent him from the Punjab by a correspondent. The roots of the *Asparagus* were tuberous, and were no doubt organs in which water was stored. The young leaves of the *Rheum* were cup-shaped, the leaf-stalk springing from the base of the cup.

Hippeastrum hybrid.—Mr. WORSLEY showed a flower of a deep dragon's blood red, a first cross between the two species *Hippeastrum alicum* and *H. vittatum*. The flower is of very good form and splendid colour.

Polystichum sp.—Mr. J. FRASER showed specimens demonstrating the resemblance between *Polystichum lobatum*, Presl., and *P. Lonchitis*, Roth. If the pinnæ of the latter were lobed or lobulate instead of being merely serrated, the two forms would be closely similar, judging from the size and form of the pinnæ in the two cases. The comparison between *Polystichum lobatum*, Presl., and *P. aculeatum*, Sw., was less obvious.

Seed from S. Africa.—Mr. E. M. HOLMES reported that the seed exhibited by Mr. VEITCH at a recent meeting was *Voandzeia subterranea*, often called Bambarra ground nut, and used in tropical and South Africa as food.

Malformed Orchids, &c.—Mr. J. W. ODELL showed some malformed Orchids, and some flowers of *Auricula* wherein the filaments of the stamens were becoming transformed into petals, thus showing the beginning of a double flower.

Dendrobium hybrids.—R. G. THWAITES, Esq., Streatham, sent flowers of *Dendrobium Thwaitesiae* × *D. Wiganiae xanthochilum* and *D. Wiganiae* × *D. Wiganiae xanthochilum*, both being white with a zone of purple on the disc of the lip. He wrote: "Of the first cross three have flowered like those sent, and of the second six plants have flowered. You will notice the pollen caps and stems are also white. I feel sure it would be quite useless to use those flowers for obtaining white hybrids, and it may be that the unsuccessful attempts to obtain white flowers (hybrids from apparently white parents) is due to coloured parentage somewhere behind the flowers used. These and other results, though apparently confusing, may later on assist in throwing light upon the question of albinism, as notwithstanding the contradictions which are appearing, I feel sure there is some logical law relating to it." *D. Wiganiae* is a hybrid between *D. nobile* and *D. signatum*, *D. Wiganiae xanthochilum* being a seedling out of the same pod, while *D. Thwaitesiae* represents the result of further crossing *D. Wiganiae* and *D. Ainsworthii* (*nobile* × *aureum*). The original parents are therefore either purple or yellow flowers, and the cause of the peculiarity is not apparent.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

APRIL 5.—The monthly committee meeting was held at the Horticultural Hall, Vincent Square, S.W., on this date. Mr. Thomas Winter occupied the chair. Nine new members were elected. The usual quarterly payments were granted. Any member not having received the annual report and balance sheet is requested to write to the secretary for a copy.

NURSERY AND SEED TRADE ASSOCIATION.

APRIL 5.—The annual general meeting of this association was held at the offices of the association, 32, Gresham Street, London, E.C., on this date. The members present included Mr. George Bunyard (Chairman), Mr. J. B. Slade (Messrs. Protheroe & Morris), Mr. H. W. W. Nutting (Messrs. Nutting & Sons), Mr. John Green (Hobbies, Ltd.), Mr. H. E. Silberrad (Messrs. Silberrad & Sons), Mr. B. B. Maller (Messrs. B. Maller & Sons), Mr. G. H. Barr (Messrs. Barr & Sons), and Mr. H. Simpson (Messrs. Cooper, Tabor & Co., Ltd.).

The annual report and balance-sheet were submitted to the meeting and accepted. The association's financial position showed still further improvement during the past year.

Mr. N. N. Sherwood, of Messrs. Hurst & Son, was re-elected president, Mr. W. J. Nutting treasurer, and Messrs. H. Simpson and G. H. Barr trustees.

SCOTTISH HORTICULTURAL.

APRIL 6.—The monthly meeting of this association was held at 5, St. Andrew Square, Edinburgh, on this date. The President, Mr. Whytock, occupied the chair. There was a moderate attendance of the members. A paper was read by Mr. L. B. Stewart, Royal Botanic Garden, Edinburgh, on "Insectivorous Plants."

Messrs. DOBBIE & Co., Rothesay, exhibited a collection of *Violas*. These were raised from cuttings rooted in August and placed in a cool house in September. The varieties *Bethea*, *Bullion*, *Kitty Bell* and *Snowflake* flowered 10 to 12 days earlier than others of the collection.

Mr. P. KEIR, Edinburgh, exhibited *Narcissus* Emperor in pots. The bulbs were planted at different depths, but were all in bloom.

Five new members were elected.

A paper will be given at the meeting to be held on May 4 by Dr. W. G. Smith, Edinburgh, on "Economic Botany and its Application to Horticulture."

ROYAL CALEDONIAN HORTICULTURAL.

APRIL 7, 8.—The spring show of this society was held in the Waverley Market, Edinburgh, on these dates. The exhibition generally was equal to those of previous years, and this notwithstanding the very inclement weather of the previous month. As is usual at this spring show the nurserymen's exhibits made a good display. Messrs. DICKSON & Co., Edinburgh, had a large exhibit, in which plants of *Rhododendron* "Pink Pearl" formed the principal feature; this firm also showed some very fine seedling *Hippeastrums*. (Gold Medal.) Amongst other local firms who set up large exhibits were Messrs. R. B. LAND & SONS, LTD. (Silver-gilt Medal), and Mr. JOHN DOWNIE (Silver-gilt Medal). Messrs. CUTBUSH & SON, Highgate, displayed an interesting exhibit of flowering shrubs and herbaceous plants (Silver-gilt Medal); Messrs. BARR & SONS, London, showed *Narcissi* (Silver-gilt Medal); Mr. R. E. GILL, Falmouth, exhibited cut blooms of *Rhododendron* (Silver Medal); Mr. Roche (gr. to Lady ANNALY, Gowrain Castle, Kilkenny) showed *St. Brigid Anemones* (Silver Medal); THE SCOTTISH MUSHROOM CO., LTD., Edinburgh, displayed *Mushrooms* (Silver Medal); Mr. F. LILLEY, Guernsey, showed a collection of *Narcissi* (Silver Medal); Mr. FORBES, Hawick, staged *Alpine* and *hardy border plants* (Bronze Medal); Messrs. STORRIE & STORRIE, Glencarse, staged *Primulas* (Bronze Medal); Messrs. KEELING & SONS, Bradford, showed *Orchids* (Bronze Medal); and Messrs. DOBBIE & Co., Rothesay, *Violas*.

A Certificate of Merit was awarded to a new variety of *Narcissus* named "The Sirdar," exhibited by Messrs. BARR & SONS.

SCHEDULES RECEIVED.

Horticultural Exhibition, to be held in connection with the Lincolnshire Agricultural Show at Louth on July 14, 15, and 16. Secretary, Mr. A. Bellamy, High Holme Road, Louth.

National Carnation and Picotee Society's exhibition, to be held at the Royal Horticultural Hall, Vincent Square, Westminster, S.W., on Wednesday, July 21. Secretary, Mr. T. E. Henwood, 16, Hamilton Road, Reading.

HARDY FLOWER BORDER.

HYACINTHUS AZUREUS.

THIS species is the old *Muscaria præcox* of gardens, a plant of miniature growth, and a habit that ever delights the eye. The small pyramids of turquoise-blue flowers usually appear in February, and, despite the frost and the snow, the plant this year has not been much behind its proper season of flowering. The blooms are welcome both in the rock-garden and the Alpine house, where, if the plants are grown in pans, they are most effective.

NARCISSUS MINIMUS.

NARCISSUS MINIMUS is a little gem too small for the open border, where its beauty would not be seen. It is better suited for growing in pans in a cold house. The small trumpet flowers are of a rich, deep yellow colour, and perfect in form. The species is unique among the early flowers of the year.

NARCISSUS PALLIDUS PRÆCOX.

NOT merely is this plant one of the most fascinating of all *Daffodils* by reason of the rich colour and great variety of form and size of its flowers, but it is one of the best for early blooming, and it is absolutely hardy. The buds can endure fresh and heavy snows for a fortnight, and later continue to expand as though nothing had happened, although in the meantime growth was perfectly arrested. This Pyrenean species appears more at home in the woodland than in the garden. E. J.

Obituary.

WILLIAM BURTON.—We regret to record the death of this gardener at 37, Whitehall Park, Hornsey Lane, on Saturday, April 3. Mr. Burton began his gardening career in 1848 in the



THE LATE WILLIAM BURTON.

nurseries of Messrs. R. Veitch and Son, Exeter. Later he was engaged for two years at Ashley Court, Tiverton, and afterwards at Messrs. E. G. Henderson & Son's Wellington Road Nurseries, St. John's Wood, where he remained for 10 years. In 1862, when Messrs. Parker and Williams dissolved partnership, Mr. Burton entered the service of the late B. S. Williams as manager of the Victoria and Paradise Nurseries, Upper Holloway. In 1888 he left the service of Messrs. B. S. Williams and Son, and engaged with Mr. John Russell, of Haverstock Hill. He afterwards retired from business. His remains were laid to rest in Islington Cemetery, Finchley, on Wednesday, April 7, in the presence of members of his family and a large number of friends.

CATALOGUES RECEIVED.

MISCELLANEOUS.

A. W. GAMAGE, LTD., Holborn, London, E.C.—Seeds, plants, sundries, &c.

COLONIAL.

C. A. NOBLE, Gembrook Nurseries, Emerald, Victoria, Australia—Fruit trees, &c.

FOREIGN.

HOWARD & SMITH, Post Office Box 484, Los Angeles, California—Plants and seeds.
V. LEMOINE ET FILS, Rue du Montet, 134, Nancy—Plants and seeds.

MARKETS.

COVENT GARDEN, April 14.

[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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices, including Acacia, Anemone, Azalea, Calla, Carnations, Catleyas, Cypripediums, Daffodils, Dendrobium, Eucnaris, Freesias, Gardenias, Hyacinths, Iris, Lilac, Liliun auratum, Lily of the Valley, Marguerites, and Mignonette.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage and their prices, including Adiantum, Agrostis, Asparagus, Berberis, Croton, Cycas, Daffodil foliage, Ferns, Galax leaves, Hardy foliage, Honesty, Ivy, Myrtle, Ruscus, and Smilax.

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

Table listing various plants in pots and their prices, including Kentia, Latania, Liliun longiflorum, Lily of the Valley, Marguerites, Mignonette, and Pelargoniums.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices, including Apples (Australian), Bananas, Cape fruit, Cranberries, Custard Apples, Grapes, Lemons, Limes, Melons, Nuts, Oranges, and Strawberries.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices, including Artichokes, Asparagus, Beans, Beetroot, Bussel Sprouts, Cabbages, Carrots, Celery, Chicory, Cucumbers, Endive, Horseradish, Kale, Lettuce, Mint, Parsnips, Peas, Potatoes, Radishes, Rhubarb, Salsafy, Seakale, Spinach, Stachys, Turnips, and Watercress.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various plants in pots and their prices, including Acacias, Ampelopsis, Aralia, Aspidistras, Asparagus, Boronia, Cinerarias, Clematis, Cocos, Crotons, Cyclamen, Cyperus, Daffodils, Dracaenas, Erica, Eucnaris, Ficus, Genista, Grevilleas, Hardy flower roots, Hyacinths, Hydrangea, Isolepis, and Juncus.

COVENT GARDEN FLOWER MARKET.

The warm sunny days preceding Easter developed flowers rapidly, and supplies last week were abundant. Better prices were made on Good Friday than on Saturday. There were large consignments of cut flowers from the south of France, the Channel and Scilly Islands. Early on Saturday, 10th inst., there was a fair trade; later in the day larger quantities of flowers arrived and prices fell considerably. Good Roses on long stems were sold at 6s. per dozen bunches, whilst Daffodils realised no more than 6d. per dozen bunches. This morning (Wednesday) the Foreign Market was glutted with flowers.

POT PLANTS.

Flowering plants have sold at fairly good prices. Azaleas are still remarkably good; there are, in addition to plants in 5-inch pots, larger specimens which make from 7s. 6d. to 10s. 6d. each; varieties of Azalea mollis do not sell freely. Rhododendrons in well-flowered plants are seen. Lilacs, although well flowered, have no great demand. Amongst Roses, there are some excellent plants of Dorothy Perkins variety. Dwarf Polyantha varieties are well flowered. Marguerites are again plentiful; some of these plants have sold for 15s. per dozen. Other plants seen in quantity include Cinerarias, Spiraeas, Hydrangeas, Mignonette, Stocks, and Genistas.

HARDY FLOWER ROOTS AND BEDDING PLANTS.

There are large supplies of Pansies with expanded flowers. At the present time there is nothing that sells more readily than these pretty border flowers. Violas also sell well. Primroses, Polyanthuses, and double varieties of Daisies are also in demand. Large quantities of hardy border plants are seen, also summer bedding plants such as Zonal Pelargoniums, Calceolarias, and Marguerites; a variety of tender plants in store boxes, and annuals in pots, including Sweet Peas, Tropaeolum canariense and Dwarf Nasturtiums sell readily for suburban planting.

CUT FLOWERS.

Carnations are plentiful again. Roses have developed rapidly, and their prices have fallen considerably. Blooms of Liliun longiflorum are abundant. I noticed fine flowers of the variety grandiflorum this morning (Wednesday). Blooms of L. lancifolium rubrum are good. Of Lilac the ordinary mauve variety is much cheaper. Tulips are over-abundant, but supplies of this flower will soon fall off. The Darwin varieties are very fine, and will be available until the end of May. Parma Violets are still very cheap. Flowers of Spanish Irises in several colours are seen. Callis are over-abundant. In fact, supplies of all seasonable flowers are plentiful. A. H., Covent Garden, Wednesday, April 14, 1909.

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.]

- List of gardening appointments including Mr. A. BEVAN, Mr. A. T. SMITH, Mr. G. A. HOLMES, Mr. J. WREN, and Mr. J. LOVATT.

DEBATING SOCIETIES.

BRITISH GARDENERS' (LONDON BRANCH).—The monthly meeting of this branch of the B.G.A. took place on Thursday, April 8. A debate on "Commercial and Co-operative Gardening" formed the principal business of the evening. Mr. J. Weathers, the general secretary, gave some interesting advice upon the business side of horticulture. A. J. H.

BRISTOL AND DISTRICT GARDENERS'.—The last of this association's meetings for the session was held on April 8. Mr. C. H. Cave gave a lecture upon "Daffodils." Mr. Cave said that lifting should be done in July, and all replanting finished by the end of August; he gave a comprehensive list of varieties suitable for various purposes. H. W.

WARGRAVE AND DISTRICT GARDENERS'.—At a recent meeting of this association, Mr. W. Pope of "The Willows" Gardens, Wargrave, read a paper on "The Culture of the Amaryllis." He gave cultural directions with regard to resting the bulbs, their propagation, soils and general management.

At the last meeting of the association an address on "French Gardening" was given by the hon. sec., Mr. H. Coleby. The chief points referred to by the lecturer were the system of peasant proprietors in France, the amount paid by English consumers for early produce from France, the various French gardens established in England, methods of working, the different crops raised and the best varieties of each, and lastly, "packing" for market.

READING GARDENERS'.—A meeting of the Association took place in the Abbey Hall on Monday, April 5. The chairman, Mr. A. F. Bailey, presided over a good attendance of the members. The lecturer for the evening was Mr. H. C. Loader (vice-chairman), who read a paper entitled "Our Association—Some of its Advantages." Mr. Loader spoke of the association as a partnership for the promotion of horticulture.

REMARKS.—Oranges from Valencia and Denia are arriving in a bad condition; best samples are much dearer. French Apples continue to sell freely but at lower prices. Australian Apples are arriving in slightly increased quantities, and are generally cheaper. Forced Rhubarb from the Leeds district is now practically finished, as also are Gros Colmar Grapes. Mushrooms are plentiful. Vegetables generally are cheaper. E. H. R., Covent Garden, Wednesday, April 14, 1909.

Potatoes.

Table listing potato varieties and their prices, including Kents, Scottish Triumphs, Up-to-Date, Lincolns, Royal Kidney, Brits-b Queen, Maincrop, Evergood, Lincolns, King Edward, Blacklands, Dunbars, Langworthy, and Yorks.

REMARKS.—Potatoes are much dearer and supplies are shorter. Prices have a tendency to advance still further. Stocks in London are very low. Edward J. Newborn, Covent Garden and St. Pancras, April 14, 1909.

THE WEATHER.

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

GENERAL OBSERVATIONS.

The weather.—During the greater part of the week the sky was almost cloudless, but some rain fell in Ireland and the west and north of Scotland on Sunday, and on Saturday a considerable amount of cloud was experienced in Ireland and Scotland, with a little rain in places.

The temperature was above the average in all districts, the greatest divergence being 3.6° in Scotland N., and the smallest 0.8° in England E. The highest of the maxima were recorded generally on the 9th or 10th, and ranged from 74° in England S.W., 73° in the Midland Counties, and about 70° in several other districts to 63° in Scotland N. The maxima were generally low on the east coast of England, on some days below 50°. The lowest of the minima, which were mostly registered early in the week, varied from 18° in Scotland E. (at Balmoral on the 6th), 22° in England S.W. (at Llangamarch Wells on the 10th) and 24° in the Midland Counties to 29° in Ireland, and to 39° in the Channel Islands. The range of temperature during the week was unusually large; at many inland stations it exceeded 40°, at Bawtry it amounted to 46°, Raunds and Marlborough 47°, and at Llangamarch Wells 48°. The lowest grass readings reported were 9° at Llangamarch Wells, 15° at Balmoral, 16° at Birmingham, and below 20° in some other localities.

The mean temperature of the sea.—At nearly all stations except those on the east and south-east coasts of England the water was rather warmer than during the corresponding week of last year, the actual figures ranging from nearly 50° at Seafield and about 48° at Plymouth and Salcombe to below 44° on the north-east and north coasts of Great Britain and to 40.7° at Burnmouth.

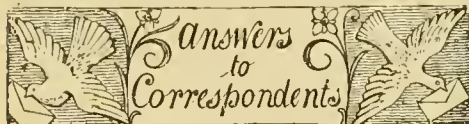
The rainfall.—Over the kingdom as a whole the week was without rain, and the few falls which occurred in the north and west were very slight.

The bright sunshine.—Over the kingdom generally the week was among the brightest ever recorded, the percentage of the possible duration ranging from 89 in England E., 87 in England S.E., 82 in the English Channel, and above 70 in the other English districts to 51 and 48 respectively in Scotland W. and N. The highest percentage of the possible amount reported from individual stations was 93 at Lowestoft, Yarmouth, Felixstowe, Tunbridge Wells, and Worthing.

THE WEATHER IN WEST HERTS.

Week ending April 14.

A remarkably good record of sunshine.—In the early part of the week the days were warm, while the night temperatures were below average. Since then the days have been of about a seasonal temperature, and the nights warm. On the warmest day the highest reading in the thermometer screen was 72°—which is a remarkably high temperature for so early in April. On the other hand, on the coldest night the exposed thermometer registered 10° of frost. At 2 feet deep the ground is now 1° warmer, and at 1 foot deep 2° warmer, than is seasonal. Rain fell on two days, but to the total depth of less than a quarter of an inch. There has been scarcely any percolation through either of the soil gauges during the week. The sun shone on an average for 8½ hours a day, or for more than three hours a day longer than is usual at this period of April. The average record for the first three days was 12 hours a day; on the sunniest of those days the sun was shining brightly for exactly 12 hours. The first few days of the week were calm, but since then the wind has been as a rule moderately high. The mean amount of moisture in the air at 3 p.m. fell short of a seasonal quantity for that hour by as much as 10 per cent. On the first four days of the week the atmosphere was singularly dry. In fact, early in the afternoon on those four days the differences between the readings of an ordinary thermometer and one with its bulb kept constantly moist were respectively 16°, 18°, 19°, and 15°. E. M., *Berkhamsted, April 14, 1909.*



* * * The Editor will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for forming Supplementary Illustrations to this Journal.

AZALEA LEAVES DISEASED: T. D. W. The leaf-galls are formed by the fungus *Exobasidium rhododendri*. Hand-picking and burning the infested portions is the only remedy.

"BIG BUD" ON BLACK CURRANT BUSHES: S. F. & Co. The buds are infested with the Currant bud mite, *Eriophyes ribis*. At this season of the year the mites are migrating, and it is during this time that they may be combated. The following remedial measures are recommended by the Board of Agriculture in a leaflet on this subject:—(1) The grower should cultivate from clean stock only, rejecting bushes that show swollen buds. Cuttings from infested plants should not be used. (2) Where the disease is limited to a few bushes these should be uprooted and burned. (3) Handpicking the swollen buds may, in an

isolated area, keep the pest in check. (4) Hard pruning followed by the removal by hand of suspiciously large buds has often been tried, sometimes with fair results, sometimes without manifest improvement. (5) Fumigation with hydrocyanic acid gas has been experimented with, but the results are not such as to justify a recommendation of this treatment, especially in view of the difficulties attending fumigation over a wide area in the open. (6) Dusting or spraying with a mixture of lime and sulphur. Very encouraging results—amounting in some cases to a cure—have attended the experiments of Collinge with the lime and sulphur treatment. The spray fluid used consisted of a mixture of 1 lb. of lime, 1 lb. of sulphur, and 20 gallons of water. This treatment to be successful must be thorough and repeated. More successful even than this was the dusting with lime and sulphur. One part of unslaked lime and two parts of flowers of sulphur should be mixed together and dusted three times on the bushes when they are wet, at the end of March or the beginning of April, again in the middle of April, and again in the first week of May.

CYCLAMEN: A. W. P. Place the plants in a tight position and keep them growing for a time after flowering to form stout corms. Afterwards dry them off very gradually, but not severely. In August shake away the old soil and pot them into a suitable compost. Place them in frames until it is time to bring them into the plant house to develop their flowers. Cyclamens are not usually grown after the second year of flowering. See also a note in the "Plants Under Glass" Calendar on p. 247.

HYACINTH BULBS FAILING TO ROOT: A. S. The bulbs are badly infested with the bulb mite, which has destroyed the roots as they appeared.

NAMES OF FLOWERS, FRUITS AND PLANTS.—We are anxious to oblige correspondents as far as we consistently can, but they must bear in mind that it is no part of our duty to our subscribers to name either flowers or fruits. Such work entails considerable outlay, both of time and money, and cannot be allowed to disorganise the preparations for the weekly issue, or to encroach upon time required for the conduct of the paper. Correspondents should never send more than six plants or fruits at one time: they should be very careful to pack and label them properly, to give every information as to the county the fruits are grown in, and to send ripe, or nearly ripe, specimens which show the character of the variety. By neglecting these precautions correspondents add greatly to our labour, and run the risk of delay and incorrect determinations. Correspondents not answered in one issue are requested to be so good as to consult the following numbers.

FRUITS: F. C. E. Dredge's Fame.

PLANTS: T. H. 1, *Aerides virens*; 2, *Dendrobium crystallinum*; 3, *D. Pierardii*.—R. B. *Erica vagans*.—J. H. C. *Ansellia congoensis*, native of tropical Africa.—Scot. 1, *Chionanthus virginica*; 2, probably *Exochorda Albertii*; 3, *Psoralea pinnata*.—H. J. W. 3, *Calceolaria violacea*.—T. H. *Butea frondosa*.—C. N. Co. *Picea excelsa* var. *stricta*.—R. T. 1, *Cologyne fuliginosa*; 2, *Eria convallarioides*; 3, *Dendrobium transparens*; 4, *Polystachya Ottomiana*.—Cornish. 1, *Stachys lanata*; 2, *Centranthus ruber*; 3, *Sempervivum tectorum*; 4, *Sedum Sieboldii variegatum*; 5, *Mesembryanthemum spectabile*; 6, *Sedum carneum variegatum*.—S. F. *Adonis aestivalis*.—H. H. 1, *Poly-podium Dryopteris*; 2, *Lastrea rigida*; 3, *Adiantum pedatum*; 4, *Asplenium trichomanes*.—B. *Dendrobium heterocarpum* (aureum), and a light form of *Cypripedium Leeanum*.—F. G. *Dendrobium luteolum*.

PEACH BUDS DROPPING: X. Y. Z. The trouble has been caused by some check. It is generally the result of allowing the borders to become too dry during the winter.

PELARGONIUM LEAF SPOTTED: F. E. S. & Co. The plants are attacked by *Botrytis cinerea*. Spray them with a rose-coloured solution of permanganate of potash. Admit more fresh air into the structure in which they are cultivated.

PINEAPPLE NECTARINE: J. D. The tree is affected with "silver-leaf" disease. Not much is known about this complaint, but it has been attributed to a fungus, *Sterium purpureum*, which is said to enter through the roots and

grow upwards into the stem. It has been asserted that deleterious substances given off by the fungus are carried up in the sap to the leaves, and there act in a disintegrating manner upon the cells of the leaf, so that they become widely separated, and with large air spaces between them. These air spaces give the pale colour to the foliage, whence the name "silver-leaf." No cure for the disease is known.

PLANTS FOR COMPETITION: Col. R. H. We are unable to assist you in this matter.

POTATO SCAB: *Wessex*. Both sawdust and seaweed are to be recommended for preventing scab in Potatoes. The main cause of this complaint is the placing of farmyard manure in the rows when planting.

ROSE FORTUNE'S YELLOW: A. E. S. This Rose, when cultivated under glass, may be termed evergreen, and when close pruning is not practised after flowering, the older leaves drop freely. If the plant is allowed to become dry at the roots, or a too dry atmosphere is maintained in the house, the leaves on the current season's flowering shoots will drop. The plant should be well watered and fed with manurial stimulants during the season of active growth and flowering. Cut the shoots hard back when flowering is finished.

STRAWBERRIES: W. W. There is no disease in the plant, although it has failed to develop many leaves or flowers. The trouble must be due to some cultural error, which only a person on the spot could determine.

TOMATOS DISEASED: G. P. The plants are affected with sleepy disease (*Fusarium lycopersici*). The fungus which causes the disease flourishes in the soil and enters the plant by the root. During its development it passes through three stages, the first of which usually lasts about a week, the stem at the end of that time being much decayed and covered with a gelatinous mass. During the last stage the spores are resting and preparing to attack the young plants another year, or whenever a suitable opportunity presents itself. The plant can only be attacked by the fungus in the last stage of its existence. Diseased plants never recover, and therefore no attempt to save the plant is successful. As the disease grows inside the plant it is useless to spray with a fungicide. All diseased plants should be uprooted immediately the disease is noticed and burned. If it is not practicable to remove the soil in which the plants have been grown, it should receive a liberal dressing of gas-lime. This should be allowed to lie on the surface for 10 days, and should afterwards be thoroughly incorporated with the soil. After this the soil should remain for at least 10 weeks before anything is planted in it. It should be soaked with water once a week. Lime should be mixed with the soil in which Tomatos are grown.

TULIPS FAILING TO FLOWER: J. Betts. As other varieties have succeeded under exactly the same conditions, and the variety you mention failed for two seasons, it is obvious it is not suitable for forcing.

WILD GARLIC: *Macedon*. Mow the Grass very closely. This will prevent the leaves of the Garlic developing and thus cause a check to the bulbs. At the same time dress the land with nitrogenous manures, which will favour the development of the Grasses, so that in time they will crowd out the intruder.

WIREWORMS IN SOIL: J. S. The larvæ may be trapped with Potato or Beetroot placed in holes and covered with soil. Mark the position of the traps with a stick. Superphosphate applied as a dressing to the land is useful for destroying wireworm. In small areas a quarter of an ounce of bisulphide of carbon applied to each square yard of soil is effectual in combating this pest. Vaporite will also destroy wireworm in certain conditions.

COMMUNICATIONS RECEIVED.—S. F. W.—de B. C.—A. D.—Lonis G., Brussels—H. R. W., Stuttgart—H. M. V.—R. I. L.—T. W. C.—W. E. G.—B. L.—G. W. K.—G. B. L.—W. T.—Th. H. L.—E. M.—W. T., Carlisle (next week)—T. W. C. (next week)—R. Dümmer—W. J. B.—S. W. F.—T. W. B.—D. R. D.—J. R. P. & S.—A. C. (Thanks for Is, sent for R. G. O. F.)—H. S.—W. B. H.—A. C. B.—W. J. W.—W. A. C.—G. W.—E. C.—J. G., Eaton—F. A.—J. C.—G. M.—D. & Co.—E. W.—E. R.—A. S.—Mrs. E.—A. D. W.—W. D.—F. M.



A WATER SCENE IN THE BOTANIC GARDENS, MELBOURNE, AUSTRALIA.





THE
Gardeners' Chronicle

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SPRING IN THE MARITIME ALPS.

WHEN Mons. Emile Burnat undertook the compilation of that great work, the *Flore des Alpes Maritimes*, which will be one of the very finest and most reliable European *Floras*, he wisely included not only the range of mountains, partly in Italy and partly in France, commonly called the Maritime Alps, but also the adjoining French Department of Alpes Maritimes.

Napoleon fixed the limit between the Maritime and the Ligurian Alps at the Col d'Altaire, under which passes the railway from Turin to Savona; and this opinion was endorsed by the Italian Geographical Congress of 1892, because the pass forms the most clearly-defined depression in the ranges round the Gulf of Genoa, and, as remarked by the great botanist and mountaineer, John Ball, in his celebrated *Alpine Guide*, there are geological reasons which favour this arrangement.

The truly Alpine district west of this pass is separated from the lower Ligurian moun-

tains, which are more Apennine in character, by the famous Col di Tenda, over which the great road runs from Nice to Cuneo and Turin. This Alpine region may be called the Argentera district, after the Punta dell' Argentera (10,883 feet), the highest point of the whole range; but there are many peaks which rise to 9,000 and 10,000 feet.

The Chestnut zone in the Maritime Alps has the most varied flora, because many plants of the distinct Mediterranean group are found growing side by side with those which have descended from the mountains, in addition to many which are only found in this particular zone.

The Maritime Alps have the advantage of being accessible perhaps a month earlier in summer and later in autumn than the Swiss Alps. Visitors to the French or Italian Riviera in spring, which is at its best in April and May, especially from the point of view of vegetation, could not do better than return via the Col di Tenda to Turin, and spend a week at that charming spot, San Dalmazzo di Tenda, on the way.

From the Italian side of the frontier, say, from San Remo or Bordighera, or nearer Genoa, one might spend an intermediate week both pleasantly and profitably, as far as plants are concerned, at one of the picturesque hill villages of Liguria, such as Pigna or Bajardo. Pigna is prettily situated 1,000 feet above Bordighera, among Olives and Sweet Chestnuts. The Chestnuts begin to appear about 400 feet above the sea, and extend to 3,000 feet on Monte Toraggio. At this altitude their place is taken by Pines, which, in their turn, give way to Larches, which mount the summits of the mountains. The top limit of Olive trees is about 1,800 feet in this district. Visitors should take with them Mr. Bicknell's excellent little *Flora of San Remo and Bordighera* (1896).

Pteris cretica is well established on the banks of a stream near Pigna. Though this Fern is found in Asia, Abyssinia and America, in Europe it is chiefly confined to Italy, Sardinia, Sicily and Crete. *Cheilanthes odora* is another Mediterranean Fern frequently seen in the district. The three handsome Lilies, *L. croceum*, *L. pomponium* and *L. Martagon*, occasionally adorn some of the grassy slopes in this neighbourhood, *L. pomponium* growing even at a height of 6,000 feet on some of the mountains.

Monte Toraggio, though not more than 6,400 feet, is a fine rugged mass, beautifully proportioned, and it lends itself to exquisite effects of colour. The lower slopes are covered with dense thickets of Oak and brushwood. Some of the wooded valleys remind one of the combes of Exmoor or the Quantock Hills; but they are deeper and more extensive. At 5,000 feet are the highest "alps"—an alp is a mountain pasture used in summer. Early in June, before these alps are mown, they are bedecked with Gentians, Anemones, *Cerinth* minor, *Orchis globosa*, *O. ustulata*, and *O. sambucina*, *Narcissus poeticus*, *Pedicularis comosa* and *P. gyroflexa*, and a host of other brilliant flowers. On the highest slopes grow great patches of *Pæony* (*P. peregrina* Mill.) and the mauve flowers of *Aster alpinus*. On the rocks above grow various Saxifragas, including the endemic *Saxifraga cochlearis* and the still more beautiful *S. linguata*.

But the Tenda district is of most interest to botanists. San Dalmazzo, beautifully situated at the junction of two lateral valleys with the main valley, is the place to stay at. It can be reached on the south from either Nice or the frontier town of Ventimiglia, whence the drive up the long Roya valley is shorter, and the main Tenda road is joined at Breil. If economy be an object, a somewhat primitive diligence may be taken the whole distance for three francs. The drive from Ventimiglia occupies six hours, but the route is very interesting, especially to the artist, botanist, and geologist. The fact that the Franco-Italian frontier is very irregular, so that one must pass from Italy into France and vice versa several times, adds to the interest. The narrow Gorge of Saorge, which the river has cut out of the limestone, is a prominent feature in the landscape. In June some of the rocks are festooned with the wax-like blossoms of *Saxifraga cochlearis*; while *Alyssum halimifolium* is abundant by the roadside.

The hotel at San Dalmazzo is new, and the rooms are good and clean. A step across the road leads into the shade of an ancient Chestnut grove, with brilliant flowers on all sides. These comprise various *Campanulas*, *Astrantia major*, *Thalictrum minus*, *Epipactis atrorubens*, and *Cephalanthera rubra* 2 feet high. *Epipactis atrorubens* seems to hybridise freely here with *E. latifolia*. The rocks by the roadside above the hotel are the home of Pinks and *Helianthemums* of different species, *Lilium croceum* and the white-rayed *Orlaya grandiflora*. Below the hotel across the river are screes and limestone cliffs, where many rare plants are found, including *Micromeria Piperella*, *Asperula hexaphylla*, *Thymelea dioica*, *Potentilla saxifraga*, and *Mœhringia*. Among the thickets and rocks above the road to Briga the handsome spikes of *Delphinium fissum* rear their heads, but, fortunately, are not easily found. *Telephium Imperati*, that puzzler to systematic botanists, grows on the roadside wall and among the broken limestone. It has for companions the handsome *Inula montana*, the woolly *Micropus erectus*, *Trigonella monspeliaca*, *T. gladiata*, whose strong scent in the herbarium is so powerful, *Ervum nigricans*, the elegant *Vicia onobrychioides*, and many other sun-loving plants. H. S. T.

(To be continued.)

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM CRISPUM XANTHOTES MRS. F. M. OGILVIE.

A SMALL, undeveloped plant of *Odontoglossum crispum xanthotes* in Mrs. Ogilvie's garden has proved to be one of the most gorgeous varieties of *xanthotes* that has yet been seen. It has been named after Mrs. F. M. Ogilvie. Imagine a snow-white bloom with finely-formed overlapping petals, and place upon the sepals three twin coalescent blotches of the most brilliant orange-yellow with a large oblong ovate lip carrying a large similar blotch and some spots, and you have a mind's picture of this lovely variety. In addition, the channel and column are similarly marked.

The title "*Bonnyanum xanthotes*" would exactly fit the plant. The illustration in fig. 110 affords a good idea of the flower. *de B. Crawshaw.*

COLONIAL NOTES.

*AN EXPERIMENTAL STATION IN MONTREAL.

In Montreal and vicinity there are about one-half million square feet under glass devoted to commercial floriculture and vegetable forcing. It is not necessary for me to state that a number of problems of great interest to florists could be worked out at considerable saving to the trade at some suitable place erected for the purpose. So far as I know, no aid has been sought for such work in this province. Yet you have at your service, without any cost and without any effort on your part, a range of greenhouses thoroughly up-to-date in every particular, given by Sir Wm. C. Macdonald, of your city, and situated at Macdonald College, P.Q., where experiments in your interests are conducted. This is a gift of which florists and gardeners should be proud, for we shall now be able to keep pace with those engaged in similar work in parts of America, and who receive more or less State, or provincial aid.

Our houses are well known to most of you. They comprise four 100-foot houses built in block, with glass partitions dividing each span of 21½ feet, and these houses are again divided, giving eight divisions, each under thermostatic control. What was in mind when developing the plan was to assist those who intend to make a living by cultivating plants under glass, so that they will be able to get the largest possible crop at the least possible expense, and thus supply plants at the lowest rate. In order to conduct effective experiments, crops must be grown on a commercial scale, and marketed in a commercial manner. A considerable quantity of each crop must be produced and placed upon the market. This process must be continued for a number of years, in order that reliable information may be obtained. In our experiments the business end is kept always in view, not by assuming what we might have got, but by actually placing our produce on the market and competing with growers in general. It always seemed to me that many of the provincial and State-aided experiment stations cut off their work at the business end, simply because some grower feels that to place such goods on the market would infringe on his business. The idea is entirely wrong from every standpoint. It is possible to abuse the practice, but if honestly carried out no one suffers.

The only fault I can find with the greenhouses is that they are only about half large enough to carry on efficient work. As an educational institution we have to devote considerable space to demonstration and for the practice of students.

Our intention at the start was to erect several styles of construction, but on close investigation it was decided that the difference in form of up-to-date construction, so far as utility goes, is slight, and that a whole range of uniform construction, such as the average grower might put up, would be more valuable.

Possibly, our experiments to determine some of the best styles of bench are the first of the kind. We have the solid side benches, 2½ feet high, in some cases filled with earth up to the cultivated soil, in other cases with rough excava-

tion stone, and in others with cinders. Some of the benches have 2½ feet sides, with openings into 2½-inch tiles, laid closely together below the bench soil, and below these again there is simply soil, excavation stone or cinders. In other benches with 2½ feet sides there are 4-inch openings in line 4 inches apart, and 18 inches below the top of the bench, leading into the excavation rock or cinder, which fills the centre of the bed. There are low benches, with simply 8-inch coping, and also elevated benches. These benches are arranged differently in various houses. The object is to determine the most suitable style of bench for different crops, and the best arrangement of these benches in the house.

In the construction of the benches, we aimed to take up as little space as possible with the thickness of the bench sides. The benches are all made of cinder concrete, reinforced with wire. The bench sides, except of the elevated benches, were made of cement slabs, 3 inches thick at the bottom, and 2 inches at the top; they are 2 feet 8 inches wide, and 5½ feet long. These were made on the flat, and electric weld wire placed in the middle of the slab, allowing 4 inches to project at each end of the slab. After they were



FIG. 110.—ODONTOGLOSSUM XANTHOTES VAR. MRS. F. M. OGILVIE.
(See page 257.)

well set, they were lifted and taken to the house, set in place, and the wire at the ends hooked together. Thin concrete was then run in between the joints by putting up boards to hold it, and the whole braced on the inside by an occasional cement beam to prevent spreading.

We have not been long enough at the work to give any information on the relative merit of these benches, but hope to do so in course of time.

The question of the best soil for greenhouses will receive our attention. An experiment that we propose to take up is the growing of a crop on the benches, principally in the summer, for the purpose of leaving fibrous roots in the soil, and by having a rotation of crops, save renewing the bench soil so often. This is impracticable with some crops, but it seems possible that quick-growing, heat-loving plants may be so treated.

The physical condition of the soil for various crops has not received the attention the subject deserves; in this connection we intend to make experiments in which the soil has been incorporated with chopped alfalfa in varying propor-

tions. Experiments for the purpose of getting more definite information as to the physical property of soils best suited to greenhouse crops will be commenced as soon as possible.

The best time for benching up different crops has not been determined in our northern districts, therefore we intend to devote some time to the subject. The selection of cuttings from the most productive plants in order to increase the yield will be studied from a commercial basis. If florists are shown by concrete experiments an increase in bloom equal to 25 cents a plant they will surely pay some attention to this important matter. Then we have the problem of getting pure fresh air into our houses during the cold winter months, when no ventilators can be opened. The question of the amount of moisture in the air during the winter months is also worthy of study.

Experiments to determine the temperature at which we can develop different crops most economically during winter is one on which several thousand dollars could profitably be expended.

There are countless experiments that may be expected to throw light on problems connected with commercial horticulture. But limited space, the need for continuing each experiment over a number of years, and the fact that several different experiments cannot be conducted at one time in the same house, will operate to make progress in such matters less quick than we could desire.

THE ALPINE GARDEN.

RED-FLOWERING SAXIFRAGAS WITH CRUSTED FOLIAGE.

From the European Alps and Pyrenees there have been obtained a few interesting members of the genus Saxifraga, which form a distinct section, having crusted leaves and red flowers. Red flowers are not uncommon in this genus; they are to be found in the oppositifolia group, as well as in those species belonging to the Megasea section. These few species, however, combine crusted foliage, red flowers and partly red stems, and are placed by Engler in the section "Kabschia," which includes such well-known garden plants as *S. Burseriana* and *S. apiculata*. They are all somewhat similar in habit, and in the form of their flowers, the principal differences between the species being found in the foliage and inflorescences. They might well be considered widely-divergent geographical forms of one variable species; but, for garden purposes, they are distinct. Given a well-drained, sunny position, in stony soil, they are quite hardy on the rockery; but, like many early-flowering Saxifragas, may be seen to better advantage when grown in pans and given the shelter of a cold house when in flower.

The five species comprising the group may be divided naturally into two sections, three having a spicate or subspicate inflorescence, while the other two have branching ones:—

Spicate or Subspicate Inflorescence.	Branching Inflorescence.
<i>S. porophylla</i> <i>S. Frederici-Augusti</i> (thessalica) <i>S. Grisebachii</i>	<i>S. media</i> (calyciflora) <i>S. Striburyi</i>

It seems strange that the two with branching inflorescences should form the two geographical extremities of the group, *S. media* being found in the Pyrenees, while *S. Striburyi* comes from Bulgaria.

S. POROPHYLLA.—This species is a native of the Italian Alps, where it is found growing on calcareous rocks. The plant forms rosettes of mostly spatulate leaves, one-half to three-

* Extracts from an address by Prof. W. S. Blair (Macdonald College, P.Q.), before the Montreal Gardeners' and Florists' Club.

quarters of an inch in diameter, and produces flower-stems 2 to 3 inches high. These are densely villous and glandular. They are coloured red toward the top, like the flowers, which are sometimes shortly pedicellate, and somewhat bell-shaped, with a contracted mouth, while the calyx is large and almost encloses the corolla.

S. FREDERICI-AUGUSTI (*S. THESSALICA*).—This species is evidently the more eastern form of *S. porophylla*, of which it is sometimes quoted as a synonym. It is found in Greece and Macedonia. This species differs from *S. porophylla* in having narrow, acute, strap-shaped leaves, in dense rosettes, one-half to three-quarters of an inch in diameter; they have chalk pits on their margins. The flower-stems in both species are about the same in height, but in *S. Frederici-Augusti* the flowers are almost sessile. The plant flowers towards the end of April. The name *Frederici-Augusti* was one of several

is figured in the *Gardeners' Chronicle*, February 21, 1903, p. 123. There is a variety in cultivation with flowers having longer pedicels than the type.

S. MEDIA (*S. CALYCIFLORA*).—A native of the Pyrenees, where it grows on high, calcareous rocks. The leaves are slightly spatulate and acute. The flower-stems are about 3 inches high, and bear a corymbosely-branched inflorescence, having flowers on relatively long pedicels. The stems, branches and sepals are covered with glandular hairs, and in this species also the calyx is larger than the corolla. *S. media* is figured in the *Botanical Magazine*, t. 7315.

S. STRIBNRYI.—This is a recent introduction, having been received from the Belgrade Botanic Gardens by Mr. Farrar. At Kew it came up amongst seeds of *S. Grisebachii*, which seems to show that the two plants grow together. Although only lately introduced to cultivation, it

S. BERTOLONII.—This plant was distributed by Mr. F. Sundermann, of Linden, as a hybrid between *S. Frederici-Augusti* and *S. porophylla*, but it has more the appearance of a cross between *Frederici-Augusti* and *S. Grisebachii*. It is identical with the variety with longer pedicels which appeared amongst seedlings of *S. Grisebachii*. The stem is red, with green-tipped bracts, and the inflorescence is nodding. *W. I.*

THE ROSARY.

FRAGRANT ROSES.

I HAVE always regarded the want of fragrance in a Rose, however beautiful it may be in colour and form, as a serious defect. Such Roses, for example, as *Baroness Rothschild*, *Spenser*, and



FIG. III.—PINUS MURICATA, WITH SPREADING HABIT, IN ROYAL GARDENS, KEW.

(See page 260.)

formerly wrongly applied to the yellow-flowered *S. apiculata*.

S. GRISEBACHII (*S. MEDIA* VAR. *MONTENEGRINA*).—This Macedonian species is undoubtedly the finest plant in the group, and is a valuable garden plant, flowering in March or sometimes earlier. The silvery leaves are produced in handsome rosettes 2 to 2½ inches in diameter, while the stems reach a height of 9 inches or even more. At the top is the nodding inflorescence of purplish-crimson flowers, having yellow stamens. The coloured stems are furnished with green-tipped, bract-like leaves, and are covered with white hairs. The flowers remain attractive for a long time before they gradually lose their brilliant colouring. This plant was given an Award of Merit at a meeting of the Royal Horticultural Society in the spring of 1903, and

was found by Stribnry, after whom it is named, on the rocky mountains of Backovo, in Bulgaria, in 1893. The rosettes of leaves are similar to those of *S. Grisebachii*, while the inflorescence resembles that of *S. media*, but it is more branched. The whole stem, branches and flowers are covered with glandular hairs, and more or less tinged with red.

There are several recorded hybrids of these species, three occurring in the Pyrenees between *S. media* × *S. arctioides*, viz. :—

S. AMBIGUA.—Nearest to *S. media*, with sepals and petals red.

S. LAPEYROUSEI.—Nearest to *S. arctioides*, with green sepals and yellow petals.

S. LUTEO-PURPUREA.—Intermediate between the parents. It has red sepals and yellow petals.

Her Majesty, however attractive in other respects, lose a great deal in the estimation of many persons by their lack of this attribute. To my mind perfume in a flower is almost as valuable as colour. There are many cultivators who hold the opinion that Roses which have not, in some degree, the essential element of fragrance are not worth cultivating. It is much to be regretted that some of our finest dark crimson varieties, such, for example, as *Duke of Edinburgh* and its numerous variations, have so little attractiveness in this special direction. The extinction of such scentless pale pink Roses as those which I have indicated need not be regretted so long as we possess more decided pink varieties of a widely different description, such as *Mrs. Sharman Crawford*, *Mrs. John Laing*, and *Mme. Gabriel Luizet*.

[Photograph by E. J. Wallis.]

Most of the hybrid perpetual Roses have fragrance, many of them, however, only to a limited extent. Among the sweetest of these are Marie Baumann, Beauty of Waltham, Crown Prince, and Captain Hayward. The last-named variety was raised by Henry Bennet, and is, perhaps, the most richly fragrant of them all. Mr. Cranston's Crimson Bedder, which I cultivate in my garden, is a beautiful, luxuriant, and fragrant Rose. Most of the China, Moss, and Provence varieties possess a delicate aroma. Among these may be mentioned Mme. Laurette Messimy, Queen Mab, and Duke of York; Cramoisie Superieure, Anne Marie de Montravel (sweetest in my estimation of the dwarf Polyanthas, and possessing an odour peculiarly its own), White Bath and Blanche Moreau, the queens of the Moss section; and the eminently beautiful Crested Moss. Very fragrant alike in flower and foliage are the Austrian, Persian, and Penzance Briars. The Penzance Briars are fascinating long after they have ceased to bloom.

Nearly all the finest Noisettes and Teas have a fragrance which is at once delicate and refined. Of the former may be instanced L'Idéal, Lamarque, and the superb Marechal Niel. Of hybrid Noisettes, by far the sweetest (and most profuse in flowering) is Mme. Alfred Carrière. The perfume of Gloire de Dijon is very pleasing; so also is that of Bouquet d'Or and Belle Lyonnaise. Of Tea Roses, perhaps the most attractively fragrant are Souvenir d'un Ami, and Souvenir de S. A. Prince. Niphetos and Mme. Bravy have exquisite perfume, while Catherine Mermet, Bridesmaid, the Bride, and Muriel Grahame have a fragrance of a very peculiar character, resembling that of a ripe Peach. The most odorous of the Bourbon Roses are Mrs. Paul, Acidale, and Mme. Isaac Pereire. The variety Mrs. Paul was raised at Cheshunt in 1891. It is very vigorous; the flowers are unique in colour, and have a perfume resembling that of the variety named after Viscountess Folkestone.

The most fragrant of all Roses are the hybrid Teas. The most fascinating are La France, Caroline Testout, Cheshunt Hybrid, Duchess of Albany, Camoens, Viscountess Folkestone, Lady Mary Fitzwilliam, White Lady, Bessie Brown, and Reine Marie Henriette. *David R. Williamson.*

PINUS MURICATA.

THERE are few more interesting hardy Conifers than *Pinus muricata*, and this in spite of the fact that as a tree to grow for ornament it is not, perhaps, in the very first rank, nor in stateliness of growth does it equal such species as *P. Laricio* or *P. Coulteri*. It will thrive in positions where most members of its tribe would die, even in exposed places in the Channel Islands, where it has to withstand the effects of salt-laden winds. In inland situations it forms a dense and rather bushy tree with a thick, rugged trunk. In its native habitat in the coast regions of California it grows, according to Sargent, usually 40 to 50 feet high, and occasionally it rises to twice that height. Its power of withstanding sea winds, under cultivation in the British Isles, is an inherited one, for, according to the same authority, it often occupies positions "on steep bluffs and bold headlands in full sweep of the ocean spray." *Pinus muricata* was first introduced to Europe by Hartweg, in 1846, although it had been discovered by Coulter 15 years previously.

The leaves are produced in pairs, each pair being clasped at the base by a persistent sheath $\frac{1}{2}$ inch long; the leaves are from 4 to 7 inches long. The cones measure from $2\frac{1}{2}$ to $3\frac{1}{2}$ inches in length; they are ovoid in the main, but often oblique through the restricted development of the less exposed side; the scales are armed with

a stout spine. The most interesting feature about the cones is the length of time they remain on the branches. Some of the trees at Kew bear cones which must have developed more than a quarter of a century ago. Other Pines have the same character,

that frequently ravage the forest regions of the Far West. The cones have undoubtedly the power to preserve the seeds alive during a conflagration of this kind, and then, by releasing them, to enable a new generation to rise on the ashes of the old trees. But it requires a larger



FIG. 112.—PINUS MURICATA: FOLIAGE AND MALE INFLORESCENCE NAT. SIZE; STAMEN AND POLLEN GRAIN MAGNIFIED.

notably *P. insignis* and *P. tuberculata*, but none perhaps so strikingly as *P. muricata*. The theory has been advanced that this character has been evolved to enable the species to survive the fires

faith than some of us possess to accept all that is implied in the theory.

The illustration (in fig. 111) of a single specimen growing at Kew in the vicinity of the

Pagoda shows this Pine in an unusual and, I think, attractive form. It has assumed a low-spreading shape, and although the tree is of considerable age it is at its tallest only 10 feet high. The branches spread over the ground 30 feet or more and form an irregular mass of rich, ever-green foliage of a pleasing and uncommon aspect, although quite the opposite of a typical well-grown

tree. It is in perfect health, and its curious mode of growth is no doubt due to the attacks (at an early stage of its career) of a boring larva which kills many of the winter buds and thus prevents the formation of a leading growth and induces an excessive branching. The process is analogous to the well-known practice of cultivators, who "pinch" the growths of many plants when

young, to make them assume a bushy habit. During a visit to the Edinburgh Botanic Garden I was shown a similar instance in the case of Deodar. A group of Deodars, planted many years ago, now form a spreading mass only a few feet high and make a very pleasing effect. In this case, I believe, the leading growths were originally destroyed by rabbits. W. J. Bean.

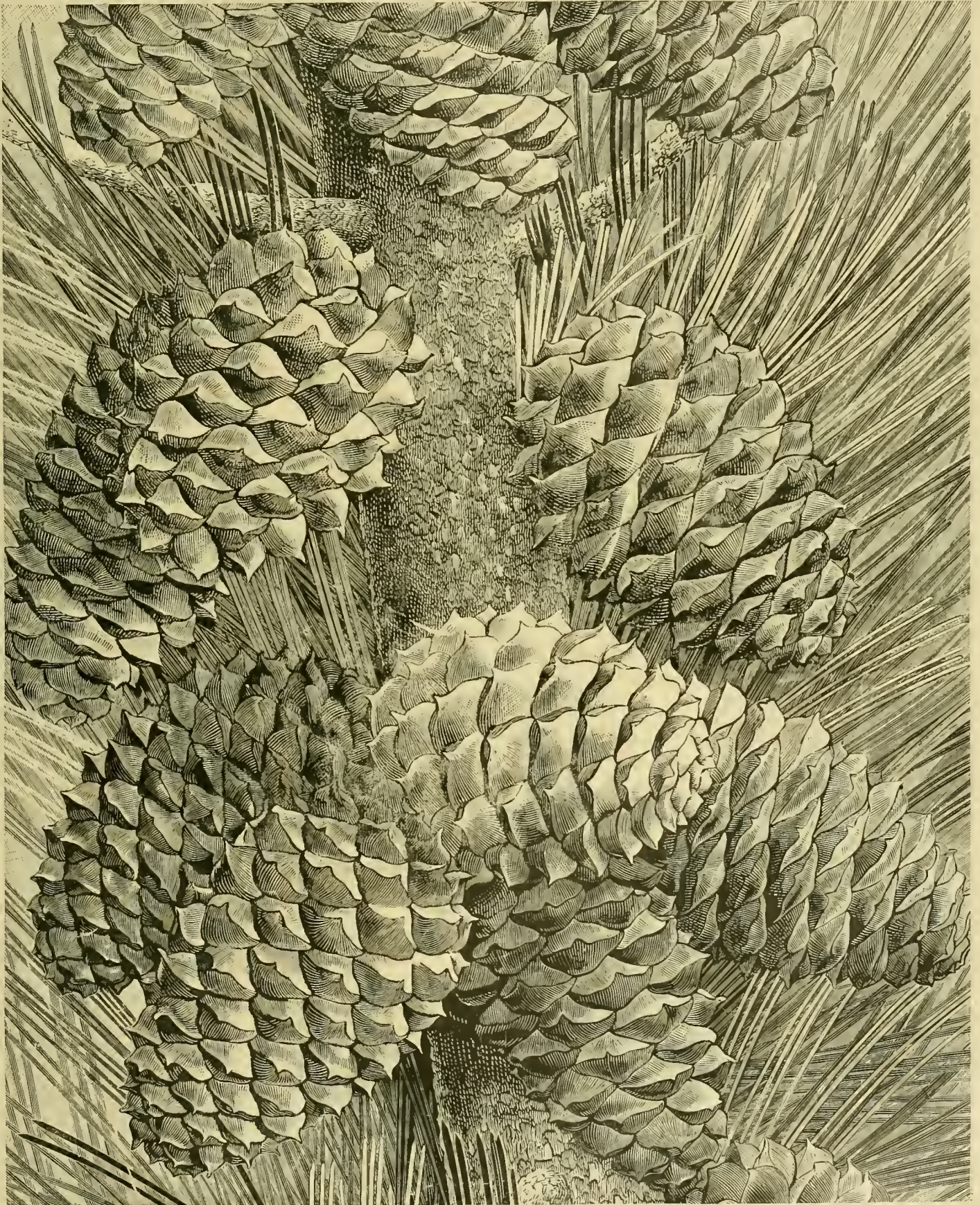


FIG. 113.—BRANCH OF PINUS MURICATA BEARING CONES WHICH REMAIN ATTACHED FOR MANY YEARS.

TOWN PLANTING.

(Continued from page 220.)

TREES intended for planting in towns, and especially alongside streets and footpaths, should be specially prepared in the matter of transplanting and pruning. As tree guards are a necessity in protecting trees by the sides of streets, the trees must have their stems free of branches, therefore the buds and branches on the stems, for a distance of 6 or 7 feet, need to be removed, whilst surplus leading shoots and ungainly branches should at the same time receive attention in pruning. The tree also needs to be frequently transplanted in order that an abundance of fibrous roots may be produced, and every effort made to produce healthy, vigorous specimens suitable for the ungenial surroundings of their permanent quarters. In street planting it is advisable to plant trees that are from 12-14 feet in height, and if these, for some years previous to their final shift, have been specially prepared in the way of frequent transplanting and careful pruning, little fear for their future welfare need be entertained. Autumn or early spring planting is to be recommended, the former time being in most cases preferable. As little time as possible should be allowed to elapse between the time the tree is lifted in the nursery and its plantation in the new position. Spread the roots out to their full extent around the stem and avoid planting too deeply; the nursery line on the stem serves as the best guide for the depth at which to plant. Planting too deeply under the mistaken idea that it will secure the tree in the ground is a fruitful source of decay and ultimate death of many street trees planted in the Metropolis, and it is not uncommon to see whole avenues of trees that have made little or no progress for many years owing to this cause. After a tree has been placed in an upright position on the prepared site and the roots properly disposed, the soil should be filled in and trampled firmly both amongst and over the roots. It may be well to warn planters against the pernicious practice of allowing leaves, packing materials, or grassy turf to come in contact with the roots of newly-planted trees. In dry situations a saucer-shaped hollow may be left around the stem of the newly-planted tree, while mulching applied during dry and warm summers is to be recommended. The planting of shrubs should be carried out with as much care as in the case of trees. It is preferable to trench land in which shrubs are to be planted rather than to make a separate pit for each shrub.

Fencing and staking.—In order to prevent damage, newly-planted trees should be fenced and staked at once. Of fences or guards there are many kinds; they are made of wood, wire, or iron. The iron tree guard has many advantages over those of wood or expanded metal, and being made in two sections it can be readily placed in position after the tree has been planted. For trees from 12 to 14 feet high the guards need not exceed, say, 7 feet in height, and preference should be given to those in which the uprights are bent outwards at the top, for this not only lessens the risk of interference with the branches, but is pleasing in appearance. Sometimes it may not be considered necessary to protect town trees, particularly such as are growing in side streets or squares, but in every case firm staking is necessary in order to prevent damage from wind.

Wooden tree guards consist of about half-a-dozen poles or uprights, about 7 feet long, joined together around the tree trunk by means of wire. When compared with those of iron they have, however, several disadvantages, for they may be climbed with ease and they do not last long. Where it is found sufficient to stake the trees without having recourse to guards. Ash poles from 2 to 3 inches in diameter and 10 feet high should be driven firmly into the ground as close to the stem as possible. The tree should be tied with specially prepared tar rope, which should be crossed between the stem and stake to prevent damage by rubbing. From time to time it will be necessary to see that the band of string does not become too tight. On rare occasions only is it necessary to stake shrubs, but this is sometimes needed in exposed positions or in the case of shrubs of unusually large size. *A. D. Webster.*

The Week's Work.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Melons.—As soon as the fruits on the earliest batch of plants show signs of ripening, the atmosphere must be kept drier and more air admitted, the amount of ventilation being determined by the prevailing weather. Do not allow the rooting medium to become dry too quickly, or the flavour of the fruits will be impaired. The appearance and flavour are both improved by gathering the fruits a few days before they are required for dessert, storing them in a cool room. Raise a fresh batch of plants so as to have them ready to replace the older ones when they have ripened their fruits. Before planting afresh, the house should receive a thorough cleansing. If woodlice have been troublesome, it will be better to clear out all the old soil and manure and then to thoroughly saturate everything with boiling water. Woodlice often cause canker in Melons by injuring the stem of the young plant. After the glass and woodwork have been washed and the walls coated with lime-wash, the house will be ready for planting. This season of the year good crops of Melons may be grown in unheated pits. Hero of Lockinge is a suitable variety for this purpose. Make up a hot-bed of stable-litter and half-decayed leaves, and tread these materials firmly. Towards the head of the pit place mounds of soil on the hot-bed, using loam, mixed with a little old mortar rubble, and crushed bones if the soil is poor. Close the pit early in the afternoon, after spraying the plants with lukewarm rain-water. Stop the points of the leading shoots when they have reached to a foot or thereabouts of the limits of the pit, and when three or four female flowers are open on each plant these should be artificially pollinated about midday. During this stage, keep the atmosphere dry. Cover the lights with mats at night-time, and add fresh litter around the outside of the pits occasionally to maintain the atmospheric temperature at 70°. Ventilate the structure early in the morning to allow the products of fermentation to escape.

Strawberries in pots.—Plants which have not yet been brought into the forcing house will be benefited by receiving diluted manure water at intervals. Remove any dead leaves or weeds that appear in the pots, but do not take them out of the plunging material until they are to be brought indoors.

Late vines.—Attend to the disbudding of late vines before the shoots become large. It must be remembered in the case of late vines that, in order to have the grapes in a good condition over as long a period as possible, an abundance of healthy foliage is necessary, but nevertheless overcrowding cannot be permitted. Give the borders a soaking with diluted liquid manure before the vines open their flowers. Do not leave Strawberries to ripen in late vinerias if it can be avoided, as red spider is almost certain to be present on the Strawberries, and this pest would infect the vines.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Mushrooms.—It is now time to make the beds that are to furnish the summer crop. They should be formed in the coolest place available, none being more suitable than a thatched shed on the north side of a wall or building. The beds are best made on the floor, and if the house is sufficiently wide there should be a central path. In forming Mushroom beds at this season of the year, the manure cannot be made too firm, and it is best not to remove very much of the short litter. In the case of Mushroom beds now in bearing, the structure containing them should not be kept at a higher temperature than 50° or 55°. Beds which have been in bearing for some time should be given copious waterings with diluted liquid manure made from farmyard dung. The paths may be damped with this liquid manure, and the walls, roof, and other bare spaces should be syringed with clear water of the same temperature as the atmosphere of the house two or three times each day.

French Beans.—Plants which are cropping freely will now succeed best if afforded merely

the temperature of an ordinary greenhouse. Thoroughly syringe the foliage twice daily, and apply manure water at every other watering. Plants raised in small pots may be safely planted out in cool frames, provided the frames are closed early in the day and the lights are covered with protective material at night-time. To ensure a continuous supply until the outside crop is in bearing, one more sowing may be made under glass. Sow the seeds in the frame in which they are to be cultivated. At the same time make a sowing in small pots and transplant the seedlings later into a sheltered border in the open.

Lettuce.—Continue to plant out in various parts of the garden plants which have been forwarded under glass, protecting them from slugs and birds. Fine cinder ashes should be freely used as a preventive of slugs, and black cotton, if stretched fairly tight about 2 inches above the young plants, will provide a defence against birds. Make further sowings of both Cabbage and Cos varieties about once every 10 days or a fortnight. A suitable position will be found on the centre of the ridges between the rows of Leeks and Celery.

Parsley.—Plant out on well-prepared ground those plants which have been raised in heat. To ensure the best results, allow plenty of room—not less than from 10 to 12 inches—between the rows and plants. Make the ground very firm, and apply a thorough dusting with fresh soot.

Leeks.—The earliest plants should now be sufficiently advanced to be planted out in the trenches. When this has been done means should be taken to draw up the plants so that a long length of blanched stem will be obtained. This is best done with brown paper collars, which can either be purchased or made at home. Late sowings will need to be pricked off, prior to planting, on a finely-prepared open piece of ground.

Hoing.—The soil around all crops should be frequently hoed, not only to check the growth of weeds, but to break the surface, which is now encrusted.

PUBLIC PARKS AND GARDENS.

By J. W. MOORMAN, Superintendent of Victoria Park, London.

Holiday-time in the parks.—During the past fortnight the playing fields and grounds have been much occupied by the public, principally school children. On Good Friday and subsequent days it appeared in Victoria Park as if every child for many miles around had made its way there. It was a matter of wonder how such a crowd could play together without injuring themselves in their gambols. Such times as these impose a great deal of work on the working staff. Each morning a general clearing up has had to be done. It is better for this work to be undertaken by fair-sized gangs of men rather than allow the men to work one or two together. The best tool for gathering the larger pieces of paper is a sharp-pointed piece of iron or steel, fixed to a wooden handle. With this a large field can be quickly cleared of litter, but for the smaller rubbish and for clearing paths, &c., the birch broom must be utilised.

Refreshment rooms.—The catering is done by contractors, who are required to adopt a tariff of prices fixed by the Council, and no beers, wines, or other alcoholic drinks are permitted to be sold. Most of the larger L.C.C. parks have also first-class refreshment rooms, in which the prices charged are rather higher than in the ordinary rooms.

Public meetings in parks.—In some 25 parks and open spaces under the control of the L.C.C., and in those under the control of the Office of Works Department, including Hyde Park and Regent's Park, speakers are allowed to address the public in certain places. In the L.C.C. parks meetings can be held without obtaining permission, but sanction must be obtained before literature can be sold, whilst before a collection can be taken, it must be shown that it is not for the profit or gain of an individual, but for the benefit of a society. In some cases, music is allowed to be used at these meetings, whilst in other cases it is forbidden. Those who wish to have music must go to the sites that are reserved for the purpose, and thus they do not annoy other persons.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Strawberries.—Employ the Dutch hoe freely between the rows on fine days to destroy seedling weeds, which at this season germinate in great numbers. When the soil is perfectly clear of weeds, apply a dressing of soot and lime about the plants to ward off slugs. After the ground has been made tidy place some clean straw about the plants, but do this before the flower-spikes are far advanced. The straw, besides preventing the fruits from becoming gritty, acts as a mulching, and in hot, dry weather is of especial value in preventing the evaporation of moisture from the soil. Very early plants in warm corners or sunny borders will need to have the flowers protected from frost; if glass lights can be spared they are very suitable for the purpose, and will have the effect of hastening the development of the fruits. They can be temporarily arranged on wooden supports, or even on large flower-pots. They will need to be removed during warm rains or, failing this, artificial watering must be practised. Get the nets and the necessary supports in readiness as work in the fruit garden is not so pressing now as it will be when the Strawberries are expected to ripen. It is more economical to purchase good nets than to buy those of inferior quality merely because they are cheap. In these gardens we erect wooden supports or poles about 4 or 5 feet high, and fix a piece of wire netting 3 feet deep all around the ground to be enclosed. On the top we place ordinary fish netting, the lower part of the net meeting the wire netting. This prevents the nets from lying on the ground, and from getting torn.

Raspberries.—The soil in the rows between the Raspberries should be hoed the same as advised for Strawberries. The Raspberry is a cross-feeding plant, therefore a heavy dressing of farmyard manure should be placed about the stools if this has not already been applied. As the young shoots develop, they should be thinned, leaving sufficient only to furnish fruiting canes for next season, unless new stools are required for planting. Even in this case do not leave very many, or the permanent canes will be weak and unfruitful.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Miltonia vexillaria.—Plants of this well-known Orchid are fast pushing up their flower-spikes, and the young pseudo-bulbs should be making roots from their base. Woodlice are very fond of these roots, and if not diligently sought after and killed, they will destroy every root immediately it becomes visible. These pests may be trapped by laying some pieces of vegetable, such as Potato, Turnip, or Carrot on the surface of the compost. Numbers may also be caught after the plants have been watered, when they frequently appear on the top of the soil. Now that the plants are growing quickly, some of the leaves will be seen to adhere to each other so firmly as to check growth. When this is observed, the leaves should be liberated with a smooth piece of thin wood, or the handle of an ordinary budding knife, taking care at the same time to see that none of the tender young spikes is in any way checked in the axils of the leaves. *M. vexillaria* thrives well in a cool, light position in the intermediate house. Where no such convenience exists, some growers cultivate the plants in the Cattleya house. As soon as the temperature of the Odontoglossum house rises to 55° by night without the aid of fire heat, the plants should be removed from the warmer house, and if one end of the Odontoglossum house is warmer than the other, let them be placed in that position. From the present time until the flowers open, plants of this *Miltonia* will require much moisture, both at the root and in the atmosphere.

Maxillaria.—In the cool intermediate house such plants as *Maxillaria grandiflora*, *M. venusta*, *M. fractiflexa*, *M. picta*, *M. callichroma*, *M. tenuifolia*, *M. præstans*, *M. ochroleuca*, *M. Amesiana*, *M. lepidota*, *M. striata*, *M. phonicanthera*, *M. scurrilis*, *M. Turneri*, and *M. nigrescens* should be examined as to their need for more pot room or potting material. Such species as *M. Sanderiana*, *M. fuscata*, *M. Hubschii*, *M. leucamata*,

M. luteo-alba, and others that are now showing for bloom should not be disturbed until they have flowered. *Maxillarias* may be cultivated in pots or shallow pans, but such species as *M. Sanderiana* and *M. Lindenii*, which sometimes push their flowers in a downward direction, like *Stanhopeas* and *Acinetas*, should be grown in teakwood baskets. No crocks should be used for drainage, as they would prevent the spikes from coming through the bottom of the basket. All species of *Maxillaria* grow well in a mixture of *Osmunda* and *Poly-podium* fibre in equal parts. The materials should be cut up moderately fine and mixed well together. We use no *Sphagnum*-moss, but mix plenty of very small crocks with the compost. The pots are about half-filled with crocks for drainage, and the plants potted firmly. Repotted plants must be afforded extra shade from strong sunshine. For several weeks, until the plants are well rooted, merely water around the edges of the pots.

Shading cool Orchids.—The inmates of the cool houses will require to be shaded whenever the sun shines on the roof, this being especially necessary where canvas blinds only are used. As regards lattice-wood blinds, these do not afford sufficient protection for the *Odontoglossums* of the *O. crispum* type, as the light admitted through the laths causes the foliage to become far more of a bronzy-red than is desirable. To counteract this, a good plan is to lightly "stipple" the roof glass with a mixture of flour and water. The preparation should be painted on when the sun is shining full on the glass, that the mixture may dry quickly; it is important that the glass should be quite clean and free from dust. This mixture will keep the glass perfectly cool even during the hottest day in summer. Should rain fall before the stippling is well dried on the glass, stop up the stack pipes which lead from the gutters of the roof into the soft-water tanks, or much valuable water will be spoiled.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Fibrous-rooted Begonias.—The old plants of *Begonia Gloire de Sceaux*, *B. Mrs. Heal*, and similar kinds which have been rested and pruned, have made sufficient growth for the supply of cuttings. If such cuttings are inserted during the next few weeks they will furnish plants to flower next winter and spring.

Violets.—Plants should now be propagated to obtain young stock for planting in the frames next October. Some cultivators prefer to employ cuttings, whilst others raise their plants from runners. The former method has the advantage that plants so raised do not produce many runners during their cultivation in the frames. Whichever method of propagation is adopted the procedure is very similar. Cuttings or runners are firmly planted out-of-doors in a well-prepared plot of ground, placing the double-flowering varieties at distances of 10 or 12 inches apart. Single-flowered varieties are nearly always propagated from runners, and they should not be planted at closer distances than 15 inches. The soil should be kept moist and the leaves may be sprinkled occasionally with water until root action has commenced. Following this stage, the surface of the ground should be loosened with the hoe at frequent intervals, and the plants should be sprayed frequently towards the close of each afternoon, this latter practice being a useful preventive of red spider. It will be as well to select a site for the plants which is slightly shaded from the mid-day sun, but in no case is excessive shade advisable, its effects being to induce the plants to make fleshy leaves, and thus the ripening of the crowns is hindered.

Gerbera Jamesonii.—It is only in the most favoured localities that the beautiful "Transvaal Daisy" can be expected to thrive out-of-doors, but in all districts it is an admirable plant for pot culture in the greenhouse, or it may be planted in frames extending by the side of glass-houses. Seeds may now be sown in moderate heat, and a good proportion of the seedlings may be expected to flower in their second year. Pot plants now flowering should be removed to a cool frame when the flowering stage has passed. After they have been there for a short time, they may be placed out-of-doors on a base composed of ashes, where they may remain during summer

and autumn. *Gerbera* flowers, when cut, are very elegant for vase decoration, possessing uncommonly attractive tints, and having a capacity for lasting fresh for a considerable time.

Balsam.—Seeds may be sown thinly in well-drained pans of light, porous soil, which should be placed in a warm house. Prick off the seedlings into small pots as soon as they are large enough to be handled. Do not allow the plants to become pot-bound until after the final potting. In the process of potting, it is advisable to keep the stem rather lower in the soil than is usual in the case of most plants. Do not pinch the leading growth. Let the surroundings be kept always moist.

Achimene.—These plants should now be moved into a cooler house, exposing them to a greater degree of light and air, which will tend to strengthen the growths. Some means of support is needed for plants in pots, and slender birch twigs, if placed just inside the rim of the pot, will answer the purpose very well.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Summer bedding plants.—These should be removed to cool frames in order to harden them gradually. On sunny days the lights should be entirely removed, placing them in position again at about 5 p.m. If the ground intended for planting *Calceolarias* is vacant, these plants may now be planted. Place them rather closely together, unless it is intended to mix other plants with them at a later date.

Violets.—Cuttings that were rooted two months ago are sufficiently developed to be placed in the open. Select a rich piece of land and mix plenty of soot and bonemeal with the surface soil. The planting should be done with a trowel, placing the plants in lines drawn at about 18 inches apart. A space of 15 inches may be allowed between each plant in the rows, excepting in the case of such single-flowered varieties as the *Princess of Wales* type; these require to be placed 18 inches apart. Plant firmly, and should the weather at the time of planting be dry, sprinkle the foliage occasionally with water. After making the ground tidy, place a label against each variety. Among the more useful varieties for all purposes are *Princess of Wales* (rich violet), *La France*, *Admiral Avellan*, *Wellsiana*, *Comte de Brazza*, *Marie Louise*, *Neapolitan*, and *Lady Hume Campbell*.

Amaryllis Belladonna.—Fork the ground lightly around the bulbs of these plants and apply a sprinkling of soot and bonemeal. If the ground is in a warm, dry situation, afford copious waterings at intervals.

Agapanthus umbellatus.—The present is a suitable time to overhaul these plants. Clear away any dead or decaying foliage, and remove the old soil down to the roots, replacing it with some fresh loam. Ram the soil as tightly as possible. The *Agapanthus*, when planted in green tubs, are excellent subjects for placing on terrace walks or around the edges of ornamental water.

Lobelia cardinalis.—The plants should be placed in their summer quarters, and any which have remained out-of-doors all the winter should be given a little fresh soil, containing some fine leaf-mould.

Lilium.—The various species of *Lilium* will be starting into growth, especially those growing on sunny borders. A dusting with soot will help to keep slugs from the plants. Slugs may also be trapped with cabbage leaves and similar bait.

General work.—Bulbous plants that have finished flowering may be planted in the wild garden, or amongst shrubs. Plants of *Cerasus*, *Lilac* and species of *Prunus* that have been forced should be pruned rather severely and planted out-of-doors in moderately rich soil. They will make useful plants for forcing again in two years. It is time to graft *Rhododendrons*, and to sow seeds of these plants and *Azaleas*. Transplant *Mignonette* from boxes for flowering early out-of-doors. Where *Sarracenias* are cultivated in the open the plants should be afforded some *Sphagnum*-moss. *Pinguicula*, *Darlingtonia* and *Drosera* are insectivorous plants requiring similar treatment. They associate well with the cotton grass, *Eriophorum angustifolium*.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

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

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, APRIL 27—

Huntingdonshire Daffodil and Spring Fl. Sh. in Corn Exchange, Huntingdon.

WEDNESDAY, APRIL 28—

Nat. Auricula Soc. (Midland Sec.) Exh.
Roy. Hort. Soc. Exam. of School Teachers in Cottage and Allot. Gard.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—48.9°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, April 21 (6 P.M.): Max. 58°; Min. 39°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden London—Thursday, April 22 (10 A.M.): Bar. 29.7; Temp. 59°; Weather—Sunshine.

PROVINCES.—Wednesday, April 21 (6 P.M.): Max. 55° Ireland N.W.; Min 42° Durham.

SALES FOR THE ENSUING WEEK.

MONDAY—

Perennials, Border Plants, Lilliums, and other Bulbs, Ferns, &c., by Protheroe & Morris, at 67 & 68, Cheapside, E.C., at 12.

WEDNESDAY—

Herbaceous and Border Plants, Lilliums and other plants and bulbs, at 12; Palms, Plants, Ferns, &c., at 4; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

Imported and Established Orchids, Orchids in flower and bud, at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

In recent years the use of acetylene gas for lighting purposes in country houses has greatly increased. The generator is usually situated in the garden, and therefore the gardener is required to look after it. Acetylene generators yield a large quantity of refuse, and, judging from the enquiries which from time to time are addressed to us as to the manurial value of this waste material, there seems to be considerable doubt as to its composition. The fact that it is composed almost entirely of slaked lime has led to its being regarded as of equal value to lime for use as a manure. That it is not quite the same as lime is obvious to the senses both of the eyes and nose. These differences are due to the presence of small quantities of impurities in the original calcium carbide used in the preparation of the gas. The impurities may greatly reduce the value of the refuse for manure, and even make it positively injurious to plant life. The following experiments, carried out at the Wye Experimental College, seem to indicate that this is the case. In the first place an experiment was conducted as follows:—

Twelve 5-inch pots were filled with soil containing a large proportion of leaf-mould. The pots were divided up into six lots, each lot containing two pots. To the soil of one of the lots 1 per cent. by weight of the dry,

powdered refuse was added, and thoroughly mixed with the soil. Four more of the lots treated received 10 per cent., 20 per cent., 30 per cent., and 50 per cent. of the refuse respectively. The sixth lot received none, and therefore it acted as a check or control.

In each pot eight Mustard seeds were sown, the pots being stood in a cool house.

After 14 days the pots presented the following appearance:—

In the pot in which no refuse was used, and also in that which contained 1 per cent., all the seeds had germinated, and 16 well-developed seedlings were showing.

In that to which 10 per cent. was added only two seedlings had appeared. They were both small. In the other three lots no seeds had germinated.

After 15 days one plant had died in the pots containing 1 per cent., one more seedling had appeared in the pots with 10 per cent., and one in those containing 20 per cent.

The plants were now distributed as follows:—The control pots had 16 seedlings. The pots containing 1 per cent. of refuse, 15 seedlings, slightly smaller than those in the control pots. In the pots containing 10 per cent. there were three seedlings, in those containing 20 per cent. one seedling, and in those with 30 per cent. and 50 per cent. there were no seedlings.

On the 17th day the condition of affairs had altered as follows:—In the control pots 16 plants showed the rough leaf, in the pots containing 1 per cent. of refuse there were 13 plants showing rough leaf and one weakly seedling; in those containing 10 per cent. there were three seedlings, whilst there were none at all in the other pots.

On the 21st day the experiment was stopped, as it was thought that no further germination would take place. At this stage only lots known as 0 per cent., 1 per cent., and 10 per cent. contained plants. There were 16 plants in lot 0 per cent. and 13 in lot 1 per cent. The plants were equal in size and appeared equally healthy. In lot 10 per cent. there were only three seedlings of small size, none of them showing rough leaf.

These experiments are not extensive enough to base any conclusion upon, but they indicate that carbide refuse has a marked effect on germination. This process is almost entirely stopped where 20 per cent. is present in the soil, greatly lessened and retarded with 10 per cent., and slightly so even with only 1 per cent.

The seedlings which died showed a shrivelling of the hypocotyl close to the soil, closely resembling damping off, but the fungus which causes this disease was not present.

It was now desired to see if the refuse had a bad effect on older plants. For this purpose Mustard plants showing two rough leaves were used. The same pots were used as in the experiment already described.

All the plants were removed from the pots except that three plants were left in one each of the pots of lots 0 per cent., 1 per cent., and two in one of the 10 per cent.

In one each of the vacant pots of all the lots, three of the Mustard plants were planted. The arrangement was now as follows:—

Lot 0 per cent. contained one pot with three transplanted plants and one pot with three of the original plants. Lot 1 per cent. was the same as 0 per cent. Lot 10 per cent. was the same, except that there were only two original plants. Lots 20 per cent., 30 per cent., and 50 per cent. each contained one pot with three transplanted plants. On the third day the condition of the plants was as follows:—Those in lots 20 per cent., 30 per cent., and 50 per cent. had all shrivelled at the base of the stem, fallen over and died. In the other lots all the plants were growing.

On the 15th day the plants in lot 0 per cent. were all healthy. The average height in both pots was about 7 inches. Lot 1 per cent. was similar, except that the average height of the plants was only about 5 inches. Lot 10 per cent. by this time was showing the effect of the refuse. In the transplanted pot there were three plants about 2 inches high. Unlike the plants in the preceding lots, their cotyledons had entirely withered. In the original pot the two plants still survived. They were about 1½ inches high and carried very dark green leaves.

The final observations were made on the 35th day:—In lot 0 per cent. the plants were in full flavour. The average height was 22 inches, the transplanted plants being a little the smaller. Those in lot 1 per cent. were similar to the 0 per cent. plants, but were smaller, the transplanted plants having an average height of 20 inches, whilst the original ones measured 17 inches.

The plants of lot 10 per cent. were not in flower, and were considerably smaller. The three transplanted plants ranged in height between 10 and 5 inches, whilst in the original pot the two plants were only 6 inches and 2 inches high respectively.

From this experiment it is seen that the amount of growth was inversely proportional to the amount of carbide refuse present. Even 1 per cent. had a bad effect, whilst 20 per cent. completely prohibited growth.

From this it appears that care should be exercised in the use of the material as a manure. We do not know if any definite cultural experiments have been made in the garden, but the refuse has been applied to various garden crops during the last five years and no marked improvement of the crop has been noticed, although the soil was one which should respond to lime—being sandy and heavily dunged. In some cases bad results have followed its use. On two occasions Strawberries have failed badly after treatment with the refuse.

Until further experiments have been carried out cultivators are recommended to use great caution.

OUR SUPPLEMENTARY ILLUSTRATION represents a specially well-cultivated specimen of *Vanda cœrulea* in the gardens of Brougham Hall, Penrith. Mr. W. ANTON, the gardener, informs us that the photograph was taken on December 18 last. The plant had 12 racemes, which bore an aggregate of 109 flowers, all perfectly developed. The sepals and petals were pure white on opening, but a tinge of blue developed with age, the lip being deep blue. The specimen being cultivated in the cooler end of one of the hottest houses, the atmospheric temperature is about equal to that which Orchidists term an intermediate house.

ROYAL HORTICULTURAL SOCIETY.—In respect to the Orchids at the coming Temple Show, we are requested to state that attention has been drawn to the possibility of misunderstanding arising from the use of the word "unrestricted" in Classes I, A and B. It must, therefore, be clearly understood that the word is governed by Rule 4, which gives 200 square feet as the maximum. In other words, Classes I, A and B, are unrestricted in size only, so long as they do not exceed the 200 square feet permitted by the rule.

JOURNAL OF THE KEW GUILD.—Somewhat belated, but none the less interesting, this little brochure relating the doings of Kew men past and present appears for the sixteenth time. Much of its contents is necessarily of most interest to members of the Guild, such as the record of the social gatherings, the report of the sports club and the information concerning the alleged grievances of the present staff. But the doings of those members now working in remote parts of the world are of quite a different character. Letters from these men give the reader an idea of the gardening in such places as the White Nile, in Honolulu, Lucknow, and Rhodesia. One member writes from a point 220 miles south of Khartoum. He is the only white man in the district, "looking to break the monotony, in the advent of tourists." The frontispiece is an excellent portrait of Mr. GEORGE MASSEE, Chief of the Cryptogamic Section in the Herbarium at Kew. The accompanying text is from Mr. MASSEE'S pen and records, in characteristic style, the chief events in his career. Another illustration is a group of the permanent staff taken in December, 1906. The same picture was reproduced in the *Gardeners' Chronicle*, January 6, 1906. No fewer than six of the group, namely, Sir W. T. T. DYER, Mr. W. B. HEMSLEY, Dr. D. H. SCOTT, Mr. J. F. DUTHIE, Mr. W. HACKETT, and Mr. J. STOCKS have since retired from Kew. We learn that the journeyman gardeners now have half their wages withheld during sickness, but it may be assumed that on some occasions such sickness may be caused by working in high temperatures such as that which is maintained in the Palm House. The number of visitors to the garden in 1908 was 2,710,220. The obituary list includes Mr. GEORGE NICHOLSON, who was curator of the gardens from 1886 to 1901, and Mrs. R. WARD, who, as Miss JESSIE NEWSHAM, worked as a student at Kew for 16 months.

EXHIBITION OF GARDEN PICTURES.—At the New Dudley Gallery in Piccadilly an exhibition of garden pictures will be on view from the 20th until the 29th inst. The exhibition will contain landscapes in water-colour by Miss ALSWEN MONTGOMERIE, water-colour drawings of the Isles of Scilly by the Misses DORRIEN-SMITH, and sketches at home and abroad by Lady MABEL SOWERBY. The drawings by the Misses DORRIEN-SMITH are specially interesting to gardeners and others who have visited the famous gardens at Tresco Abbey.

SEEDSMEN AND THE SALE OF POISONS.—According to the *Glasgow Herald*, considerable correspondence has passed between the secretary of the North British Branch of the Pharmaceutical Society and the Dalkeith Town Council concerning the new Poisons and Pharmacy Act. All the registered chemists in Dalkeith had intimated to the secretary that they were prepared to sell the poisonous substances referred to in the Act, and, therefore, he held, the occasion for granting licenses to any other persons did not arise. He submitted that the Town Council had acted somewhat prematurely in disposing of any application for a license under the Provisional

Order, which had not been formulated, and he suggested that the matter should be reconsidered. The clerk made a statement at a meeting of the Town Council on the 12th inst. in connection with the granting of applications of Dalkeith seedsmen, and it was agreed that these merchants should have their licenses confirmed on fulfilling the conditions now made known in the schedule, as it was felt by the councillors that these firms who had been trading in the articles in question for a long period could not now be reasonably prevented from supplying the demands of their customers.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—In aid of this Institution Mr. EDWARD SHERWOOD will give a new musical play on May 12 next entitled "In Cyderland." The play has been written by Mr. R. CARY TUCKER, and the music is by Mr. EDWARD SHERWOOD. The performance will take place at the Cripplegate Theatre, Golden Lane, London, E.C. A full orchestra, by the courtesy of "The HURST & SON" Musical Society will be present, under the direction of the composer. Tickets may be obtained from 3s. to 10s. 6d. each from Mr. N. N. SHERWOOD, Dunedin, Streatham Hill; Mr. G. J. INGRAM, 175, Victoria Street, Westminster; or Mr. EDWARD SHERWOOD, 152, Houndsditch. Remembering that the funds of the Royal Gardeners' Benevolent Institution are greatly in need of help, we hope as many of our readers as can will help Mr. N. N. SHERWOOD to make this event successful.

SHIPWRIGHT'S PATENT ADJUSTABLE TAP UNION.—Our attention is directed by a correspondent to this patent tap union. It has been designed to obviate the tendency of the ordinary hose union to blow off the tap. The union consists of upper and lower plates drawn together by two small thumb-screws, one on each side of the union; between the plates a moulded band of rubber is fitted, and being enclosed on the upper, lower, and outside, it expands when the plates are drawn together on the inner side against the surface of the tap, forming a joint which is perfectly watertight and one that will stand any pressure without allowing the union to be blown off the tap. Perhaps some of our readers have given this new union a trial?

JAMAICAN PLANTS FOR GLASGOW.—The Glasgow Parks Committee have accepted an offer by Professor F. O. BOWER, of Glasgow University, to send to the corporation a collection of rare plants from the island of Jamaica, which he intends visiting in July to study the Fern flora.

THE BULB SHOW AT HILLEGOM.—The 30th anniversary of the Hillegom section of the General Society of Dutch Bulbgrowers is now being celebrated by a flower show in the open ground in the Hof Gardens, at Hillegom. The show was opened on Thursday, April 8, by the MAYOR OF HILLEGOM. On account of the late season, but few flowers were then fully developed, but the arrangement of the beds and borders showed that the exhibition will be interesting when the flowers are at their best. The show will remain upon until May 8. Hyacinths, Tulips, and Narcissus are expected to be in full bloom before that time.

A BOTANICAL GARDEN IN EAST JAVA.—In an interesting note, dated January 18, written by Mr. BUYSMAN, from Hortus Tenggerensis, Lawang, Java, the writer states:—We are now experiencing the rainy season, and almost every day the water pours down, not continuously, but mostly in showers. A dry day, however, is a rare thing now; nevertheless, the temperature has not been lower than 16° C., and the lowest daily maximum observed was 18½° C.;

the mean for December was 19.05° C. Vegetations grows rapidly. Among European plants, the common Dandelion (*Taraxacum officinale*) grows as luxuriantly here as in Europe; the same is the case with *Bellis perennis*, except in the rainy season, when the Daisy does not flower. *Ceratonia Siliqua* (the Carob tree) ceases to grow in the rainy season, but starts again in the dry season. Many European plants grow very slowly when sown in the open, but do well when cultivated in pots and protected from rain. Of Lilies, *L. longiflorum* and *L. tigrinum* do best. Species of Iris rarely flower. *Melilotus* species grow well, but only *M. italica* has flowered up to the present. *Tropaeolum majus*, *Mirabilis Jalapa*, and *Thunbergia alata* are weeds of the roadside; as also are *Oxalis sensitiva* and *Isoloma longiflorum*. These plants must be escapes from cultivation. The same is the case with *Cyphomandra betacea*, known here as *terong blanda* (Dutch Solanum). This latter plant is largely cultivated in Java. *Furcraea gigantea* is beginning to escape from gardens, as is *Montbretia crocosmaeflora*. *Verbena hybrids*, *Dahlia variabilis* and *Tritoma Uvaria* flower the whole year round. Escaped *Roses* are seen everywhere. *Begonia ricinifolia* is always flowering, with stems of 1 to 1½ metres in height; *Gardenia florida* flowers the greater part of the year. *Cannas* are common in gardens everywhere; Wheat, Barley, Oats, and Rye all do well, even in the rainy season. They produce an abundance of seeds, but they are not cultivated, because Sugar, Coffee, and Rice at present pay better. I presume, however, that these grains will be cultivated ere long, as trials have been made here on a relatively large scale, with good results. European Grasses flourish and produce abundance of ripe seeds. *Narcissi*, *Hyacinths*, and *Tulip* species do not flower, but they produce luxuriant foliage. *N. Pseudo-narcissus*, however, flowered this year in the dry season, and, seeing that the flowers were normal, it is curious that it blooms so seldom. *Papaver Rhoëas*, *Eschscholtzia californica*, and hundreds of other annuals flourish. The most interesting feature, however, is the growing and flowering of succulents in this most humid climate.

PUBLICATIONS RECEIVED.—*Arnold Arboretum*. Harvard University. A map showing how the trees are grouped in this famous arboretum.—*The Academy of Natural Sciences of Philadelphia Annual Reports, 1908*.—*Uganda Protectorate Annual Report on the Botanical, Forestry, and Scientific Department for the year ending March 31, 1908*, by M. T. Dawe. (Uganda: Government Press, Entebbe).—*Transvaal Department of Agriculture Annual Report, 1907-8*. (Pretoria: Government Printing and Stationery Office).—*Twenty-First Annual Report of the Agricultural Experiment Stations of the Louisiana State University and Agricultural and Mechanical College for 1908*, by W. R. Dodson, Director. (Baton Rouge: *The New Advocate*, Official Journal of the State of Louisiana).—*The Western New York Horticultural Society Proceedings of the Fifty-Fourth Annual Meeting*, held at Rochester, N.Y., Wednesday and Thursday, January 27 and 28, 1909. (Rochester, N.Y.: Democrat and Chronicle Press).—*The Queensland Agricultural Journal*. (March.) (Brisbane: Department of Agriculture and Stock).—*Thirty-Ninth Annual Report of the Entomological Society of Ontario, 1908*. (Toronto: Ontario Department of Agriculture).—*Imperial Department of Agriculture for the West Indies Reports on the Botanic Station, Agricultural Instruction, and Experiment Plots, Grenada, 1907-8*. (Barbados: Imperial Commissioner of Agriculture for the West Indies). Price 3d.—*Bird Notes and News*. (London: 3, Hanover Square, W.).—*The Agricultural Gazette of New South Wales*. (Sydney: Government Printer). Price 6d.—*The Cultivation and Preparation of Para Rubber*, by W. H. Johnson. (London: Crosby, Lockwood & Son). Price 7s. 6d. net.—

—*Report on the Meteorological Observations made at Victoria Park, Swansea, during the year 1908*, by Daniel Bliss, Superintendent of Parks, Swansea.—*The Forest Flora of New South Wales*, by J. H. Maiden. Vol. IV., Part 3. (Sydney: Government Printer). Price 1s.—*Journal of the Royal Society of Arts*. (April.) (London: George Bell & Sons).—*The Agricultural Journal*. (March.) (Cape Town: Cape Times.) Price 6d.—*Proceedings of the Agri-Horticultural Society of Madras, July to September, 1908*. (Madras: Higginbotham & Co.).—*New York Agricultural Experiment Station, Geneva, N.Y.* Bulletin No. 307: Potato Spraying Experiments in 1907, by F. C. Stewart, G. T. French, and F. A. Serrine. Bulletin No. 308: Methods of Paying for Milk at Cheese-Factories, by L. L. Van Slyke. Bulletin No. 309: Variety Test of Strawberries and Cultural Directions, by O. M. Taylor. Bulletin No. 310: Directors' Report for 1908, by W. H. Jordan. Bulletin No. 311: Potato Spraying Experiments in 1908, by F. C. Stewart, G. T. French, and F. A. Serrine. Bulletin No. 312: The Tussock Moth in Orchards, by W. J. Schoene. Bulletin No. 313: Inoculation and Lime as Factors in Growing Alfalfa, by H. A. Harding and J. K. Wilson. Published by the Station.—*Fifth Report of the Board of Commissioners of Agriculture and Forestry of the Territory of Hawaii for the year ending December 31, 1908*. (Honolulu: The Hawaiian Gazette Co., Ltd.).—*Conservation of Hawaii's Natural Resources before the Legislature Session of 1909*. (Honolulu: The Hawaiian Gazette Co., Ltd.).—*Field Experiments at the Harper-Adams Agricultural College, Newport, Salop, and in Staffordshire*. Joint report for season 1908. (Newport, Shropshire: Bennion Horne, Smallman & Co., Ltd., Printers, &c.).—*Proceedings of the Academy of Natural Sciences of Philadelphia*. Vol. LX., Part III. July to December, 1908. (Philadelphia: The Academy of Natural Sciences).

NURSERY NOTES.

HIPPEASTRUMS AT CHELSEA.

On a recent visit to the Royal Exotic Nursery in the King's Road, Chelsea, the chief establishment of Messrs. J. Veitch & Sons, Ltd., I was especially interested in the Hippeastrums, which were opening nicely into bloom. These plants are accommodated in a light, span-roofed house 60 feet in length and 22 feet in width. In the middle is a central bed 7 feet in width, with a narrow gangway for the convenience of the gardener in applying water, and inspecting the plants. There are likewise other beds of 3½ feet in width, for the plunging of younger bulbs. Beneath the beds are hot-water pipes to heat the plunging materials. The plants that were in bloom were chiefly those of crimson, scarlet, or pink colours, and many of the lighter-coloured varieties were showing colour in the bud and would soon be expanding. These handsomely-formed cross-bred Hippeastrums are the descendants of the Brazilian species *H. Leopoldii*, which gave the fine form to the race. The species has creamy-white flowers with a crimson centre, the tips of the segments being white. *H. Leopoldii* was crossed with *H. × Empress of India*, a hybrid raised in Holland, and from this cross the present race has descended. The efforts of the firm are now largely directed to the production of a good yellow-coloured variety, and indications of that colour are to be noticed in some of the newest varieties, but only in a minor degree. Among fully-expanded flowers the following varieties were conspicuous:—*Sybil* is a large flower with a white ground netted with crimson and furnished with a white lower segment; *Cerebus*, flowering for the first time, is a handsome crimson flower, but is not of a first-class shape, the segments being narrow, and the points too pronounced. *Lavacea* is a pure crimson self, without the least trace of other colour, and it is of perfect form. The variety *Acme* develops an immense scarlet flower, the wide segments having a

white band extending down the centre. *Ovington* is a scarlet flower, of fair size; *Nysa* is a good, dark-crimson flower of capital form; *Marcus* is also crimson, and unexcelled in the form of the flower; this variety has obtained an Award of Merit from the Royal Horticultural Society, and is shown in fig. 114. *Neila* is scarlet, with a white band on two of its segments; *Julian* is a very large crimson variety, having an orange-coloured tint, with white rays and central band on each of the segments. *Gamos* is of an orange-scarlet tint, with a yellowish-green tinge at the base of the segments; *Idothea* is a finely-formed crimson self; *Queen Alexandra* has a white flower flamed with bright scarlet. Seedling No. 9 is one of many derived from one seed-pod. It has a light-red flower with greenish rays and a decided orange tint. *Ilfra* is a very large crimson variety with a yellow tinge in the middle of the segments; *Optima* is a scarlet self, with a band of white on all the segments excepting the lowermost. *Ravenna* is of royal scarlet colour; *Lodore* is a flower of a

mens for sitting-room and dinner-table adornment. Fine specimens of *D. Goldiana* stood at the back of the bed, and smaller ones of *D. Sanderiana* were dotted about.

The main stock of Orchids is cultivated at the Langley nursery. In the Orchid house at Chelsea there were some plants in bloom, including *Odonoglossum crispum*, *Cymbidium Lowianum*, several *Dendrobiums*; *Pleione pogonioides*, a low-growing Chinese species, bearing light-purple flowers; *Maxillaria luteola*, and a great number of forms of *Cattleya Schröderæ*.

The Rockery house was delightfully furnished with *Adiantum* in great variety, *Asparagus plumosus*, ornamental-leaved *Begonias*, &c. *Anthuriums* formed an interesting display. Many of the plants were furnished with their showy spathes, especially the species *A. Scherzerianum* and its varieties. Others in bloom included *Duvivierianum*, *Madame Dalliere*, *Rothschildianum*, and *Wardii*, also varieties of *A. Andreanum*. The show house was gay with many of the finest varieties of *Camellia*,



FIG. 114.—HIPPEASTRUMS AT CHELSEA.

At back, *Enid*, white with a little red colour in centre; at front, *Omar*, red with white stripes; to the left-hand, *Romola*, orange-scarlet; and at right, *Marcus*, crimson.

deep crimson tint, having a tinge of purple in it. *Tamos* has a white flower rayed with scarlet—a very fine variety; *Adia* is white, with some faint red lines on the segments; *Vidette* is a dark crimson-coloured variety, with segments greatly reflexing; *Quirites* has prettily-tessellated segments of a crimson colour. *Titan* is a large-flowered variety; the upper segments are white, striped with crimson, the lower segments white with the points well reflexed. There are three other varieties, in addition to *Marcus*, shown in our illustration, namely, *Enid*, a white flower with slightly coloured centre; *Romola*, a self-coloured flower of orange-scarlet tint; and *Omar*, a red flower with white stripes.

The plants are in splendid condition, with strong vigorous foliage. They are well rooted, most of the bulbs being seedlings 2½ years old and flowering for the first time.

The best varieties and species of *Dracenas*, perfect plants in most instances, filled one of the small houses. I noted the narrow-leaved varieties *The Queen*, *Duchess of York*, *Doncettii*, *Ernestii*, and *marginata rosea* in excellent speci-

Rhododendron indicum, and *N. sinense* *Staphylea colchica*, finely-grown and flowered *Lilacs*, *Viburnum Opulus*, *Streptosolen Jamesonii* (admirably flowered for the time of year), *Prunus* in variety, *Narcissus*, *Tulips*, *Lily of the Valley*, and *Mignonette*. *F.*

NOTES FROM A "FRENCH" GARDEN.

The Carrots in the frames have been cleaned and thinned. The frames are now ventilated day and night. If the Cauliflowers are growing very fast among the Carrots the lights can be raised by placing them on 5-inch pots or bricks. In this case a good watering must be given before the lights are tilted, as it is very difficult to apply water after the lights have been arranged that way. This method is only practised in small gardens; in larger ones cultivators prefer to lift the frames and lights a few inches from the ground.

We are now planting one Cauliflower under each cloche.

The Cos Lettuces under the cloches require careful shading in the middle of the day, but this must not be excessive or it will cause the Lettuces growing between the cloches to become drawn. The space under the rim of the cloche must be kept well opened for ventilation.

We are just finishing our planting of Cos Lettuces in the open ground. These plants were raised on hot-beds early in January, and are as forward as those raised in December, which are late, owing to the bad weather which prevailed in February and March.

Endive "La Rouennaise" is now being planted in beds measuring 12 feet wide and 70 feet long. The ground has been well prepared and manured. The plants are set 10 inches apart each way. Care is taken not to set the plants too deeply.

The first batch of Melons is now well established, and they are given ventilation in the middle of the day. We have lined the frames with hot manure to maintain a good heat in the beds.

Melon plants intended for the main batch are doing well. We stop them at different times in order that the fruits may not ripen all at once. We have received the manure for the making of the hot-beds, as we expect to start the final planting early next week. This operation will be the chief work next month, and must be carried out as quickly as possible.

The Passion Lettuces which were planted in the unheated frames are now hearting, and will therefore require plenty of water.

The Turnips growing in frames must be given ample ventilation during the day and night as the frames and lights will soon be removed for the Melons. The soil must always be kept moist.

We are now pricking off for the second time our strongest Tomato plants, putting 100 plants in each light. The soil is made very firm at the roots, and the plants are set deeply to induce new roots to grow from the stem. The lights are kept closed and shaded for two or three days after the planting is done. *P. Aquatias.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

PERPETUAL-FLOWERING CARNATIONS.—In his excellent article on Perpetual-flowering Carnations (see p. 241), Mr. Weston mentions the variety Harlowarden as being the best of its colour. Another crimson variety of comparatively recent introduction is Gwladys. This plant flowers very freely, and the blooms are perfect in form, being even larger than those of Harlowarden. The variety has long, strong stems, smooth-edged petals, and rich Clove scent. *J. Johnson.*

GRISELINIA LITTORALIS.—I notice that several writers in the *Gardeners' Chronicle* have recently referred to this plant. *E. M.* states on p. 234 that he has seen many plants of this species killed by frost. My experience here is that even small seedlings are perfectly hardy. I have twice planted *G. lucida* var. *macrophylla* in the open, and each time it has been killed by frost. *G. J. P. Mayor, Lamellen, St. Tudy, Cornwall.*

GRAFTING OR BUDDING THE LILAC.—In the *Gardeners' Chronicle* for April 17 is a valuable caution from a correspondent against using Lilacs worked on Privet stocks for forcing purposes. Apart from other considerations, my experience of the Lilac when grafted on the Privet stock is that the plants are apt to die suddenly without any apparent cause, whether employed for forcing or for planting out-of-doors. Nearly all the dwarf, bushy plants sent to this country from abroad, which are intended for flowering in pots, are grafted or budded on the common Lilac, and they usually make effective specimens. It is, however, necessary to keep a sharp look-out for the removal of suckers, and doubly so if the plants are afterwards placed in the shrubbery

border where suckers quickly detract from the vigour of the specimen. Such being the case, I much prefer Lilacs on their own roots, though they are sometimes difficult to obtain in this form. Continental nurserymen are notoriously fond of grafting, whether this is necessary or not, but in the catalogue of Mons. Lemoine et Fils occur the following words:—"Our Lilacs are not grafted." As this firm raised nearly all the double-flowered forms and some of the single ones, the fact that they have discontinued grafting is strongly in favour of plants on their own roots. *W.*

THE VACANT LAND CULTIVATION SOCIETY.—The work of this society during its first season has been so successful in actual, tangible results, that it confidently appeals to the public for help. From landowners or their agents, we solicit the loan of unused and vacant plots of land, no matter where, in the metropolis or country. We agree to deliver up such lands within seven days, whenever called upon to do so by the owners or their agents. From seedsmen, growers and merchants we solicit seeds and plants, hoes, shovels, spades and rakes for the use of our cultivators. From bait-stable proprietors we ask contributions of manure and street-sweepings. From those able and willing to subscribe money in large or small amounts we solicit donations, on the assurance that none will go in the usual form of charity, but to provide opportunity for the heads of poor families to grow their own food by their own work, without any stigma attaching to them of receiving alms. The society requires £2,000 for the present season's work. *Joseph Fels, Hon. Sec.*

HIMALAYAN RHODODENDRONS AT TREMOUGH, PENRYN.—There is now a magnificent display of Himalayan Rhododendrons at Tremough, Penryn, Cornwall, where Mr. R. Gill has specialised in these beautiful plants for a great many years. One of the early owners of Tremough was the late Mr. Shilson, who formed the lovely garden at Trevarrick, St. Austell, now in the occupation of Mr. Martin F. Hitchens, of Sweet Pea fame. Mr. Shilson was a great lover of Rhododendrons, and his name is commemorated in the splendid hybrid Rhododendron *Shilsonii*, which was obtained from a cross between *R. barbatum* and *R. Thomsonii*. Among many beautiful Rhododendrons which I noted at Tremough during my visit at mid-April were the following:—An unnamed cross between *R. Griffithianum* and *R. Johusonii*, a large flower of charming colouring, blush with bright rose edge, *Triumph (Aucklandii × Thomsonii)*, a noble hybrid with immense carmine flowers; *R. barbatum*, a grand scarlet flower; *Duchess of Cornwall*, carmine-rose, fine pyramidal truss; a form of *R. Thomsonii* with a red calyx, the flower bearing a strong resemblance to *Lapageria rosea*; *Nuttallii*, having huge white flowers with faint lemon suffusion; *Countess of Haddington*, blush-coloured with long tube; several forms of *Shilsonii*, with very rich, decided colours, and the small but charming blush-coloured *ciliatum*. Mr. Gill has a good stock of young plants of such interesting Rhododendrons as *Wightii argenteum*, *glaucum* and *racemosum*; likewise of that splendid plant *Embothrium coccineum*. He imports seed of Rhododendrons from the Himalayas. The Tremough Rhododendrons ought to be good until nearly the end of May this year, as the season is late. The place is within three miles of Falmouth. *W. P. W.*

COMMON MUSK.—Is there such a thing now as a Common Musk with the old Musk perfume? Many friends of mine contend that there is not, and I myself am sceptical. *T. Smith, Newry.*

EVERGREEN AMPELOPSIS.—I enclose a fragment of a plant which I believe is an evergreen species of *Ampelopsis*. The plant has grown for some 20 years here against an east wall, the soil being very poor. It has never received protection during cold weather. *G. J. P. Mayor, Lamellen, St. Tudy, Cornwall.* [The specimen sent is *Vitis striata*. This species was not included on p. 240 in the list of tender evergreen species, for although in a few favoured places in the south-west counties it can be grown successfully on a wall, it is not generally hardy, and will not succeed out-of-doors in the neighbourhood of London. It is a native of the most southern part of Brazil, on the borders of Uruguay, and forms a

neat growing plant with small compound leaves. In a few gardens in Cornwall fine examples exist, notably at Tregothnan, near Falmouth. A few years ago, in September, a specimen in that garden was heavily laden with small black fruits of handsome appearance. The species has several synonyms and has been called *Cissus striata* and *Ampelopsis sempervirens*. It is probable that the evergreen species mentioned on p. 240 will thrive in any garden where *V. striata* is known to succeed.—Eds.]

ONIONS FOR MARKET.—I regret *A. D.* should think me a wet blanket. I only wrote as I did because his ideas so completely coincided with my own enthusiastic mistake. Many seedsmen inform the public in their catalogues that the best White Spanish type is the only good sort for a general market crop. I did not believe them, to my sorrow. Some of my regular customers would not even look at a sample. I sent them to Birmingham, and took London advice. The Bristol men told me they had not touched an English Onion all the season. They said they had "plenty of Dutch." It would be calamitous if we grew an immense English supply of the wrong sort of Onion. I thought myself of capturing the market. My bulbs were fine samples; but I was unsuccessful. *P. Kitley.*

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 20.—An excellent display of flowers was seen at the meeting held on Tuesday last in the Society's Hall, Vincent Square, the building being filled even to the annexes with exhibits. Flowering bulbs were numerous, also Roses, forced shrubs, Carnations, Orchids, *Cinerarias*, Rhododendrons, and hardy spring flowers generally.

The FLORAL COMMITTEE granted two First-class Certificates and eight Awards of Merit. The ORCHID COMMITTEE conferred one First-class Certificate and five Awards of Merit. The NARCISSUS COMMITTEE granted a First-class Certificate to *Narcissus "Queen of the West."*

The annual exhibition of the National Auricula and Primula Society was held on the same day; a report of this show is given on p. 270.

At the three o'clock meeting in the lecture-room a paper on "Pansies" was given by Mr. Eric Drabble, D.Sc.

Floral Committee.

Present: W. Marshall, Esq. (Chairman), and Messrs. C. T. Drury, Jno. Green, R. Hooper Pearson, C. R. Fielder, George Gordon, J. H. Barr, J. F. McLeod, W. Howe, W. Bain, Chas. Dixon, Chas. E. Pearson, Ed. Mawley, Chas. E. Shea, J. T. Bennett-Poe, W. Cuthbertson, W. P. Thomson, Jas. Douglas, E. H. Jenkins, George Paul, E. T. Cook, and R. C. Reginald Nevill.

Several exhibits of forced Roses were shown. Mr. GEO. MOUNT, Canterbury, staged in his usual excellent style, a collection of popular varieties, having such beautiful kinds as Dean Hole, Mrs. John Laing, Richmond, Ulrich Brunner, Mrs. R. G. Sharman Crawford, Frau Lilla Rautenstrauch, a German variety with pale, conical blooms lightly tipped with rose, and Liberty, in first-class condition. (Silver Flora Medal.)

Messrs. WM. PAUL & SON, Waltham Cross, exhibited pot Roses, several being tall pillar varieties. These latter included the beautiful Waltham Bride variety and Veilchenblau, the so-called blue-flowered Rambier, a vigorous grower with blooms a poor shade of violet. We also noticed a batch of the beautiful Aennchen Müller, which formed the subject of our Supplementary Illustration in the issue for June 1, 1907. There were also seen Lyon Rose, with plump buds of a coppery-rose tone, and Marguerite. (Silver Flora Medal.)

Messrs. B. R. CANT & SONS, Colchester, staged cut blooms of many varieties of Roses, an epergne filled with the beautiful Fortune's Yellow variety being noticeable.

Some excellent blooms of this delicate Rose were also shown by Lady COWPEN, Panshanger, Herts. (gr. Mr. Staward), who also exhibited a collection of Violets.

Messrs. FRANK CANT & Co., Colchester, showed an assortment of Rambler Roses trained up tall stakes. All the plants were freely flowered, the selection of varieties including Lady Gay, Hiawatha, Mrs. F. W. Flight, Minnehaha, and Crimson Rambler.

Messrs. GEO. PAUL & SON, The Old Nurseries, Cheshunt, showed a number of small plants of a dwarf, perpetual-flowering *Wichuraiana* variety named Agate, also others of a single variety named Sea Shell, one of the parents of this latter variety being a Tea variety. The group contained prettily-flowered *Cystissus*, one labelled Firefly being very fine. Another interesting plant was *Osteomeles anthyllidifolia*, with pinnate leaves and *Olearia*-like inflorescences.

Mr. G. PRINCE, Oxford, exhibited Roses, some as pot plants. Blooms of Mrs. Ed. Mawley, Mrs. Longworth, a new H.T. variety, Florence Pemberton, and other varieties were shown in excellent condition. (Silver Flora Medal.)

Messrs. HUGH LOW & Co., Bush Hill Park, Enfield, had many Roses in an exhibit of miscellaneous flowers. A white sport from the beautiful Killarney variety attracted attention. Carnations shown by this firm were of the high quality usually seen in their exhibits of this popular flower. They also made a feature of *Acacias* in assortment, and large plants in bloom of *Meterosideros floribunda*, *Chorizema cordata*, *Ericas*, and *Grevilleas*. (Silver Flora Medal.)

Mr. W. H. PAGE, Hampton, had one of his usual magnificent exhibits of Carnations associated with *Lilium longiflorum* and red Roses. It was a grand display, all the flowers alike showing excellent culture. (Silver Flora Medal.)

Messrs. WM. CUTBUSH & SON, Highgate, London, N., also presented a fine assortment of these flowers, the blooms being staged with taste and the varieties representative of the best in commerce. Adjoining the Carnations, the same firm showed forced shrubs in assortment, the whole providing a wealth of blossom. (Silver Flora Medal.)

Many interesting flowers were shown from the garden of Sir EDMUND LODER, BART., Leonardslee, Horsham, Sussex (gr. Mr. W. A. Cook). Amongst several species of *Magnolias* was a flower of the rare *M. Campbellii*; *Camellias* were equal to those grown under glass, the old *C. Donckelaarii* being especially fine; blooms of *C. reticulata* were 8 inches across. *Rhododendrons* included *R. Fosterianum*, one of the most fragrant of the family; also *R. Gibsonii*, *R. Aucklandii*, *R. multiflorum*, and *R. ciliatum*. The beautiful *Narcissus* King Alfred was represented by exceptionally large blooms, and equally good was *N. maximus*. There were also plants of *Primula rosea*, *P. denticulata*, *P. cashmeriana*, and many other spring flowers. (Silver Bankian Medal.)

A large table was filled by Messrs. SUTTON & SONS, Reading, with Italian *Hyacinths* in blue and white-flowered varieties. These are excellent for furnishing cut flowers. At intervals were arranged vases of *Freesia Leichtlinii*, which, with small Ferns and Palms, afforded relief to the *Hyacinths*. In the centre was an unnamed species of *Cineraria*. (Bronze Flora Medal.)

A Bronze Flora Medal was also awarded to Messrs. H. CANNELL & SONS, Swanley, for an exhibit of *Zonal Pelargoniums*.

Messrs. JAMES CARTER & Co., High Holborn, London, adopted a pleasing style in exhibiting their plants of *Schizanthus*. Instead of the orthodox table arrangement, they furnished a circular kiosk with hanging baskets of these flowers, and grouped them on the floor and about the sides. The standards were entwined with *Smilax*. The whole formed a bower of flowers. (Silver Flora Medal.)

Messrs. JAMES VEITCH & SONS, King's Road, Chelsea, showed *Cinerarias* of much beauty; some were of beautiful shades of blue, others had rose, mauve, white, and pink blossoms. They were compact specimens, with healthy foliage and huge flower-trusses. The variety *Fantasy* has revolute florets of deep, rosy, mauve colour. Most interesting was *Cineraria flavescens*, raised from *Cineraria Feltham Beauty* × *Senecio auriculatissimus*; the buds are quite yellow and the expanded blooms are a shade of lemon, almost cream. Messrs. VEITCH also showed hybrid *Gerberas*, varieties of *Hippeastrum*, the floriferous *Malvastrum hypomodorum* (see *Gardeners' Chronicle*, June 20, 1908, fig. 176), and a batch of *Clerodendron myrmecophilum*. (Silver Flora Medal.)

Messrs. H. B. MAY & SON, The Nurseries, Edmonton, showed baskets of *Pansies*, *Verbena* Miss Willmott, *Statice profusa*, the dwarf-habited *Roses Phyllis* and *Mme. N. Levavasseur*, and large-flowered *Clematis* of the Marcel Moser and Miss Bateman varieties. Arranged amongst the flowering plants were decorative Ferns. Another exhibit shown by this firm consisted of hardy Ferns. Amongst these were crested forms of exceptional merit of the common *Scolopendrium*. (Silver Flora Medal.)

Colonel HOLFORD, Westonbirt, Gloucestershire (gr. Mr. Chapman), showed varieties of *Hippeastrum*, one receiving an Award of Merit (see Awards) Harvest Moon is of beautiful form, white flushed with rose; *Mirabel* is a rosy cerise shade and *Phoebus* brilliant scarlet.

Hardy flowers were plentiful, several exhibitors arranging their plants in temporised rock-gardens. Messrs. R. WALLACE & Co., Colchester, staged a rockery, somewhat similar to their exhibit at the previous meeting, and planted it with choice species of *Iris*, *Saxifraga*, *Anemone*, *Primula*, &c. (Silver Bankian Medal.)

Messrs. T. S. WARE, LTD., Feltham, also showed an exhibit of this kind, having many subjects of interest to cultivators of hardy plants, including a fine batch of plants of *Primula pulverulenta*. (Bronze Bankian Medal.)

Similar exhibits were arranged by Mr. H. G. PULHAM, Elsenham, Essex; Messrs. JOHN PEED & SON, Forest Hill, Norwood; Messrs. G. & A. CLARK, Dover; Messrs. GEO. JACKMAN & SON, Woking, Surrey (double-flowered *Primroses* and *Primulas cashmeriana* and *denticulata* were excellent in this exhibit); Misses HOPKINS, Mere Gardens, Shepperton-on-Thames; and Miss ALICE SMITH, Barnham, Bognor, Sussex.

Other exhibitors of hardy garden and Alpine plants were Messrs. G. BUNYARD & Co., Maidstone, whose double-flowered *Primroses* were noteworthy; Messrs. JOSEPH CHEAL & SONS, Crawley, Sussex; Mr. G. REUTHE, Keston, Kent (this exhibitor showed a fine dark form of *Primula rosea*, the pretty *Calypso borealis*, *Shortia uniflora*, &c.); THE GUILDFORD HARDY PLANT NURSERY, whose *Aubrietias*, *Primula nivalis*, *Doronicum Clusii*, *Cassandra calyculata*, and *Orob. azurum* were all well cultivated (Bronze Bankian Medal); Messrs. PHILLIPS & TAYLOR, Bracknell, Berks. (this group included a good strain of *Auriculas*); and Messrs. BAKER'S, Wolverhampton. This last-named firm showed a fine *Aubrieta* labelled *J. S. Baker*, also *Polyanthuses*, a batch of *Trilliums*, and the red-flowered *Primula Cockburniana*.

Messrs. BARR & SONS, King Street, Covent Garden, exhibited *Tritonia Prince of Orange*. The blooms are of regular form and not unlike a pale-coloured *Nasturtium*.

Named varieties of *Polyanthus* were shown by Messrs. STORRIE & STORRIE, Glencarse, Perthshire.

Pansies and *Violas* in variety were shown by Messrs. DOBBIE & Co., Rothesay (Bronze Bankian Medal), and Messrs. CARTER, PAGE & Co., 52, 53, London Wall, London.

AWARDS.

FIRST-CLASS CERTIFICATES.

Bougainvillea Rosa Catelina.—As shown, this plant appears to be a variety of *B. glabra*, and may, therefore, be expected to possess the good habit of that species. The purple colour of the type is next to eliminated from the bracts, which are a shade of rose. A large flowering branch was shown by Colonel PETRE, Westwick House, Norwich (gr. Mr. G. D. Davison), who stated that the variety was obtained from Las Palmas, Grand Canary.

Primula Forrestii.—This is an interesting new species from the high alps of Yunnan, China (9,000 to 11,000 feet altitude). The species possesses many points of uncommon interest. The root-stocks are described by Mr. Forrest, who collected this species and others for Mr. A. K. Bully, as growing in the crevices of dry, shady limestone cliffs, where they become 2 to 3 feet in length. Only a few inches of the tapered root-stalk are generally enclosed in the crevices of the rock, the remaining part of the plant being pendulous for almost its full length, a few inches of the growing apex only being turned out and upwards. It is estimated that some of the native plants are from 50 to 100

years old. The plants shown by Messrs. BEES, LTD., were about 2 inches high, and bore simple, ovate-elliptical leaves with crenate margins. The flowers were borne on erect scapes, and were deep yellow with orange-coloured eye. Both flowers and foliage were fragrant. The older leaves were mealy on the under surface. The species is described as perfectly hardy in Cheshire.

AWARDS OF MERIT.

Auricula (Alpine) Admiration.—A grey-edged flower with sulphur-coloured centre.

Auricula (Alpine) Claud Halcro.—This flower has a yellow centre and crimson petals falling to bronzy-red at the margin.

Auricula (Alpine) Robert Bruce.—A grey-edged flower with sulphur-coloured centre.

Auricula (Alpine) Ulleswater.—A very large purple-edged flower with whitish centre.

Carnation "Lady Coventry".—This is a magnificent variety of the *Souvenir de la Malmaison* type, the flowers being of extra large size, and carmine-lake in colour. One plant, which was cultivated in a 3-inch pot, was 2 feet in height and bore a flower of immense size. The blooms are very fragrant. Shown by Messrs. W. CUTBUSH & SONS.

Hippeastrum Graechus.—This is a deep crimson flower without any sign of another colour. It is the richest and deepest in tint of this type yet exhibited. Shown by Messrs. JAS. VEITCH & SONS, LTD.

Hippeastrum Pinkie.—This flower has excellent form and good substance in the imbricated petals. These are of glistening white, but marked with rose-coloured veins, the colour occasionally suffusing between the veins. The centre of the flower is pale green. Shown by Col. HOLFORD, C.I.E., C.V.O., Westonbirt, Tetbury (gr. Mr. A. Chapman).

Saxifraga decipiens hybrida grandiflora.—Those who know the moss-like *Saxifragas* and can recall a plant having somewhat of the habit of *S. cespitosa*, may form a good idea of the habit of growth of this novelty. In other respects it may be compared to a large, free-flowering plant in the way of *S. "Guildford Seedling"*, except that the plant promises to flower more freely. The plants exhibited were but 4 inches or 5 inches in height, the richly-coloured flower stems harmonising with the blood-crimson of the flowers. This variety represents an advance on all crimson-flowered *Saxifragas* hitherto known. From Mr. KITLEY, Bath.

Narcissus Committee.

Present: H. B. May, Esq. (Chairman); Miss E. Willmott, and Messrs. W. Poupard, W. A. Milner, Henry Backhouse, P. D. H. Williams, P. R. Barr, F. H. Chapman, Arthur R. Goodwin, Christopher Bourne, G. W. Leak, J. D. Pearson, W. F. M. Copeland, J. T. Bennett-Poë, Robert Sydenham, W. W. Fowler, James Walker, H. A. Denison, C. T. Digby, R. W. Wallace, Walter T. Ware, John Pope, and Chas. H. Curtis.

There were many good collections of *Narcissus*. One of the largest and most comprehensive groups was staged by Miss F. W. CURRY, Lismore, Ireland. Notwithstanding their long journey by sea and land, the blooms appeared fresh and good. Among the many excellent varieties, we noticed *Maggie May*, *Queen of Spain*, *Horace*, *Dante*, and *Lycidas* of the *Poeticus* section; *Lord Kitchener*, a handsome variety of the *Leedsii* group; *King Alfred*, *The Geraldine*, *Lady of the Snows* (a white *Ajax* kind), *Lady Margaret Boscawen*, and *Apricot*. (Silver-gilt Bankian Medal.)

Messrs. BARR & SONS, King Street, Covent Garden, London, showed, in addition to a remarkably good collection of unnamed seedlings, the giant white *Leedsii* *Lord Kitchener* and the unrivalled *Peter Barr*, also *Loveliness*, *Mascotte*, and *Torchlight*, while the bicoloured *Seraphim* was in every respect excellent. A superb variety of the *Engleheartii* type was seen in *Red Emperor*; *Czarina* is a giant flower of the *Leedsii* class. (Silver Flora Medal.)

Messrs. POPE & SON, King's Norton, displayed many good kinds of *Narcissi* such as *Olympus* (a choice yellow *Ajax* variety), *White Lady*, *Bernardine* (with a rich orange crown), *Will Scarlett*, *J. B. M. Camm*, *Ben Simonite* (a fine

bicolor), Sebastian (of the Leedsii section), Boat-swain (a flower with soft yellow trumpet), Judge Bird (a bicolor flower of large size), Torch, Gonzola, Weardale Perfection, and a large number of promising seedlings. (Silver Flora Medal.)

Messrs. HOGG & ROBERTSON, Dublin, also exhibited a choice assortment of these flowers, their extensive display being composed of standard varieties and novelties. King Alfred was especially good. (Silver Flora Medal.)

Messrs. R. H. BATH, LTD., Wisbech, staged a collection of well-grown Narcissi, the varieties including King Alfred, Silver Strand, Weardale Perfection, Primrose Queen, Lucifer (with a fine orange-coloured cup), King's Norton (a big yellow self), Harmony (white), Fireflame, and Crystal Queen. (Silver Banksian Medal.)

Mr. G. CHURCHER, Alverstoke, and Mr. W. WATTS, St. Asaph, also displayed exhibits of these flowers, a Silver Banksian Medal being awarded in each case.

FIRST-CLASS CERTIFICATE.

Narcissus Queen of the West.—A yellow Ajax Daffodil of fine proportions and of that rich yellow colour so desirable for a market variety. It may be likened to a glorified flower of Golden Spur in regard both to its colour and form. The handsome crown is more widely expanded than in the older variety. An Award of Merit has been previously granted the variety, and on this occasion the Committee gave the higher award of a First-class Certificate. Shown by Messrs. WALTER T. WARE, LTD., Bath.

Orchid Committee.

Present: J. Gurney Fowler, Esq., (in the Chair), and Messrs. Jas. O'Brien (hon. sec.), de B. Crawshay, H. Little, W. Boxall, J. Forster Alcock, Stuart Low, F. Sander, R. G. Thwaites, W. Cobb, J. Cypher, W. H. Hatcher, J. Charlesworth, H. G. Alexander, W. H. White, A. Dye, H. Ballantine, Gurney Wilson, J. Wilson Potter, W. Bolton, H. A. Tracy, W. Waters Butler, and F. J. Hanbury.

Colonel G. L. HOLFORD, C.I.E., C.V.O., Westonbirt, Tetbury, Glos. (gr. Mr. H. G. Alexander), staged a selection of fine hybrids raised at Westonbirt, including *Odontoglossum Phæbe* "Westonbirt variety," a fine white flower evenly blotched with deep ruby-red; *Laelio-Cattleya* × *Dorothy* var. *fulgens*, a pretty salmon-tinted flower having an orange ground; and *L.-C. Dorothy splendens*.

Sir TREVOR LAWRENCE, Bart., K.C.V.O., Burford, Dorking (gr. Mr. W. H. White), showed a selection of rare *Masdevallias*, including *M. deorsa*, *M. pachyantha*, varieties of *M. ignea*, *M. Shuttleworthii*, *M. Shuttryana*, *M. leontoglossa*, *M. Chamberlainiana*, and *M. Fraseri*. (See also Awards.)

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), was awarded a Silver Flora Medal for an effective group, in which were several varieties of *Odontoglossum crispum* with finely-blotched flowers, and a selection of good hybrids. Among species noted were *Cyrtopodium punctatum*, *Odontoglossum Edwardii*, two good specimens of *Epidendrum Wallisii*, *Oncidium Marshallianum*, *O. leucochilum*, *O. concolor*, white forms of *Cattleya intermedia*, and a plant of *C. citrina* with six flowers.

Messrs. CHARLESWORTH & Co., Haywards Heath, were awarded a Silver Flora Medal for a select group consisting chiefly of fine hybrids, and all splendidly grown. Amongst the best plants were *Odontioda Bradshawiae* with flowers of a light shade of scarlet; the fine pure white flowered *Brasso-Cattleya* "Queen Alexandra"; *Odontoglossum ardentissimum xanthotes*, snow-white with some orange spots on the lip; the rare white-flowered *Trichopilia Backhousiana*; a very beautiful home-raised, heavily-blotched form of *Odontoglossum crispum*; the dark scarlet *Renanthera Imschootiana*; *Diacrium bicornutum*; *Cattleya Trianae* Edgar Knight, a variety of the Emperor class with a deep violet-purple lip showing but little yellow in the throat; *Aërides Fieldingii* and other species.

Messrs. SANDER & SONS, St. Albans, were awarded a Silver Flora Medal for a group which included another specimen of their new *Odontoglossum Dreadnought*. The central plant was a

grand specimen of *Miltonia Bleuana* Sander's variety with six flower-spikes. Amongst others noted were *Laelio-Cattleya Dominiana* magnifica; *Laelia Cholletiana* with four flower-spikes; *Odontoglossum crispum Thompsonii*, bearing large white flowers finely blotched with purple. We also noticed a remarkable white form of *O. crispum* with very firm substance in the petals; *Vanda cœrulescens*, *Polystachya bracteosa*, *Scuticaria Steelii*, and other uncommon species.

Messrs. JAS. CYPHER & SONS, secured a Silver Flora Medal for a group rich in *Dendrobiums*. *D. infundibulum* was finely flowered; other species were *D. atrovioleaceum*, *D. nobile virginale*, *D. Apollo grandiflorum*, *D. Devonianum*, and *D. Dalhou-nobile*. We also noted the white *Chysis bractescens*, *Miltonia Warszewiczii*, *Cattleya intermedia alba*, and various *Brasso-Cattleyas*.

Messrs. HUGH LOW & Co., Bush Hill Park, Enfield, were awarded a Silver Flora Medal for a group in which were several distinct forms of *Cattleya Schröderæ* of the coloured type; also a clear white variety of this plant. The *Dendrobiums* comprised good examples of *D. barbatum*, *D. Devonianum*, *D. Jamesianum*, and *D. Wardianum* of a specially fine type, one specimen bearing 125 flowers. Others noted were *Cymbidium Lowianum concolor*, *C. Lowgrinum*, a

Schröderæ *Silvia* James, a fine flower of a pale lilac tint.

J. T. BENNETT-POË, Esq., Holmewood, Chess-hunt (gr. Mr. Downes), exhibited cut spikes of *Cymbidium Colmanæ* Holmewood variety.

H. S. GOODSON, Esq., Putney (gr. Mr. Day), showed *Cattleya Mendelii* Goodson's variety and *Odontoglossum Rolfeæ* Ernestii.

NORMAN C. COOKSON, Esq., Oakwood, Wylam (gr. Mr. H. J. Chapman), showed *Odontoglossum crispum* Millicent, a beautifully-blotched home-raised variety; also a fine form of *O. percultum*.

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), showed his very beautiful new hybrid *Odontoglossum Theodora* (see fig. 115), a very fine dark blood-red *Odontioda Charlesworthii*, and *Odontoglossum Vulpex* (Pescatorei × *Vuykstekei*).

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontoglossum Theodora (*Rossii rubescens* × *triumphans*), from DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables).—One of the most remarkable of *Odontoglossums*, and comparable to the handsome *O. Smithii* in its compact habit and size of flower. The sepals and petals are of a clear canary-yellow ground colour, the sepals showing little yellow except on



FIG. 115.—ODONTOGLOSSUM × THEODORA.

Awarded R.H.S. First-Class Certificate on Tuesday last.)

large specimen of *Masdevallia Pourbaixii*, pretty plants of *Ionopsis paniculata*, and *Cirrhopetalum Amesianum*.

Monsieur MERTENS, Ghent, secured a Silver Flora Medal for a group of select hybrid *Odontoglossums*, including *O. Lawrenceanum*, *O. Wigianum*, *O. amabile*, *O. illustre*, and *O. percultum*.

Mr. A. W. JENSEN, Lindfield, Haywards Heath, was awarded a Silver Banksian Medal for a group consisting of good forms of *Cattleya Mendelii*. Two of the plants carried 21 and 23 flowers respectively. With the *Cattleyas* were several good plants of *Odontoglossum crispum*, one having rose-tinted flowers bearing many small brownish spots, similar to the *punctatissimum* class.

The Duke of MARLBOROUGH, Blenheim Palace (gr. Mr. Hunter), showed *Odontoglossum crispum* virginale Blenheim variety.

Mrs. TEMPLE, Leyswood, Groombridge (gr. Mr. Bristow), sent *Laelio-Cattleya* Mrs. Temple (*L.-C. Hy. Greenwood* × *C. Mossiæ*).

HENRY LITTLE, Esq., Baronshalt, Twickenham (gr. Mr. Howard), showed *Cattleya Mendelii* Baronshalt variety, a good flower of peculiar colour with a purplish-crimson lip, showing but little of the usual yellow disc.

W. JAMES, Esq., Chichester, showed *Cattleya*

the tips and as shading between the closely-arranged bars of reddish-claret colour. The petals have a wide margin and are tipped with canary-yellow, the central two-thirds bearing bars of confluent reddish-claret blotches. The lip has a broadly ovate fimbriate blade, white with a slight tinge of lavender, the base having a yellow crest, in front of which is a horseshoe-shaped reddish-brown blotch.

AWARDS OF MERIT.

Laelio-Cattleya Goldencrest (*C. Schröderæ* × *L. Cowanii*), from Col. G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. H. G. Alexander).—A beautiful hybrid bearing an erect inflorescence of many pretty flowers of a clear chrome-yellow colour, with darker veining on the lip.

Cattleya Robert de Wavrin (*Schröderæ* × *Schilleriana*), from Col. G. L. HOLFORD.—A large flower of fine substance, the sepals and petals being white, tinged with pale rose; the broad labellum is deep rose, with a yellow disc from which light crimson veining, derived from *C. Schilleriana*, extends to the front.

Odontoglossum loochristiense aureo-fulvum, from Sir TREVOR LAWRENCE, Bart., K.C.V.O., Burford (gr. Mr. W. H. White).—A finely-formed flower with bright yellow sepals and petals distinctly barred and blotched, with dark-

reddish chocolate. The lip is white with a yellow crest around which are some brown spots.

Miltonia Bleuana Sander's variety, from Messrs. SANDER & SONS, St. Albans.—A grand form with large, almost circular, white flowers, the petals having their bases tinged with violet; the lip a distinct mask of reddish lines. The plant bore six spikes.

Epi-Lalia Lionetii (L. purpurata × E. atropurpureum), from Messrs. CHARLESWORTH & Co., Haywards Heath.—A singular hybrid, producing an erect inflorescence, after the manner of *E. atropurpureum* (macrochilum), bearing flowers greatly resembling in shape those of that species, and of a bright rose colour.

BOTANICAL CERTIFICATE.

Pleurothallis Birchenallii, from Messrs. CHARLESWORTH & Co.—A singular species, bearing spikes of long reddish-purple flowers with narrow, white petals resembling *P. Scapha*.

Oncidium barbatum, from GURNEY WILSON, Esq., Glenthorne, Haywards Heath.

CULTURAL COMMENDATION.

To Mr. H. G. Alexander, Orchid grower to Col. G. L. HOLFORD, for a notable specimen of *Cattleya Enid* "Westonbirt variety," with seven flowers on a spike. The same award was given for a fine plant of *Odontoglossum Pescatorei*, with 153 flowers on three spikes, shown by this exhibitor.

Mr. W. H. White, Orchid grower to Sir TREVOR LAWRENCE, BART., showed three finely-flowered plants of *Dendrobium crepidatum*, and was granted a Cultural Commendation.

Fruit and Vegetable Committee.

Present: A. H. Pearson, Esq. (in the Chair), and Messrs. P. D. Tuckett, J. Vert, H. Parr, A. Dean, O. Thomas, J. Lyne, W. Bates, G. Wythes, F. Perkins, J. Davis, J. McIndoe, W. Crump, C. Foster, G. Hobday, W. Fyfe, A. R. Allan, J. Harrison, and W. Poupert.

A collection of Pineapples, including very small fruits of the Queen variety and larger examples of smooth Cayenne were displayed by THE SOUTH AFRICA CONSTANIA FRUIT CO.

MESSRS. SUTTON & SONS, Reading, set up an interesting and meritorious group of "April" Cabbage some 150 in number. These were from a sowing made early last August, and were specially planted 9 inches apart in the open to furnish early heads. All were small, very conical, and quite firm. (Silver Banksian Medal.)

Lady COWPER, Panshanger, Herts. (gr. Mr. Steward), staged a collection of seven dishes, distinct, of frame-grown Potatoes. They were good samples, but much the finest was Midlothian Early Kidney. Other varieties were Sharpe's Express, Duke of York, Sharpe's Victor, Britannia, Tweedale, and Early Balfour. The same exhibitor showed excellent Canadian Wonder Dwarf Beans and Dainty Scarlet Turnip-rooted Radishes. (Silver Banksian Medal.)

Sir EDMUND LODER, BART., Leonardslee, Horsham, Sussex (gr. Mr. W. A. Cook), showed heads of late Broccoli.

COMPETITIVE CLASSES.

Mr. J. POUPART, Brentwood, staged five large flat bundles of Asparagus. Two of these were in competition in a trade class, and secured a Silver Knightian Medal.

Mr. E. BECKETT, Aldenham House Gardens, was the only exhibitor of two dishes of Dwarf French Beans, having the varieties Canadian Wonder and Ne Plus Ultra, both in excellent pods. The exhibit secured the first prize. There was no other competitor.

NATIONAL AURICULA & PRIMULA. (SOUTHERN SECTION.)

APRIL 20.—The annual exhibition of this Society was held at the Horticultural Hall, Vincent Square, Westminster, in conjunction with the fortnightly exhibition of the Royal Horticultural Society. Owing to the cold weather, the season for these flowers is late, and few growers of the Auricula had their plants in bloom. The number of entries was much fewer than on former occasions, and very poor competition resulted. The Society has lost by death several prominent members, whose exhibits were missed on this occasion, notably Mr. Martin Smith, Mr.

Charles Turner, and Mr. Ben Simonite. In the larger classes for Auriculas Mr. James Douglas easily surpassed his competitors, his flowers being much superior to any of the others.

SHOW AURICULAS.

Twenty-four Auriculas in not fewer than twelve dissimilar varieties.—There were three competitors in this class, viz., Mr. JAMES DOUGLAS, Great Bookham, Surrey; Mr. W. M. SHIPMAN, Altrincham; and Mr. J. H. WILSON, Handsworth, Sheffield, the prizes being awarded in the order of their names. Mr. DOUGLAS had by far the finest flowers. He staged Mrs. Phillips, Prince Charming (a very commendable example), Henry Wilson, Marmion, Seedling Grey Edge, Queen of Sheba (one of the best in the collection), Sultan, Rev. F. D. Horner, Ouida, Dinham, Lovebird, Favourite (2) (this variety was in good form), Harrison Weir (2) (also shown well), Queen of Spain, Geo. Lightbody, Shirley Hibberd (good), Abraham Barker, Eucharis (2), Abbé Liszt, and Colonel Champneys. In the 2nd prize exhibit were good examples of Mikado, Acme, Shirley Hibberd, and Dinham. Mr. WILSON'S best examples were Heroine, Cleopatra, and Ruby.

Twelve show Auriculas of dissimilar varieties.—Mr. JAMES DOUGLAS and Mr. W. SMITH, Bishops Stortford, contested in this class, the former winning, but not so easily as in the larger class. Mr. DOUGLAS had Dido, Abbé Liszt, Favourite, Beauty, Harrison Weir, Westhumbra, Lovebird, Mrs. Phillips, Marmion, Conservative, Prince Charming, and George Lightbody. The 2nd prize group contained good specimens of Abbé Liszt, Harrison Weir, Dr. Hardy, and Snowdon.

Six show Auriculas, dissimilar.—Mr. J. T. BENNETT-POË, Ashley Place, London, S.W., was the only exhibitor, and he was awarded the 1st prize. His varieties were Richard Heady, Mrs. Henwood, J. Hanniford, Mrs. Phillips, Rev. F. D. Horner, and Vesta.

Four show Auriculas, dissimilar.—There were two exhibits, staged by Mr. BENNETT-POË and Mr. F. W. PRICE, Beckenham, who were awarded 1st and 2nd prizes respectively. The premier four were Prince Charming, Rachel, Mrs. Phillips, and Mrs. Henwood.

The best single specimen of a green-edged variety was Abbé Liszt, shown by Mr. DOUGLAS; the best grey-edged variety Stately, shown by Mr. W. SMITH; the best white-edged variety Acme, shown by Mr. F. W. PRICE; and the best coloured flower, Favourite, shown by Mr. DOUGLAS.

For seedling varieties never before exhibited, the 1st prizes were awarded as follow:—Green-edged, Harbinger; grey-edged, Grey Friar; and fancy, Majestic; all shown by Mr. W. SMITH.

The premier show Auricula was Queen of Spain, a maroon "self" variety, shown by Mr. DOUGLAS.

ALPINE AURICULAS.

Twenty-four Alpine Auriculas in not fewer than twelve varieties.—There were two competitors, viz., Mr. JAMES DOUGLAS and Messrs. PHILLIPS & TAYLOR, Bracknell. Mr. DOUGLAS won the 1st prize easily with Admiration, Dazzle, Rosy Morn, Mrs. James Douglas, Janet, Sweetness (new), Brightness, Argus, Phyllis, Purple Glory, Robert Bruce (very finely shown), Janet, Firefly, Ettrick, and Mrs. Markham.

Twelve Alpine Auriculas, dissimilar.—The same two competitors as in the last-named class, with Mr. W. M. SHIPMAN, contested this class. Mr. DOUGLAS again won the 1st prize, followed by Messrs. PHILLIPS & TAYLOR. In Mr. DOUGLAS'S collection was Phyllis, the premier Alpine Auricula in the show.

Six Alpine Auriculas, dissimilar.—There were four competitors in this class, Lady COWPER, Panshanger, Herts. (gr. Mr. Steward), was awarded the 1st prize, for very fair specimens of Seedling Maggie, Blue Bell, Argus, Rosy Morn, Teviotdale, and Flora McIvor; 2nd, Mr. F. W. PRICE, Beckenham.

POLYANTHUSES.

These flowers also were not up to the usual exhibition standard, owing to their backwardness.

In the class for 12 varieties Mr. WATTS, St. Asaph, was awarded the 1st prize, and Messrs.

TITT & SON, Windsor, the 2nd prize, these two being the only exhibitors.

Messrs. TITT & SON took the 1st prize in a class for 12 Primroses, of dissimilar varieties, having some excellent plants.

Mr. WATTS showed the best specimen Primrose in a pale yellow variety with a deep orange-coloured "eye."

The best group of Primrose and Polyanthus plants arranged for effect and occupying an area of 4 feet by 3 feet, was shown by Mr. MORTIMER, Rowledge, Farnham, Surrey. All were seedlings of an exceptionally fine strain. 2nd, Messrs. STORRIE & STORRIE, Glencarse, Perthshire, with named varieties.

AWARDS.

The Certificate of the Society was awarded to each of the following Auriculas:—

Sweetness.—An Alpine variety of fine form, the colour being purple shading to lilac.

Queen of Spain.—A self show variety, colour maroon. Both these were shown by Mr. J. DOUGLAS.

Harbinger.—A green-edged show variety, exhibited by Mr. W. SMITH.

Bracknell.—An Alpine variety with a large yellow eye, shown by Messrs. PHILLIPS & TAYLOR.

Alexander Dean.—An Alpine variety of deep maroon colour, with a yellow centre. Shown by Mr. F. W. PRICE.

A non-competitive exhibit of Polyanthus was shown by Mr. JOHN CROOK, The Avenue, Camberley, Surrey.

CORNWALL DAFFODIL AND SPRING FLOWER.

APRIL 15.—On account of the backwardness of the season, it was found necessary to postpone the date of the show from March 30 to April 15. This alteration suited exhibitors, for the entries exceeded those of any previous show, and the exhibition was certainly the best that has ever been held. The displays of Daffodils were quite equal to those of previous seasons; the exhibits of hard-wooded flowering shrubs were superb, Violets were exceptionally fine, and the collections of spring flowers generally were varied and interesting. The show was held in the great Market Hall, Truro. The weather was fine and the exhibition was attended by a large number of visitors. The Hon. John Boscawen has occupied the post of hon secretary since the inception of the society 13 years ago.

In the class for 30 varieties of Daffodils, the 1st prize was won by Mr. E. J. WILLIAMS. Among the best specimens shown by this exhibitor were White Queen, Horace, Incognita, Lucifer, Lady Margaret Boscawen, King Alfred, and Homespun. 2nd, the Rev. A. T. BOSCAWEN, whose exhibit was held by many to surpass that which received the 1st prize.

For 30 varieties of Daffodils, not necessarily in commerce, the 1st prize was awarded to Mr. J. C. WILLIAMS. This stand was one of the most remarkable features of the exhibition. It included a collection of seedling varieties, numbered but not named. Amongst them were some beautiful bicolor trumpets, a fine golden trumpet, an improved White Queen, and several very fine flat-crowned flowers with pale, dark yellow, and glowing orange-crimson centres.

Miss CLARICE VIVIAN won the 1st prize for six Magni-coronati varieties, and for the same number of Medio-coronati flowers. This lady also showed the best collection of three varieties of the Leedsii section, the best six Parvi-coronati flowers, and won the 1st prizes in several other classes. Other successful exhibitors of Narcissi included Miss MABEL WILLIAMS, Col. NOEL-USTICKE, Mr. P. D. WILLIAMS, Mr. E. H. WILLIAMS, and Mr. C. DAWSON.

In the class for 20 hard-wooded flowering shrubs or creepers, equal 1st prizes were awarded to Mr. T. B. BOLITHO and Mr. C. HEXT. Mr. BOLITHO'S collection contained by far the rarer varieties and included *Buddleia madagascarensis*, *Acacia cordata*, *Chorozema Lowii*, *Cerasus Watereri*, *Acacia verticillata*, *Magnolia stellata*, *Boronia heterophylla*, *Hardenbergia monophylla*, *Calceolaria Burbidgei*, *Spiraea arguta*, *Andromeda formosa*, *Sutherlandia frutescens*, *Grevillea Preisei*, *Skimmia Fortunei*, *Lotus peliorhynchus*, *Camellia reticulata*, *Prunus pendula*, *Jasminum primulinum*, *Embothrium coccineum* and *Boronia megastigma*.

NURSERYMEN'S EXHIBITS.

The nurserymen provided a very bright display with their exhibits. Messrs. R. VEITCH & SON, Exeter, received an Award of Merit for *Rhododendron* Dr. Stocker. They also staged *Azalea obtusa* alba, A. Marie Louise, *Prunus spinosa* flore pleno, *Grevillea sulphurea*, *G. ornithopoda*, *Brachysema Drummondii*, *Kennedyia rubicunda*, as well as rock plants and *Hippeastrums*.

The DEVON ROSERY, Torquay, showed a fine collection of pot Roses, including the varieties Mollie Sharman Crawford, John Cuff, Dorothy Page Roberts, and Elizabeth Barnes.

Mr. G. REUTHE, Keston, Kent, exhibited an interesting assortment of Alpines and received an Award of Merit and Cultural Commendation for *Calypto borealis*.

Messrs. BARR & SONS, King Street, Covent Garden, London, provided a superb show of Daffodils, including the varieties Mrs. G. H. Barr, Peter Barr, Fair Maiden, Horace, The Bride, Weardale Perfection, Mountain Maid, Katharine Spurrell, Monarch, Albatross, Resolute, Buccaneer, and Admiral Togo.

Messrs. CARTWRIGHT & GOODWIN also showed a very fine selection of Daffodils, amongst which were noticed Goldseeker, Yellowhammer, Home-spun, Outpost, and Alice Knights.

Messrs. CUTBUSH & SON staged *Adonis amurensis* flore pleno, *Tulipa pulchella*, *Anemone vernalis*, *Ranunculus amplexicaulis*, and many other spring flowers.

Messrs. HEATH & SONS, Cheltenham, exhibited *Saxifragas*, *Glaucium flavum tricolor* and *Lathyrus cyaneus*.

A Cultural Commendation was given to Mr. T. H. ARCHER HIND for varieties of *Helleborus*.

Mr. J. H. WATSON showed a collection of *Acacias* grown in the open; they included *A. hastulata*, *A. Drummondii*, *A. acinacea*, *A. ovata*, *A. armata*, *A. armata angustifolia*, *A. diffusa*, *A. floribunda*, *A. melanoxylon*, *A. leprosa*, *A. hæmatophylla*, *A. longifolia mucronata*, *A. longifolia magnifica*, *A. ulicina*, *A. verticillata*, *A. Riceana*, and *A. juniperina*.

DEVON DAFFODIL AND SPRING FLOWER.

APRIL 20.—A very successful show, under the auspices of the above society, was held in the Guildhall, Plymouth, on this date. The entries, both in the open classes and those restricted to growers in Devonshire, were numerous, and the exhibits generally were of a high order of merit. In judging the Daffodils the new classification was adopted.

The following exhibitors were prominent prize winners in the classes for Narcissi:—Mrs. TYACKE, Miss CLARICE VIVIAN, Messrs. POPE & SON, and Mrs. CHRISTY.

In the class for 12 hardy spring flowers, the 1st prize was won by Mr. H. W. GRIGG with a fine stand, which contained *Leucojum æstivum*, *Fritillaria imperialis*, *F. verticillata*, *F. obliqua*, *F. meleagris* alba, *Triteleia uniflora*, *Iris bucharica*, *Scilla italica*, *Muscari conicum album*, *Anemone Robinsoniana*, *Erythronium giganteum*, and *Tulipa florentina* major.

The best six bunches of Anemones were shown by Mr. SOLTAU-SYMONS, and the best six bunches of *Anemone fulgens* by Mrs. CORYTON.

In the classes reserved for residents in Devonshire the following exhibitors were successful in obtaining 1st prizes:—Mr. SOLTAU-SYMONS, Mrs. GAGE-HODGE, Mrs. PARLBY, Miss HINCHCLIFF, Miss G. HAWKER, Hon. Mrs. COLBORNE, Mr. T. BATSON, Mr. H. G. HAWKER, Mrs. DUKE YONGE, Mrs. J. J. MALLOCK, Mr. R. WATTS, Mrs. BAINBRIDGE, and Mrs. A. FROUDE.

Messrs. ROBERT VEITCH & SON, Exeter, showed a fine collection of plants, among which were *Lotus peliorhynchus*, *Eriostemon nerifolius*, *Correa cardinalis*, *Exochorda Albertii macrantha*, *Acacia Drummondii*, *A. armata*, *Gerbera Jamesonii*, *Prunus triloba*, *Pimelea spectabilis*, *Magnolia stellata*, *Hibbertia dentata*, and numerous rock plants. The Devon Rosery, Torquay, staged a splendid selection of pot Roses in full bloom, embracing many of the newer varieties.

Messrs. BARR & SONS, King Street, Covent Garden, London, arranged a display of Daffodils, amongst which were many new varieties. Messrs. JOHN WEBBER & SONS exhibited a collection of miscellaneous plants.

Obituary.

WILLIAM MILLER.—The death of William Miller, who for upwards of 40 years was gardener to the Earls of Craven, at Combe Abbey, Warwickshire, occurred on the 16th inst. at Berkswell. Miller belonged to an old school of Scotch gardeners who received their early tuition under Fleming, at Trentham, in Staffordshire. He was born at Knockdow, in the parish of Inderchoalin, Argyleshire, on November 29, 1828. His father was then gardener to James Lamont, of Knockdow, having commenced service in this family as a gardener in 1821. He served three generations, extending over a period of 52 years, and died on August 3, 1873, in his 85th year. In an autobiographical note, which William Miller contributed to these pages in the year 1875, he states that he was educated at the parish school, Toward, until he was 14 years of age, when he was sent to teach two orphan grandchildren belonging to a wealthy sheep farmer in the neighbourhood. At the end of this service he was put to work under his father, who was then manager on the Lamont estate, already mentioned.



THE LATE WILLIAM MILLER.

Plantations of Larch, Scotch Fir, Spruce and Oak were being plentifully made at that time on this and other estates on the west coast, for purposes of shelter and timber. Although still a lad, Miller could measure land. When a piece of land was set out for planting, he was frequently sent to survey it, and to work out the number of plants that would be required. Subsequently Miller was appointed foreman in the Lamont gardens in succession to his elder brother John. After serving for a time in this capacity, he entered the gardens at Erskine House, on the Clyde, the seat of Lord Blantyre. The gardener at that time was George Shiels. He had the best walled garden in the West of Scotland. The bothy at Erskine was a good one for those days, and in the evening the young men read assiduously. It was here that Miller commenced horticultural drawing, which he pursued ever afterwards. How he succeeded may be seen in the flower garden which he designed at Combe Abbey, and in various designs for flower gardens which he has contributed to this journal, and to the Paris Exhibition of 1900. He only remained at Erskine for one year, and then, having no situation to go to of a suitable character, he entered for the winter the Andersonian Univer-

sity at Glasgow. In the following spring he went as journeyman to Dysart House, where Mr. John Laing, the founder of the nursery of John Laing and Sons, Forest Hill, was then gardener. During the time Miller was at Erskine, John Laing succeeded in flowering *Rhododendron Dalhousia* for the first time in this country. It was John Laing who sent Miller to Trentham. At the end of two years he left Trentham for Gowran Castle, Ireland, to become head gardener to Viscount Clifden, where he remained four years. In 1859, Fleming, of Trentham, sent for Miller to take up the bailiffship on the Trentham home farm. Miller wrote afterwards that he cited repented most bitterly that ever he left the service of such a kind and indulgent family. The post at Trentham proved to be hedged with difficulties of a personal rather than professional character. Leaving Trentham again in the spring of 1861, he worked under Mr. Eyles in the new gardens of the Royal Horticultural Society at South Kensington for three months, and then, with the help of several friends, including Fleming, of Trentham, he obtained an appointment as head gardener at Combe Abbey. The late Earl of Craven was a man of great taste, fond of horticulture and of improving his estate; he possessed a good knowledge of trees. Miller's first duty at Combe was to erect new forcing-houses. He afterwards commenced a series of improvements in the pleasure grounds, and this work was continued for many years. Large trees were transplanted, and many Conifers and other new trees and shrubs were planted. Extensive green drives were formed and trees and hedgerows were cleared away in order to open up views and increase the interest of the pleasure grounds and park. In the 'sixties Miller was a frequent exhibitor at the competitive horticultural exhibitions. Some of the best shows in this country were then held at the Royal Botanic Society's Gardens, Regent's Park. In 1867, 1868, and 1869 Miller won successively the gold medals offered by this Society for the best collections of fruit.

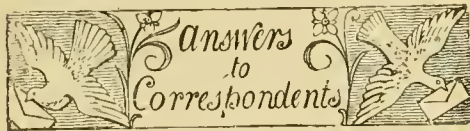
During a week-end visit the writer spent with Miller about ten years ago at Combe, he related a great many interesting details connected with his service there. He could look up to Poplars 60 feet in height which he had planted. He could point to the most interesting flower garden and say that it had been formed not only by himself, but from plans which he had designed. The flower garden portrayed an idealistic tree growing from an ornamental vase, nearest the house, and spreading in fanciful curves over the space the garden covers, some of the branches terminating in little beds, similar in form to the Shamrock leaf; and others resemble the flower-head of a Thistle. The vase and its ornamentation was planted in semi-carpet-bedding style, and the branches of the trees were like so much tracery, the beds being only from three-quarters of a foot to about 1½ feet in width. The planting of such beds can only suitably be done with neat-habited plants, and Pelargoniums and other showy species were most effective. By the sides of this tracery there were two long beds in which a very bright display was made by hardy perennial and summer-bedding plants, disposed in a mixed pin-cushion system, thus affording a feature in the same view of entirely different style.

In every direction the features at Combe had been formed or developed by Miller. He was not only a practical gardener but a student as well. Whenever he could obtain leisure he might be found in his room studying works upon horticulture or botany, or drawing new plans. He studied British botany closely, and in this respect the flora around the large and magnificent lake at Combe offered considerable facilities.

A few years ago Miller resigned his position at Combe. Being well over 70 years of age at the time, he might reasonably have claimed some rest after an exceedingly energetic and busy life, but instead he preferred to commence a business and nursery at Berkswell, near Coventry,

where he has since practised as a landscape gardener. For 40 years past Miller has been a frequent and valued correspondent to this journal. His brother John, who will be remembered as gardener at Workop Manor, Nottinghamshire, and Ruxley Lodge, Surrey, died in 1902 at the age of 80 years. John had four sons, who adopted gardening as a profession. William leaves several sons, but all have selected other occupations. One of them, Mr. Hugh Miller, a civil engineer, contributed several articles on the use of motors in horticulture to this journal in the spring of last year.

SAMUEL LAIRD.—The death of this gardener occurred at Arbroath. For nearly two years deceased had been in indifferent health, but it was only within the past month or two that his illness took a serious turn. Mr. Laird was for 23 years head gardener to the late Earl of Southesk at Kinnaird Castle, and he had held a similar position at Dunninald Castle. Nine years ago he commenced business as a seedsman and fruiterer in Arbroath. Mr. Laird, who was 68 years of age, was a native of Newcastle, Co. Down, Ireland. He leaves a widow and family.



* * * The Editor will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for forming Supplementary Illustrations to this Journal.

EDITOR 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 EDITOR. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

ALLEGED MISREPRESENTATION: Nusselt. You will have to prove misrepresentation as to the character of the place and that you were thereby induced to take the situation. Subject to this, you should succeed in obtaining damages at least sufficient to cover the expenses of your removal both going and coming, assuming that you decide not to stay. A jury might give you even more than this. You should get a local solicitor to draw the claim and work up the evidence.

ARAUCARIA: C. J. L. It has not been determined if the plants were grown in pots, and the roots, therefore, injured by the severe restriction. This is scarcely a likely explanation of the failure of the poor specimens.

BLACK CURRANT BUD-MITE: W. P. R. Mr. A. H. Pearson's remedy, which he described in communications published in this journal on May 21, 1904, p. 298, and May 13, 1905, is as follows:—Spray the bushes at intervals of 10 days during May and June with a mixture of soft soap, Quassia, and water, at the strength of 2 ounces of soft soap and 4 ounces of Quassia to each gallon of water, applied by means of the Knapsack sprayer (Vermorel's). Bushes that were slightly affected before the spraying will probably be found to be quite free from the pest at the end of the season, but if they are not, Mr. Pearson stated they will certainly be clean after such treatment in two seasons. In the autumn, when the leaves have fallen, the bushes should be very carefully inspected, and, if any big buds are found, remove them to the fire.

BLUE FLOWER: B. L. The Muscari would be the better plant both as regards its permanent character, and the class of soil you mention. The plant is by no means fastidious, but owing to its free increase by means of offsets should be planted thinly if desired to form a permanent group. We are assuming that you require the plant to grow alone and not in actual association with the Chionodoxa. It would not be suited for such an association. Should you require a third subject you might with advantage select Hyacinthus azureus, a pretty plant with turquoise-blue flowers that appear in February or early in March.

BLUE PRIMROSES: W. H. H. There appears to be nothing remarkable in the flowers received, but they were so withered on arrival that it is impossible to see exactly what they have been.

CAMELLIA LEAVES SPOTTED: J. D. C. There is no disease present in the foliage; the injury is due to some external cause, probably scorching. It is not advisable to plant Camellias against a wall; the radiation of heat from the bricks dries up the young shoots, and in time kills them.

COMPENSATION FOR IMPROVEMENTS: Northern. (1) The amount of compensation to be awarded under the Agricultural Holdings Act, 1908, is "such a sum as fairly represents the value of the improvement to an incoming tenant," and such sum would be fixed by arbitration under the Act quite independently of whether there is a new tenant forthcoming or not. (2) The tenant, on leaving can claim compensation for "repairs to buildings necessary for the proper cultivation or working of the holding other than repairs which he is himself under an obligation to execute, provided that the tenant, before beginning to execute any such repairs, shall give to the landlord notice in writing of his intention, together with particulars of such repairs, and shall not execute the repairs unless the landlord fails to execute them within a reasonable time after receiving such notice." We certainly do not consider that the tenant could recover the cost of glass broken during his tenancy. (3) Ask a local solicitor to arrange a mortgage for you.

CORRECTION.—Messrs. R. B. Laird & Sons, Ltd., inform us that our reporter was in error in stating that a Silver-gilt Medal was awarded for their exhibit at the Edinburgh show. The exhibit was entered on the understanding that no award would be made.

CROCUS: Mrs. S. E. One of the most effectual means of keeping sparrows from destroying Crocus flowers is to stretch black cotton across small sticks driven into the ground at various intervals about the Crocuses. The cotton should be 4 to 6 inches above the flowers, and form an almost invisible network above them. The birds coming in contact with the cotton, are thus frightened and fly away. Poison is the other alternative. It is well known that the Dutch yellow Crocus is sterile, but its definite history is unknown. It is supposed to be derived from *C. aureus*, a native of South-eastern Europe. *C. aureus* is a smaller and more refined flower than the common yellow Crocus, and it produces seeds.

CUCUMBERS: C. V. D., Holland. The variety referred to on p. 234 is known in this country as Butcher's Disease-resisting Cucumber.

CYCLAMEN: A. S. *Cyclamen persicum* is stated to have been first cultivated in Europe at Lille in 1731, having been introduced from Persia. There is, however, doubt as to its origin, because the plant is not found wild in Persia; it probably came originally from Syria. The florist's *Cyclamen* is a cultivated form of *C. latifolium*, a native of Syria. The first authority for the name *C. persicum* is Miller, in his *Gardeners' Dictionary*, 1768.

EUONYMUS SHOOTS KILLED: E. W. The damage has been caused by frost; the injury is common in most parts of the country this season, even in suburban gardens around London.

FORESTRY PERIODICAL: T. W. C. There is no such publication as you require. The book you mention will be of service. *Tree and Shrub Culture*, by William Dallimore, is a cheap but valuable work on the subject. It may be obtained from our publishing department.

MARGUERITE LEAF-MINER: Constant Reader. The foliage you send is attacked by the Marguerite leaf-miner. The female punctures the leaves and deposits her eggs in the interior. Directly the young caterpillars are hatched, they commence to feed upon the leaves, and tunnel about between the two surfaces in their quest. Subsequently the caterpillar becomes a chrysalis, thus completing the cycle. Preventive measures would include the spraying of the plants with quassia extract or other distasteful liquid, in order to prevent the females from depositing their eggs upon the leaves. When plants have been so sprayed at intervals, it has been found to be very effective. Remove badly-affected leaves and burn them.

MARKET MEASURES: Correspondent. A bundle of Asparagus contains, approximately, 150 shoots; a bag of green vegetables weighs 40 lbs. Carrots are not packed in pads, but are sold in bundles, containing 12 roots. A tally of Cabbages is 60 heads. Horse-radish is sold in bunches of 12 sticks. Turnips are bunched, 12 to 15 roots forming a bunch. The sieve varies; it is practically equivalent to one bushel. In weight it may be estimated at 40 to 50 lbs., according to the produce.

NAMES OF FLOWERS, FRUITS AND PLANTS.—We are anxious to oblige correspondents as far as we consistently can, but they must bear in mind that it is no part of our duty to our subscribers to name either flowers or fruits. Such work entails considerable outlay, both of time and money, and cannot be allowed to disorganise the preparations for the weekly issue, or to encroach upon time required for the conduct of the paper. Correspondents should never send more than six plants or fruits at one time: they should be very careful to pack and label them properly, to give every information as to the county the fruits are grown in, and to send ripe, or nearly ripe, specimens which show the character of the variety. By neglecting these precautions correspondents add greatly to our labour, and run the risk of delay and incorrect determinations. *Correspondents not answered in one issue are requested to be so good as to consult the following numbers.*

PLANTS: Foreman. *Bifrenaria Harrisoniae*, often known in gardens as *Lycaste Harrisoniae*.—*F. F.* A good type of *Oncidium Marshallianum*.—*T. H. O.* 1, *Brassia brachiata*; 2, *Catasetum maculatum*; 3, *Oncidium flexuosum*; 4, *O. sphecelatum*.—*T. T.* 1, *Pulmonaria officinalis*; 2, *Valeriana Phu aurea*; 3, *Nephrolepis Todeoides*; 4, *Adiantum decorum*; 5, *Selaginella Wildenowii*; 6, *Asplenium bulbiferum*.—*Anxious.* 1, *Daphne Mezereum*; 2, probably *Acacia Farnesiana*; 3, *Draecena Sanderiana*; 4, *Begonia subpeltata*; 5, *B. metallica*.—*A. G.* *Dendrobium heterocarpum (aureum)*.—*S. E. L.* 1, *Mesembryanthemum blandum*; 2, *M. inclaudens*; 4, *M. Brownei*; 5, *Teucrium fruticans*.—*Reader.* 1, *Leedsii* type; 2, *Bicolor* Empress; 3, *Emperor*; 4, *Incomparabilis* Queen Bess; 5, apparently one of the discarded varieties of the *incomparabilis* type; 6, probably a poor bloom of the variety *Sir Watkin*.

PERENNIAL BUCKWHEAT: T. W. C. The only perennial species of the Buckwheat family in cultivation is *Fagopyrum cymosum* (Beech-wheat). It is a strong growing plant, reaching to a height of from 5 to 6 feet, and is a native of the Himalayas. Both the other species, *F. esculentum* and *F. tataricum*, are annuals or biennials.

TO PREVENT BEES SWARMING: R. O. F. The following methods will discourage swarming, but we do not know of any certain means of prevention:—(1) By the caging of the queen in a "pipe cover" cage, afterwards examining the hive and cutting out all queen cells. This latter operation needs care, for often one cell is missed and all one's calculations are upset. After about eight days examine the hive for queen cells and release the queen. (2) Some give increased space by extracting from the brood combs, and if the machine be not worked too swiftly, the brood will not be injured. (3) The removal of frames containing honey and replacing frames fitted with full sheets of foundation. This is a valuable device, for the queen requires more breeding space, and this provides the requisite room. (4) Tiering up too rapidly will cause swarming, but oftener than not more space is not allowed in time, and the bees, feeling cramped, are induced to swarm. Where very large apiaries exist, beekeepers often omit the use of the queen excluder, so the queen roams at will over the whole hive, if so disposed, and the number of swarms does not exceed two or three per cent.

Communications Received.—Captain D. S.—W. E. G.—R. I. L.—R. L. C.—T. H.—A. C. B.—Bot. Soc. of Edinburgh—S. A.—W. A. C.—Croydon Hort. Soc.—D. & Co.—F. T.—G. M.—J. E.—J. G. W.—T. L.—H. L. & Co.—J. V. & Sons—E. R.—Nat. Rose Soc.—A. O. W.—Roy. Meteorological Soc.—H. F., Port Elizabeth—S. Pickering—A. G.—F. W. C.—H. W. W.—J. M.—C. T. D.—J. D. G.—G. V. W.—E. G.—Ed. A., Paris.

THE Gardeners' Chronicle

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HYBRID GERBERAS.

UNDER the title "Hybrids of Gerbera Jamesonii," an important account of Hybrid Gerberas is given by Philippe de Vilmorin in a recent issue for March of the *Revue Horticole*. He first discusses the genus Gerbera, then the species *G. Jamesonii*, giving descriptions of its varieties, and deals afterwards with the hybrids, presenting conclusions of a scientific and practical character. Mons. P. de Vilmorin has set forth the origin of a novelty which already has assumed considerable importance and is likely to become a feature among special cultures in some parts at least of the Riviera. He points out the duty of recording the history and origin of novelties when making them known, and desires to be the chronicler of these new plants so enthusiastically remarked upon at a recent exhibition of the Société d'Horticulture de France. This, he says, is not difficult, because he has received sufficient information from Mr. Irwin Lynch and M. Adnet to throw light on the birth and development of these plants. For the most part he allows the originators of the Hybrid Gerbera to speak for themselves.

The genus Gerbera is dedicated to the German botanist, Gerber (Gronov., in *Linn. Gen. ed.* 2, p. 16, 1737). It belongs to the Composite, Durand placing it in the tribe Mutisiaceæ. The species are distributed in Africa from Abyssinia and Madagascar to

the Cape, being especially abundant in South Africa. They are found also in South America (in Chili, the Argentine, and especially in Brazil), in the Himalaya, Japan and China. In the last-mentioned country Franchet describes four species. The *Index Kewensis* mentions 37 species, and the supplements add 15. Apart from *G. Jamesonii*, the greater number of the species by themselves possess but little horticultural interest. *G. Anandria*, *Schult. Bip.* of Japan resembles a small Daisy of bluish-white colour, and is rather dull. *G. asplenifolia*, *Spreng.* of South Africa, has violet flowers carried on long, woolly peduncles, with short leaves resembling those of a Fern. With regard to *G. viridifolia*, *Schult. Bip.*, which is one of the parents of the magnificent hybrids, M. de Vilmorin remarks that there is some doubt as to the description, because the plant has been lost. Mr. Lynch describes it as having flower-heads about 2 inches across, white inside, with pale yellow exterior tinted with lilac towards the tips of the rays. In the *Prodomus* this plant occurs under the name of *Lasiopus viridifolius*, *D.C.*, described as having yellow ray florets slightly red below. Three varieties are given: *hirsutus*, *medius* and *oblongifolius*. *Gerbera aurantiaca* must also be cited. It was introduced by Mr. Max Leichtlin, is allied to *G. Jamesonii*, has red flowers, the ray florets being yellow beneath. It flowered at Kew for the first time in 1905. The importance of these species, of those cited by Mr. Lynch (*Flora and Sylva*, 1905, p. 208, *cum tab.*), and of those that we know by herbarium specimens, is rendered evident by the success obtained in crossing Gerbera Jamesonii with *Gerbera viridifolia*, one of the most insignificant species in appearance.

G. Jamesonii was introduced into England in 1887, and flowered first with Mr. Tillet at Norwich, then at Kew, and other places. Under the head of varieties it is stated that the wild plant, according to Mr. Lynch, varies from intense red to coral-pink, and also yellow, as in the form named Sir Michael. This important fact must be noted in view of the variations produced by hybridisation. Under the head of forms obtained in cultivation must be placed Gerbera Jamesonii "Brilliant," raised by Lynch by crossing typical Jamesonii and Sir Michael. In this cross the red of Jamesonii is rendered clearer and more brilliant by the yellow of Sir Michael. M. Sprenger, of Naples, who was one of the first to be interested in Gerbera, has obtained, by variation of the type, *G. Jamesonii atrosanguinea*, with blood-red flowers. To him also we owe the form named *illustis*, with flowers larger and more brilliant than those of the type. *G. Jamesonii transvaalensis* is given without description by Mr. Lynch as of Belgian origin. M. Sprenger has informed the author that he has attempted cross-fertilisation between Gerbera and *Gazania* without success. M. Adnet, before commencing his work upon the hybrids, had already obtained from typical Jamesonii very distinct variations of pale red, salmon and light fawn (chamois). These evidently, from a phylogenetic point of view, are in accordance with the variations indicated by Mr. Lynch.

THE HYBRIDS.

But to obtain an absolute break from the type it was necessary to have recourse to hybridisation. This was done by Mr. Lynch, who, in a letter recently received by Mons. P.

de Vilmorin, owned himself entirely responsible for that work. It is a responsibility, the author says, that many would have been very happy to assume. The first attempt was between *G. viridifolia* and *G. Jamesonii*, the resulting plants having flowers that varied from white to deep pink; another cross before-mentioned between Gerbera Jamesonii Sir Michael and *G. Jamesonii* having given the plant named "Brilliant." Afterwards *G. Sir Michael* and the first hybrids were intercrossed, and all the new forms between them. From that moment it might be said that almost the complete scale of colours was obtained, as was proved by the plate published in *Flora and Sylva* in 1905. In the article which accompanied this plate Mr. Lynch gave details, corroborated, moreover, by information which M. Adnet has given to M. de Vilmorin, demonstrating the facility and almost the necessity for crossing. "I knew," says Mr. Lynch, "that many of the Composites are sterile with their own individual pollen. It is the case with Gerbera. At all events, the female organs first mature and are receptive before the pollen is ready."

But to return to the history of the hybrids. Mr. Lynch's collection, already very rich and getting too considerable for the means of a botanic garden, being of considerable horticultural interest and having obtained one of the highest awards at the Temple Show in 1904, was disposed of to an English horticultural establishment. Unhappily, from circumstances which have nothing to do with our present subject, the collection was dispersed, and all the work might have been lost, especially as we have seen that *G. viridifolia* had disappeared, and from that time has not been re-introduced.* But some plants had been preserved in the Botanic Garden at Cambridge, which, crossed and multiplied afresh, have reproduced the greater part of the forms and colours of the first hybrids and crosses.

The other important point is that M. Adnet, who for several years had devoted himself in his establishment of "La Roseraie," at the Cap d'Antibes, to the culture of Gerbera Jamesonii, was deeply interested in the new hybrids. Of Mr. Lynch's dispersed collection he could obtain only four plants—at first three with pink flowers, viz., a light pink, a deep pink, and one intermediate between these two; later he procured one of a dull yellow, rather insignificant in itself. In 1906 Mr. Lynch sent to M. Adnet three plants with pink flowers and some seeds of crosses between pink and white and yellow and white. Such is the origin of M. Adnet's large collection, and of which the specimens he exhibited last autumn have given him such a just renown. Up to the present M. Adnet has made 2,700 crosses, all with a registered number giving the colour of both parents, and he possesses nearly 25,000 hybrid plants representing the fourth generation of his seedlings. It is interesting to note that on account, no doubt, of the disturbed hybrid character of the forms employed by him, and because also of the variability of *G. Jamesonii*, he has obtained wonderful results: thus, a light pink crossed by a deep pink has given him, even in the first year, both white and yellow flowers. L.

(To be continued.)

* It may here be remarked that a plant, no doubt to be regarded as conspecific, has been recently introduced to Kew. It is, however, quite different, having broader leaves and ray-florets distinctly coloured purple below. The Cambridge plant had an advantage, perhaps, in being practically colourless, though dirty and very poor indeed for a white.

NEW OR NOTEWORTHY PLANTS.

PRIMULA FORRESTII, BALF. FIL.

(See figs. 117 and 118.)

THIS is a handsome new species which was discovered by Mr. George Forrest on the eastern flank of the Lichiang range in N.W. Yunnan at an altitude of 9,000 to 11,000 feet. It has been raised by Bees, Ltd., from seed sent home by Mr. Forrest. Writing of it in *Notes from the Royal Botanic Garden, Edinburgh*, for April, 1908, where the species was described and figured, Mr. Forrest says that it "is a curious as well as a beautiful species, and a lover of dry, stony situations. The flowers are large and numerous, of a rich deep shade of orange, and fragrant. The foliage is densely coated with glandular hairs, and, in the fresh state, has a peculiar, but not unpleasant, aromatic odour. The plant is specially adapted to the situation in which it is commonly found, i.e., the crevices of dry, shady limestone cliffs, in having a long, extremely tough, woody rootstock of 2 to 3 feet in length. The base of the rootstock is very tapered, generally only a few inches being enclosed in the crevices of the rocks. From this point the plant is pendulous for almost the full length of the remainder of the rootstock, a few inches of the growing apex being turned out and upwards. The rootstock, for two-thirds of its length, is covered with the induræ of previous year's foliage, which, at the apex, form a dense matted mass, with the fresh foliage and flowers arising from the centre. Judging from the length of the rootstocks of specimens seen growing, allowing two whorls of leaves for one year's growth—a liberal estimate—some plants must reach the age of 50 to 100 years. Another feature which pointed to great age in the species was that the cliffs behind some of the larger specimens were scored and worn to the depth of fully an inch by the motion of the plants in the wind." To this account of it may be added that the golden farinose, under surface of the young leaves increases the effectiveness of the plant. Of its cultivation, Mr. Forrest writes: "There is not the slightest doubt in my mind as to the hardiness of the species, but it *will not* do with damp. The most sunny and dry situations are what you should try, and do not forget to give it plenty of lime. The situations in which I found the species in greatest luxuriance were the crevices and ledges of *dry limestone cliffs*."

The plant belongs to the small section *Bullata* of the genus *Primula*—a section restricted, as we know it, to the mountain ranges of Eastern Tibet and North-west Yunnan, and of which no species is yet in our gardens. Its nearest allies are *P. bullata*, Franch., and *P. bracteata*, Franch. From the latter its farinose leaves and long scape separate it, and from the former it is distinguished by the densely pubescent scape, pedicels, and calyx.

The plant is an acquisition to horticulture. It whets the appetite for more of the novelties which the enterprise of Mr. Bulley and the skilful exploration of Mr. Forrest have brought to this country, and which we long to see in general cultivation. It was exhibited by Bees, Ltd., at the Royal Horticultural Society's meeting on April 20, when it received a First-class Certificate. *I. B. B.*

EPICATTELEYA WOLTERIANA. KRANZL.
(*EPIDENDRUM AURANTIACUM* ♂ × *CATTELEYA SCHRODERE* ♀).

THIS hybrid is a medium-sized plant of no striking peculiarities in habit. The pseudo-bulbs are about a span high (15-17 cm.), one-leaved; the leaves oblong, blunt, of the same length, and 3-3.5 cm. wide. The spikes in the two specimens I have seen are two-flowered; the pedicels are 6 cm. (about 2½ inch) long, pale green, with or without a darker somewhat purplish hue. The flowers are 7-7.5 cm. (3 inches) in

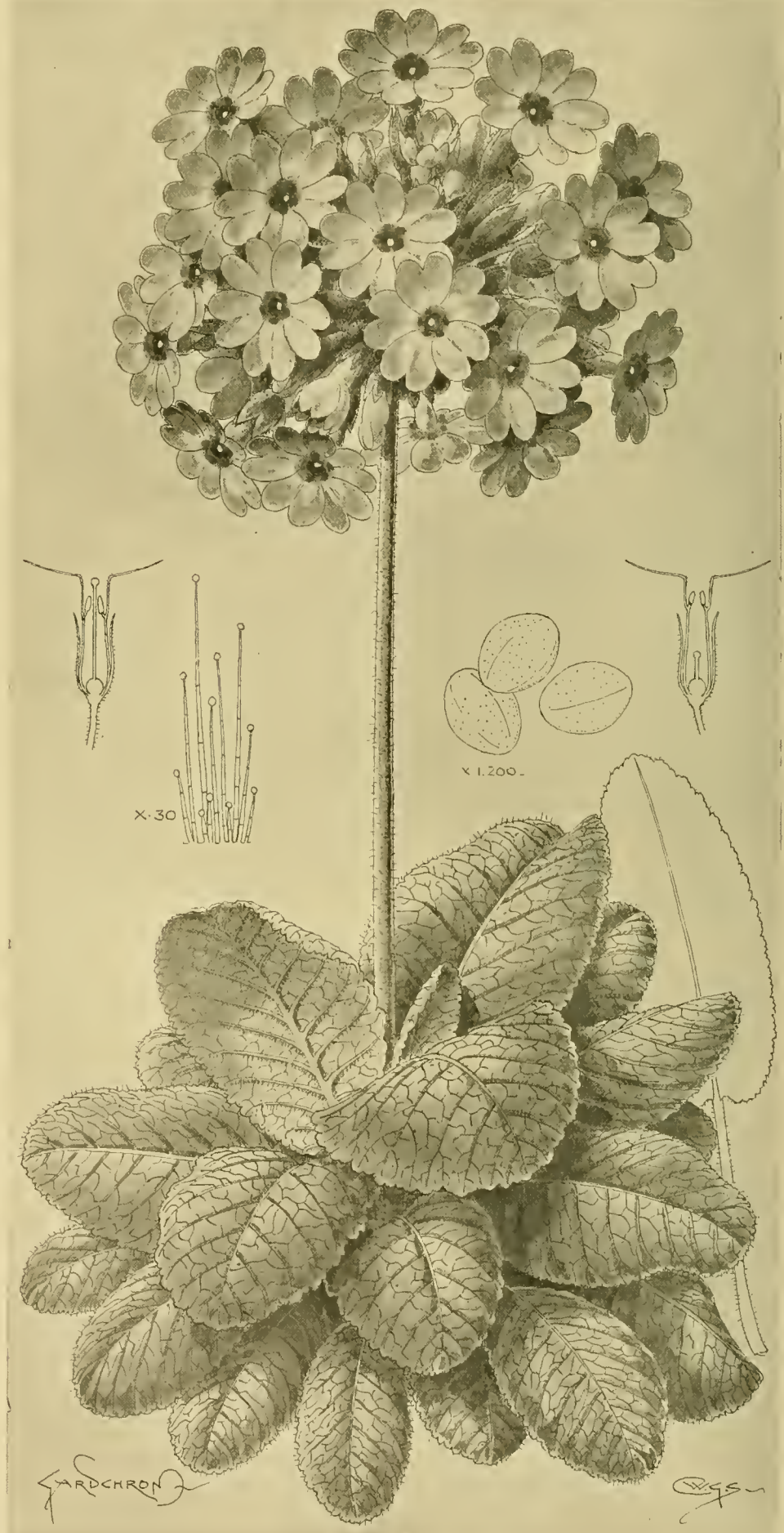


FIG. 117.—*PRIMULA FORRESTII*, A NEW SPECIES FROM CHINA: FLOWERS YELLOW.

(Awarded F.C.C. at R.H.S. meeting on the 20th ult.)

diameter, and in the two flowering specimens I examined, two varieties differing somewhat in size and colour were to be observed. The sepals are lanceolate, acute; the petals are oblong or rhombic, thrice as wide as the sepals and a little shorter. The lip is entire without any trace of division and funnel-shaped. The colour of the bigger flowers is exactly what we call salmon colour, the smaller have the same ground colour, but there is a purplish hue upon the whole flower, especially on the sepals and the border of the lip. In the purely salmon-coloured form the lip has two mauve-purple stripes on its base, and the column has also two stripes of the same colour and a corresponding mauve-purple sign at its base, whilst the other form (the smaller with the purplish hue) has no trace either upon the lip or column, the latter being pure white.

It is a question whether such a hybrid should be described as bigeneric. *Epidendrum aurantiacum* is one of the species so near *Cattleya* that Reichenbach, in the sixth volume of *Walper's Annals*, placed the plant among the true species of this genus, for evidently no better species he could find for connecting together *Cattleya* and *Epidendrum*. Nevertheless, it is better to follow precedent, especially in questions of no systematical but merely horticultural interest, and therefore I keep *Cattleya* distinct from *Epidendrum*. For this reason I have adopted the generic name *Epicattleya*. The plant was raised by Mr. Paul Wolter, Magdeburg, Wilhelmstadt, from the parents I have named, and flowered there for the first time. It may be assumed that adult and vigorous plants will produce more and perhaps still bigger flowers than those which have yet appeared. The seeds were sown in 1903, and the two plants flowered after five years and some months. *Fr. Kränzlin, Berlin.*

THE CHEMISTRY OF HEATED AND OF PARTIALLY STERILISED SOILS.

SOME communications appeared in the *Gardeners' Chronicle*, Aug. 10 and Aug. 31, 1907, on work which was in progress on the question of the influence of bacteria on the germination of seeds, and on the root-formation of trees. The subject has since been pursued, and most of the results will be found in the *Journal of Agricultural Science*. The view originally taken, that bacteria affected the germination of seeds, has been definitely disproved, and it has been shown that the inhibitory action of heated soils is due to the heating having resulted in the formation of a toxic substance, which is a soluble organic, and, probably, nitrogenous compound. The amount formed increases with the temperature of heating from 60° to 200° C., and it appears to be present to a certain extent even in soils which have not been heated above ordinary atmospheric temperatures. The inhibitory action on the germination of seeds is roughly proportional to the amount of this toxic substance present. The treatment of soils with antiseptics results in a chemical change, independent of any bacterial change, similar to that produced when the soil is heated to 60°-70°.

The heating of a soil, and, in a lesser degree, the treatment of it with an antiseptic, results in a considerable increase in the soluble organic and nitrogenous matter present in it, and such soils, therefore, are more favourable than ordinary soils for the growth of plants, and for an increased nitrogen assimilation by them. This is, apparently, a sufficient explanation of the results hitherto published of the behaviour of plants in such soils. It appears, however, that the substance which is toxic towards germination, and which is formed by the heating or treatment of soils, is really toxic also towards plant growth, and, if the heated soils are used for growing plants before that toxic substance has been

eliminated, then the plants grow less vigorously, instead of more vigorously, in the heated soils. It has been found that the toxic substance becomes destroyed by oxidation under those circumstances usually prevailing in cultivation, but, when destroyed, there is still left in the heated soil much of the extra organic matter which had been rendered soluble by the heating. Heated soils, therefore, may behave in diametrically opposite ways towards plant growth, according to the conditions to which the soil has been subjected after the heating. There is no evidence at present to show that the phenomena observed with these heated or treated soils are due to bacterial operations, and not simply to ordinary chemical changes. *Spencer Pickering.*

VEGETABLES.

EARLY CABBAGE.

EARLY Cabbages are always appreciated; but in seasons when green vegetables are scarce, they

TREES AND SHRUBS.

MAGNOLIA STELLATA.

THIS *Magnolia* was awarded a First-class Certificate by the R.H.S. on March 19, 1878, and it is probable that that was the first occasion on which plants of this species were publicly exhibited in England. It was exhibited by Messrs. James Veitch & Sons under the name of *M. Halleana*, a name given in honour of Dr. G. R. Hall. Mr. S. D. Parsons, a nurseryman of Flushing, U.S.A., describes its introduction in a letter to *The Garden* (June 15, 1878). He says that "he had long been trying to find a suitable man to send to Japan, but owing to difficulties attending the entry of foreigners into Japan he had been unable to secure the right person." One day in 1862, however, Dr. Hall entered his office and offered his collection of Japanese plants, which he had brought with him in Wardian cases. Many choice shrubs appear to have been contained in



FIG. 118.—*PRIMULA FORRESTII* GROWING IN YUNNAN, CHINA. ALT. 9,000 TO 11,000 FT.

(See p. 274)

are doubly welcome. We commenced cutting nice heads of "Flower of Spring" on April 1, at which time also the variety "April" was ready. These two varieties, with "Favourite," have withstood the severe weather of the past winter excellent, and they are three fine Cabbages in other respects, being of excellent table quality.

The seeds were sown on August 20, and the seedlings pricked out into plots on October 15 and 16. Other good Cabbages are Early Heartwell (sown now, this furnishes fine heads for summer use) and Carter's Model. I would recommend Mammoth Beefheart. By judicious selection and careful management, a supply of young Cabbages may be had all the year round. They should be planted thickly on a warm border in the autumn, and, after the Cabbages are cut, the borders can be planted with early crops of Peas, Carrots, Potatoes and Turnips. If the ground has been well prepared and manured for the Cabbages little more will be necessary for these other crops beyond digging. *W. A. C.*

these cases, including *Thuja dolabrata*, Japanese Maples, the double-flowered *Deutzia crenata*, *Hydrangea paniculata*, *Cupressus obtusa*, *Picea polita*, and two *Magnolias*, one of which was *M. stellata* (syn. *Halleana*). An interesting mention, with regard to this collection, is made of *Lilium auratum*, a few bulbs of which were sold to a firm in Europe for \$80 a bulb.

Although *Magnolia stellata* has been known in this country for upwards of 30 years, very little was done to popularise it until half that period had passed, and it is only in late years that it has become fairly well known in gardens. The flowering period is April, and, in the absence of frost, the pure white, star-like blossoms, 3 inches across, have a charming effect. The blossoms are borne with such freedom as to hide the branches. At Abbotsbury Castle, in Dorsetshire, is one of the oldest and finest specimens in the country. When selecting a position for planting, it is advisable to choose a spot sheltered from the east, so that when the flowers are frosted the

sun will not shine on them until they have thawed. The plant is well adapted for forcing into bloom. In addition to the type there is a variety with pink flowers. W. D.

PRUNUS TOMENTOSA.

ALTHOUGH this is by no means a new shrub, it is only within the last five years that its value as an ornamental plant has been appreciated. The plant is a native of Northern and Western China, and was first brought to notice by Bretschneider. It was introduced to European gardens from Japan, where it is cultivated. *Prunus tomentosa* has a wide distribution, for it has been found by various travellers in the mountainous districts of places so widely separated as Manchuria, Szechuen, and Kashmir. Under cultivation it forms a well-developed bush, 5 to 6 feet high and as much through, a considerable amount of growth being formed annually. The bark is

NATURAL DESIGN IN WATER GARDENS.

NOTWITHSTANDING the attraction a mere expanse of water has for most people, there is a greater pleasure in the cultivation of aquatic plants on the margins of a brook, pond, or lake if these are grown with an artistic sense of the fitness of their surroundings. There is no class of vegetation that suffers more if deprived of the background of its natural surroundings, than aquatic plants. *Nymphæas* are beautiful under any circumstances, but when grown artificially in tubs or square cement tanks they lose much of their attractiveness. Compare, for example, a Water Lily grown under such conditions and a similar plant revelling in a sunny spot in a well-designed pool or lake with rustling sedges and rushes in the background and glowing tints of *Spiræas*, Water Iris, and other plants of a similar nature pushing their vigorous growth into the

Mimulas, *Myosotis* and *Polygonums*. In the shallow water may be cultivated *Sagittarias*, *Acorus*, *Ranunculus*, *Typhas*, and in the deeper portions floating plants such as *Nymphæas*, *Villarsia* and *Nuphars*. If these and similar plants are disposed in proper positions the effect will be not only one of the most beautiful in the garden, but it will be reflected in the water below.

Although a perfectly natural design is best for the water garden, it is not necessary to undervalue the introduction of such aquatics as *Nymphæas* into the water portions of a scheme where the design is necessarily formal. The stately formality of certain styles of landscape gardening has its uses, and where an expanse of water is edged with a geometrical design in stone the addition of some Water Lilies is a decidedly attractive embellishment. Nevertheless, such an arrangement remains merely an embellishment,



FIG. 119.—A WATER GARDEN IN MESSRS. WALLACE'S NURSERY AT COLCHESTER.

brown in colour and tomentose. The leaves are more or less elliptic and rather sharply acuminate. The flowers are borne in April, appearing about the time that the leaf-buds burst. They are usually produced singly from both sides of each bud on shoots of the previous season, and are white, slightly flushed with pink, especially in the bud stage. The fruit is of a shade of orange-scarlet and in shape resemble an Apricot, but is only about the size of a small Cherry. So far fruits have not been produced in any great quantity in this country, but in China and Japan the plant is stated to be cultivated exclusively for its fruits. When in full bloom the species forms an exceedingly ornamental shrub. The petals are very delicate and liable to be damaged by storms; during unsettled weather the flowers are very fugitive. The stock may be increased by means of cuttings or layers. W. D.

water! It is not that the plant itself is less beautiful, but there is a sense of the unfitness of things in the former case that detracts from its charm.

Were these points so well understood generally as they ought to be there would be much less of the incongruous in modern gardening. Streams of water now running to waste might be utilised for producing effects of the most charming description. By damming the streams at suitable points and by effecting some slight excavation, it is possible to provide breadths of water that in themselves possess some attraction. But the banks and margins may be clothed with Japanese Iris, groups of *Astilbes* and *Spiræas*, American Bog Lilies, such as *Lilium canadense*, *pardalinum* and others; *Trollius*, such species of *Primula* as love moisture, including *P. japonica*, *P. denticulata*, and others; *Calthas*, *Rodgersias*,

and the effect can never be equal to that afforded by a more natural garden.

The illustrations at figs. 119 and 120 represent views taken in the nurseries of Messrs. R. Wallace and Co., Colchester. Their water garden shows what combinations and effects may be obtained by making the most of favourable circumstances. Everything that is possible under circumstances necessitating the production of plants for commercial purposes has been done to effect an arrangement rich in beautiful grouping.

In fig. 119 may be seen the vigorous growth of *Rumex hydrolopathum*, *Astilbe*, and *Iris Kämpferi*, all in the background, whilst the foliage of *Iris cuprea* in the foreground are some of Mons. Marliac's *Nymphæas*. In fig. 120 a fine specimen of *Nymphæa* "James Brydon" planted three years ago has for its background a clump of *Acorus* and *Iris* foliage. C.

FLORISTS' FLOWERS.

SOME OF MR. HAYDON'S NARCISSI.

AMONG the names of the pioneers in the improvement of the Daffodil, that of Rev. G. P. Haydon will always stand high, especially for the many Trumpet varieties which he has produced since 1895. Among the chief of these may be mentioned The Pearl of Kent, C. H. Curtis, his own namesake G. P. Haydon, Lord Medway, The President, and Benenden. Exceptional interest, therefore, attaches to the records of the parentage of his seedlings, which are, with Mr. Haydon's sanction, given herewith.

SEEDLINGS FROM SEED SAVED IN 1895.

M. CROSS.—MME. DE GRAAFF ♀ × MONARCH ♂.—Beatrice Barlow, Bella, Bugler, C. H. Curtis, Drummer Boy, Dr. Kumura, Duke of Kent, Duchess of Kent, Fanny Haydon, Gwendolen, Hatfield Beauty, Heliodora, Kuroki, Mme. Kuroda, Marchioness Oyama, Miss Sato, Okapi, Our Nellie, Pearl of Kent, Philippe de Vilmorin, Pyramus, Stourmouth, Wearmouth.

N. CROSS.—MONARCH ♀ × MME. DE GRAAFF ♂.—Cygnet, Castaway, C. W. Nunn, E. Arnold,

MME. DE GRAAFF ♀ × GLORY OF LEIDEN ♂.—Lily, White Horse of Kent (1901), Rectitude (1902).

WEARDALE PERFECTION ♀ × MME. PLEMP ♂ (1903).—Milner, Euphonium.

KING ALFRED ♀ × DUKE OF BEDFORD ♂ (1903).—Benenden.

In the following varieties (all seed of year 1902), referring to the "M. Seedling" used as pollen parent, Mr. Haydon says: "These are of the 1895 M. cross; I can't say which of them, as they were all in one bed with numbers, and I could not say which I took the pollen from; but all were of the same cross."

MONARCH ♀ × M. SEEDLING ♂.—Hereward, Cuckoo, Goodwin Sands, Earl Goodwin. The parentage of these is, therefore, three-fourths Monarch and one-fourth Mme. de Graaff.

WEARDALE PERFECTION ♀ × M. SEEDLING ♂.—April Fool, Chart. The parentage of these is, therefore, one-half Weardale Perfection, one-fourth Monarch, and one-fourth Mme. de Graaff.

KING ALFRED ♀ × M. SEEDLING ♂.—The President, Sea Horse, Stockwell. The parentage of these is, therefore, one half King Alfred,

felt about the cross of Mme. de Graaff × Glory of Leiden, for Mme. de Graaff is a free-seeder, while the pollen of Glory of Leiden is notoriously infertile, and Mr. Haydon says, with regard to one of the two 1901 seedlings: "I should say White Horse of Kent was self-fertilised." On the other hand, he is of the opinion that "Lily decidedly shows Glory of Leiden cross."

There is no doubt that the high quality of these seedlings is due mainly to the choice of parents of refined form, for Monarch and Mme. de Graaff, even when compared with the latest varieties, are of the highest class in form, though neither are exceptional in size or quite pure in colour. This is a point which most, if not all, breeders agree is of the greatest importance. Size and colour matter less, and colour seems to be quite beyond any forecasting in Daffodils at present, self-yellows, bicolors, and whites coming, apparently, at random from such crosses as Monarch × Mme. de Graaff, and even from Weardale Perfection × Mme. de Graaff. But, perhaps, something also depends on the conditions under which a cross is made, for the same varieties have been used by many others, and not always with such successful results. Mr. Haydon himself says: "I find that seasons have much to do with the satisfactory crossing of Narcissus." In 1895 he obtained the wonderfully high proportion of 49 first-class seedlings out of 74 seeds sown, or 66 per cent.; while in 1899 he only obtained one seedling worth naming. *A. J. Bliss.*



FIG. 120.—NYMPHÆA "JAMES BRYDON" IN A NURSERY WATER-GARDEN.
(See p. 276.)

Edith, E. T. Cook, Dropmore, G. Honeysett, Henri Vilmorin, Knight Errant, Pharaoh.

O. CROSS.—WEARDALE PERFECTION ♀ × MME. DE GRAAFF ♂.—Blanche Hill, Crawford Barlow, Houth Beauty, Isolde, Lady Warren.

R. CROSS.—GLORY OF LEIDEN ♀ × MONARCH ♂.—Bull Pup, Chinaware, Euphrosyne, Guinea Gold, G. P. Haydon, Jack, Lacquerware, Leiden Jar, Sunshine.

Ten other crosses, made in 1895, including N. Emperor × N. bulbocodium, which gave "monstrosities," were mostly failures, except, perhaps for Maydew, a seedling from N. biflorus × Pyrenean Poeticus.

The following varieties were from seed saved in the years 1899 to 1903, as noted after them:—

MME. DE GRAAFF ♀ × PYRENEAN POETICUS ♂.—Our Bessie (1899).

MME. DE GRAAFF ♀ × N. TRIANDRUS CALATHINUS ♂ (1900).—Our Joe, Preference, Premier, and Policy.

MONARCH ♀ × MME. DE GRAAFF ♂.—Lord Medway, Goise, Broom (1900), The Secretary (1901), Pantiles (1903).

WEARDALE PERFECTION ♀ × MME. DE GRAAFF ♂.—The Grey Mare (1900), The Golden Dustman (1901).

one-fourth Monarch, and one-fourth Mme. de Graaff.

Many of the 1895 seedlings are now well known, as they have been before the public for several years. Most of the later ones have been shown at the annual shows of the Kent and Sussex Daffodil Society, at Tunbridge Wells, during the last three years.

The parentage given in the above lists is always that of the actual crosses made, and, in most cases, it can be traced more or less clearly in the seedlings. The possibility of self- or cross-fertilisation by wind or insects was not entirely excluded, but, as those who have experience in the hybridising of Daffodils are aware, this seldom occurs, or, at any rate, much less often than might be supposed when the work is carefully done and the pollen applied early.

There is one seedling—The Golden Dustman (Weardale Perfection × Mme. de Graaff, 1901)—that at first sight appears to show an unexpected result. Its colour (uniform bright yellow) and form suggest fertilisation by a chance grain of pollen of Monarch. But, of the 25 seedlings of this cross, Mr. Haydon tells me that they were "all of them dark yellow." Some doubt might also be

SPRING IN THE MARITIME ALPS.

(Concluded from page 257.)

THE favourite walk from S. Dalmazzo is up the beautiful Val Miniera to the west, and leading to Val Casterino, where Mr. Clarence Bicknell has a summer cottage. There is not a yard of the way which is not interesting. In the mossy banks by the pathway *Listera cordata* and *Herminium Monorchis* are happily overlooked by the casual passer-by. The large blue flowers of *Aquilegia Reuteri*, the rose blossoms of a species of *Geranium*, and the yellow *Digitalis media* few could fail to notice. The flora becomes more and more Alpine in character as we ascend the gentle slope. Higher up, *Aquilegia alpina* takes the place of *Reuteri*, which it so closely resembles, and near the head of the valley the nearly black *A. atrata* is found. *Cardamine asarifolia* is frequent near the water, and *Lamium longiflorum* among the stones. Above the fork of the valley, where the mines are to be found which give their name to it, many of the ordinary Alpine plants luxuriate. *Primula viscosa*, *Orchis sambucina*, *Atragene alpina*, *Pulsatilla alpina*, *Anemone narcissiflora* and *A. hepatica*, *Gentiana verna* and *G. excisa*, *Dryas*, *Viola calcarata*, and *Saxifraga exarata* are but a few. Yet there are still traces of Mediterranean influence in this valley, as shown by such plants as *Astragalus monspessulanus* and others. In this district the flowers of *Nigritella nigra* are almost invariably of a beautiful rose colour.

Primula marginata, *P. latifolia*, *P. intricata*, *P. suaveolens* (the southern form of Cowslip), *Orchis speciosa* and *O. sambucina*, both yellow and purple, adorn the ground in many places, the two yellow *Primulas* appearing where the snow has only just melted, and, consequently, where the ground is still brown. In fact, they keep company with the *Crocus* and the *Soldanella*.

Still higher, words fail to convey an impression of the wealth of floral beauty which the eye meets in the glorious sunshine of a morning in June. Among the moss under the topmost Pines the golden-starred *Gagea Liotardii* seemed to strive for more light. The first surprise was *Adoxa Moschatellina* at this altitude (about 6,500 feet). It is not found at all on the Mediterranean. On gaining a ridge, acres of the

ground were white with *Ranunculus pyrenæus*, large numbers of the flowers being so double that they contained five or six whorls of petals. Close at hand, and interspersed with blue and white *Crocuses*, were masses of handsome dwarf Tulips (*T. australis* var. *alpestris*), their finely-moulded yellow petals being deeply tinged with red on the exterior. They reminded me of the taller but similarly-coloured Tulip (*T. gallica*) I had seen in the foothills of the Var a few weeks before.

Among the rocks not far off the large blue blossoms of *Linum montanum* and the milk-white flowers of an Iberis gave a change of form and colour for a while. But the Tulips were everywhere. Only less abundant were the spotted purple-brown blossoms of *Fritillaria Burnatii*, one of the many great rarities of the Maritime Alps. It was puzzling not to find the other *Fritillaria* (*F. Moggridgei*), with its yellow flowers, which, I knew, grew somewhere there, so I cut diagonally down and across the shoulder of the mountain, and soon came across thousands of the large nodding blossoms of this most handsome plant. Here and there a few of the purple variety appeared with the yellow one.

On the swampy sides of the streams above Val Casterino, *Gentiana Rostani* is found. It is, perhaps, only a variety of *G. bavarica*, and in habit much resembles the beautiful violet *G. pyrenaica*, which is never found in the Alps, though it appears in Hungary and again in Western Asia. In other directions such rarities as the glandular *Saxifraga pedemontana*, *S. retusa*, *S. diapiensoides*, and *Galium Tenda* were found; and later in the summer appear *Silene campanula*, *Potentilla Valderia*, *Saxifraga florulenta*, and *Phyteuma Balbisii*, to mention four more species endemic in the Maritime Alps.

A very rare hybrid, *Gymnadenia conopsea* × *Orchis latifolia* = *Orchigymnadenia Lebrunii* from Val Casterino di Tenda, is now in the Herbarium at Kew.

It is remarkable to find on the cliffs above Fontan and by the river, only a few kilometres below San Dalmazzo, which is 2,284 feet above the sea, masses of the handsome *Cineraria maritima*, which, except in gardens, is rarely seen save in warm nooks on the shores of the Mediterranean. The curious *Ballota spinosa* is one of the endemic plants abundant at the foot of the limestone cliffs at Fontan and Saorge, but it is not a plant worthy of cultivation in gardens.

Space does not permit me to refer to any of the interesting plants about the little town of Tenda, or below the bold pinnacles of limestone which overlook the town. Nor can I mention any of the other treasures to be found higher up the Col di Tenda or on the northern side of the long tunnel towards Limone.

Tenda itself is most romantically situated, and a fragment of the old castle still hangs over the town. Although Tenda is higher than S. Dalmazzo, it is not so inviting a place to stay at, particularly because trees are but few there. *H. S. T.*

HARDY FLOWER BORDER.

ANEMONE BLANDA SCYTHINICA.

THE flowering of this pretty plant affords a picture of rare beauty and interest in the garden at the present time. A colony with hundreds of its blossoms expanded in the warm sunshine is a sight not easily forgotten. Like all the forms of *A. blanda*, the plant has tuberous roots, starts early into growth, and the flower-buds appear with the leaves. At first the buds are coloured a deep shade of indigo blue, which presently changes to deep violet, a shade which contrasts well with the pure white of the expanded blossoms. The flowers at their best are larger than a half-crown piece, and in a large group the shades of colour are seen as the flowers expand and close, while at mid-day and for some hours a carpet of white yellow-centred blossoms meet the eye. The plant is not more than 6 inches high, and the finely-cut leafage which covers the soil preserves the blossoms for a long time. The plant is easily grown in sandy loam, and if the root-run is of a cool nature so much the better. *E. J.*

The Week's Work.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Pineapples.—Plants of The Queen variety, which are now swelling their fruits, need copious waterings, for their roots are very active, and a check at this stage would interfere with the development of the fruits. Manurial stimulants may be given more frequently and in slightly increased doses than hitherto. Drainings from the farmyard, and guano water are excellent manures for Pineapples. Keep the atmosphere of the house moist by frequently damping all the paths and other spaces. Should the crowns show a tendency to become disproportionately large, the centres may be stopped, but this must be done carefully, otherwise growth will again commence and the fruit be disfigured. Excessive overhead syringing is a frequent cause of the crowns growing too fast. Close the house early in the afternoon after syringing, and do not allow the temperature at night-time to fall below 70°.

Successional Pines.—Plants which were potted early in the year must be encouraged to grow freely. Admit a little fresh air at the top of the pit early in the morning when the weather is fine, increasing the ventilation as the sun gains power. It is important that the structure should be closed early in the afternoon, when the plants are syringed. If the atmosphere is well charged with moisture the temperature may be allowed to rise from 95° to 100°. After the plants have made plenty of roots, weak manurial stimulants may be afforded, increasing the strength as the plants make further progress. Occasional waterings with weak soot water are beneficial. Attend to any plants which need repotting before they become pot-bound.

Shading.—Harm may be done to Pineapples by the excessive use of shading. The plant loves sunshine and, therefore, no shade should be applied except to plants which have been recently repotted or planted out. Even in such cases, the shading should be dispensed with as soon as the roots are again active. The excluding of sunshine from the plants, even during the hottest part of the day, has an injurious effect upon its growth, and is often the cause of the plants failing to develop their fruits at the proper time.

Bananas.—Musas should, if possible, be planted out in a bed in a very warm house, where there is plenty of room for the plants to develop their large leaves. Strong suckers should be potted in readiness to replace the old plants after they have fruited. A suitable rooting medium for the Banana is rich loam mixed with well-rotted manure and crushed bones. When the plants have become established they should be watered frequently and occasional applications of liquid manure will be useful, more especially if they are applied when the fruits are in course of development. During their season of growth Bananas require a very hot and moist atmosphere. One of the best Bananas for fruiting in hothouses is *Musa Cavendishii*.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Runner Beans.—These plants should be raised under glass, not only because they will fruit much in advance of those raised out-of-doors, but also because they suffer less from the attacks of slugs and other pests, and from inclement weather. The very best varieties only should be cultivated, and there is now a wide selection available, the best kinds being of the Ne Plus Ultra type. Sow the seeds either in boxes, or singly in small pots in a cool house or frame. As soon as germination takes place, admit an abundance of fresh air so as to thoroughly harden the plants before they are put out into the open ground towards the end of the present month. Runner Beans are best grown in trenches, and if these are not already prepared, the work should be undertaken without delay.

Peas.—Plants in bearing under glass should be given an abundance of fresh air both night and day whenever the weather permits. Manure water should be given freely. Successional plants growing in pots or boxes may now be placed out-of-doors in a sheltered position. Whenever frost is likely to occur, some protec-

tion must be afforded them. Transplant Peas raised in boxes for successional fruiting. Make regular sowings of main crop varieties for succession during the next six weeks according to the demand.

Cauliflowers.—Make another small sowing of the Autumn Giant variety, sowing the seeds thinly in the open. The plants from this sowing, although very late, will be excellent for lifting and planting in cold frames or other suitable structures late in the autumn. Continue to plant out Cauliflowers raised from sowings made under glass as they become ready. Select rich ground for their planting and make the soil about them very firm. Early Cauliflowers still growing in pots, or which have been planted out in the orchard house or in pits, should be heavily mulched and otherwise liberally fed. Tie the leaves together immediately after the heads have formed.

Beetroot.—The principal sowing of this vegetable should be made within the next ten days or fortnight. The larger the variety the later should it be sown. On many kinds of soil it will be necessary to bore deep holes and fill up the spaces with soil as previously advised for Carrots. Seedlings under glass must be given an abundance of fresh air, and care must be taken that they are not overcrowded in the seed-pans.

Capsicums and Chillies are alike useful for decorative and culinary purposes. They form pleasing subjects in an intermediate house during the latter part of the summer and early autumn. The young plants should now be ready for potting into their fruiting pots. Use pots 5 or 6 inches in diameter, and place the plants in a brisk heat. Guard against aphids. These plants seldom ripen their fruits satisfactorily in the open, but if large plants are placed on a warm border about the first week in May they will give satisfactory results if the summer is favourable.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Peaches and Nectarines.—The weather having been genial during the time the trees were in bloom, the fruits are already set in most localities. When this is the case disbudding should be no longer delayed. It may be practised over a period of two or three weeks. Should the weather again become cold enough to retard growth, it will be advisable to postpone further disbudding for a few days, remembering that the young shoots serve to protect the fruits. In disbudding, remove first those shoots which are known as fore-right shoots; these grow at right angles to the wall. Afterwards remove any that are very close to the wall, or that in other respects may be regarded as misplaced; and then giving a moderate thinning to the shoots all over the tree. After an interval of a week or ten days the final thinning should be done, leaving sufficient shoots to furnish any portions of bare wall and to provide fruiting wood for next year. Should any leaves develop leaf-curl or blister (*Exoascus deformans*) cut off the points of infested shoots and burn them. If blistered leaves and shoots are removed early in the season and the tree is otherwise in a good condition, the disease may be expected to disappear as the weather improves. When all the blooms have set, spray the plants with a suitable insecticide for destroying aphid or green fly. This pest must not be allowed to spread, or much damage will result.

Gooseberries.—The promise for a fine crop of Gooseberries is exceptionally good, but a severe frost when the plants are in flower might still ruin the crop. If the caterpillars of the Gooseberry saw fly are detected they must be picked off by hand and destroyed. Dusting the bushes with Hellebore powder is a favourite preventive, but owing to the poisonous nature of this powder it must not be applied for some time before fruits are gathered for consumption. The American Gooseberry-mildew appears to be spreading rapidly in this country, and it will be wise to be on the watch for its appearance. According to a leaflet issued by the Board of Agriculture and Fisheries, it attacks both the fruits and the foliage, first appearing in the form of delicate white patches which gradually become thick and felt-like, but later change to a dingy-brown colour.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Stippling the roof glass.—Continuing my remarks respecting the stippling of the roof glass of the houses, I may mention that the flour and water mixture recommended last week keeps the glass much cooler than a mixture composed of mineral matter—a very important factor in hot weather for inmates of the cool house. It is liable, however, to be washed off by rain, if not thoroughly dried by the sun immediately after application. For the warmer houses, such as the East Indian, Cattleya and Mexican divisions, in addition to lattice wood blinds, we use a stippling composed of white lead and whiting, which, once it adheres to the glass, remains till towards the end of the summer, though it gradually becomes worn, and consequently much thinner, thus enabling more light to reach the plants. At that time of the year *Dendrobiums*, *Cattleyas*, *Lælias*, *Catasetums* and *Calanthes* are the better for this gradual decrease in shading. To about half a pound of white lead add one pound of whiting, with sufficient paraffin oil to make it into a thin paint. Stipple this on very thinly, choosing a bright day, with the sun shining full on the glass, so that the mixture will dry quickly. On span-roofed houses which run north and south we stipple the east side in the morning and the west after mid-day. By adopting this method of shading we need not use the blinds quite so frequently, it being unnecessary to work them up and down for every trifling change in the weather. Another advantage is that the blinds need not be let down nearly so early in the morning, or kept down so long in the afternoon. The plants thus receive far more natural sun heat; therefore a better atmosphere can be preserved inside than if blinds were used exclusively.

Dendrobium Phalaenopsis.—To some growers the young shoots of this species appear to be very thin and weak, but, under proper treatment, they soon gain strength and swell rapidly. When the new shoots are a few inches high, a number of roots will appear at their base, and just before these are visible, the plants should be repotted, or, if not in need of repotting, the old worn-out material may be carefully picked out from between the roots and fresh compost afforded. The plants will thrive in pots, shallow pans, or baskets; but whichever receptacle is preferred, it should be small in proportion to the size of the plants; it is equally important that these receptacles should be clean and well drained. Many growers, including myself, have found considerable difficulty in cultivating plants of this species thoroughly well for five or six consecutive seasons. Generally, the contrast between imported and home-grown pseudo-bulbs is obvious. For a number of years our plants were steadily deteriorating. Last year the plants were placed in ordinary flower-pots, with suitable copper wire handles attached, and suspended in a fairly shady position in the warm, moist plant-stove, where they improved considerably. They are now rooting and growing with increased vigour. The plants were potted in *Osmunda* and *Polypodium* fibres, with plenty of small crocks intermixed, but no *Sphagnum* moss was used. Having been potted with extra firmness, the material is still quite good, and the plants need not be disturbed this season. Carefully water plants that have been repotted, but when roots become numerous and growth is advancing satisfactorily afford them water more freely, both at the roots and in the atmosphere. Keep the roots and young growths free from the ravages of insect pests. *D. superbiens*, *D. bigibbum*, *D. Statterianum*, *D. undulatum*, and others of like growth should receive similar treatment.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Rhododendron indicum (Azalea indica).—As these plants cease to flower they should be encouraged to make growth. Remove the faded flowers and seed vessels, and place the plants in a warm, moist atmosphere. Syringe the foliage at least twice daily (directing the water well underneath the leaves) to prevent thrips getting a lodgment. If the pest is already present on the plants, fumigate them with the XL-All vaporis-

ing compound, or syringe them with some good insecticide. Copious waterings and occasional applications of manure water are necessary during the season of growth. Repotting is best done early in autumn.

Primulas and Cinerarias.—The plants obtained from the earlier sowings of seed require to be potted singly into 3-inch pots. For a few days following this operation, place the plants in a moist and shady position in a frame or low-roofed house; afterwards expose them to more light. When a few weeks have elapsed, they may well be grown in an unheated frame. Seed sown as late as the present date will yield useful plants.

Manure.—Now that most pot plants are growing freely, they require some manurial assistance. Liquid manure should never be given to plants when the soil is very dry. Whatever the nature of the stimulant may be, it is necessary to be cautious in its use, and to err rather on the side of applying it in a much-diluted condition. Many gross-feeding plants, however, may be safely watered with liquid manure of a strength which would be fatal to most hard-wooded plants. For general use, liquid manure obtained from soaking sheep-droppings may be recommended; but it is advisable to apply organic and chemical manures in their various forms as changes of food to the plants. Take care to water the plants several times with clear water between each change. Strong-smelling stimulants should not be used in the show houses.

Sanchezia nobilis.—The *Codiaeums* have long since driven this ornamental-foliaged plant from popular favour, but whilst well-grown specimens are as beautiful as many *Codiaeums*, they certainly do not require such great heat. Cuttings of the young wood root readily in a close, warm atmosphere. The plants thrive in rather a light soil, such as one consisting of fibrous loam, with a third part leaf-soil, and plenty of sand. Make the soil firm, and use pots of comparatively small size. The two varieties, *glaucophylla* and *variegata*, differ from the species in their leaf markings.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODGE, Bart., Leonardslee, Sussex.

Gunnera.—The stock of any particular *Gunnera* may be increased by division, which should be carried out at the present time. If additional plants are not required, the crowns should still be thinned in order that the shoots retained will have sufficient room for their proper development. When the leaves are crowded they are small, and much of the beauty of the plant is lost. Any material that has been placed about the plants for protecting purposes should now be removed. It may, however, be advisable to place a little dried Bracken over the crowns to save them from late frosts, for if the leaves are injured when young they continue to show the disfigurement throughout the season. The flower-spikes of these plants appear about this time, and must be removed. When planting *Gunneras*, choose a position near the water's edge or some other place where the ground is always moist. The plants will be benefited by an occasional dressing of farmyard manure and a sprinkling of nitrate of soda.

Helleborus.—The present is a suitable time to remove these plants. If they are not succeeding in their present positions they should be lifted, have all the soil about the roots carefully removed, and be replanted in fresh leaf-soil and loam. It will be necessary to shade the plants until they have become established in the new soil. Apply copious waterings, especially in dry weather.

Rhododendrons.—As soon as the early-blooming varieties have finished flowering, pick off the seed vessels and, if necessary, afford the plants a watering and a top-dressing of cow dung. Newly-planted *Rhododendrons* should not be allowed to develop many inflorescences, and if the plants are weak all the flower-spikes should be removed. See that the shrubs are firm in the ground, and that the roots are not suffering from lack of moisture.

Staking Trees and Shrubs.—Examine all trees and shrubs that are supported by stakes and see that the string is neither so tight that it will cut the bark, nor so loose as to cause chafing.

Replace any faulty stakes. If any of the plants have become loose in the soil tread the ground firmly.

Annals.—Seeds of these plants, including many that are half-hardy, may now be sown in the open. *Portulacas* should be sown in a warm situation, such as a dry bank, or in some portions of the rock-garden. The newer *Centaureas* or *Sweet Sultans* have flowers twice the size of the older forms, and they are developed on long stalks. The *Centaurea* is one of the finest annual-flowering plants. *Marguerite Carnations* should now be planted where the plants are required to bloom. They require a rich soil which contains plenty of soot, and in these conditions generally provide a good display of flowers in the late summer months; to ensure very large blooms, the flower-spikes should be disbudded. A liberal sowing of the various kinds of *Poppies* and of annual *Chrysanthemums* should be made. All annuals should be thinned sufficiently to allow every plant to develop to its maximum size.

Chrysanthemums.—Summer and autumn-flowering varieties should now be planted in their flowering quarters. Allow a distance of 15 inches between each plant; the spaces between them can be planted with *Mignonette*, which will flower before the *Chrysanthemums* require the room.

Carnations.—Place stakes to early-flowering varieties and dress the plants with a suitable fertiliser, stirring the soil occasionally with the Dutch hoe.

THE APIARY.

By CHLORIS.

When to place on shallow frames and sections.—Generally speaking, supers should be placed in position as soon as the upper cells in the brood chamber are tipped with new, white wax. Many beekeepers delay this operation, consequently the bees store surplus honey in the brood chamber. This robs the queen of cells intended for accommodating eggs, with the result that queens are reared and swarming takes place. Even if the bees do not swarm, it will be found at the end of the season that no honey is stored in the supers, although there is a superabundance of it below, and the colony is extremely weak, consisting mainly of old bees. As a result, the stock is exceedingly weak the following spring. In the case of an established hive ready for supers to be attached, it is often best to place a super of shallow frames containing drawn-out drone comb. The bees generally take readily to these, and when the comb is about two-thirds filled with honey, a super of sections may be placed beneath, taking great care to keep the hive warm. It is impossible to make the bees too comfortable at this time of the year. A non-conductive material will not only keep the heat in the hive, but also keep it out, when the heat from the sun at noon is intense. In the case of swarms recently hived, if starters are placed below and drawn shallow frames above, then the bees, having plenty of storing room, will proceed to build worker comb. If this is not attended to, they will build drone comb for the storage of honey in the brood chamber. When honey is plentiful and the weather fine, the bees may require an additional super in from seven to ten days. This will allow the combs in the brood chamber to remain free for the use of the queen, and thus swarming is kept somewhat in check. The work of adding a fresh super is best carried out at noon, when the bees are occupied in the fields. It will be necessary to puff smoke at the entrance, carefully raise the supers with an iron chisel or screwdriver, if they are firmly fixed with propolis, give another puff of smoke above the brood chamber, and place the new super below the old one.

Removing supers.—As the frames in the supers are filled with honey they should be removed. If a super clearer is used for the purpose, this will be easily accomplished. All that is necessary is to place the "clearer" at night-time below the super to be removed, and next morning it will be ready for removal, because it will then be free of bees. If the super contains shallow frames the sooner they are placed in the "extractor" the better and easier the work will be accomplished. The empty super may be replaced at once if the bees are storing honey fast.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

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

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

APPOINTMENTS FOR MAY.

SATURDAY, MAY 1—

Soc. Franç. d'Hort. de Londres meet.

MONDAY, MAY 3—Royal Academy opens.

TUESDAY, MAY 4—

Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by Mr. C. C. Hurst, on "Mendel's Law and its Application to Horticulture"). Brit. Gard. Assoc. Ex. Council meet.

THURSDAY, MAY 6—

Roy. Gardeners' Orphan Fund Festival Dinner at Hotel Cecil, Strand. Croydon Spring Fl. Sh. Linnean Soc. meet.

MONDAY, MAY 10—

United Hort. Ben. & Prov. Soc. Com. meet.

THURSDAY, MAY 13—

London Branch B.G.A. lecture by Prof. Bottomley on "Nitrogen Fixation."

TUESDAY, MAY 18—

Roy. Hort. Soc. Coms. meet and Nat. Tulip Soc. Combined Show at Hort. Hall, Westminster (Lecture at 3 p.m. by Mr. A. Clutton Brock, on "Alpines in their Native Homes.")

MONDAY, MAY 24—Anniversary meet. of Linnean Soc.

TUESDAY, MAY 25—

Roy. Hort. Soc. Sh. in Temple Gardens, Thames Embankment (3 days). Ann. meet. and dinner of the Kew Guild at the Holborn Restaurant.

WEDNESDAY, MAY 26—

Bath and West and Southern Counties Sb. at Exeter (6 days).

MONDAY, MAY 31—

Whit Monday. Chesterfield Spring Fl. Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—50.2°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, April 28 (6 P.M.): Max. 60°; Min. 43°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, April 29 (10 A.M.): "Bar. 29.8; Temp. 55°; Weather—Sunshine.

PROVINCES.—Wednesday, April 28 (6 P.M.): Max. 56° Bedford; Min. 43° Ireland N.

SALES FOR THE ENSUING WEEK.

TUESDAY—

The whole of the Greenhouse Plants, Frames, Utensils, &c., at the Nurseries, Chelmsford, by Protheroe & Morris, at 12.30.

WEDNESDAY—

Herbaceous and Border Plants, Bulbs and Tubers, at 12; Azaleas, Palms, Ferns, &c., at 4; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

Imported and Established Orchids in variety, at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

Importation of Currant Bushes.

The prohibition of the importation of Currant bushes has been rescinded, and, provided that a license of the Board of Agriculture and Fisheries is produced at the point of landing, such bushes may now be introduced into this country. The conditions attaching to the granting of licenses are numerous. The exporter must cleanse the plants of all earth, the bushes must be packed so that they cannot come in contact with others on the journey, and yet the package must be such that one end must be capable of being opened for inspection.

The importer must obtain a guarantee that the bushes are free from American Goose-

berry-mildew, Black Currant mite, and other disease, together with statements of the kinds of bushes, number, proposed date of landing, port, name and address of exporter, place where the bushes are to be planted and where to be permanently grown, together with answers to many other questions.

We are inclined to think that only those who are very anxious to possess imported Currant bushes will have the patience to furnish the information required, and would ask: What living person who knows anything about the subject would be willing to give a guarantee that a given plant is free from "all other disease"? In this kind of legislation, the redundancy of language dear to the legal mind should be abandoned in favour of simple common-sense statements of the law. If these restrictions are really necessary, it would be simpler and wiser to continue the prohibition; if they are not necessary, the restrictions should be abandoned.

It might be simpler to start a system of isolation and to require of the port authorities that they should set up Currant-bush quarantines.

Vine Culture.

Probably no horticultural subject has more attractions for gardeners generally than the cultivation of the Grape vine. The varied experiences of growers in different parts of the country are always read eagerly, and controversies that arise from time to time concerning methods and results are engaged in with spirit and enthusiasm. This is remarkable in some respects, because, in a natural state, the vine is one of the most easily grown plants, and thousands of examples of the fact can be seen in cottage gardens throughout England. But it is also an interesting illustration of the variability and difficulties which are introduced by any kind of artificial treatment. The conditions under which the same variety of Grape is grown in glasshouses necessarily vary greatly in different gardens, hence the diversity of results from similar procedure; from this, too, arises the interest with which growers compare notes, criticise, and disagree. It is, therefore, with peculiar pleasure that we welcome a work on the subject,* by Mr. Alexander Kirk, of Norwood Gardens, Alloa, N.B., for he is a veteran grower of long experience. In the vineries under his charge during the past thirty years or more, and at many exhibitions in that period, he has so consistently proved his skill as a producer of fine Grapes that he is amply entitled to take a high rank amongst British horticultural specialists.

Mr. Kirk has given to his readers exactly what might be expected from a practical gardener of such experience, namely, a plain recital of the essential details in Grape growing, pointing out the difficulties and mistakes, and relating the simplest means by which these can be prevented or overcome. No attempt has been made to produce an elaborate or polished treatise.

Thirty-three chapters are included in the book, but many of these are very short, some less than half a page, and the remarks are condensed as much as possible, while there is very little of the repetition which is frequent

in horticultural works, and occasionally unavoidable. Starting with the construction of vineries, the author proceeds to relate the details of drainage and border-making and other matters that need attention up to the time of planting the vines. Following this comes pruning, disbudding, stopping, thinning bunches and berries, watering, mulching, and ventilation, temperatures being indicated under each section as the work proceeds. Renovating borders, root-pruning of old and young vines, diseases and insect pests, propagation and storing, receive due attention, and the chapters contain many useful hints which should illuminate difficult points for beginners.

Probably the majority of readers will turn with special interest to that part of the book which deals with exhibiting, where they will find full descriptions of boards, boxes, and methods of packing, with valuable instructions in regard to staging bunches at shows. Mr. Kirk relates that his first experience was in 1874, when he took Grapes from Kirkeudbrightshire to the Crystal Palace, a distance of 300 miles. He had two and four bunches on boards, but the Grapes travelled so badly that ever since he has used boards for single bunches only. Subsequently he again exhibited a collection at the Crystal Palace—this time travelling 350 miles—on the improved system; the Grapes not only arrived in excellent order, but easily secured the first prize. We had the pleasure of seeing the exhibits on both occasions, and though the single boards are certainly more convenient, in this particular case we think Mr. Kirk's ability as a Grape grower had considerably advanced since he exhibited the earlier bunches.

In his concluding chapter Mr. Kirk advocates separating the roots of all vines in the borders by means of single-brick walls both inside and out. These are recommended to be 2½ feet high and 3½ feet apart, and the author adds: "My experience of 35 years has convinced me that this system of allotted space for each vine is the right one." There is something to be said for this when many different varieties are grown in one house, and the subject is therefore worth discussion.

ROYAL HORTICULTURAL SOCIETY.—A meeting of the Committees will take place on Tuesday, May 4, in Vincent Square Hall, Westminster. In the afternoon a lecture on "Mendel's Law and its Application to Horticulture" will be delivered by Mr. C. C. HURST.

HORTICULTURAL EXHIBITION IN HOLLAND.—According to the *Journal* of the Board of Agriculture, the Horticultural Exhibition, which is to be held at Zeist, Holland, from August 25 to September 16 of the present year, will be on a large scale, and will include foreign as well as native exhibits. The central committee of the exhibition invites the participation of foreign countries with a view to extending commercial relations.

ROYAL GARDENERS' ORPHAN FUND.—We desire to remind our readers that the annual Festival dinner in aid of this fund will take place on Thursday next, May 6, at the Hotel Cecil, Strand, at 6.30 for 7 o'clock. His Grace the Duke of Rutland will preside. All interested in the gardening charities are asked to support the Orphan Fund on this occasion. The secretary,

* *Grape Culture Up to Date*, by Alexander Kirk. Pawson and Brailsford, Sheffield. Price 7s. 6d.

Mr. BRIAN WYNNE, will be pleased to hear from anyone desiring to be present. His address is 35, Surrey Street, Strand.

SPRING FLOWER GARDENING.—Mr. DIVERS informs us that the spring flowers at Belvoir Castle are now at their best. Himalayan and other early Rhododendrons are flowering more freely than usual this season. They have not suffered from frost. The Duchess Garden is open to the public on every weekday.

APPOINTMENTS AT KEW.—We learn from the *Kew Bulletin* that the designation of the post of Principal Assistant in the Royal Botanic Gardens has been changed by authority of the Treasury to Assistant Keeper. Mr. G. MASSEE, F.L.S., hitherto a Principal Assistant in the Herbarium, and Mr. C. H. WRIGHT, whose appointment as successor to Dr. STAFF was notified in *Kew Bulletin*, 1909, p. 24, will rank as Assistant Keepers. The President of the Board of Agriculture and Fisheries has been pleased to appoint Mr. N. E. BROWN, A.L.S., hitherto an Assistant in the Herbarium, and Mr. L. A. BOODLE, F.L.S., hitherto an Assistant in the Jodrell Laboratory, Assistant Keepers.

THE SELBORNE SOCIETY'S SOIREE.—Lord AVEBURY will take the chair at the annual conversation of the Selborne Society, which will be held on May 7 at the offices of the Civil Service Commission (Old London University). Two lectures will be given, the first on "How Birds Fly," by Mr. F. W. HEADLEY, F.Z.S., and the second on "How Men Fly," by Mr. T. W. K. CLARKE, B.A., A.M.I.C.E. Mr. JAMES BUCKLAND, the original promoter of the Plumage Bill, will exhibit a number of lantern slides illustrating the birds that are in danger of extermination in various parts of the world. There will also be a display of microscopes and natural history exhibits. Messrs. WATSON & SONS will demonstrate the processes of making microscope lenses. Messrs. J. J. MARSHALL & Co. will show a paper-making machine. The CARAVAN CLUB will send an exhibit illustrating the application of caravaning to the study of natural history. Tickets can only be obtained through members of the society. All communications should be addressed to Mr. WILFRED MARK WEBB, honorary general secretary, at 20, Hanover Square, W.

NURSERYMAN AS CHAIRMAN OF DISTRICT COUNCIL.—Mr. S. G. RANDALL, a nurseryman and fruit grower, has just been elected Chairman of the Skegness District Council. Mr. RANDALL was also chairman of the same council in 1897.

FLOWERS IN SEASON.—From Messrs. DOBBIE & Co., Rothsay, we have received an assortment of Pansy and Viola blooms. The wide range of colouring, combined with large flowers of exceptionally good form seen in such a collection as is sent us by Messrs. DOBBIE, shows the great advance that has been made in these popular flowers. Of the 50 varieties sent us, the following are a few of the more noteworthy:—Pansies: Mrs. Campbell, a yellow coloured variety, with large blotches of claret colour and most perfect outline of petal; Mrs. R. P. Butler, dark violet, with creamy-white edges mottled with purple-crimson, the upper petals are marked with crimson; Mrs. Harry Stuart, the lower segments are deep crimson, bordered with yellow, the upper petals being very faint yellow, shaded with rose. Of Violas, very fine are Jenny McGregor, a shade of violet striped with mauve; Lizzie Storer, the lower petals are dark and tipped with lavender, the upper petals being wholly of this latter colour; Mrs. J. H. Rowland, a beautifully-formed flower shaded with rose colour; Robert Menzies, a shade of purple, with markings of lavender on the upper petal; Mary Burnie, not new, but

still one of the most lovely of all violets, the pale primrose blossoms being margined with dark heliotrope; and Hugh Reid, a magnificent flower of the best form suffused with rosy-purple, slightly fainter on the upper petal.

—Some exceptionally fine inflorescences of *Clivia* are sent us by Mr. E. ROGERS (gr. to Mr. WRIGLEY, Bridge Hall, Bury). They are amongst the largest we remember to have seen, and of excellent shades of orange-scarlet. Mr. ROGERS states they were raised by Mr. WRIGLEY at Bridge Hall, and are the result of more than 20 years selecting and breeding. —We have received several interesting plants from Mr. W. A. COOK, gardener to Sir EDMUND LODER, Bart., at Leonardslee, Sussex. The Skunk Cabbage of the United States, *Symplocarpus foetidus* (syn. *Spathyema foetida*) is an evil-smelling Aroid. The inflorescence appears before the foliage, as in many of its congeners. It is an interesting plant for the bog garden. *Scolopus Bigelowii* is a dwarf-habited Liliaceous plant having greenish flowers striped with purple. A figure of this plant was given in the issue for March 3, 1894, p. 267. A fasciated flower-spike of *Narcissus cyclaminus* had five fully developed blooms. Mr. COOK also sent flower trusses of *Rhododendron barbatum*. —Messrs. WILLIAM BULL & SONS, King's Road, Chelsea, send blooms of their strain of *Cinerarias*. They represent a desirable type of this useful greenhouse plant. —Flowers of *Primula obconica* received from Mr. THOS. DENNY, Down House Gardens, Blandford, show a great advance on those of the type, the blooms being large and of excellent colour.

THE LATE G. H. SAGE.—Some weeks ago reference was made in these pages to efforts that were being made by Mr. W. A. Cook and others to raise a sum of money for the widow of the late Mr. G. H. SAGE. Mr. COOK now informs us that he has been able to hand over to the widow the sum of £27, and he has reason to believe that there will be further donations.

THE GEORGE MONRO CONCERT COMMITTEE.—We are informed that as a result of the 13th annual concert, held at the Queen's Hall on February 25 last, the following donations have been made:—Gardeners' Royal Benevolent Institution, £15 15s.; Wholesale Fruit and Potato Trades' Benevolent Society, £10 10s.; Surgical Aid Society, £6 6s.; Charing Cross Hospital, £5 5s.; Royal Ophthalmic Hospital, £2 2s.; Covent Garden Lifeboat Fund, £3 7s.; Geo. Monro, Ltd., Pension Fund, £4 4s.; Geo. Monro, Ltd., Outing Fund, £3 3s.

SPRING FLOWERS AT CROYDON.—The ninth annual exhibition of spring flowers, under the auspices of the Croydon and District Horticultural Society, will take place on Thursday next in the Horniman Hall, North End, Croydon. These exhibitions have proved the possibility of holding successful flower shows without charging fees for entry or offering prizes. The secretary is Mr. H. BOSHER, 62, High Street, Croydon.

WATER-COLOUR DRAWINGS AT THE NEW DUDLEY GALLERY.—We referred in the last issue to an exhibition of water-colour drawings by the four Misses DORRIEN-SMITH, of Tresco Abbey, St. Mary's, Scilly; Hampshire scenery, by Miss ALSWEN MONTGOMERIE; and of Malta and Sicily by Lady MABEL SOWERBY. At Tresco many introduced plants from Australia, New Zealand, and Japan, flourish vigorously, although they suffer some injury from the Atlantic gales. In a drawing of a patch of *Iris tingitana* by Miss CICELY DORRIEN-SMITH, the harmony of the adjacent blue sea, with the colour of the *Iris*, makes a pretty whole, admir-

ably contrasted with a scattered group of *Kniphofia Uvaria*. Another picture by the same artist represented Tree Ferns (*Cyathea*), and purple-flowered *Crocuses*. "On the Shore in May," was a piece full of colour and variety. "Gorse at Saint Mary's," showed the plants of a tint rarely seen on the mainland. A striking example of Miss GWENDOLINE DORRIEN-SMITH's landscape work was remarked in "Garrison Hill, St. Mary's," wherein a Heather-covered headland showed Gorse in bloom, and the ever-present sea at the back of the view. Another was a view from the upper terrace, Tresco—a garden subject—consisting of a carpet of *Thymus*, a *Pinus Pumilio*, dwarf in stature, and wind-blown; together with *Agaves* and other succulent plants. A seascape showed Grimsby Harbour, Tresco, and *Hydrangeas* with pink and very deep blue flower-heads. In "Sunset Glow" the artist had caught the exact moment very happily. Her pictures of Orange *Phoenix* and *Soleil d'Or* Daffodils gave the idea of the abundance of *Narcissus* blooms in the Scilly bulb fields. The patch of *Soleil d'Or* had groups of *Iris germanica* and tree-like *Dracæna australis* growing in an irregular manner among the bulbs. The view of the Neptune Steps in Tresco Gardens showed a curious combination of art and semi-wild nature. Himalayan *Rhododendron* in flower, nicely drawn and accurate in colour, probably *R. arboreum*, was the work of Miss CHARLOTTE DORRIEN-SMITH. Studies of garden plants such as *Iris Kämpferi*, *Mesembryanthemums*, *Hydrangeas*, *Fuchsias*, *Aloes*, *Azaleas*, &c., were contributed by one or other of the Misses DORRIEN-SMITH. Miss A. MONTGOMERIE's pictures exhibited views of Hampshire, mostly of swampy places, such, for example, as "Low Tide," "Eling Wharf," "Evening in the Water Meadows," "A Desolate Waste, New Forest," "The Dying Day," "The Mists in the Valley," "Approach of Night," "The Haunt of the Heron," and many more of a rather depressing character, but cleverly drawn and coloured. Among Lady MABEL SOWERBY's contributions to this collection of water-colour drawings were subjects from Malta and Sicily, of which the more conspicuous were "An Arab Pony and Cart" and "Old Age," both old and ill-fed, sorry specimens of the horse, "The Strada," "Britannica at Night," "Smelting Hatpins," "Maltese Fishing from a Quay," a well-worn subject. Various seascapes by Miss E. INNIS DORRIEN-SMITH, a tempestuous sea rolling in shore was one of the best of the works of this artist.

NEW PUBLIC PARK FOR BISHOP'S STORTFORD.—The Saxon castle and grounds at Bishop's Stortford, which were recently acquired from private ownership by the town council for the purposes of a public park and recreation grounds, have been formally opened. The castle and grounds cover 8 acres, and the purchase money will be a charge on the rates for 60 years.

TRADESCANT'S TOMB.—In Lambeth churchyard there is the tomb of JOHN TRADESCANT, who was gardener to Charles I. in 1629. Near by was his famous botanical garden, in which as late as 1749 might have been seen many rare and curious plants, including unusually large specimens of *Arbutus* and of *Rhamnus Catharticus*, the latter about 20 feet high and nearly a foot in diameter of stem—truly a giant specimen of the native Buckthorn. It was hard to realise during a recent visit to the Lambeth Borough Recreation Ground, containing miserable-looking, soot-incrusted specimens of the *Euonymus*, *Holly* and *Aucuba*, and surrounded by an atmosphere full of chemical fumes, that little more than a century and a half ago the same site should have been that of the most famous museum and botanical garden of its day.

BRUSSELS INTERNATIONAL EXHIBITION.—The Government of this country is "waking up" to the importance of giving official aid to the organisation of British exhibits at important exhibitions. To this end a Royal Commission, presided over by His Royal Highness the Prince of WALES, has been appointed by his Majesty the KING, to assist the Board of Trade in the organisation of exhibits illustrative of British art, industry, and agriculture both at the 1910 Brussels Exhibition and at the 1911 Turin Exhibition. We commend to the notice of our readers the fact that Group 8 in the general classification of the Brussels Exhibition is devoted to horticulture and arboriculture. This group includes appliances and processes in horticulture and arboriculture, kitchen-garden plants, fruit trees and fruit, trees, shrubs, ornamental plants and flowers, greenhouse plants, horticultural and nursery seeds and stocks. It is to be hoped that British horticulture will be adequately represented at Brussels.

medal and \$250. Another class is arranged for a display of a similar nature, but to include not fewer than 10 Orchid genera and bigeneric hybrids. There are also classes for a recently introduced Orchid plant not previously exhibited in the United States, a new seedling Orchid, a new species of stove or greenhouse plant in bloom, a new species of stove or greenhouse foliage plant, a new species of coniferous plant, not yet in commerce but likely to be hardy in Massachusetts; a new species of shrub or climber in bloom, likely to be hardy in Massachusetts; and for a new species of hardy herbaceous plant in bloom. The secretary is Mr. WILLIAM P. RICH, and his address is at Boston, Massachusetts.

A PROPOSED WOMEN'S GARDEN OR PARK.—

In connection with the proposed conversion of the disused burial ground behind the Chapel of the Ascension in the Bayswater Road, London, into a public park, efforts are being made by

reason, to make use of the free seats in the parks. There should also be some place of shelter from the rain."

ACETYLENE GAS REFUSE.—The experiments on this subject related on p. 264 of the last issue were carried out by Mr. W. B. BURGESS, of the South-Eastern Agricultural College, Wye, in his private capacity, and not at the college, as was inadvertently stated.

* **"FAMILIAR WILD FLOWERS."**—We have received Part I. of a new edition of this work by the late F. EDWARD HULME. There will be 45 fortnightly parts, and these will be illustrated with 360 coloured plates. We recommend the work to anyone desirous of acquiring an elementary knowledge of native British flowering plants. The recent death of the author has robbed popular botany of one of its most enthusiastic teachers.

PUBLICATIONS RECEIVED.—*Mendel's Principles of Heredity*, by W. Bateson, M.A., F.R.S., V.M.H. (Cambridge: University Press). Price 12s. net.—*Transactions and Proceedings of the Botanical Society of Edinburgh*. Vol. XXIII. Part IV. (Edinburgh: Royal Botanic Gardens).—*Kew Bulletin*. (No. 3, 1909). Containing the Flora of Ngamiland: A Funtumia Disease: The Herbarium Savatier, etc. (London: Wyman & Sons, Ltd., Fetter Lane). Price 6d.—*Imperial Department of Agriculture for the West Indies*. Seedling Canes and Manurial Experiments at Barbados, 1906-8. Price 6d. Seedling and other Canes in the Leeward Islands, 1907-8. Price 4d. Manurial Experiments with Sugar-Cane in the Leeward Islands, 1907-8, Price 4d. Insect Pests of Cacao, by H. A. Ballou. M.Sc. Price 4d. (Issued by the Commissioner of Agriculture).—*Appendix to the Report of the Minister of Agriculture, Experimental Farms Report for the year ending March 31, 1908*. (Ottawa: Published by the Minister of Agriculture).—*U.S. Department of Agriculture*. Bulletin No. 73: Economic Loss to the People of the United States through Insects that carry Disease, by L. O. Howard, Ph.D. Circular No. 42 (fifth edition): How to Control the San Jose Scale, by C. L. Marlatt. (Washington: Government Printing Office).—*Michigan State Agricultural College Experimental Station, Horticultural Division*. Bulletin No. 253: Can the General Farmer afford to Grow Apples, and Suggestions on Improving and Spraying Apple Orchards, by S. B. Hartman and H. J. Eustace. (Michigan Agricultural College).—*Bulletin du Jardin Imperial Botanique de St. Petersburg*. Tome IX., livraison I.—*Trees: a Handbook of Forest Botany for the Woodlands and the Laboratory*, by the late H. Marshall Ward, Sc.D., F.R.S. Vol. V., with illustrations. Edited by Percy Groom, D.Sc. (Cambridge: University Press). 4s. 6d. net.—*The Midland Naturalist*. A bi-monthly periodical published at Notre Dame, Indiana. Vol. 1. No. 1. Price \$1 per year, or by foreign post 5s.—*The Teaching of Gardening in Public Elementary Schools, and the Formation of School Gardens*, by A. Hosking, instructor in horticulture. Bulletin No. 49 of the West of Scotland Agricultural College.



[Photograph by J. Gregory.]

FIG. 121.—ROSE "WHITE KILLARNEY."

(From a photograph obtained after the bloom had been brought from America in a cut state.)

ORCHID SHOW IN AMERICA.—We have received a preliminary schedule of prizes to be offered at an exhibition that will take place under the auspices of the Massachusetts Horticultural Society on May 26-30, 1910. Orchids will constitute a leading feature at this show. The chief prizes are offered for a "display of Orchid plants in bloom, arranged for effect, embracing at least 20 Orchid genera and bigeneric hybrids and unlimited as to the number of species, varieties, and hybrids, to fill 400 square feet of space." Cut blooms of rare sorts not exceeding in number 5 per cent. of the total number of varieties of Orchid plants in the exhibit will be admissible. The points will be awarded as follows:—Varieties of Orchids, 30 points; quality, 35 points; arrangement and decorative effect, 25 points; novelty of Orchids, 10 points. The first prize in this class will consist of a gold medal and \$1,000, the second prize of a silver medal and \$500, and the third prize of a bronze

a number of influential people to induce the authorities to form a garden or park for the exclusive use of women. The following paragraph is taken from a letter printed in the *Times*:—"We are convinced that it would be a great boon to many women to know of a place where they could walk, sit down, rest and saunter at their ease, under other conditions than obtain either in the streets or in the parks. Particularly in summer, towards the close of the long hot days, must it be the longing of many to escape from narrow or crowded surroundings to be in the open air and not compelled to trudge. The garden that we suggest would be essentially a place for rest and ease—not a playground—a garden rich in flowers with shady and with sunny walks, and with broad spaces of lawn between the flower walks. It is desirable that the garden should be provided with many seats. This provision would be greatly appreciated by women who hesitate, not without

ROSE WHITE KILLARNEY.

THIS Rose has excited considerable interest in America recently, especially amongst the florists who supply the horticultural markets. Although a sport from the well-known pink variety, it is said to have more substance in the petals than the type. It is a large flower, and possesses a delicious perfume. This variety will be valuable for forcing, as the flowers are larger than any of the white varieties specially suitable for the purpose. The photograph reproduced in fig. 121 was taken in the Royal Horticultural Society's Hall, Vincent Square, on the 20th ult., and the flower photographed was brought from America in a cut condition, in the cold room of the "Mauretania," by Mr. H. A. Barnard, a representative of Messrs. Hugh Low & Co.

* Cassell & Company, Ltd. Price 6d. each part.

PROPAGATION OF HYACINTHS IN HOLLAND.

(See Supplementary Illustration.)

THE Hyacinth does not naturally form a large number of new bulbs, but only a few offsets occasionally develop. When a bulb is broken at its base, or is in some way injured, however, a number of buds or bulbils appear about the wound. It was the observance of this fact that led to intentional wounding or cutting of the bulbs on the part of the cultivator with a view to increasing his stock. In our Supplementary Illustration are to be seen the various stages in the propagation of Hyacinths on a Dutch farm by what is known as the notching or cross-cut system. The base of the bulb is notched as is

Meulder, at Lisse. A series of trays is arranged from floor to ceiling so that the propagator can conveniently examine the bulbs from time to time. These trays are formed very much after the manner of those in which Potatoes are stored for seed purposes. The bottom is constructed of laths, and the openings allow of a free circulation of air. The bulbs are cut in June, after which they are placed directly into the trays and kept in a high temperature. Soon afterwards there appears in every wound a number of tiny buds or bulbils. By this system flowering bulbs can be obtained one year earlier than if the base of the bulb were hollowed. This is because, fewer being formed, they receive more nourishment individually than in the case of those

sold each bulb is inspected. Those that are suitable are packed in paper bags or cases amongst husks of Buckwheat.

Haarlem, the city of the Counts of Old Holland, as is well known, has long been occupied with the raising of flowering bulbs, and every field and meadow about the city is now cultivated as a bulb farm. It is the narrow strip of sandy ground situated immediately behind the dunes that has proved exceptionally suitable for such culture. Tulips, and particularly Narcissi, can be propagated and grown for commercial purposes in many parts of the British Isles, and in the Scilly Islands and in Ireland, but in the case of Hyacinths the whole of the commercial output, for Europe at the least, is raised in Holland.

The bulb fields during the latter part of April always present a glorious sight, but a visit to the district in autumn is not less interesting. Along the banks of the canals and rivers, strips of land are covered with bulbous plants. The country from Leiden to Beverwyk, 12 miles north of Haarlem, is one continuous bulb farm 30 miles in length. Even around the Hague many orchards have been destroyed, the trees grubbed up, and bulbs planted in their stead. Until about 1860 bulb cultivation in Holland was limited to the immediate neighbourhood of Haarlem, the country beyond being either meadow or orchard land, but bulb-culture has proved to be more profitable. The farmer, therefore, became a bulb-grower, and his sons soon adapted themselves to a commercial life. They learned foreign languages and travelled in other countries for the purpose of disposing of their stocks. For the photographs we are indebted to Mr. Piet Ammerlaan, Amsterdam.

(To be continued.)

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

THE SEASON IN MID-WALES.—With reference to Mr. Markham's note on p. 245, the following remarks may be of interest. Scotch, Cottagers', and Asparagus Kales are plentiful and good. Broccoli have withstood the severe weather well, and without any protection. We cultivate the following varieties of this vegetable: Self-protecting Autumn, Snow's Superb Winter White, Frogmore Protecting, Cattel's Eclipse, Late White May, and June King. They have all been grown between Potatoes planted 3 feet apart. Spinach (Green Beet) has furnished plentiful crops during the winter; the prickly-seeded kind will soon be plentiful. Of Celery, the variety Major Clarke is keeping well. Turnips Chirk Castle, Black Stone, and Orange Jelly have been, and still continue, in good condition. Autumn-sown Peas were ruined by the severe weather in March. Broad Beans are later than those sown in January outside. Autumn-sown Onions of the Giant Rocca variety are very good; of Ailsa Craig we lost quite 50 per cent. of the plants. Onions and Parsnips sown outside in February promise well. Of autumn-planted Cabbage, Ellam's Early Dwarf is late, but quite healthy, and will be ready to follow late Kales. Fruits of all kinds are very satisfactory. Hybrid Perpetual and climbing varieties of Roses are breaking well, but Tea Roses have been damaged by the cold weather. Rose Beauty of Glazenwood, or Fortune's Yellow, growing on a south wall and with no protection during March, will soon be a glorious sight. *Retinospora Sanderae*, a beautiful coloured Conifer, refuses to grow here; probably the plant requires shelter from wind, as it appears quite hardy. Ribes, in five varieties, are charming just now. *Euonymus* trees are badly damaged, particularly the green variety. The shoots of *Escallonia* are badly browned, but the plants will soon be green again with new growth. *Veronicas*, except the variegated variety of *V. Andersonii*, which is cut to the ground, are unharmed; our plants include *V. salicifolia*, *V. Burkii*, *V. Traversii* and *V. cupressoides*. *Con-toneaster angustifolia* is cut badly by the frost. The flowering shrubs were unharmed, although



FIG. 122.—NARCISSUS "QUEEN OF THE WEST."

(Obtained R.H.S. First-Class Certificate on 20th ult. as a good market variety.)
(See *ante* p. 269.)

shown, or it is scooped out, as will be illustrated in a later number. Immediately after the bulb is scored in this manner, the wounds are exposed so as to dry them. In former times they were exposed to the sun's rays, but it is the practice now to apply some absorbent material, such as ash or lime, which prevents the exudation of sap. It is usual to set apart a portion of a bulb store for use as a "nurse-room," in which the formation of the bulbils takes place and their development continues until they are ready for planting. Our illustration shows a part of one of these rooms in the nursery of Mr. F. de

obtained by the other treatment. In October or November the bulbils are detached and planted in ground which is liberally dressed with cow-dung in the preceding year. In the following season the bulbs do not flower, but merely produce foliage. They are lifted with the other bulbs in June, placed in the bulb stores and spread out on laths to dry. When this is accomplished they are cleaned of the foliage and loose leaf scales, and stored in a well-ventilated room until planting time in the following autumn. As soon as they are of a proper flowering size, which takes usually three years, they are ready for the market. Before they are

without protection: *Olearia Haastii*, *O. nitida*, *Rhododendrons*, including the variety "Pink Pearl"; *Stuartia pentagyna*, *Caryopteris Mastacantha*, *Elæagnus choisyi*, *Buddleia globosa*, *B. variabilis*, *Choisya ternata*, and *Cassinia fulvida*. The shoots of *Cistus* in several varieties have been killed by the frost, but they have been pruned and are breaking freely. *Styrax japonica*, *Edwardsia grandiflora*, and *Azara microphylla* are, I am afraid, damaged beyond recovery. The foliage of *Rhododendron elegantissima* is quite brown, but the buds appear to be alive. *R. præcox*, which lost all its foliage, is now in flower. *R. odoratum* is quite hardy with us, although a very shy bloomer. *Carpenteria californica*, which was lightly protected, is quite green. These trees and shrubs have all been planted within the last five years. The soil is a stiff clayey loam, which has been well drained and worked; all are growing at an exposed altitude of 600 feet. *Yucca filamentosa*, *Tricyrtis hirta nigra*, and *Opuntia Rafinesquii*, planted in prepared soil, have withstood the winter well. Pampas Grass, planted four years ago as offsets, are damaged, but not severely. Specimens of *Romneya Coulteri* have been cut to the ground; they were weak when planted. The shoots are now breaking through the soil again. A plant of *Lilium auratum platyphyllum*, which developed 44 flowers last season, is now 6 inches high, the only protection it has had being an inverted flower-pot. A patch of *Anemone hortensis plena* is now a blaze of colour, whilst several varieties of *A. coronaria* will be charming for some weeks to come. Plants of *Meconopsis integrifolia*, raised from seed sown in a cold frame last June and planted out in October, are healthy and strong. Seeds sown in the open air last August appear to be doing well. Our first Almond tree to flower opened its blossoms on the 17th inst. *J. E., Welshpool.*

CRIMSON CARNATIONS.—Mr. Weston and Mr. Johnson take different views (see pp. 241, 267) as to which variety of perpetual-flowering Carnations should be regarded as the best crimson variety. Having tested all varieties from the old General Maces to the new variety known as Black Chief, I think that this latter variety is to be recommended with confidence. A seedling from Harlowarden, Black Chief has a stronger stem and more robust habit of growth than its seed parent. It possesses a rich Clove scent, which Harlowarden does not, and it is capable of producing almost double the crop of bloom. Gwladys is a beautiful variety, but it is too slow in growth, producing its main crop of flowers in spring. When a flower is cut from this variety it takes more than seven months before the same growth will produce another bloom. Harlowarden will do so in six months, but Black Chief requires only five months. Harry Fenn and The President require a better winter climate than we possess, Governor Roosevelt is too slow, whilst Harvard, the American novelty, produces large flowers, but they are somewhat few. Black Chief is the best crimson perpetual-flowering Carnation up to the present date. *Montagu C. Allwood.*

CULTURE OF CUCUMBERS.—Mr. Jenkins states (p. 253) that I am in error in assuming that "all engaged in growing Cucumbers for market stop the young plants at the third or fourth wire of the trellis," adding that he himself does not do so, "although a market grower of Cucumbers for many years," thereby proving the truth of the old axiom about there being "an exception to every rule." All market growers of Cucumbers that I am acquainted with stop their young plants as I described in order to hasten the production of fruit-bearing laterals, and to have good Cucumbers earlier than would otherwise be the case. The individual laterals are stopped, as a rule, immediately beyond the second joint, and no fruits are allowed to develop on the main stems of the plants. Mr. Jenkins says (p. 193), "When the second or third rough leaf has been made the seedlings may be planted out." Young plants, however, are as a rule shifted from 3-inch pots into others having a diameter of 6 inches, and are not planted on the ridges until they have developed five or more rough leaves, the plants being grown on in the meantime in a position pretty close to the roof glass. In order to secure good crops of saleable fruits over as long a period as possible, liberal top-dressings of suitable manures should be

afforded before applying water at the roots two or three times in the week. The top-dressings are given in addition to a fresh compost of good loam and manure in about equal parts at intervals of a few weeks. Mr. Jenkins asks if I have tried the method which he advocated on p. 193. I have not, simply because it would not result in so great a profit as the one I now practise, and is wholly unsuited for commercial purposes. I have grown Melons extensively in the manner described by Mr. Jenkins for several years when in private practice, and with very satisfactory results. But satisfactory as this system was in a private establishment, I am satisfied that it would not do for market growers. With regard to my fuel bill, the cost was practically nothing, inasmuch as the plants were grown, as stated at p. 234, in boxes over a flue in the back wall of a three-quarter span pine stove, which, during the winter and early spring months, contained fruiting plants. *H. W. W.*

ACETYLENE GAS REFUSE.—I have been using this in my garden for six years, and though I have not put it to any kind of scientific test, I have had no reason to think that its effects were other than those of ordinary dressings of lime. I might add that the weeds grow freely on the piece of waste ground where my man washes out the tins. If there were any seriously injurious effects from the refuse one would have thought it would be seen here more than anywhere, but the grass does not appear to be affected by the liquid which runs over it. *Chas. E. Pearson.*

THUJA LOBBII AS A HEDGE PLANT.—There can be no doubt as to the general excellence of *Thuja Lobbii* as a hedge plant as recommended by *E. M.*, p. 245; but by far the most ornamental, evergreen hedge is furnished, in my opinion, by *Thujopsis dolabrata*. Here at Rotherfield Park we have some hedges formed of this Conifer which never fail to command admiration. The plant does not, perhaps, equal *T. Lobbii* in rapidity of growth, but it makes a very dense and excellent hedge. The only pruning necessary is an annual cutting of the side growths with a knife; they should not be clipped with shears. *Cupressus Lawsoniana* also makes a good hedge. *W. H. G., Alton, Hants.*

SOCIETIES.

ROYAL HORTICULTURAL.

The following circular letter is being distributed from Wisley:—

Royal Horticultural Society's Laboratory,
Wisley, Ripley, Surrey, April, 1909.

In view of the great severity of the weather in the past winter (1908-9) in certain parts of the country and the large number of new plants recently introduced to our gardens, it is desirable to collect all available information concerning the damage done by frost in order that it may be made public in the Royal Horticultural Society's *Journal*.

Will you, therefore, be so good as to fill in the forms sent herewith and return them to me at your convenience? Additional forms will be sent with pleasure if required.

No doubt the extent of the damage done will not be apparent until the middle or end of May, but may we be allowed to suggest that notes of the apparent damage should be made at once and checked subsequently at the time the plants should be in full growth.

In some cases it will be impossible to answer all the questions, but any exact information that can be given will be of immense service in drawing up the report and will be of great value to the Fellows of our Society.

Yours truly, FRED. J. CHITTENDEN.

SCHEDULE OF QUERIES.

1. Locality of garden.
2. Height above sea level.
3. Is the surrounding country open or is the garden sheltered by hills, &c.?
4. Is there any large body of water near?
5. Has the garden suffered any great damage from frost during the winter of 1908-9? If possible, please say how the amount of damage compares with that experienced in previous severe winters.
6. What are the lowest temperatures re-

corded during the winter, with dates?

- (1) On grass
- (2) In screen

If the thermometers are placed in positions other than these please give exact situation and exposure.

7. Have the thermometers been verified at Kew?
8. If not, are the thermometers ordinary minimum thermometers or "Six's"?
9. How do the temperatures compare with those experienced during other winters?
10. How long did the frosts last?
11. Was snow on the ground at the time? If so, about how much?
12. What was the general character of the autumn months in the district?
13. What is the nature of the soil and sub-soil?
14. Please give any further particulars regarding the climatic conditions that you think may be of service in drawing up the report.

[Two further forms accompany this one; one is intended for the enumeration of plants that have received injury, and the other for the enumeration of newly-introduced plants.]

Scientific Committee.

APRIL 20.—*Present*: Mr. E. A. Bowles, M.A., F.L.S. (in the chair); Sir Daniel Morris, G.C.M.G., Prof. Church, F.L.S., Messrs. A. Worsley, G. Masee, A. W. Hill, J. Douglas, C. Drury, J. T. Bennett-Poë, J. W. Odell, W. Cathbertson, and F. J. Chittenden (hon. secretary).

Fatsia injured by gnawing animals.—Mr. J. W. ODELL reported that he had examined the plants of *Fatsia* in the garden of Mr. KINGSMILL, at Harrow Weald, who had sent specimens of the injured stems to be examined by the committee, and found that the injury had been caused by the long-tailed field mouse, which had gnawed off the bark of some of the branches all round for a considerable length.

Double Auricula.—Mr. DRURY called attention to a double-flowered *Auricula* of an exceedingly dark purple colour, shown by Mr. J. DOUGLAS. The plant had been raised by Mr. C. B. GREEN, of Acton, from seed bought of Mr. DOUGLAS. The example was particularly interesting, since Mr. DOUGLAS stated that never before in his experience had a double *Auricula* been raised from seed of his plants. Sir DANIEL MORRIS raised the question of whether such a variation as this suddenly occurring from seed could rightly be called a sport. The discussion of the proper application of this term was deferred.

Various plants.—Mr. WORSLEY showed flowers of Tulips which he had received under the name of *Tulipa Fosteriana* from Holland, and commented upon the amount of variation in colour which these showed, especially in the presence and absence of the dark blotch at the base of the perianth segments. He considered that the plant approached very closely to *Tulipa Eichleri*. Mr. WORSLEY also offered some remarks upon a plant shown at the previous meeting, which he had identified as *Urceolina miniata*, a native of the Peruvian Andes.

From Mr. A. W. SUTTON came an unnamed Composite, apparently a native of Tropical Africa. In appearance the flowers somewhat resembled those of a *Cineraria*, but did not seem identical with any known species. Mr. SUTTON was asked to show the plant again when ripe fruit could also be seen.

Sir DANIEL MORRIS remarked that he had recently seen, in a garden in the New Forest, a white-flowered shrub about 5 feet or 6 feet in height, which there passed under the name of *Leucopogon Cunninghamii*, but which was really *Spiræa Tunbergii*. He desired to know whether *Leucopogon Cunninghamii* was hardy in England.

Presentation to the Library.—Prof. A. H. CHURCH presented three books which he had had privately printed, being catalogues of some 6,000 manuscripts, scarce pamphlets, &c., contained in the library of the Royal Society, and dating from about 1606 to the beginning of the nineteenth century, containing many interesting references to well-known botanists and other scientific men of this and foreign countries, to which Prof. CHURCH briefly referred. Prof. CHURCH was heartily thanked for these interesting additions to the library.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

APRIL 1.—*Committee present:* E. Ashworth, Esq. (Chairman); and Messrs. R. Ashworth, H. Thorp, Z. A. Ward, F. W. Ashton, A. Warburton, J. C. Cowan, W. Holmes, A. J. Keeling, C. Parker, W. B. Upjohn, and P. Weathers (hon. sec.).

A. WARBURTON, Esq., Haslingden (gr. Mr. Dalgleish), exhibited *Cattleyas* (Bronze Medal), a group of *Odontoglossums* (Silver Medal), and another of *Cypripediums* (Bronze Medal), the combined display receiving a Silver-gilt Medal. From this collection the following plants received awards, viz., First-class Certificate to *Odontioda Goodsonae* Vine House variety and *Odontoglossum crispum* var. *Inoticus*. *Cattleya Schröderæ* var. *Countess Deepore*, C. S. var. *Matador*, and C. S. var. *White Queen* received Awards of Merit.

H. J. BROMLOW, Esq., Rainhill (gr. Mr. Morgan), was awarded a Silver Medal for a group of *Cypripediums*. C. × *Hopkinsonianum*, a hybrid between C. *bellatulum* and C. *Mastersianum*, received an Award of Merit.

Messrs. MOORE, LTD., Leeds, were awarded a Silver Medal for a fine display of *Dendrobiums*.

Mr. W. SHACKLETON, Gt. Horton, near Bradford, was awarded a Bronze Medal for a small group of plants consisting of *Cypripediums* and *Odontoglossums*. *Odontoglossum crispum* Shackleton's variety received an Award of Merit.

J. MCCARTNEY, Esq., Bolton (gr. Mr. Holmes), was awarded a Silver Medal for a group of *Cattleyas*; a fine white variety named *Cattleya Schröderæ alba* var. *Mrs. J. McCartney* was awarded a First-class Certificate, whilst *Cattleya Schröderæ* var. *Model* received an Award of Merit.

Mr. J. ROBSON, Altrincham, was awarded a Silver Medal for a miscellaneous display, in which were some well-grown plants of *Dendrobium* and *Odontoglossum* in great variety.

Mr. A. W. JENSEN, Linfield, Sussex, exhibited a number of distinct forms of *Cattleya Schröderæ* and some choice forms of *Cattleya Mendelii*.

Mr. A. J. KEELING, Bradford, was awarded a Bronze Medal for a group in which were many interesting plants. *Cypripedium* × *Eurybel* received an Award of Merit, and a similar award was given to a good form of *Dendrobium Cambridgeanum*.

G. S. BALL, Esq., Burton, Westmoreland (gr. Mr. Herdman), received Botanical Certificates for *Bulbophyllum Lobbii* var. *Siamensis* and *Cirrhoptalum picturatum*. P. W.

HORTICULTURAL CLUB.

THE COLOURS OF PLANTS.

APRIL 20.—At the usual monthly meeting of this club, at the Hotel Windsor, on this date, Mr. W. J. Jefferies presiding, Mr. A. E. Bunyard gave an interesting lecture on the underlying causes of colour and change of colour in plants. By means of a number of lantern slides, some representing flowers in their natural colours, and others prepared microscopic sections of the colour-producing plant cells, he showed the many subtle ways in which colours are widely varied by minute modifications of the colouring matter, or even only of its rearrangement. In the first place, he explained that we recognise colours by virtue of the varying powers possessed by the colouring materials of absorbing white light, e.g., sunlight, and breaking it up, as in prisms, into those constituent tints which are seen in the rainbow or in the spectrum. When so broken up, these components are partly absorbed and partly thrown off or reflected, and it is by virtue of the reflected rays, and not the absorbed ones, that our eyes are affected and we see the colour concerned. Thus a red body absorbs all the rays of the spectrum except the red; these, reflected, fall upon the eye and give rise to the sensation of redness. He then went on to explain that the colouring matter in plants is of two kinds, sap, or liquid colours, and "plastids," or minute microscopic bodies of a granular nature.

In one very remarkable slide representing a section of a flower petal, he showed how these two kinds, say, one yellow, the other red, may be associated in separate but adjoining cell layers

in definite patches, and in such a fashion that, when both were exactly superimposed, a very intense colour appeared; while a less exact coincidence would allow the lighter tint to appear between the darker one, and in this way produce more or less marked gradations of tint.

Mr. Bunyard next explained that the chief colouring matter of plants, viz., the chlorophyll, contained in the green granules to which leaves owe their colour, is associated with a yellow colouring matter termed Carotin.

In foliage the yellow colour of the Carotin is masked by the predominating green chlorophyll, but when the green chlorophyll decomposes in the autumn the yellow tint becomes visible, and, in conjunction with other pigments, produces the brilliant reds and yellows of the autumn landscape. Another interesting point brought out by the lecturer was the practical identity of blue and red sap colours, the acidity or alkalinity of the sap holding the pigment in solution determining the colour (blue or red) of that pigment. Hence a very slight change in the composition of the soil or in the plant itself may lead to a change from red to blue flowers, or vice-versa as is seen in the much-discussed cases of the *Hydrangea*. A further series of slides illustrated the peculiar forms taken by the coloured plastids (chromoplasts) in the epidermal layers of fruits, the Melon displaying under the microscope curious arrangements of rods and ribbons, while in other cases the matter takes the form of minute crystal-like bodies. Flowers usually contain chlorophyll in their incipient stages, but eliminate it later as they assume their distinctive colours; in the green flowers, however, such as green Roses and Dahlias, this elimination does not occur; in them the chlorophyll persists.

Mr. Bunyard referred to the well-known fact that a colour which may be entirely absent in the flower may betray its presence elsewhere in the plant's system, and stated that varieties even when not in flower may thus be recognised. Such examples may be found in the white Lilac, the leaf-buds differing from those of the coloured Lilacs by an absence of a tint in the foliage which the latter invariably show. In the subsequent discussion Messrs. Druery, Cuthbertson, Pearson, Barr, Sanders and Dr. Shillitoe took part.

IPSWICH AND EAST OF ENGLAND HORTICULTURAL.

APRIL 21.—The annual spring flower exhibition of this society, otherwise known as the Daffodil show, was held at the Public Hall, Ipswich, on this date. The show was marked by exceptional success, both as regards the number and quality of the exhibits. The classes were divided into those for amateurs, with no restriction as to the number of gardeners employed, amateurs employing no regular gardener, and ladies' classes. In a group of classes for amateurs, Mr. F. L. BLAND took a prominent place. He was awarded the 1st prize for 24 varieties of *Narcissus*, the collection including *Seagull*, *Albatross*, *Mme. de Graaff* and *Lucifer*; 2nd, Mr. W. P. BURTON, with a collection which contained good blooms of *Glory of Leiden*.

For 12 varieties of *Narcissus*, exhibitors in the previous class not being eligible, Major CAUTLEY was placed 1st, his finest varieties including *Lucifer* and *Duke of Bedford*.

Mr. F. L. BLAND was again successful for one bloom each of 12 varieties of *Narcissus*. *Wear-dale Perfection* was shown in good condition in this exhibit. 2nd, Major W. O. CAUTLEY, Newton, Bury St. Edmunds.

Amongst the classes for yellow *Magni-coronati* varieties, Mr. DONALD WARNES won the 1st prize, his exhibit including a specially good specimen of *Glory of Leiden*. Mr. BLAND was 1st with the sulphur varieties, and also the white and yellow, his example of *Wear-dale Perfection* being awarded Major W. O. Cautley's prize offered for the best bloom in the section.

The next three classes were devoted to varieties of the *Incomparabilis*, *Barrii* *conspicuus* and *Leedsii* sections. Major CAUTLEY was 1st in two classes, and Mr. BLAND was 1st for three bunches of *Barrii* *conspicuus*. The last-named gentleman secured Major Cautley's Silver Medal offered for the best bloom in these classes with a fine example of the variety *Seagull*.

Mr. F. L. Bland offered a Silver Medal for the

best bloom of *Parvi-coronati*, which was won by Mr. G. H. SAVILLE. Mr. SAVILLE, who does not employ a regular gardener, won remarkable success with his exhibits of *Narcissus*. He won the 1st prizes offered for the *Sir Watkin* variety, for a collection of *Narcissus*, and for one bloom each of six varieties of *Narcissus*.

For a vase of 12 *Daffodil* blooms of any one variety, Mr. ROBERT DEATH was successful with fine blooms of *Emperor*. Mr. R. Dow was 1st for six bunches of spring flowers.

Pot plants.—The open classes for pot plants were responsible for some of the most brilliant effects in the show. There were four semi-circular groups of miscellaneous plants, and these formed a most creditable display. Mr. W. P. BURTON's group was much the best, both in arrangement and quality. Mr. NOTCUTT won two 1st prizes for *Palms*; the best *Lilacs* were shown by Mr. F. PORLEY, and the best *Clivias* by Mrs. LUTHER HOLDEN.

There was keen competition in the classes for *Azaleas*. Mr. W. F. PAUL won the 1st prize both for *Azalea indica* and *Azalea mollis*, his plants being full of bloom.

Some attractive pots of *Cinerarias* were shown by Mr. R. Dow, who beat both Mrs. LUTHER HOLDEN and Mr. W. F. PAUL. For *Cineraria stellata*, Mr. PORLEY was 1st; but Mr. W. PIPE also staged some good examples.

Mrs. W. H. BURROUGHS was 1st for both *Spiræa japonica* and other varieties of *Spiræa*.

Mr. W. F. PAUL showed some finely-grown *Calceolarias*, taking 1st honours; and Mr. W. PIPE's *Schizanthus* were beautiful specimens. Mr. V. D. COLCHESTER won easily with his fine *Tulips*. Mr. R. Dow's three pots of *Hyacinths* and also his *Narcissus* were a long way ahead of anything in the same classes. There was some very fine *Mignonette* to be seen.

TRADE EXHIBITS.

Non-competitive exhibits formed an attractive feature of the show. Mr. R. C. NOTCUTT, of Woodbridge and Ipswich, had a very fine exhibition, effectively displayed, which consisted largely of hardy spring-flowering shrubs, slightly forced and in full bloom. Also several varieties of *Roses* in full bloom. Mr. NOTCUTT had, in addition, an exhibit in the form of a rock-garden.

Messrs. WILLIAM CUTBUSH & SON, Highgate, London, N., showed *Carnations*, the more noticeable, perhaps, being the new *Souvenir de la Malmaison* variety named *Lady Coventry*.

Mr. CHARLES H. BUCK, Tresco Nurseries and St. Matthew's Street, Ipswich, showed some excellent results of the French system of gardening.

Messrs. FRED SMITH & Co., Suffolk Seed Stores, Woodbridge and Ipswich, had a well-arranged exhibit, in the centre of which were fine blooms of *Emperor Narcissus*.

Mr. R. H. BATH, the Floral Farms, Wisbech, and Mr. FRANK LILLEY, of the Bulb Nurseries, Guernsey, showed bright groups of bulbous and other spring flowers.

COLCHESTER ROSE AND HORTICULTURAL.

APRIL 22.—This society having abandoned their summer exhibition for this year, held instead a spring show on this date. Cut flowers were remarkable for their excellent quality and the exhibits of plants were also good, especially *Roses* from the celebrated Colchester rosarians.

In the class for a group of foliage and flowering plants, Mrs. H. DE LARPENT, Holwood, London Road, Colchester (gr. Mr. G. W. Richardson), was awarded the 1st prize; Mr. DIAPER, Priory Street, Colchester, being placed 2nd.

In the similar but small class G. H. GOODY, Esq., Colchester (gr. Mr. G. H. Spurgeon), won the 1st prize; 2nd, E. J. SANDERS, Esq., Colchester (gr. Mr. J. Wood).

Excellent *Roses* were staged by Messrs. F. CANT & Co. in a class for 12 of these plants, many being of the Rambler type. Messrs. B. R. CANT & SONS were awarded the 2nd prize. In the smaller class for *Roses* the awards were reversed, Messrs. B. R. CANT & SONS being placed 1st and Messrs. F. CANT & Co. 2nd.

The classes for bulbous flowers were in some cases weakly contested, but in others splendid blooms were staged. Major W. O. CAUTLEY, Newton, was awarded the 1st prize for 12 varieties of bulbous plants. Mrs. CHESHIRE had the

best bulbous plants growing in bowls or vases. Mr. SANDERS had the best collections of Polyanthus and Primroses.

Table decorations were a feature of the exhibition, and all were tastefully arranged. The 1st prize was won by Miss A. F. HARWOOD; this lady employed Solomon's Seal and Gypsophila largely. 2nd, Mr. TURNER, Colchester.

The class for decorated bowls or vases was strongly contested. Mrs. O. G. ORPEN, West Bergholt, was placed 1st with a charming arrangement of *Azalea mollis* and *Narcissus Leedsii*.

HONORARY EXHIBITS were numerous. Messrs. R. WALLACE & Co., Colchester, showed fine bulbous and Alpine plants; Messrs. B. R. CANT & SONS had a fine display of Roses; Messrs. PRIOR & SONS, Colchester, staged excellent Roses and other flowers; Mr. R. C. NORCUTT, Woodbridge and Ipswich, exhibited forced shrubs in variety; Messrs. W. CUTBUSH & SONS, Highgate, displayed Carnations, including their new variety named Lady Coventry; Mr. CHAS. TURNER, Slough, showed Auriculas; and Messrs. DOBBIE & Co., Rothesay and Mark's Tey, Violas.

MIDLAND DAFFODIL.

APRIL 22, 23.—The Midland Daffodil Society's 11th annual exhibition was held at the Botanical Gardens, Edgbaston, on the above dates. The weather on the first day was wet, and greatly interfered with the attendance of visitors to the show, which was visited by a deputation from the Royal Horticultural Society, consisting of Messrs. H. B. May, E. A. Bowles, A. Kingsmill, and C. H. Curtis.

Mr. Peter Barr, who was present, declared the exhibition to be the best Daffodil show in the world. It certainly was one of the best held at Birmingham, and the all-round quality of the flowers, especially new seedlings, was surprisingly good. Mr. E. M. CROSFIELD is to be congratulated upon winning both the "Bourne" and the "Cartwright" Challenge Cups for seedlings and new varieties, as well as the 1st prize in the open championship class and 1st prizes in all classes in which he exhibited.

The new system of classification of Daffodils drawn up by the Royal Horticultural Society was used, and came in for some criticism.

In the evening Mr. Robert Sydenham entertained the principal exhibitors, judges and visitors to dinner at the Grand Hotel. An interesting discussion on the classification and registration of Daffodil names was opened by the Rev. Joseph Jacob.

CUT FLOWERS (OPEN CLASSES).

The premier class was one for a collection of 50 varieties of Daffodils. There were four entries, and the 1st prize of five guineas was awarded to Mr. E. M. CROSFIELD, Cossington, Bridgwater, whose flowers were of an unusually high standard of excellence. A few of the best varieties were Prelude, Draco, Hamlet, Schem, Northern Light, Cassandra, Incognita, Lucifer, Homespun, Horace, Pilgrim, Honeybird, and Cohort. Messrs. CARTWRIGHT & GOODWIN, Blakebrook, Kidderminster, won the 2nd prize; their exhibit contained exquisite flowers of Monarch, King Solomon, Hamlet, Homespun, Admiral Togo, Diamond, Circle and Incognita. 3rd, Messrs. POPE & SON, King's Norton.

Messrs. CARTWRIGHT & GOODWIN were awarded 1st prizes in each of the following six classes:—(1) Twelve distinct varieties of long-trumpet Daffodils; (2) six distinct varieties of short-trumpet Daffodils; (3) 12 distinct varieties of large-cupped Daffodils; (4) 12 distinct varieties of small-cupped Daffodils; (5) six distinct varieties of flat-cupped Daffodils; and (6) three distinct varieties of double Daffodils. The same exhibitors shared equal 1st with Mr. F. H. CHAPMAN, Rye, in a class provided for six distinct varieties of *N. poeticus*. It is difficult to particularise where flowers were so numerous and the quality uniformly high, but the specimens exhibited by Messrs. CARTWRIGHT & GOODWIN were models of good culture and refinement and artistically arranged.

In a class for six varieties of Daffodils selected from moderate-priced varieties, such as Emperor, Golden Spur, Empress, Victoria, Sir Watkin, Mrs. Langtry, &c., there were four competitors, and the Rev. T. BUNCOMBE, Black Torrington, N. Devon, gained the 1st prize with

beautifully-fresh flowers of *Barri conspicuus*, John Bain, Emperor, Leonie, Flora Wilson, and Frank Miles. 2nd, J. A. KENRICK, Esq., Berrow Court, Edgbaston (gr. Mr. A. Cryer).

AMATEURS' EXHIBITS.

In the section reserved for amateurs the leading class was for 25 varieties of Daffodils, and eight good exhibits were placed before the judges, who awarded the 1st prize to Mr. N. Y. LOWER, Presteign, for a beautiful set of flowers, in which the following varieties were of outstanding merit:—Horace, Homer, Gloria Mundi, Weardale Perfection, Blood Orange, Chancer, Glory of Leiden, Albatross, Mme. Plemp, Lucifer, Cresset, and J. B. M. Camm. 2nd, Mr. H. B. YOUNG, Metheringham, whose best flowers were Lucifer, Gloria Mundi, Weardale Perfection, Leonie and *Barri conspicuus*. The Rev. T. BUNCOMBE, who obtained the 3rd prize in this class, beat 10 competitors in a class for nine distinct varieties of long-trumpet Daffodils. He showed very clean, shapely blooms of Mme. de Graaff, Victoria, Emperor, Weardale Perfection, Glory of Leiden, J. B. M. Camm, M. J. Berkeley, and Empress. Mr. H. B. YOUNG was a close 2nd, and the Rev. G. P. HAYDON, Canterbury, 3rd.

In a class for nine distinct varieties of large-cupped Daffodils the Rev. T. BUNCOMBE again took the lead with exceedingly good flowers, except two, namely, Artemis and Minnie Hume. 2nd, the Rev. G. P. HAYDON, who succeeded in winning 1st prizes in the undermentioned classes:—(1) Nine distinct varieties of small-cupped Daffodils; (2) three distinct varieties of flat-cupped Daffodils; and (3) three distinct varieties of double Daffodils.

The Rev. T. BUNCOMBE had the best exhibit of three distinct varieties of bunch-flowered Daffodils in the varieties *Aspasia*, Irene and *Elvira*. 2nd, J. A. KENRICK, Esq. gr. Mr. A. Cryer).

Messrs. Pope & Sons offered five prizes for six distinct varieties of Daffodils, none of which was of a greater value than 3s. per dozen bulbs. 1st, Mr. H. B. YOUNG, with beautiful flowers of *Horsfieldii stella superba*, Sir Watkin, C. J. Backhouse, *præcox grandiflorus*, and Minnie Hume; 2nd, Mr. N. Y. LOWER.

Six classes were provided for exhibitors, who had never won a 1st or 2nd prize at any of the Society's exhibitions, and several creditable displays were made, especially by Mr. H. R. DARLINGTON, Potter's Bar, who won 1st prizes for (1) six varieties of small-cupped Daffodils; (2) six varieties of small-cupped Daffodils; (3) distinct varieties of double Daffodils; and (4) three distinct varieties of bunch Daffodils.

Mr. F. W. MITCHELL, Warwick, beat Mr. H. R. DARLINGTON and three other competitors in a class for 12 distinct varieties of Daffodils.

SINGLE BLOOMS.

The most successful prize-winners in this section were Messrs. E. M. CROSFIELD, P. D. WILLIAMS, C. DAWSON and J. MALLENDER.

SEEDLINGS AND NEW VARIETIES.

The Bourne Challenge Cup was offered for 12 distinct varieties of Daffodils raised by the exhibitor, and although only four entries were made, compared with eight a year ago, the quality of the flowers was particularly good. The winner of the Cup on the present occasion was the redoubtable Mr. E. M. CROSFIELD, who showed exquisite flowers of *Crystal*, Pixie, Honeymaid, Gaybird, Casilda, Flashlight, Frostbound, Tara, Renee, Ecu, Phantasy, K.G.5 and Pedestal; 2nd, Mr. P. D. WILLIAMS, St. Kevern, Cornwall, for a very choice collection of flowers, shown mostly under numbers.

The next class was for six varieties of Daffodils raised by the exhibitor, but not in commerce. The 1st prize was awarded to Mr. T. BATSON, Beauworthy, who showed the following varieties:—Downcast, Melissa, Chryseis, Infanta, Adria, and Aktis; 2nd, Messrs. POPE & SON.

Mr. F. H. CHAPMAN was the only competitor in a class for three seedling Daffodils raised by the exhibitor and not in commerce. Only those who had not previously won a prize for seedlings were eligible to compete. The varieties exhibited by Mr. CHAPMAN were much admired. They were Henry James, Spindrift, and Signal.

THE CARTWRIGHT CHALLENGE CUP.

This was offered for 12 distinct varieties of Daffodils that have not been in commerce more than four years. Last year's winner, Mr. E. M. CROSFIELD was again placed first. He showed refined flowers of Herod, Chandos, Radiant, Artus, Ecu, Helm, Silver Sheen, Bernardino, Bedouin, Pedestal, Phantasy, and Honeymaid; 2nd, Messrs. CARTWRIGHT & GOODWIN; 3rd, the Rev. G. P. HAYDON.

In a similar but smaller class Messrs. POPE & SON beat Mr. F. H. CHAPMAN.

MISCELLANEOUS CUT FLOWERS.

Mr. R. Usher (gr. to J. A. KENRICK, Esq., Harborne) carried off the first prizes in classes for (1) six varieties of Darwin Tulips and (2) six varieties of Spanish Irises. Mr. A. Cryer (gr. to J. A. KENRICK, Esq., Berrow Court, Edgbaston) beat the above exhibitor and Messrs. POPE & SON in a class for 12 distinct varieties of hardy flowers.

PLANTS GROWN IN POTS.

Daffodils and Tulips in pots were well represented, Mr. A. CRYER taking the lead in classes for (1) 12 pots of Daffodils (bunch-flowered section excluded), (2) six pots of bunch-flowered (Polyanthus) Daffodils, and (3) 12 pots of single Tulips. Mr. R. USHER was successful in the classes provided for (1) six pots of Daffodils and (2) six pots of single Tulips.

Mr. A. CRYER took 1st prizes in two classes for Daffodils grown in moss-fibre without drainage.

TABLE DECORATIONS.

The 1st prize for an arrangement of cut hardy spring flowers arranged on a round table 2½ feet in diameter, suitable for a drawing-room, was won by Mr. JOHN SCEANEY, Harborne, with a dainty arrangement of small Daffodils relieved with Asparagus. The best bowl of cut Daffodils came from Messrs. POPE & SON; Mr. JOHN SCEANEY was 2nd.

CUPS AND MEDALS.

Messrs. Barr & Sons' Daffodil vase, offered to the most successful amateur exhibitor in certain classes, was won by the Rev. T. BUNCOMBE.

The medals offered by the Birmingham Botanical and Horticultural Society were awarded as follows:—The large Silver Medal as champion prize in the open classes was won by Messrs. CARTWRIGHT & GOODWIN, and the large Bronze Medal by Messrs. POPE & SON. The large Silver Medal offered to the most successful exhibitor in the amateur classes was won by the Rev. T. BUNCOMBE, and the Bronze Medal by the Rev. G. P. HAYDON.

Silver and Bronze Medals were offered in another section, and these were won by Mr. A. CRYER and Mr. R. USHER respectively.

HONORARY EXHIBITS.

Gold Medals were awarded to Messrs. BARR & SONS, for Daffodils; and Messrs. BAKERS, for Alpine plants.

Silver-gilt Medals to Mr. H. D. PHILLIPS, for new Daffodils; to Mr. C. DAWSON, for new Daffodils; to Miss CURREY, for Daffodils; and Messrs. SUTTON & SONS, for Cinerarias, Stocks, &c.

Large Silver Medals to Messrs. J. R. PEARSON & SONS, for Daffodils; to Sir JOSSLYN GORE-BOOTH, Bart., for Daffodils; to Messrs. GUNN & SONS, for hardy plants and shrubs; and Mr. S. MORTIMER, for Carnations.

Small Silver Medals to Messrs. R. H. BATH, for Daffodils; and Messrs. ROBERT SYDENHAM, LTD., for Daffodils, &c.

AWARDS TO NOVELTIES.

FIRST-CLASS CERTIFICATES

to *Narcissus Homespun*, from Mr. H. D. PHILLIPS, Olton Birmingham; *N. Great Warley*, from Mr. W. T. WARE, Bath; *N. Queen of the West*, from Mr. W. T. WARE, Bath.

AWARDS OF MERIT

to *Narcissus Bedouin*, from Mr. E. M. CROSFIELD, Bridgwater; *N. Cossack*, from Mr. C. DAWSON, Penzance; *N. Red Chief*, from Mr. C. DAWSON, Penzance; *N. Poeticus St. George*, from Messrs. BARR & SONS, London; *N. White Slave*, from Mr. H. D. PHILLIPS, Olton; *N. Giraffe*, from Messrs. CARTWRIGHT & GOODWIN, Kidderminster; *N. Poetaz Scarlet Gem*,

from Messrs. CARTWRIGHT & GOODWIN; N. Red and Gold, from Messrs. CARTWRIGHT & GOODWIN.

R.H.S. AWARDS.

The Awards made by the deputation from the Royal Horticultural Society to competitive and non-competitive exhibits were as follow:—

Gold Medals to Mr. E. M. CROSFIELD, for Daffodils; to Messrs. CARTWRIGHT & GOODWIN, for Daffodils; to Mr. C. DAWSON, for new Daffodils. Silver-gilt Flora Medals to Messrs. BARR & SONS, for Daffodils; to Messrs. J. R. PEARSON & SONS, for Daffodils.

Silver-gilt Banksian Medals to Mr. H. D. PHILLIPS, for new Daffodils; to Sir JOSSLYN GORE-BOOTH, Bart., for Daffodils; to Messrs. BAKERS, for Alpine plants; to Messrs. SUTTON & SONS, for Cinerarias, Stocks, &c.; to Mr. P. D. WILLIAMS, for seedling Daffodils in Class 31; to Messrs. POPE & SON, for Daffodils.

Silver Flora Medals to Miss CUREY, for Daffodils; to Mr. F. H. CHAPMAN, for Daffodils.

Silver Banksian Medals to Mr. S. MORTIMER, for Carnations; to Messrs. GUNN & SONS, for hardy flowers; to Messrs. R. H. BATH, LTD., for Daffodils; to ROBERT SYDENHAM, LTD., for Daffodils, &c.; to Messrs. HOGG & ROBERTSON, for Daffodils and Tulips; to Messrs. W. H. SIMPSON & SONS, for Daffodils; to Mr. N. ELLISON, for Ferns.

AWARD OF MERIT to Daffodil Lowdam Beauty, from Messrs. J. R. PEARSON & SONS, Lowdam.

Special Commendation to Mr. W. T. WARE, for Daffodils.

HUNTINGDONSHIRE SPRING FLOWER.

APRIL 27.—The fourth show of the above society was held at Huntingdon, on this date. Both the number of visitors and entries constituted records. The cup offered by Messrs. Barr & Sons for a collection of Daffodils was won by A. R. DARLING, Esq., Potter's Bar; 2nd, J. CATOR, Esq., Woodbastwick. Trade exhibits contributed much to the success of the show. Messrs. BARR & SONS, Covent Garden, London, Messrs. R. H. BATH, LTD., Wisbech, Messrs. J. R. PEARSON & SONS, Lowdam, Mr. J. MALLENDER, Bawtry, Messrs. W. & J. BROWN, Stamford, Mr. PERKINS, Huntingdon, Messrs. LAXTON BROS., Bedford, and Mr. G. REUTHE, Keston, displayed showy groups of spring flowers. Lady DE RAMSEY showed Tree Carnations.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending April 28.

A showery and sunny week.—All the days and nights of the past week have been more or less warm for the time of year, but on the warmest day the temperature in the thermometer screen at no time rose higher than 64°, and on the coldest night the exposed thermometer showed only 3° of frost. The temperature of the ground is now 1° warmer at 2 feet deep, and 2° warmer at 1 foot deep, than is seasonable. Rain has fallen on each of the last 6 days, but to the total depth of less than 1/2 of an inch. For the last five days there has been no measurable percolation through the bare soil gauge, and for the last three days no percolation at all through that on which short grass is growing. The sun shone on an average for 8 hours a day, which is more than 2 1/2 hours a day longer than is usual at this period of April. On the sunniest day the sun was shining brightly for 12 hours. The wind has been, as a rule, moderately high, and mostly from some point between south and west. The mean amount of moisture in the air at 3 o'clock in the afternoon fell short of a seasonable quantity for that hour by 3 per cent. E. M., Berkhamsted, April 28, 1909.

GARDENING APPOINTMENTS.

Mr. G. WAGSTAFFE, decorator at Belvoir Castle Gardens, Grantham, as Gardener to J. WILSON, Esq., Anlaby, Hull. Mr. J. GOUGH, late of Booton, as Gardener at Heyden Hall, Reepham. Mr. G. PHILLIPS, for the past 14 years Gardener at Sandrone Castle, Shrewsbury, as Gardener to Sir WILLIAM MATHER, Bart., Bramble Hill Lodge, Bramshaw, New Forest, Hants. Mr. J. K. HOARE, late of Iwerne Minster, Grenehurst Park, and South Lodge, as Gardener at Stanmer Park, Lewes. Mr. H. W. DAWES, late Foreman in the employ of Sir WM. HART-DYKKE, Bart., Lullingstone Castle, Dartford, Kent, and previously Foreman at Ratton Park, Eastbourne, as Gardener to H. H. C. HORSEFALL, Esq., Penn's Hall, Birmingham.

MARKETS.

COVENT GARDEN, April 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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their wholesale prices, including Anemone fulgens, Azalea, Calla aethiopica, Carnations, Cypripedium, Daffodils, Dendrobium, Eucharis, Freesia, Gardenias, Gladiolus, Gypsophila, Hyacinths, Iris, Lilac, Liliun auratum, Lily of the Valley, Marguerites, Mignonette, Myosotis, Narcissus, Ranunculus, Roses, Snowdrops, Spiraea, Stocks, Sweet Peas, Tuberoses, Tulips, and Violets.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage and their wholesale prices, including Adiantum, Agrostis, Asparagus plumosus, Berberis, Croton, Cycas, Daffodil foliage, Ferns, Galax, Hardy foliage, Honesty, Ivy-leaves, Moss, Myrtle, Smilax, and various other foliage types.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various potted plants and their wholesale prices, including Acacias, Ampelopsis, Aralia Sieboldii, Araucaria excelsa, Aspidistras, Asparagus, Clematis, Cocos Weddelliana, Crotons, Cyclamen, Cyperus, Dracaenas, Erica, Euonymus, Ferns, Galax, Hardy foliage, Honesty, Ivy-leaves, Moss, Myrtle, Smilax, and various other potted plants.

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

Table listing various plants in pots and their wholesale prices, including Hardy flower roots, Heliotropiums, Hydrangea, Isolepis, Kentia, Latania, Liliun longiflorum, Lily of the Valley, Marguerites, Mignonette, Pansies, Pelargoniums, Primulas, Rhodanthe, Rhododendrons, Roses, Selaginella, and various other plants.

Fruit: Average Wholesale Prices.

Table listing various fruits and their wholesale prices, including Apples (Tasmanian, Cox's Orange, Pippin, Alexander, Prince Alfred, Australian), Bananas, Berries, Grapes, Lemons, Limes, Melons, Nuts, Oranges (California, Valencia), Peaches, Pineapples, Plums, and various other fruits.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their wholesale prices, including Artichokes, Asparagus, Beans, Beetroot, Cabbages, Cardoon, Carrots, Cauliflower, Celery, Chicory, Cucumbers, Endive, Horseradish, Kale, Leeks, Lettuce, Mint, Mushrooms, Parsley, Peas, Potatoes, Radishes, Rhubarb, Spinach, Stachys, Turnips, and various other vegetables.

REMARKS.—Forced Strawberries are plentiful and slightly cheaper, 2s. 6d. per lb. being an average price. Supplies of fruit from Cape Colony have practically finished; there are a few Plums, Grapes, &c. left from the last consignment. Australian and Tasmanian Apples have been received in small quantities; prices for these fruits remain about the same as those of last week. Lemons are slightly cheaper, but sound packages of Oranges continue to sell at advanced prices. French Asparagus is more plentiful and much cheaper. Forced Rhubarb is practically finished for the season. Trade generally is quiet. E. H. K., Covent Garden, Wednesday, April 28, 1909.

Potatoes.			
Kents—	s.d. s.d.	Lincolns—	s.d. s.d.
Scottish Triumphs..	3 6-4 3	King Edward ...	3 3-3 9
Up-to-Date ...	3 6-4 3	Blacklands...	3 0-3 3
Lincolns—			
Royal Kidney ...	3 0-3 6	Langworthy, red soil	5 3-5 6
British Queen ...	3 0-3 6	Up-to-Date, red soil	4 3-4 6
Up-to-Date ...	3 9-4 3	" " grey soil	3 0-3 9
Maincrop ...	3 9-4 3	Yorks—	
Evergood ...	3 0-3 6	Up-to-Date ...	3 9-4 0

REMARKS.—Trade is very slow, and supplies are larger than the demand; in consequence prices are lower.—*Edward J. Newborn, Covent Garden and St. Pancras, April 28, 1909.*

COVENT GARDEN FLOWER MARKET.

Plants for window-boxes are in demand. Large numbers of Ivy-leaved Pelargoniums are used for this purpose, especially the varieties Galilee and Madame Crousse. The plants are rather larger than those formerly used for window-boxes; Zonal Pelargoniums in 48 and large 60 pots are also largely used for this work, the semi-double-flowered kinds being most favoured. Raspail, Ville de Poitiers, Mrs. Lawrence and King of Denmark are the leading varieties seen. Hermione is the favourite semi-double white, and Albion and Snowdrop the best single white-flowered varieties. Paul Crampel is the best scarlet. The old Henry Jacoby is also in demand, and I find some buyers favour King Edward VII., but plants of this variety do not succeed in a poor soil. Mrs. Cannell appears to be the best single salmon. Intermediate Stocks are very good; there is a demand for the pink variety, but those with crimson and white flowers sell most readily. Mignonette has been over-plentiful, but I have not seen any spring-raised plants, and these are more suitable for window-boxes. Marguerites are remarkably good; plants of a moderate size are most in demand. Heliotropiums are good, particularly the dark-flowered variety. Fuchsias are well flowered. Plants of the ordinary market size are worth about 10s. per dozen, but extra tall plants have sold readily at 18s. per dozen. Herbaceous Calceolarias in dwarf, well-flowered plants are seen, but they do not meet with a brisk demand. Cinerarias are abundant, but if the warm weather continues they will soon be over. Many growers have finished with Azaleas for the season. Spiræas are abundant. The pink varieties have not proved such good market plants as was anticipated. Rambler Roses in various sizes are well-flowered; I noticed some very fine specimens of Cant's Blush. Bulbous-flowering plants will soon be past. Hardy flower roots are abundant, but some growers have almost cleared their stocks. Pansies are abundant; there has been a good demand for these plants. There is also a fair demand for Violas.

CUT FLOWERS.

The large consignments of Daffodils will soon be over, and then trade for other flowers will improve. There was a large demand for Roses on St. George's Day, and last Thursday and Friday their prices increased, but this week they are cheap again. Many Carnations are either wasted or sold at low prices. Gladiolus The Bride and the bluish pink variety are seen on the stands. Irises (Spanish) from the Channel Islands are abundant, and their prices are much lower. Parma Violets are over for the season. There is a great falling off in consignments of other flowers from the South of France. Supplies of Callas and Liliams are abundant. Darwin Tulips are very good, and there are large quantities of Parrot Tulips, but these latter are cut without foliage. Ordinary Dutch Tulips are almost finished for the season. *A. H., Covent Garden, Wednesday, April 28, 1909.*

DEBATING SOCIETIES.

BRITISH GARDENERS' (RICHMOND BRANCH).—The first outing of the members of this branch will take place on Saturday, May 1, when a visit will be paid to Messrs. J. Veitch & Sons' Nursery at Combe Wood, Kingston. The party will assemble at the Star and Garter Hotel, Richmond Hill, at 1.30 p.m.

BRISTOL AND DISTRICT GARDENERS'.—The annual meeting of this association was held on Thursday, April 22, at St. John's Parish Rooms. Mr. A. O. Shelton presided. The annual report and balance sheet showed that the society is in a more favourable position than in previous years. Colonel Carey-Batten was again elected president. Mr. Shaddick was elected chairman for the ensuing season, and Mr. Hayball, vice-chairman. The other officers were also appointed. Mr. E. T. Parker offered a silver medal to the most successful exhibitor at the meetings during the coming session. Six new members were elected.

READING GARDENERS'.—The final meeting of the spring session took place in the Abbey Hall, on Monday, April 19, there being a large attendance of the members. The president, Mr. Alderman F. B. Parfitt, occupied the chair. The evening was devoted to competitions in floral arrangements. This being "Hospital Night," flowers brought by the members were next day sent to the Royal Berkshire Hospital. More than 100 bunches of cut flowers were contributed. A collection on behalf of the Hospital realised a sum of more than £3.

WINCHESTER GARDENERS'.—At the meeting held on April 20 in the Oddfellows' Hall, a lecture on "French Gardening" was given by Mr. W. F. Giles. Mr. W. Cardy presided. Views of "French" gardens were shown by means of a lantern; and varieties of forced vegetables were illustrated. Mr. Giles reminded his hearers that French Gardens entailed a great expense for materials, labour, and manure.

SCHEDULES RECEIVED.

Forest Gate and Stratford Chrysanthemum Society's 18th annual exhibition, to be held on November 4, 5, 6, at the Town Hall, Stratford. Secretary, Mr. A. J. Palmer, 19, Thorngrove Road, Upton Park, E.

Haywards Heath Horticultural Society's 21st annual flower show, to be held on Wednesday, July 28, in the Victoria Park, Haywards Heath. Secretary, Mr. Geo. Prett, The Rosary, Haywards Heath.

ANSWERS TO CORRESPONDENTS.

* * * *The Editor will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for forming Supplementary Illustrations to this Journal.*

EDITOR 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 EDITOR. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

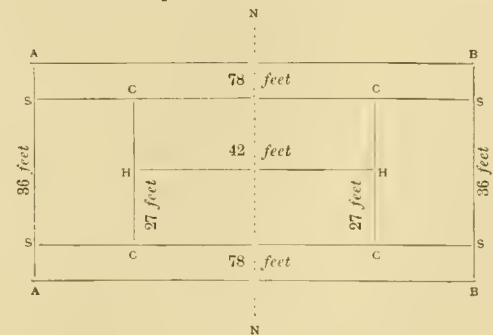
"BIG-BUD" IN CURRANT: *D. O.* The buds are infested with *Phytoptus ribes*, the mite causing "big-bud." See reply to *W. P. R.*, p. 272, in the last issue; also to *S. F.*, p. 256, in the issue for April 17.

BULBS FAILING: *G. W. W.* The bulbs have failed to form a satisfactory root-system. This may be due to an unsuitable rooting medium, or some other condition which only those on the spot could determine.

COMPENSATION FOR ENCROACHING TREES: *Brae-side.* Your proper course is to give notice to the owners of the adjoining land requiring them to cut back the trees so as to prevent their overhanging your premises, and if they do not comply with this notice within a reasonable time, you can cut back the overhanging branches yourself. If you cannot reach the branches from your own land, you should ask permission to enter on the adjoining land for the purpose, and if this permission is refused, the Court would grant you an injunction against them. (2) The question of encroaching roots is a point on which legal authorities have somewhat differed from time to time; but the balance of legal opinion is in favour of your having a right to cut away the roots in the same way as the branches referred to above. (3) Unless the adjoining owners refuse to have the matter put right, you would not have much chance of obtaining damages, as you need not have put up with the annoyance for so long, but you would probably be content with an injunction to prevent any further continuance, and unless there were exceptional circumstances, the adjoining owners would have to pay your costs. You will find these matters fully discussed in a lecture given by Mr. H. Morgan Veitch before the Royal Horticultural Society, which was reported verbatim in Vol. XXXIII. of the *Royal Horticultural Society's Journal*.

FERNS IN COMPETITION: *H. F., Port Elizabeth.* The wording of the schedule is not sufficiently definite. "Six *Adiantums*, distinct," may be taken to mean six distinct species, or merely six varieties or species, in which *Adiantum cuneatum* and the variety *elegans* would count as two plants. The compilers of the schedule, rather than the judges, are to be blamed.

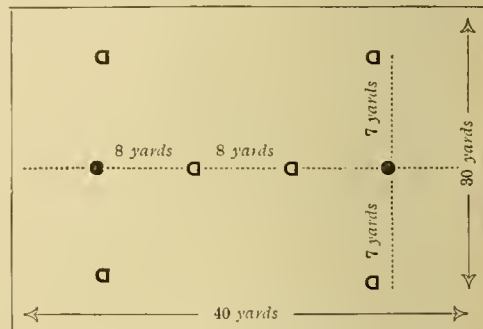
LAWN TENNIS COURT AND CROQUET GROUND: *H. R.* The following particulars are taken from the *Calendar of Garden Operations*:—The diagram will illustrate the amount of ground required, and the lines that are usually made and kept in a tennis court:—



PLAN OF A LAWN TENNIS COURT.

The lines A B and B A indicate a double court for three or four players; S S, S S, a single court for two players; A A and B B are the base lines; C C and C C, service lines;

H H, half-court line; N N, net. A court for the single game is 27 feet wide and 78 feet long; and for the double game, 78 feet long and 36 feet wide. The posts for supporting the net should be placed 3 feet beyond the sides. The service lines run parallel to the net, and are 21 feet distant from the same. The net should be 3 feet high in the centre, and 3 feet 6 inches at the posts, which are put 2 or 3 feet outside the line, to allow of the net dropping. —For the purpose of playing the game of croquet, a well-rolled level grass lawn not less than 30 yards long by 20 yards wide is required. A full-sized croquet ground measures 40 yards long by 30 yards wide. The following diagram will show what is needed:—



PLAN OF A CROQUET LAWN.

In the line through the centre of the ground, 8 yards from the boundary at either end, put the croquet pegs, and at 16 yards from either end a hoop. Let the corner hoops be placed in a line with the pegs, and 7 yards from the pegs.

- NAMES OF PLANTS:** *W. J. F.* 1, *Cupressus Lawsoniana* var. *aureo-variegata*; 2, *Pseudotsuga Douglasii*; 3, *Cupressus obtusa* var. *filifera*; 4, *Pseudotsuga Douglasii* var. *glauca*; 5, *Erica lusitanica* (codonodes).—*Enquirer.* 1, *Pyrus* (syn. *Cydonia*) *japonica*; 2, *Pulmonaria officinalis*; 3, *Coronilla Emerus*; 4, *Garrya elliptica*; 5, *Cedrus Deodara*.—*B. P.* *Juniperus Sabina*. Yet, this plant is poisonous, and if it is eaten in large quantities by domestic animals during pregnancy it produces abortion.—*A. H.* 1, *Adiantum cuneatum elegans*; 2, *A. tenerum*; 3, *A. Pacotii*; 4, *A. trapeziforme*; 5, *A. concinnum latum*; 6, *Dendrobium chrysothoxum*.—*J. S.* *Magnolia conspicua*.—*W. E.* *Chrysosplenium oppositifolium*.—*Orchis.* *Bifrenaria Harrisonæ*.—*R. B., Cork.* 1, *Erica mediterranea*; 2, *Cytisus albus*; 3, *Berberis stenophylla*; 4, *Magnolia conspicua*; 5, *Forsythia viridissima*; 6, *Pyrus japonica*.—*F. R.* 1, *Odontoglossum Lindleyanum*; 2, *Oncidium pubes*; 3, *Oncidium divaricatum*; 4, *Brassia verrucosa*.—*A. W. T.* 1, *Juniperus chinensis variegata*; 2, *Pulmonaria officinalis*; 3, *Orobus vernus*; 4, *Polygala Dalmaisiana*.—*H. B.* 1, *Spiræa confusa*; 2, *Diplopappus chrysophyllum*.—*W. M. B.* 1, *Trillium grandiflorum*; 2, *Erythronium Dens-canis*; 3, *Epimedium Perralderianum*; 4, *Bryonia dioica*; 5, *Spiræa arifolia*.

PEACH LEAVES: *T. B.* There is no disease present in the leaves: they are, however, very thin, and such as would be found on an ill-nourished tree. The specimens arrived in a bad condition, being improperly packed.

R.H.S. EXAMINATION: *Jas. G.* Particulars of these examinations may be obtained on application to the Secretary, Royal Horticultural Hall, Vincent Square, Westminster.

SCUM ON PONDS: *H. R.* The lowly forms of vegetation causing the scum would be killed by the sulphuric acid, but this would also harm the fish. Try the effect of a weak solution of copper sulphate or the Bordeaux mixture at half strength.

Communications Received.—Lady G. D.—Prof. B. B.—J. D. W.—W. M. B.—B. M.—B. G. B.—C. S. & Co.—W. W.—R. F.—T. H.—R. C. M.—A. B. J., Kew—M. C. A.—H. H. B. F.—New South Wales—J. F.—Philippe de V.—S. W. F.—W. G. B.—E. F.—H. M. S.—H. M., Paris—B. & Sons—F. M. G. B.—A. L., Manila—A. D.—W. R. D.—Old plants—J. W. L.—E. W.—A. D. W.—S. A.—R. T. L. V.—Distressed (You should have sent your name and address with the communication. This is not necessarily for publication but as a guarantee of good faith. We are unable to write to you.)



PROPAGATION OF HYACINTHS BY MEANS OF BULBILS (NOTCHING METHOD).

1. BULBS BEFORE AND AFTER PREPARATION BY NOTCHING.
2. BULBILS COMMENCING TO FORM IN THE CHANNELS.
3. FURTHER STAGE SHOWING NUMEROUS BULBILS.
4. EXAMINING THE BULBS.
5. SHOWING YOUNG BULBILS READY FOR PLANTING.



THE
Gardeners' Chronicle

No. 1,167.—SATURDAY, May 8, 1909.

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TREGOTHNAN.

THE beautiful grounds of Tregothnan are approached on the Probos side by a drive four miles in length from the lodge to the mansion. This drive is bordered on either side by Evergreen Oaks, and skirts on the right hand a creek of the Fal, where at high water swans may be seen swimming placidly on the still surface. The house is a noble, well-proportioned building, and, with its mellowed stonework, presents a stately appearance when seen from the broad lawns on a sunny day. From the front of the mansion a charming view is obtained of the Fal winding its way between wooded banks. The grounds are spacious and afford a variety of prospects of great beauty. Here, beneath lofty deciduous trees, the sward is carpeted in the springtime with Primroses; there groups of Yuccas and Cordylines display their foliage; there, again, giant bushes of the Himalayan Rhododendrons and tall Acacias brighten the scene with their blossoms, whilst the water garden, surrounded by picturesque vegetation, presents an attractive picture. Camellias are grown more extensively at Tregothnan than in any other garden in England. In the capacious grounds, prettily diversified by hill and dale, there must be fully a thousand huge bushes, bearing flowers from purest white to richest crimson, and spreading veils of colour around them with their fallen petals. The stable wall, 80 yards in length and 25 feet in height, is completely covered with trained Camellias. Against the house *C. reticulata* has reached a height of 14 feet, and in the spring is covered with hundreds of great semi-double, rose-pink blossoms. Recent winters have been exceptionally severe in the south-west,

and every garden where tender plants are grown has suffered serious losses. At Tregothnan the following species have died:—*Adenandra linearis*, *Boronia polygalifolia*, *Buddleia ficifolia*, *Cassinia leptophylla*, *Camarina tenuissima*, *Dianthus arboreus*, *Echium candicans*, *Erica Cavendishii*, *E. coronata*, *E. Savileana*, *E. Spenceriana*, *Eucalyptus tereticornis*, *Euryops virginicus*, *Genetyllis fuchsoides*, *Hakea petrophylla*, *H. salignus*, *Leschenaultia formosa*, *Luculia gratissima*, *Myoporum laetum*, *Oleander*, *Polygala grandis* and *P. mixta*. However, such a large quantity of rare plants find a congenial home there that at the present time the gardens possess a larger collection than almost any garden in England. This winter 12 degrees of frost have been registered on two occasions, but no harm appears to have been done. Lady Falmouth is an enthusiastic gardener and spares no trouble to obtain every rare and tender plant

ceed well at Tregothnan. A group of *A. dealbata*, about 40 feet in height, backed by Evergreen Oaks, forms a lovely picture in March, when their heads are a cloud of gold standing out against the dark background. Other Acacias grown are *A. armata*, *A. calamifolia*, *A. cordata*, *A. cultrifolia*, *A. decurrens*, *A. diffusa*, *A. latifolia*, *A. longifolia* (20 feet in height and 15 feet through), *A. linifolia*, *A. melanoxylon*, *A. pycnanthera*, *A. Riceana* and *A. verticillata*. There is a fine example of the Fan Palm, *Trachycarpus (Chamærops) excelsus*. Around this plant numerous self-sown seedlings have sprung up. From the summer-house an extensive view is obtained of the river and surrounding country. On the wide lawn fronting it is a fine group of about 30 plants of *Yucca gloriosa*, there are also colonies of Azaleas, Magnolias and Cordylines, whilst the trees on either side are fringed with Rhododendrons. The water garden is formed by four ponds, one



[Photograph by S. Wyndham Fitzherbert.

FIG. 123.—TREGOTHNAN, CORNWALL.

that is likely to succeed at Tregothnan. Many examples have been received from Kew of late years. In Mr. William Andrews she possesses a highly-efficient head gardener, whose solicitous care for his charges leaves nothing to be desired. Of Himalayan Rhododendrons there is a fine collection. A specimen of *R. Falconeri* was, three years ago, 23 feet in height and 30 feet in diameter. This is well furnished with foliage to the ground level, and is probably the finest example in England. A few years ago it bore fully 2,000 bloom trusses. There is also a splendid plant of *R. grande (argenteum)* about 18 feet in height and 24 feet through. This has borne 300 flower trusses, and in that year it was a beautiful picture in the closing days of March (see fig. 124). There are also excellent specimens of *R. Griffithianum (Aucklandii)* and many other species. Acacias suc-

lower than the other. They are edged by Gunneras, Bambusa, Arums, Phormiums and *Eryngium pandanifolium*, and form a charming feature in a dell flanked by tall Firs. The woods are margined with Benthamias, members of the Prunus family and Heaths, while Daffodils are planted by the thousand in the grass. The house is adorned with climbing plants, whilst others are grown on high walls in the vicinity. Many tender shrubs are given the protection of a wall. Among the climbers are *Akebia quinata*, *Berberidopsis corallina*, *Brachysema lanceolata*, *Bucklandia populnea*, a Himalayan plant with large, handsome leaves; *Cassia corymbosa*, *Clematis indivisa lobata*, a lovely sight in the early spring; *Clianthus puniceus*, *Hibbertia Reidii*, *Kennedyia nigricans*, *K. rubicunda*, *Mandevilla suaveolens*, *Sollya heterophylla* (the Australian Bluebell creeper), *Stauntonia latifolia* and *Trachelospermum*

(*Rhynchospermum*) *jasminoides*, which produces its small, scented, white blossoms for months together. Against the front of the house the fragrant Gum, *Eucalyptus citriodora*, has reached a height of over 20 feet. The *Boronias* and *Grevilleas* succeed excellently in front of walls. *Boronia elatior* is 6 feet high and 4 feet through, *B. heterophylla* is about 2 feet less in height and *B. megastigma* 3 feet, while of the *Grevilleas* *G. alpina*, *G. longifolia*, *G. pendula*, *G. Preissii* and *G. sulphurea* are doing well. The members of the Heath family have a little garden to themselves. They include *Erica gracilis*, *E. hyemalis*, *E. magnifica*, *E. perspicua nana* and *E. persoluta*, whilst the larger *E. mediterranea* grows into great bushes. The *Epacris* race is also very ornamental. Of these there are *E. ardentissima*, *E. candidissima*, *E. delicata*, *E. magnifica* and *E. Vesuvius*, which is often bright pink with bloom at Christmas. Among other shrubs are the pink-flowered *Abelia floribunda* from Mexico, which does well in the southwest, even without wall protection, the South

flower in March, *Cinnamomum Boisseri*, the Lily of the Valley tree, *Clethra arborea* from Madeira, the hardy Japanese Orange, *Citrus trifoliata*, *Cytisus elegans*, the South African *Diosma capitata* and *D. ericoides*, *Daphne indica*, *D. hybrida Dauphinae*, *Drimys Winteri* (from the Straits of Magellan), which bears its ivory-white blossoms in profusion, and the smaller-flowered *D. (Tasmania) aromatica*; *Edwardsia (Sophora) chrysophylla* and *E. grandiflora*, the Australian *Eriostemon linifolius* and *E. neriifolius*, the Chilean *Eucryphia cordifolia*, Japanese *Euonymus fimbriatus*, a handsome shrub, but rare in gardens, whose young leaves are of a brilliant crimson colour, giving it the appearance of being in flower; *Eutaxia myrtifolia* from Australia, the Brazilian *Feijoa Sellowiana*, *Garrya elliptica*, very decorative in the winter when covered with its drooping catkins, *Gnidia carinata* from the Cape of Good Hope, *Lagerstroemia indica* from China, the New Zealand *Leptospermum scoparium*, the Chilean *Lomatia ferruginea*, an exceptionally handsome foliage shrub, which has proved quite hardy, *Metrosideros lucidus*

the open are *Strelitzia Reginae*, *Iris fimbriata* or *chinense*, *Musa japonica* and *Pourettia mexicana*. The fine, large-flowered form of *Rosa laevigata* is grown, and Fortune's Yellow Rose does well. *Muehlenbeckia complexa* has covered an old tree stump to a height of over 20 feet, and several examples of *Clematis montana* clamber aloft over trees. Among the notable trees is a fine specimen of the rare *Pinus Montezumae*. Cape bulbs, such as *Ixias* and *Sparaxis*, are grown, and the *Agapanthus* does well in the open. The rare *Gladiolus tristis* and its self-coloured form known as *concolor* or *sulphureus* are largely represented.

The glasshouses, which are kept in the best of order, include vineries and houses devoted to Figs, Roses, Carnations, Crotons, Palms and a general collection of greenhouse plants. *S. W. Fitzherbert.*

HYBRID GERBERAS.

(Concluded from page 273.)

COLOURS.—M. Philippe de Vilmorin remarks: "I give here word for word what M. Adnet has written to me on the question of colour":—"The scale of colours is of incomparable richness. I had commenced an endeavour to identify the tints, making use of the *répertoire de couleurs* of the *Chrysanthemum* specialists. But I was obliged to give it up; there were too many of them. It might have been necessary to give them numbers, could they have been conscientiously numbered, and had it not been absolutely impossible to the keenest eye to catalogue them at sight. It would have been necessary every time to have recourse to the *répertoire*, but every comparison requires from five to ten minutes, if one wishes to do it well. It is necessary to know how to limit oneself, and also to make the abundance of tints classify themselves into groups. This is how I regard the question.

1. **PURE WHITE.**—Colour clear, unique. Then all the scale of whites; greenish white, and yellowish white leading insensibly by degrees to yellow.

2. **YELLOW.**—Proceeding from scarcely yellow to Buttercup yellow by an absolute gradation of tints.

3. **ORANGE.**—Here also there is an infinity of tints in gradation, sinking insensibly to orange red, very near to typical *Jamesonii*.

4. **SALMON.**—Obtained by crossing yellow and pink. Here also the scale is extensive between light and dark.

5. **PINK.**—In this colour there is a scale of gradation of vast extent. Crosses between pale pink and white have given me pinks of palest tint, more tender, for example, than the outside petals of a 'Malmaison' Rose. The pink tint disappears by deepening to the deepest pink colour, passing a number of intermediate shades, arriving at—

6. **CHERRY RED.**—Ruby red, pure red in a word, a red in which there is no trace of yellow, and which, to my mind, will be the most esteemed by the florist by reason of its richness and purity.

7. **VIOLET RED.**—A new tint, my best achievement, the one I like the best, and which I hope will lead to deep violet.

VARIATION.—With respect to variation M. de Vilmorin states that it is almost infinite, as one might well expect in a plant so strongly disturbed in character. Many of them are without practical importance, and are rather monstrosities to be eliminated. It is desirable,



FIG. 124.—RHODODENDRON GRANDE AT TREGOTHNAN, 18FT. IN HEIGHT, AND BEARING 300 FLOWER TRUSSES.

[Photograph by S. Wyntham Fitzherbert.]

African *Adenandra fragrans*, with rose-coloured blossoms, *Agapetes Mannii*, *Andromeda floribunda*, 6 feet in height and 8 feet in diameter, *Anopterus glandulosa* from Tasmania, *Aralia quinquefolia*, a handsome foliage shrub, *Aralia papyrifera*, with leaves 2 feet 6 inches in length, *Banksia integrifolia* and *B. reticulata*. *Banera rubioides*, a little shrub from New South Wales with pink flowers. *Beaufortia splendens*, a native of Australia with scarlet blooms, the New Zealand *Brachyglottis repanda*, the rare *Bowkeria Gerardiana* from South Africa, which bears white, *Calceolaria*-like flowers; *Buddleia Colvillei*, nearly 20 feet in height, which blooms profusely every summer; *B. salicifolia*, a rare plant, *Calceolaria violacea*, a great bush 6 feet across, which was badly injured two winters ago; *C. integrifolia*, which creates a brilliant effect in July; *Cantua dependens* from the Peruvian Andes, *Callistemon lapanthus* and *C. salignus* from Australia, *Casuarina quadrivalvis* and *C. tenuissimus* also Australian plants. *Cedralia serrata*, *Ceratonia Siliqua*, *Chorizema Lowii*, which is often in

from New Zealand, *Mitraria coccinea* from the island of Chiloe off the coast of Chili; *Michelia (Magnolia) fuscata*, whose purplish flowers are deliciously scented, *Olea fragrans*, the rare *Olearia insignis*, *O. myrsinoides* and *O. Solandri* from New Zealand, *Osteomelas anthyllidifolia*, said to be a native of the Pacific islands; the Australian *Pimelea spectabilis*, the New Zealand *Pittosporum*, *P. crassifolium*, *P. eugenoides*, which blooms freely, *P. Mayii*, 30 feet in height, *P. Tobira* and *P. variegatum*; the South African *Polygala Dalmaiana*, *Rhapiolepis Decouri*, *Senecio Greyii*, *S. natalensis* and *S. rotundifolius* from the Cape, the Chilean *Tricuspidaria lanceolata*, better known as *Crinodendron Hookeri*, and the newly-introduced, white-flowered *T. dependens*, *Veronica Gauntletii* and *V. Hulkeana*, the most beautiful of all the New Zealand shrubby *Veronicas*; the Australian *Westringia triphylla* and *Xanthoceras sorbifolia* from China. The foregoing list will give some idea of the number of rare plants from foreign climes grown successfully at Tregothnan. Among other subjects that are cultivated in

however, to note them, and we have to thank M. Adnet for making the record.

1. **DISC.**—Discs are red, pink, white or yellow, with the centre green; there are red flowers with pink disc, pink flowers with white disc, yellow flowers with disc of paler or deeper yellow, yellow flowers with red disc, &c.

2. **FORM OF THE FLOWER.**—The range of variation in the form is as great as that of the colour of the flower. One finds, so to speak, all dimensions and all dispositions of the ligule. Certain plants present broad ligules, imbricating as in a Daisy, and taking away the starry lightness of the type; on the contrary, there are flowers with ligules so slender that they are almost filiform; others have trumpet-shaped ligules more or less spreading, sometimes curving in the horizontal plane and giving the flower a helicoid appearance. Certain flowers have their

flowers of the same peduncle more or less separated.

5. **DWARF FORM.**—Certain colours, especially the yellow, give a large proportion of dwarf plants, which produce themselves fairly true from seed.

FOLIAGE.—The slender and graceful peduncles of *Gerbera* proceed generally from a rosette of spreading leaves, rather insignificant. The hybrids from this point of view present some variations worthy of remark. In general, the leaves are more erect, longer, less divided, thicker and more coriaceous than the type. Their lower surface is often furnished with short and stiffish hairs, their edges are irregularly undulated, and there are some of a shining green, as if varnished. Lastly, M. Adnet has observed some individuals of which the peduncles present the rudiments of leaves, and of these he is carefully observing the descendants: if the occur-

flowering season than the two types in the cross.

Though the method by which the first hybrids were obtained at Cambridge is known, it is extremely difficult either to establish the descent of each form, or to study the influence of each parent from the point of view of the transmission of its special characters. It is, therefore, probable, in spite of the very precise notes taken by M. Adnet through four generations of hybrids, that we shall be unable to find any precise fact by which, in *Gerbera*, the laws of Mendel can be studied. We must wait until the different colours are fixed, producing themselves true from seed, and that, I believe, will soon be done.

If we now pass to the horticultural side of the question, we see in the hybrids of *Gerbera* one of the most interesting introductions of recent years. It is impossible to describe the elegance, the lightness, the originality, distinctness, or the colours so varied and delicate of this pretty Composite. Recently, even the violet colour, which, if I mistake not, was wanting in the forms produced by Mr. Lynch, has made its appearance with Mons. Adnet.

As cut flowers, those of *Gerbera* are valuable, provided that they are gathered fully open, when the male organs are well developed; the flower-heads last two or three weeks in water, and make bouquets of incomparable charm. During this winter the Parisian florists have commenced to receive them from the south, and the welcome that these flowers have been given is a sure guarantee of their success in the future. L.



FIG. 125.—RHODODENDRON ADENOPODIUM FLOWERED FOR THE FIRST TIME IN EUROPE BY M. MAURICE DE VILMORIN. FLOWERS PALE ROSE COLOUR.

ligules recurved on their longitudinal axis so that their extremities show the lower surface. One also finds more or less tubular ligules, some even with lacinated ligules or slashed in the form of an arrow head.

3. **DOUBLING.**—This, which may seem to be an improvement for many flowers, is not so for *Gerbera*, of which lightness is the first quality. The plant seems, however, to have a tendency to doubling, either by the appearance of ligules on the disc, or by the formation of a collarette between the latter and the normal ligules. In the last case the collarette, which may be of one or several rows, is often of lighter colour than the flower—light pink in the flowers of deep pink, and almost white in the flowers of pale pink.

4. **FASCIATIONS.**—Fasciations are very frequent, as could be remarked in the set exhibited by M. Adnet in the month of November, 1908. It is not rare to find two or three

ence can be fixed, it will constitute a definite advance.

HARDINESS.—I do not here speak of their power of resistance to cold, which is, naturally, not great, but rather to their power of resisting moisture. Rotting off, which is one of the great difficulties in the culture of *Gerbera Jamesonii*, is much less to fear in the hybrids, which, from this point of view, are distinctly superior to the type.

CONCLUSIONS.—The conclusions to be drawn from this brief account are of two kinds—the scientific and the practical. From the scientific point of view it is necessary to note the disturbance produced in the species by the introduction of the pollen of *Gerbera viridifolia*; not only has the number of colours been multiplied, so to speak, indefinitely, but numerous individuals have been found with flowers larger than those of the parents; others are more floriferous, though of shorter

NEW OR NOTEWORTHY PLANTS.

RHODODENDRON ADENOPODIUM.

This *Rhododendron* (see fig. 125) is one of the many new species brought into notice by recent exploration in Central China. It appears to have been first discovered by L'Abbé Farges in Eastern Setchuen. From seed forwarded by this gentleman in 1901 M. Maurice de Vilmorin raised the plant which has recently flowered at Les Barres, and from which the illustration at fig. 125 has been prepared. The species was subsequently found by Mr. E. H. Wilson in Western Hupeh, whilst collecting plants on behalf of Messrs. Jas. Veitch & Sons. Young plants raised from seeds sent home by this collector are now in cultivation at the Coombe Wood Nursery of Messrs. Jas. Veitch & Sons and at the Royal Gardens, Kew. The species was named and described by Franchet in the *Journal de Botanique* for 1895, p. 391. According to Wilson, *R. adenopodium* forms a bush 4 to 10 feet high. The leaves are 3 to 6 inches long, oblong-lanceolate with an acutely-pointed apex, coriaceous, smooth above, but covered beneath with a close white tomentum. The inflorescence is described by Franchet as few-flowered, bearing from four to six flowers only. The plant may, however, prove more floriferous under cultivation. The corolla is bell-shaped, and has five rounded lobes. The blooms are stated by M. de Vilmorin to be nearly as fine as those of *R. × kewense*. I have not seen the flowers, but they are described by M. de Vilmorin as of pale rose, and from 2½ to 3 inches across. A distinctive character of the plant is the hairiness of the flower-stalks and seed vessels. The specimens at Kew and Coombe Wood are but a few inches high, so it is probable that a few years will elapse before flowers are produced in this country. M. de Vilmorin's plant flowered in an unheated glass structure, but the species will probably prove hardy in the South of England, especially if protection is given the plants when young. W. J. Bean.

FLORISTS' FLOWERS.

CACTUS DAHLIAS.

UNTIL as late as the second week in May young plants may be shifted into 5-inch pots. It is not advisable to have Dahlia plants too large at the time of planting out, as large plants suffer more severely from the check of transplanting, and hence, should dry weather prevail just after they have been transferred to their flowering quarters, they suffer more from the drought than do plants of moderate size. The best are those about 14 inches high, with stout shoots that are growing freely. Very small plants often grow freely and are very healthy, but much time is lost before they reach the flowering stage. In other respects the small plant has much to recommend it, especially in the case of double-flowered varieties grown for producing specimen blooms, as the growth is unchecked from first to last—an important matter in Dahlia cultivation. Of the two I greatly prefer a small, actively-growing plant to one that is larger but somewhat hard in the wood and root-bound. In most seasons, by the time such a plant has made sufficient roots to support its abundant foliage, the little plant has made a very good foundation, and probably in a week or two outstrips the bigger one. An assortment of vermin usually accompanies the Dahlia to its summer quarters, and for six weeks after planting the various pests give an immense amount of trouble. Much of this may be avoided by dipping the plants in a suitable insecticide the day before they are transferred to the open ground. The damage caused to Dahlias by thrip is enormous. The unhealthy appearance of so many young Dahlias is caused by this pest, which is apt to infest the plants practically throughout the whole period of their growth. Thrip may often be found on the plants late in the autumn, but the damage caused by them is not so much in evidence when the heavy dews and rains of autumn appear. If the land was deeply dug during April, all that is needed now is to prepare it for planting. Dahlias thrive in a heavy soil, provided it has been sufficiently worked and exposed to the influence of the weather. When the weather is wet day after day the grower who has a heavy soil cannot successfully compete with one whose land is light and friable. Our system is to turn up the soil, and, after it has been allowed to dry for one day, the clods are broken. The plot is then re-dug and left rough again on the top, and the process is repeated until the whole of the land is brought into a suitable condition. It is inadvisable to prepare the land in small patches just where each plant is to be placed. I have often seen this done during bad weather, the intention being to finish digging between the rows at some future time. In most cases this proceeding results in certain parts of the land never getting tilled at all. I am referring, of course, to heavy land. In the case of light soil, cow manure should be employed, taking care to bury it well. This may be applied until near planting time, but earlier is better. The following varieties of Cactus Dahlias are to be recommended:—

Mrs. Walter Baxter.—The most reliable of the dark varieties. The habit is dwarf, free in flowering, and the blooms are of the best form.

C. B. Wilkins.—This is a lovely pink variety, although the blooms do not remain long in a perfect condition. For this reason it is advisable to grow several plants to ensure a supply of the best flowers.

Harold Peerman.—Unlike the preceding variety, this lasts well, and is very reliable, being free in blooming and of great depth of flower. The colour is a pure shade of yellow.

Ivornia.—The flowers of this variety are of great size and the habit good. The colour is a bright fawn. This variety needs but little thinning.

Rev. Arthur Bridge.—The blooms of this variety develop quickly and fade quickly. It is

of the loveliest colour, being yellow and tipped with deep rose pink. The stem being rigid, it is one of the best varieties for bunching.

Flame.—This is a plant easily cultivated, producing reliable little flowers. It is fine in floret, and has a pretty centre. The name is indicative of the colour.

Foxhunter.—Scarlet flowers have become rare amongst Cactus Dahlias, of which this is a useful variety, although but little known. It has straight, narrow florets.

Helium.—One of the largest of Cactus Dahlias, although it has none too many florets. The bloom, however, has a capital centre, and never comes shallow. The plant is a very gross grower, and may be allowed to carry three buds instead of one only, as is usual.

Mrs. F. Grinstead.—This dwarf variety especially requires a good, deep root medium. The colour is a purplish shade of crimson.

Mrs. W. H. Raby.—A free-flowering, white variety. Although not quite pure, it is one of the best white Dahlias yet produced.

Hyacinth.—A good variety, but one which flowers in an erratic manner, and it may not have a single bloom out on a show day. Owing to this fault we plant this variety in as many stages and aspects as possible.

Ruby Grinstead.—A beautiful salmon-pink flower of very great depth, and one that lasts well. It is rather later in flowering than the majority, and should be obtained as farward as possible at the time of planting.

Eureka.—A large, rather coarse flower. The colour is a rich, velvety-crimson.

Kathleen Bryant.—This is a rather weakly grower, but it produces excellent flowers of dark-crimson colour.

William Marshall.—Though not new, it is still one of the best kinds. Colour orange and yellow.

Nelson.—A huge flower, but very uncertain in its behaviour. It should be given a trial in all collections, because where it does succeed it is magnificent.

Other first-rate sorts include Victorian, Sirius, J. B. Riding, Faunus, T. A. Havemeyer, Recam, Lustre, Mercury, and Brutus.

DECORATIVE VARIETIES.

It is doubtless a fact that some flowers with the finest florets have but indifferent stems. However, the exhibitor cares not much about the stem, provided the bloom be good. It is a very different matter when one wishes to use them as cut blooms. There are plenty of Cactus Dahlias having good blooms and stout stems. The following varieties possess both these desirable qualities, although the form of some of them is what is termed by exhibitors "heavy."

Dorothy.—A lovely pink flower, possessing a stiff stem and with flowers of exhibition quality.

Mrs. J. Emberson.—One of the fancy Cactus Dahlias. The flower-stems are long and stiff, and the flower is of large size. It is shy in flowering, but otherwise it is a variety of great merit.

Celia.—A beautiful, rich pink colour, excellent in the late autumn. The flower-stems are perfectly erect.

Caradoc.—This is one of the best-stemmed yellow Dahlias. The flowers are quite equal to the best exhibition type.

E. Cadman.—A free-blooming variety with red flowers.

Rosa Starr.—Another of the pink varieties: it possesses all the qualities necessary for a garden Dahlia.

Dreadnought.—One of the largest, and, as a flower irrespective of exhibition points, probably the most popular. The blooms are a shade of crimson-maroon.

Of older sorts suitable for garden purposes may be given:—Zoe, William Jowett, Wm. F. Balding, T. G. Baker, Primrose, Mrs. S. Gas-kill, Khaki, Mrs. E. Mawley, Mrs. Brousson, Thos. Parkin, and Star. All these varieties have stiff-stemmed flowers.

The shoots should be thinned a little at intervals, and the roots be given a moderate supply of water during dry weather. *Harry Stredwick.*

WORCESTERSHIRE DAFFODILS.

A FEW days after the Birmingham Daffodil show, I was afforded an opportunity of inspecting Mr. Arthur Goodwin's Narcissi, which are grown in a garden on the high ground near Kidderminster, commanding an extensive view over the Severn Valley, and situated at an altitude of 500 feet above sea-level. The soil, which is of fertile loam interspersed with small nodules of sandstone, is excellently adapted to Daffodil culture, as the plants were all in the most perfect health and bore flowers of very large size. Messrs. Cartwright and Goodwin were very successful at Birmingham, winning the Champion prize for the greatest number of points and exhibiting several remarkable flowers, among which were Giraffe, Scarlet Gem, a new seedling between Horace and Jaune à Merveille, and the double Red and Gold, all of which received Awards of Merit, as well as Chloe, Lemon Star, Inga, and Evangeline. Mr. Goodwin must, at the present moment, have fully 50,000 seedlings raised from the best varieties, that have not yet flowered. M. J. Berkeley, a variety that sometimes proves difficult to grow, was in the best of health with deep blue-green foliage, and was bearing seed; Golden Spur, fertilised with special pollen, had the seed-pods well formed. A batch of Lucifer seedlings were flowering for the first time, some being very brilliant in the colouring of their cups. Glory of Noordwijk, Weardale Perfection, and Emperor were bearing enormous flowers, and Lady Margaret Boscawen was exceptionally fine; a seedling between the last-named variety and N. calathinus, bearing three flowers on a stem, was very pretty. A cross between Madame de Graaff and Minnie Hume showed a distinct break in having the trumpet edged with apricot. A very beautiful picture was presented by thousands of the delicate, white Waterwitch with drooping blossoms swaying in the breeze. Madame de Graaff was doing very well, and Princess Ena (Award of Merit, R.H.S.) was very similar in appearance. A beautiful flower with a flat, white perianth and green-centred cup edged with glowing orange, was a hybrid between N. Bernardii, from the Pyrenees, and a variety of N. poeticus. Circle, which obtained an Award of Merit from the R.H.S. in March, and has a wide, overlapping, white perianth and spreading, yellow cup, was present in numbers. Of trumpets, Mrs. J. H. Veitch is one of the best yellows; Cornelia, of the same colour, is fine in quality and large; and Cleopatra, another golden trumpet, is a striking flower, white Ailsa, the whitest of the white trumpets, is a beautiful flower. Musidorus is a good late variety raised by Mr. Engleheart from N. poeticus of Linnæus. Others of Mr. Engleheart's raising were Commodore, a very healthy grower of good habit; Resolute, a hybrid from Grandee; Sceptre, and the double Argent. One of the best of the parvi-coronati section was Ethelbert, raised by Mrs. Backhouse, of Hereford, and shown at Birmingham. There was a very lovely collection of Minnie Hume and triandrus seedlings with scarcely a bad flower amongst them, mostly with two blossoms on the stem; and some pretty seedlings between Mme. de Graaff and Minnie Hume. A cross between King Alfred and N. triandrus was flowering in its third year and bearing pale yellow trumpet flowers of exquisite shape. Elvira, a poetaz, was being fertilised with the pollen of brightly-coloured varieties of N. poeticus and perfectus; an incomparabilis, with very flat, broad perianth, was being used as a seed-bearer. An unnamed seedling, with

pure white, overlapping perianth $4\frac{1}{2}$ inches across and deep yellow cup edged with orange-scarlet, should make a sensation when distributed. Other notable flowers were Giraffe, a hybrid between Princess Mary and Mme. de Graaff; Evangeline, with white, broad-petalled perianth and rich yellow cup; Alton Locke; Fusilier, very bright; Ariadne, white spreading perianth, lemon cup; Fairy Queen, a lovely, pure white, one of the most beautiful of all Daffodils; Beacon; Ceres, a cross between Grandee and *N. poeticus*; the popular Citron, Arnold Rogers (a flower of high merit); Homespun, Incognita, Seagull, Albatross, Blackwell, Catharine Spurell, and J. B. M. Camm. *P.*

MEGACLINIUM PURPUREO-RACHIS, WILDEM.

At the meeting of the Orchid Committee of the Royal Horticultural Society, on April 6, a very remarkable *Megaclinium* (see fig. 126) was shown by Sir Trevor Lawrence, Bart., K.C.V.O., as *M. Bufo*. The only illustration of *M. Bufo* known to us is the small figure showing a portion of an inflorescence in the first volume of the *Gardeners' Chronicle*, (1841, p. 348). This was taken from the original plant which flowered with Messrs. Loddiges, and differs much from the plant shown by Sir Trevor Lawrence. This newer plant has since been identified at Kew as *Megaclinium purpureo-rachis*, Wildem. It is a very remarkable species, the flowers on each side of its flattened purple rachis being concealed whilst in the bud stage by curiously-formed bracts; lately the bracts reflex as the flowers in succession approach maturity. The flowers are yellowish, spotted with purple.

The genus is a singular one, peculiar to Tropical Africa, and it is not surprising that the flowering of *Megaclinium Bufo* in 1841 should have been regarded as an event of considerable importance. The note which accompanied the illustration was as follows:—

“Vegetable Reptiles. The *Megaclinium Bufo* or Toad Orchid is thus described in the *Botanical Register*. Let the reader imagine a green snake to be pressed flat like a dried flower, and then to have a row of toads, or some such speckled reptiles, drawn up along the middle in single file, their backs set up, their fore legs sprawling right and left, and their mouths wide open, with a large purple tongue wagging about convulsively, and a pretty considerable approach will be gained to an idea of this strange plant, which, if Pythagoras had but known it, would have rendered all arguments about the transmigration of souls superfluous. The figure will show that the language of this account is justified by the plant itself, which is really one of the most strange-looking things that we have in gardens. We only regret that the queer motion of the tongue cannot also be shown.”

The moving labellum is peculiar to the genus, and Mr. Worthington G. Smith's drawings of the parts show their arrangement in this species.

NOTES ON IRISES.

IRIS GRANT-DUFFII AND ITS ALLIES.

WILL any reader of the *Gardeners' Chronicle* who has succeeded in inducing *I. Grant-Duffii* to flower give his experience? It was one of the very few Irises that baffled the late Sir Michael Foster. I remember his telling me, as he gave me some roots, that he had grown them for 25 years from the time that General Grant Duff gave them to him, and that he had never had a flower. These plants I still have, and others imported from Palestine, but I have never yet seen a flower.

I. Aschersonii, however, is flowering freely this year with me, and I attribute this to the fact that I am growing it in moist, rich soil. *I. Grant-Duffii*, too, seems to be doing better under these conditions, and I hope to see

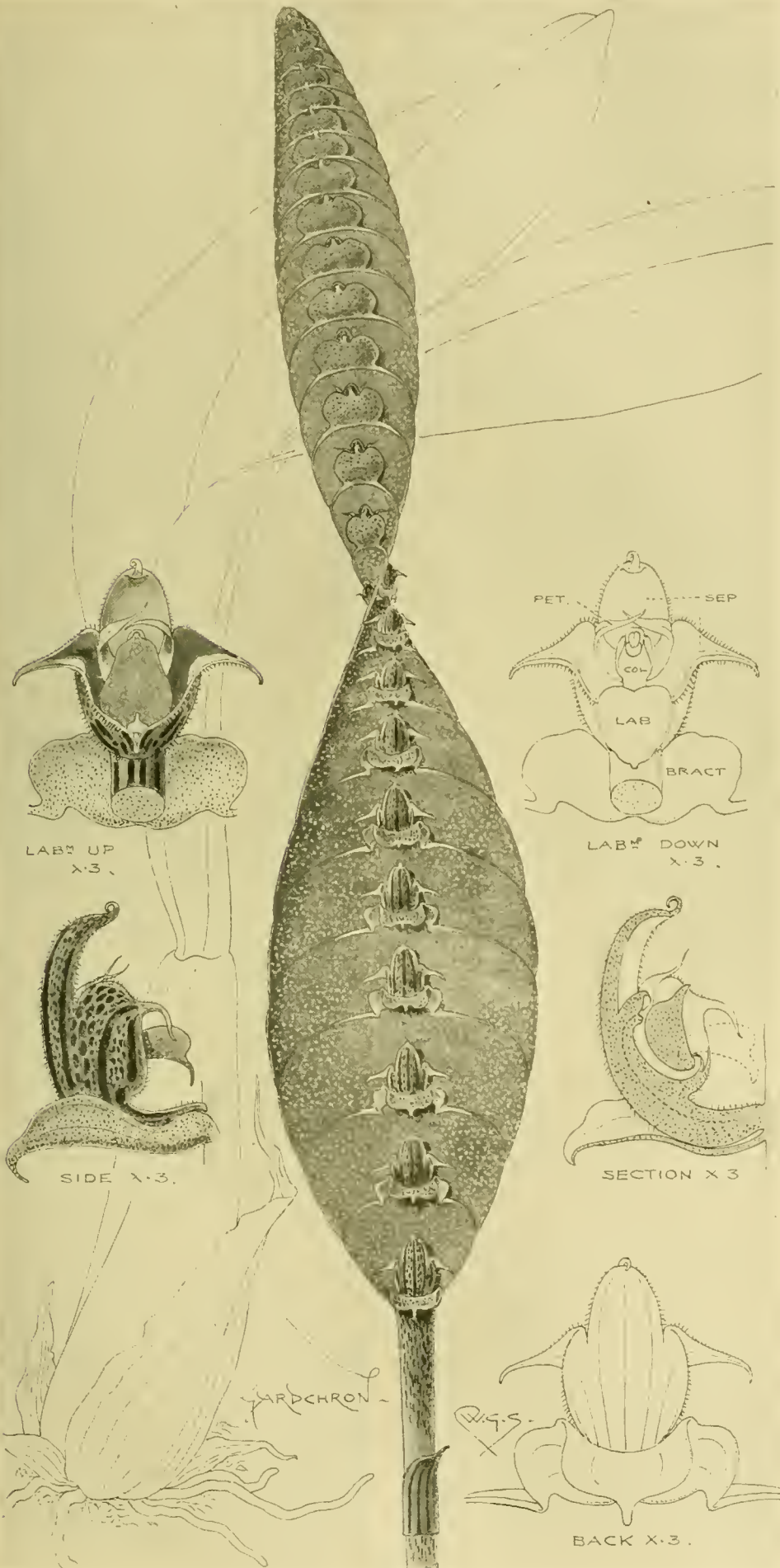


FIG. 126.—MEGACLINIUM PURPUREO-RACHIS, AS SHOWN BY SIR TREVOR LAWRENCE, BART., AT THE ROYAL HORTICULTURAL SOCIETY'S MEETING ON APRIL 6 LAST

flowers next year. A correspondent in Jaffa told me that these Irises grow in swamps, which means, I take it, that the soil is moist in spring and yet parched in the height of summer. *I. ochroleuca* and *I. Monnieri* are found wild, I believe, in similar situations, and need moisture and rich feeding to flower well. It remains to be seen whether *I. Grant-Duffii* will respond to this treatment, or whether the secret of its needs has yet to be discovered.

The new *Iris melanosticta* is said to be a member of the same group, and a purple-flowered form, *I. Masiaë*, is also in cultivation.

AN IRIS DISEASE.

Of late years Iris growers have from time to time suffered from the ravages of a disease which attacks the rhizomes of *Pogoniris*, generally at the flowering time. The leaves turn yellow first at the tip, and then all over, and flower-stems topple over and are found to be rotten at the base. The disease is said to be due to a fungus which attacks the skin of the rhizome, after which a bacillus enters in by the wound and completes the destruction. Lime has sometimes been suggested as a remedy, but though this may discourage the fungus, it tends, I believe, to encourage the bacillus.

The only remedy, and this a partial remedy, is to take up affected plants at once, when it will be found usually that it is the old central rhizomes that are affected, whilst the young side growths are intact. These may be cut off, and possibly washed in some such disinfectant as permanganate of potash, and replanted in fresh ground. Since *Pogoniris* make a fresh set of roots at flowering time, the plants will grow strongly at once, and be well established before autumn. I have also found that diseased rhizomes, which I pulled up and left lying on the surface of the ground under a light all through last summer, are now growing healthily. *W. R. Dykes, Charterhouse, Godalming.*

NOTES FROM A "FRENCH" GARDEN.

THE lights and frames may now be removed from the Carrots and Turnips, and set in position on the site intended for the culture of Melons. In order to prevent the soil from being displaced and to keep the sides of the beds intact, some short manure should be put against the beds.

The Carrots are forming nice roots, and need abundant waterings.

The first batch of Cos Lettuce is ready for market. We tie the plants before they are pulled from the ground to prevent the leaves from breaking.

The cloches will now be placed over Rows I., IV., and VI., as shown in the diagram, p. 164, fig. 70.

The plants are given a copious watering before being covered with the cloches, and they are shaded with mats in the middle of the day.

The lights and frames should now be removed from the Endives planted early in April, the appliances being required for Melons. The Endives will require light, but frequent, waterings.

We are pulling Radishes sown as an intercrop with the "Passion" Lettuces in the open. When this crop is cleared, the ground will be well hoed. These Lettuces will require no further attention beyond waterings until they are ready for market about the middle of May.

We are sowing a batch of "Witloof" Chicory as a winter crop. The seeds are sown thinly in well-manured ground in drills drawn 1 foot apart. Hot-beds are being prepared for Melons, the seeds having been sown in three different batches: the last of the seedlings will be stopped early next week. All our plants are healthy and forward, so that we shall be compelled to finish the making of the beds by May 15.

Before planting the Melons we wait until the manure has fermented, which generally occupies three or four days. After planting, the frames are lined with fresh manure, and mats are placed on the lights for the whole of the first day. These are afterwards removed early in the mornings, but the shading is again placed on the glass when the sun is shining brightly. We have made tidy the beds of Onion "White of Paris," the seeds of which were sown last August. The bulbs are now swelling, and we expect that they will be ready for marketing within a fortnight. *P. Aquinas, May 1.*

The Week's Work.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Out-of-door vines.—Early attention should be paid to the disbudding of outdoor vines, rubbing out all but two or three of the shoots on each spur. After an interval of a week or two the shoots may be again thinned to one on each spur, it being possible at that time to determine which will carry the best bunch of fruit; one shoot is quite sufficient, and it should be stopped when it has made two leaves beyond the fruit. Subsequently all lateral shoots should be stopped at the first leaf. Keep the growths well thinned out so that the leaves, being fully exposed to the sun and air, may grow hard and leathery in texture. They will thus the better withstand attacks of insects or of such fungus diseases as mildew. The first appearance of mildew should be looked for assiduously, and on its appearance the plants should be sprayed immediately with a fungicide. Outdoor vines being usually cultivated against walls and buildings facing south, they require a considerable amount of water applied at the roots. Later, when the fruits are swelling, frequent applications of manure water should be given them.

The watering of young fruit trees.—Young trees that were planted last season, and especially those that were planted against walls, must be examined frequently that water may be given to them before they suffer from drought. When drying winds prevail, such trees suffer irreparable injury if they are also dry at the roots. A slight spraying overhead in the afternoon will be beneficial in keeping the wood in a plump condition, thus encouraging them to make growth. If these trees have not already been given a mulching of some light material, as was advised in a former Calendar, it should be applied at once. Manure from a spent Mushroom bed is probably the best material to use; but if this nor any other short manure is procurable, then the mown grass from the lawns may be used in their stead. Disbud these young trees carefully, and endeavour to get each to form a good foundation for its future development.

Plums.—The trees are now growing rapidly. At this season suckers are more than usually troublesome. Remove any that are seen before they become difficult of eradication.

Apple blossom weevil.—This pest will now attack the Apple blossom. If the trees were thoroughly sprayed during the winter with a caustic alkali solution, there will be less reason to fear attack. Unwashed and otherwise neglected trees, bearing rough bark with moss upon it, provide ideal hiding places for this pest. Soon after the weevil has entered an Apple blossom the petals turn a brown colour as if affected by frost. If such blooms are closely examined a weevil will generally be found in them, or a little hole will be discovered in the petals indicating that the weevil has escaped. If young trees are attacked some of the weevils may be caught by shaking the trees suddenly on a calm day, for on this provocation the weevils will drop suddenly from the tree. A sheet is usually placed under the tree before it is shaken, and the weevils are gathered up and destroyed.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Fig trees in pots.—As soon as the fruits are taken from the earliest trees in pots, these trees should be thoroughly cleansed of any insect pests there may be present on them. It is not advisable to allow pot trees to bear a second crop, especially if they are needed for forcing early next season. Therefore, the house should be kept as cool as possible. Syringe the trees with clear water thoroughly each morning and afternoon in hot weather, and exercise care that the roots are never allowed to suffer from drought. Thin out any shoots necessary to allow the others to be fully exposed to the light, and pinch the points of those which are growing freely. As soon as the weather is favourable, the trees may be removed out-of-doors, and plunged in ashes in a position exposed to the sun.

Fig trees in borders.—Afford liberal supplies of manure water to trees on which the fruits are approaching the ripening stage, but withhold manures as soon as ripening has

actually commenced. During warm weather the house should be ventilated freely both at the top and bottom, and the top ventilators may be left open just a little during the night. Stop and regulate the shoots on later trees, in order that every shoot may be fully exposed to the sunshine, and that the air may circulate freely amongst the shoots. Spray the foliage with tepid water each morning and at closing time in the afternoon. During the day a moist atmosphere may be promoted by damping at frequent intervals all the available surfaces in the house. Trees carrying a full crop of fruit, especially if they are growing in shallow or restricted borders, must be fed liberally, and the borders should be covered with a mulch of decomposed horse manure, if this material has not already been supplied. Very little fire heat is needed at this season of the year, indeed, merely sufficient to maintain a circulation in the atmosphere.

Early Peach and Nectarine trees in pots.—Manures must be withheld from these trees directly the fruits begin to ripen; water even must only be given in moderation. If the pots are at present exposed to the sun's rays, they should be shaded by some means in order that watering may not be needed so frequently. Syringing must not be practised during the time the fruits are ripening. When all the fruits have been gathered, the trees must be removed to a cool house, where they should be syringed twice a day. If red spider is present on the leaves, the plants had better be laid on their sides and thoroughly syringed with an insecticide. Later, when the weather is warmer, plunge the pots in ashes out-of-doors in a sunny position.

Early Peaches in borders.—These trees should be given a thorough watering just before the ripening stage commences, it being inadvisable to apply water during the time the fruits are actually ripening. At that stage the house must be kept dry. Remove any laterals that are shading the fruits, and if there are any fruits on the undersides of the shoots, they must be exposed to the light by placing a label or some similar prop under them. In determining whether a Peach is ripe or not, the underside of the fruit near to the stem alone should be felt. The fruits should be gathered as early in the morning as possible. Certain varieties of Peaches—and particularly Nectarines—are liable to suffer from scalding during the ripening season, and this causes the skin of the fruit to shrivel. The trouble may be prevented by covering the glass with a double thickness of fish netting.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Salsafy.—This is one of the most useful of winter vegetables and deserves to be more generally cultivated. The last sowing for the season should now be made, selecting deeply tilled and finely-worked soil. Sow the seeds thinly in drills, drawn at 15 inches apart, and as soon as the young plants are large enough, thin them out to 12 inches or so apart. If perfectly shaped specimens are required it may be necessary in some soils to bore deep holes as advised for Carrots, and to fill them with finely-sifted soil of a sandy nature.

Scorzenera.—This requires much the same kind of treatment as Salsafy, but it is important that the seed is not sown too early. The best time to sow is from May 12 to May 20.

Seakale.—The young sets of Seakale planted out last month should have their eyes or shoots reduced to one, leaving the strongest. Every encouragement should be given the plants to make a robust growth. In showery weather a slight application of some approved fertiliser may be made and the surface soil should be disturbed frequently by means of a Dutch hoe.

Brussels Sprouts.—Plants that were pricked out from the earliest sowings may now be sufficiently advanced to be put in their permanent quarters. Lift each plant carefully with a ball of soil attached to its roots. It is scarcely possible to make the soil too firm about the roots. The rows should be 3 feet distant from each other, and the distance between each plant in the row should not be less than 2 feet 6 inches. If Brassica crops on this soil have been in the habit of showing club disease, it will be well to fill in the holes with finely-sifted cinder ashes. I have found this material a splendid preventive of club disease.

Cabbage.—Quick-maturing varieties that were raised in boxes and afterwards pricked out should be ready for planting. Most of these may be planted at 15 inches apart in rows 2 feet distant from each other.

Spinach (New Zealand).—This vegetable frequently has great value during a hot season, ordinary Spinach thriving but poorly in very hot weather. Seeds of New Zealand Spinach may now be sown in boxes, and the seedlings afterwards planted out, or seeds may be sown on a warm border out-of-doors.

Cucumbers.—If Cucumber plants have been properly hardened, they may safely be planted in portable frames, which have already done duty for other vegetable crops. It will be necessary, however, to make the best use of the sun heat by closing the lights very early in the afternoon and spraying the surfaces with chilled water. Cover the lights entirely with some protective material on cold nights, but do not neglect to ventilate the frame early each morning. Peg down the growths, stop, and thin them out as they require it. The best varieties of ridge Cucumbers are worth cultivation in any garden. They should be brought into bearing as soon after planting as possible. The warmest available place, therefore, should be given them, it being all the better if a moderate hot-bed can be formed for their use. The seeds should be sown at once, and the plants may be put out towards the end of the present month. Hand lights or cloches may be used for a short time in order to give them a better start. Failing these, the plants may be covered at nights with flower-pots or some other form of shelter.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Cattleya and Lælia.—Now that such plants as *Cattleya Schröderæ* and *C. Lawrenceana* are passing out of bloom, they should be placed in the coolest part of the house, and be kept comparatively dry at the root, otherwise they may recommence to grow instead of getting to rest. Each plant should be watched, and immediately root action commences those plants which require it should be repotted. Plants of *C. Mendelii*, *C. Mossiæ*, *C. Skinneri*, *Lælia purpurata*, and the various *Cattleya* and *Lælio-Cattleya* hybrids developing flower-spikes, will require to be kept fairly moist at the root till the flowers expand. Over-watering must be carefully guarded against, for if the plants are kept too wet whilst in bloom, some of the pseudobulbs and leaves may decay soon after the flowers have faded. Plants of the autumn flowering *C. labiata*, *C. Gaskelliana*, *C. gigas*, *C. Dowiana*, *C. D. aurea*, *C. Bowringiana*, and others that are starting to grow should be placed in the warmest part of the house. Elevate the plants well up to the roof glass, so that they will be well exposed to the light. If the *Cattleya* house is situated at a high elevation and in a naturally dry position, the plants in growth will probably require a moderate supply of water at the root twice a week, but in low-lying districts where the house is less exposed to drying winds, about one watering a week for the present will be found sufficient. In either case the compost should be allowed to become moderately dry before water is again applied to the roots. When the flower-sheaths are seen developing in the young growths the quantity of water may be slightly increased. *C. Luddemanniana* (*speciosissima*) may also be included with the varieties mentioned as regards its present requirements, but better flowering results may be obtained with this species if the plants are suspended as near to the roof glass as possible. In such a position the plants take more water than those down upon the stage, and it is better for them to do so. Plants of *C. Trianae* starting to grow and needing room for further development may be repotted. The young growths will soon produce roots which will quickly enter the new compost. Plants of *C. Percivalliana*, *C. amethystoglossa*, *C. Harrisonæ*, and others now commencing to grow may also be repotted. In most collections there will be some plants of *C. Mendelii* and *C. Mossiæ* that have failed to produce flower-spikes, or others that have deteriorated and require breaking up. These may also be attended to at this season. Plants that

are unhealthy or shrivelled should be relieved of their flower-sheaths. The pots for these *Cattleyas* and *Lælias* should be about half filled with clean crocks for drainage, over which a layer of the roughest part of the compost should be placed with a sprinkling of small crocks intermixed. This should be made quite firm on the surface. The compost should consist of *Osmunda* fibre and *Polypodium* fibre in equal parts. Cut both materials up together, but not too finely, and mix with them plenty of small broken crocks. For these plants we do not use *Sphagnum*-moss, but some growers prefer to mix a little with the compost, and results are equally good. Over-potting should be avoided. Pot rather firmly, especially in the centre, and keep the rhizome of each plant about on a level with the rim of the pot. Tall-growing plants like *Lælia elegans* and *Cattleya amethystoglossa* may require to have a pseudobulb here and there tied to neat sticks to hold the plant firmly in its place. When the plants have been repotted, place them on the shady side of the house, and for a few weeks keep them rather dry at the root, but the surroundings may be kept fairly moist by syringing between the pots several times each day according to the condition of the weather outside.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. Ford, Pencarrow, Cornwall.

Coleus.—The earliest plants of *Coleus* should now be growing in 7-inch pots. Those that were propagated later should be potted off as soon as they have made roots. Continue to insert fresh batches of cuttings at intervals, remembering that well-grown plants, upon a single stem, in 3-inch pots, are useful for furnishing small vases in the house. As a rule, however, there is no advantage in retaining a plant after it has done duty in a dwelling-room. For the present let the plants be kept in a warm, moist house, and in a position that is well exposed to the light.

Begonia.—Varieties of *B. Rex* may easily be propagated from the older leaves. Take the leaves and make a few incisions on the under side of the ribs. Then lay them flat on pans of light sandy soil. Be careful not to over water the soil, but shade the leaves from sunshine. Established plants should be cultivated in partial shade and in a moist atmosphere. If the plants are to be used as vase plants they should be turned round frequently, otherwise all the leaves will face in one direction. Tuberous-rooted varieties may now be grown in an unheated frame facing to the south. The plants should be arranged on a bed of cinders, and may be sprayed overhead twice each day during fine weather. In the middle hours of bright, sunny days, slight shade may be afforded.

Boronia.—As the plants complete their flowering, *B. elatior*, *B. heterophylla*, and *B. megastigma* should be pruned severely and placed in a warm, moist house. Do not water them much at the root for some time after the pruning has been done, but syringe the plants overhead whenever the weather is bright. When they have completed their growth they may be removed to a cooler house.

Nerine.—When the foliage shows signs of turning yellow, the supply of water at the roots should be gradually decreased, until when the leaves have quite withered the roots may be kept dry. *Nerines* require a long season of rest, and during this period they should be fully exposed to sunshine in a cool house or frame.

Staking.—Many plants now require some means of support, and it is bad gardening to withhold stakes in cases where they are necessary. At the same time it is equally wrong to use more than are absolutely essential. The vivid green stakes sometimes seen are objectionably prominent when associated with certain plants. It is difficult to get shades of painted green that are not conspicuous when associated with living stems and leaves. As a rule home-grown stakes are best. In the Western counties many of us are able to use Bamboo canes that we ourselves have cultivated. These are chiefly obtained from the Metake (*Arundinaria japonica*). This Bamboo, being similar in colour to the leaves and stems of many plants, makes a fairly inconspicuous stake. A stake should never be out of proportion to the size of the plant it

supports. In the case of quick-growing plants under glass it is better to affix another in the course of a few weeks rather than to use one larger than is needed. Whilst the ties must be made sufficiently tight to keep the plant steady, it is obvious that allowance ought to be made for the increase in size of growing stems.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir Edmund G. Loder, Bart., Leonardslee, Sussex.

Preparations for bedding-out.—Preparations should be pushed forward for the bedding-out of tender plants, which may be possible towards the end of the present month. The best preparation consists in thoroughly preparing the plants for their period out-of-doors by gradually hardening them to exposure. It may still be necessary to protect many of them during cold nights. Take every care that none is allowed to suffer from drought at the roots, the danger of this happening being very acute in the case of those growing in tiny pots.

Propagation.—It is now time to commence preparations for propagating plants that will be used in the spring flower garden next season. Many plants can be raised either from cuttings or from seeds as the cultivator desires, but the best stocks are usually obtained from cuttings. Excellent cuttings may be taken at the present time from *Aubrietias*, these being half-ripened shoots. Insert them in boxes or in prepared beds in the nursery, using a compost consisting mainly of leaf-mould. Dibble the cuttings in very firmly. Choose a partially-shaded position, or if this is not available shade the cuttings from the midday sun. Stocks of *Alyssum* and *Arabis* may be raised similarly. The cuttings root very readily if detached with a heel of the old wood adhering to them. Some good varieties of *Aubrietias* include *Fire King*, *Leichtlinii*, *Moerheimii*, *Dr. Mulcs*, *purpurea*, and *Richards' Nine to One*. Varieties of *Arabis* include *A. aubrietoides*, *A. Allioni*, *A. Halleri*, and *A. albidæ*, fl. pl. Of *Alyssums*, there are *A. saxatile*, *A. s. compactum*, and *A. spinosum*.

Wallflowers.—Seeds of *Wallflowers* should be sown to provide plants for putting out in the autumn. Select an open border that is shaded from the midday sun, and rake the soil very finely, working in a little soot during the process of raking. Draw broad drills at distances of one foot apart and sow the seeds very thinly. The variety *Helen Willmott* is especially to be recommended. Seeds should also be sown of *Canterbury Bells* (*Campanula medium*), and *Silene*, *Pansies*, *Campanula pyramidalis* and *Delphinium hybridum*. *Campanula pyramidalis* makes better decorative plants for pots if it is cultivated out-of-doors during the summer. Indeed, in many districts, they may remain out-of-doors during the winter if the pots are plunged, or the border containing them is mulched. All the *Delphiniums* are best sown out-of-doors if we except *D. nudicaule*. Seeds of this somewhat delicate species should be sown in boxes in frames, and the seedlings planted out afterwards in rich, fine soil. Slugs are very destructive to *Delphiniums*, and the plants must be carefully preserved from these during the earlier stages of growth.

Polyanthus and Primrose.—Varieties of both these plants should be sown on well-prepared borders in comparative shade. Frequent supplies of water must be given them in dry weather. The leaves being liable to attack from red spider, they must be treated with an insecticide at intervals during the summer. All plants raised from seeds should be carefully pricked out as soon as they can be handled, that they may not become weak and drawn, owing to overcrowding in the seed drills.

Perennial Asters.—Cuttings that have been rooted in the present spring should now be planted out in the reserve nursery. They will make strong plants by autumn.

Hardy Fernery.—Top-dress any of the hardy Ferns in need of this attention. Remove all weeds from the fernery, and place a few evergreen branches to protect delicate Ferns whose young fronds are liable to become injured by frost. A little soot scattered over the surface of the soil, avoiding dusting the fronds, is a good fertiliser. Ferns favouring limestone, should be given a dressing of this material mixed with leaf-mould.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

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

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MAY 10—

United Hort. Ben. & Prov. Soc. Com. meet.

THURSDAY, MAY 13—

London Branch B.G.A. lecture by Prof. Bottomley on "Nitrogen Fixation."

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—52°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, May 5 (6 P.M.): Max. 60°; Min. 47°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, May 6 (10 A.M.): Bar. 30.2; Temp. 68°; Weather—Sunshine.

PROVINCES.—Wednesday, May 5 (6 P.M.): Max. 59° Bedford; Min. 46° Scotland E.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Border Plants and Perennials, Lilioms, and other bulbs, at 12; Palms and Plants, Ferns, &c., at 3, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

Cypripedium Hybrids, Imported and Established Orchids, at 12.45, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

The Sensitiveness of Plants to Gases.

The investigations of physiologists have brought to light the fact that plants respond in various ways to a large number of external agents. One form of response—the tropistic or curving response—consists in a bending of the root, stem, or other part of the growing plant in a definite direction with respect to that in which the agent or stimulus acts. The curving of the stem of a plant illuminated from one side so that its tip is directed towards the light is a well-known example of such a tropistic reaction. Plants which are free to move, as, for example, the swarm-spores of Algæ, show a like reaction; though in their case the movement is not a bending, but an actual progression in the line of action—toward or away from—the stimulus. Chief among the directive agents for the higher plants are, of course, gravity and light, and it is by their regular, definite, and purposeful reactions to these stimuli that plants acquire their characteristic positions. Without such ever-present guides it is difficult to believe that a seedling could adjust itself to its environment sufficiently to obtain adequate supplies of material from soil and air.

But, besides these well-known manifestations of plant-sensitiveness, the general results of which are clear and beneficial, there are other responses to stimuli, the meanings of which are less obvious. For example, after a considerable amount of discussion and conflicting experiment, it has now been shown

that both the roots and stems of plants respond by definite curvatures when they are exposed to what may be called a non-uniform gaseous environment: that is to say, when one side of the plant is exposed to a gas which is absent or, at all events, present in smaller quantity on its other side. Such conditions do not occur with sufficient regularity in Nature for the curvatures which they induce to be recognised. Nevertheless, when these conditions are set up artificially, when, for instance, a seedling is so placed in a bell-jar that a stream of carbon-dioxide falls on it from one side, the plant responds to the stimulus by curving toward or away from this gas. The curvature directs the tip toward the carbon-dioxide when the amount of that gas is but small; away from it when it is larger. A similar behaviour is exhibited by both roots and stems when they are exposed in this one-sided way to oxygen. To other gases, however, the plant remains indifferent. Thus, neither hydrogen nor nitrogen induce curvature; although, if the nitrogen contains a mere trace of ammonia, a curvature takes place. The marked reaction to carbon-dioxide is interesting inasmuch as the roots of plants are peculiarly sensitive to this gas. For example, it suffices to kill a plant to direct for a comparatively short time a supply of carbon-dioxide to its roots. It may be that the marked curvature away from considerable quantities of carbon-dioxide represents the plant's mode of escape from the injurious influence of that gas. Though why this curvature should be manifested by the shoot as well as the root—although the shoot requires carbon-dioxide for the manufacture of its food-materials—is by no means clear. The whole question of these adjustments of the plant to the several factors, light, gravity, moisture, &c., of its environment, is fascinating. From the study of such adjustments it has become evident that the plant possesses as fine a sensitiveness as the animal, and an equally marked power of response. Though its nervous system is not represented by brain or nerve, it nevertheless has at its command powers of perception of stimuli, just as the animal has eyes for the perception of light; and also powers of response by movement, like those which animals exhibit. By the exercise of these powers of response to stimuli the organism adjusts itself with supreme nicety to its surroundings, and, as it were, feels its way safely in spite of the changes and chances of its life. It is not at all improbable that the sensitiveness of plants is far more varied than is at present suspected; nor, considering how ignorant we still are of the physiology of plants, that many examples of sensitiveness may be discovered for which explanations in terms of utility may not be forthcoming.

OUR SUPPLEMENTARY ILLUSTRATION.—In the last issue the Supplementary Illustration showed the various processes in the propagation of Hyacinths by scoring the base of the bulbs in a series of cross-cuts. This week the system illustrated is that of hollowing out the base by the "scooping method." As we explained last week, this latter method produces a larger number of bulbils than develop after scoring the bulbs, but, in consequence of this, the development of the bulbs is slower, and therefore more time is required

before they are fit for planting out and before the bulbs reach the flowering stage. Like the former photographs, these now reproduced were taken by Mr. PIET, Amersham, in the bulb nursery belonging to Mr. H. DE MEULDER at Lisse.

FLOWERS IN SEASON.—A box of magnificent flowers of the St. Brigid strain of Anemone has been sent us by Mr. G. ROCHE, Gowran Castle Gardens, Co. Kilkenny. The blooms are of extra large size and the shades of colour as pleasing as they are varied. We cannot speak too highly of these Anemones, and their value is the greater since they are capable of lasting in good condition in water for upwards of a week.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—In aid of the funds of the Worcester Auxiliary, the gardens and grounds of Madresfield Court will be opened to the public on Thursday, May 13. The admission from two to four o'clock will be 1s., but afterwards 6d. Should the weather be wet on that date, the gardens will be opened on the following Thursday.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, the 10th inst., at 8 p.m., when a paper will be read by Mr. A. B. HOWES (Fellow), entitled "Quantity Surveyors: A Review of their Legal Position." The next country meeting will be held at Cardiff on May 20 and 21. Visits have been organised to various works and places of interest in or near Cardiff for the afternoon of the 20th, including the Bute Docks, the Dowlais Steel Works, Cardiff Castle, and Llandaff Cathedral. The following excursions have been arranged for the following day:—(1) Excursion to Ilfracombe via Barry Docks; by boat along the Devon and Somerset coast to Minehead; (2) a visit to the Bargoed Colliery and to Caerphilly Castle.

NATIONAL TULIP SOCIETY.—The sixteenth annual southern exhibition of this Society will be held at the Horticultural Hall, Vincent Square, Westminster, on Tuesday, May 18, in conjunction with the fortnightly meeting of the Royal Horticultural Society. All particulars can be obtained from the secretary, Mr. W. PEETERS, Farcet House, Cambridge.

SOCIÉTÉ ROYALE D'AGRICULTURE ET DE BOTANIQUE DE GAND.—This Society will hold an international exhibition of fruits, vegetables, and flowers on October 30, 31, and November 1 next. The principal feature of this exhibition will be Chrysanthemums, for which a number of liberal prizes are offered. There are also classes for other flowers in season, including Orchids. Twenty-seven classes are arranged for hardy and tender fruits, and 15 for vegetables. The schedule comprises in all 136 classes, and the exhibition promises to be one of considerable interest. The secretary for the exhibition is Mons. LUCIEX DE COCK.

THE "JOURNAL" OF THE COOPER RESEARCH LABORATORY.—We have received with pleasure the first number of the *Journal* of the Cooper Research Laboratory. The laboratory was founded in 1902 by Sir RICHARD COOPER in order to carry on agricultural investigations and to keep the agriculturist informed on all matters where biological or chemical science can offer him assistance. Information is given free of charge to genuine enquirers. The work carried out during the past year includes experiments with insecticides and fungicides; the use of lime in agriculture, with special reference to "Finger-and-toe"; the life-history and habits of the woolly-aphis. We wish the Cooper Research Laboratory all success in its career.

"THE BOTANICAL MAGAZINE."—In the issue of this publication for May there are illustrations and descriptions of the following plants:—

DENDROBIUM BRONCKARTII, tab. 8252.—This plant was first described by Mr. WILDEMAN in *Gardeners' Chronicle*, June 16, 1906, page 380. It is most closely allied to *D. thyrsoiflorum*, but is readily distinguished by its larger size, its ampler and laxer inflorescence. The flowers are pale-rose colour, the disc of the lip being marked with a large orange-coloured blotch. They are produced on pendant racemes.

LARIX OCCIDENTALIS, tab. 8253.—This species, originally described by NUTTALL, was figured in the *Gardeners' Chronicle* for May 22, 1886, page 652, when Professor SARGENT, of the Arnold Arboretum, Massachusetts, wrote an interesting account of it, and of *Larix Lyallii*. *Larix*

at Verrières-le-Buisson, near Paris, also cones freely, but has never yet given seed.

MUSSAENDA TREUTLERI, tab. 8254.—This is an old plant that has been known heretofore as a variety of *M. frondosa*. It was originally mistaken by Dr. WALLICH, when he discovered the plant in the mountains of Nepal, for a form of *M. frondosa*, but was subsequently confused with *M. macrophylla*, under which name it has usually been cultivated. Dr. STAPP now raises the plant to specific rank for the first time. It was introduced to cultivation by Messrs. KNIGHT & PERRY about 1840. It is a stove plant, and forms a shrub about 3 feet high. The flowers are produced in terminal heads, the only colour being in the limb of the corolla, which is reddish-orange. The plant gains some of its decorative value from its leaflike white sepals.

p. 665) that the tree cultivated in European collections as *Pyrus Pashia*, which DECAISNE has distinguished from the typical form of that species as *P. Kumaoni*, may be no more than a glabrous variety of *P. Pashia* proper. A careful study of the material in the herbarium at Kew has enabled Dr. STAPP to completely confirm this view. According to LOUDON (*Encyc. of Trees and Shrubs*, p. 424), *P. Pashia* was first introduced into England in 1825. The tree from which the plate of *P. Pashia Kumaoni* has been prepared has been growing in the collection of Rosaceae at Kew for many years, but its precise history is not known. The flowers are exceedingly attractive, by reason of the deep-red anthers, which show up strongly against the pure white petals. The individual flowers are remarkable for their full-rounded contour, and are produced in unusually compact flower-trusses.



[Photograph by W. J. Vasey.]

FIG. 127.—SOUVENIR DE LA MALMAISON CARNATION "LADY COVENTRY," AS EXHIBITED BY MESSRS. CUTBUSH AND SON AT THE R.H.S. EXHIBITION ON APRIL 20. FLOWERS CARMINE-LAKE. (See ante p. 263.)

occidentalis was first observed by LEWIS and CLARK in the forests of the Upper Clearwater River. It was seen also by D. DOUGLAS in 1827 near Fort Colville, on the Upper Columbia, but was mistaken by him for the European Larch. NUTTALL collected it from the Blue Mountains in 1834, and first described it in *Sylva*. Certain foresters in England have the opinion that this American Larch may prove to be a useful substitute for the European Larch, owing to the susceptibility of the latter to the attacks of the fungus *Peziza Willkommii*, the cause of Larch-canker. Mr. BOTTING HEMSLEY states that the trees at Kew fruit freely, but that the cones have never yet been found to contain fertile seed. A tree in the garden of Mr. P. L. DE VILMORIN,

DEUTZIA SETCHUENSIS, tab. 8255.—This species was described in the *Gardeners' Chronicle* by Mr. LEMOINE on October 8, 1898, page 265, as *D. corymbiflora*. Mr. HUTCHINSON now points out that *D. corymbiflora*, Lemoine, has been identified by Mr. FRANCHET with this species; Mr. HUTCHINSON, however, states that LEMOINE's plant appears to have smaller, less acuminate leaves and pinkish-white flowers. The figure now given in the *Botanical Magazine* was presented to Kew in 1897 by Mr. M. L. DE VILMORIN. It has white flowers, and blooms early in July.

PYRUS PASHIA VAR. *KUMAONI*, tab. 8256.—Dr. STAPP says that it has already been suggested by Dr. SCHNEIDER (*Ill. Handb. Laubholz*, vol. i.,

WHAT AILS YOUR PLANTS?—Under the above title the *Garden Magazine* (New York), May, 1909, publishes a valuable contribution from Mr. PORTER FELT, State Entomologist, New York. Drawn up in tabular form are lists of ornamental shrubs, small fruit, orchard trees, shade trees, vegetables, and plants of the flower garden. Opposite each plant is given the symptom of the injury or disease to which it is liable, the time of its appearance, its cause, name, remedy, or preventive means to be adopted, and remarks and cautions. As the editor remarks, most tables and spray calendars assume an acquaintance on the part of their users with the insect or fungus causing the disease. KIRCHNER's excellent book adopts a similar method with respect to European pests, but, being in German, is not generally available. It is to be hoped that some competent entomologist or fungologist will draw up a similar table dealing with the common pests of this country.

EXHIBITS OF WILD FLOWERS.—The wild flower exhibition at the People's Palace, Glasgow Green, Glasgow, which proved so successful last year, is to be repeated. The daily exhibits of freshly-culled wild flowers will continue from the present time until the last week of September. District librarians and headmasters of schools in the neighbourhood have promised to assist all they can by the loan of books and by giving simple botanical teaching.

THE TRANSVAAL DEPARTMENT OF AGRICULTURE.—No better testimony to the activity of the Transvaal Department of Agriculture could be provided than that supplied by the report of the work of the department during the year July, 1907, to June, 1908. The volume embodying the report consists of 328 pages, and contains the records of the several sub-departments, which include those of Botany, Plant Pathology, Entomology, Horticulture, Forestry, Co-operation and others. Among many interesting items dealt with in the report the following may be noticed: the rapid development of the Transvaal as a Maize-growing region and the progressive policy adopted by the Department of Agriculture for the provision of pure and suitable seed for this crop; the vigilance exercised in the discovery of imported plant diseases and the rigorous destruction of diseased plants. It is noteworthy that dry-rot of Potatoes (*Nectria solani*) has proved itself capable of attacking the crop as well as the stored tuber. Our readers will recollect that this has been shown recently to be the case both in America and in this country. Attempts to discover or breed rust-resisting strains of Wheat have not as yet proved successful, though in the light of the experiments made by Professor BIFFEN, at Cambridge, it would seem probable that this much-desired end is not unattainable. Lastly, it is interesting to observe that the gospel of co-operation is being preached, and not vainly, to the farmers of the Transvaal.

STONE SEAT IN KEW ARBORETUM.—Enquiries are from time to time made as to the stone seat among the Beech trees towards the southern end of the gardens. The seat, which was placed in the position it occupies in February, 1904, was presented to Kew by a group of friends of the late Miss CASSELL, who was for 20 years Lady Superintendent of the College for Working Women. It was provided as a memorial by past and present students of the college, to express their sense of Miss CASSELL'S unique personality. "That it should be a resting-place in sight of sky and trees in such an altogether beautiful place as Kew, and within reach of working Londoners, seems, in accordance with her life spent in working for the working poor, what she would like," is a sentence which occurs in a letter on the subject, written by Mrs. MACLEHOSE, at whose instance the memorial was erected, to her brother, Mr. G. MACMILLAN. In the same letter Mrs. MACLEHOSE says:—"We should like some motto or words carved on it, but no obviously memorial words—no names." The actual inscription is:—

"Life—the gift
Let us take hands and help this day we are
alive together
Look up on high and thank the God of all."
—*Kew Bulletin*.

"**THE ROSE ANNUAL, 1909.**"—This excellent publication of the National Rose Society progresses in importance with the Society itself. The number before us is a valuable contribution on matters pertaining to the Rose. Mr. E. B. LINDSELL, who has won the principal trophy at the Society's shows no fewer than 17 times since 1890, writes upon Rose shows. In an admirable résumé of the shows of 1908, Mr. LINDSELL winds up with a plea for a permanent date for the Society's principal summer exhibition. A selection is given of the best Climbing Roses in their several colours, and Mr. MAWLEY'S analysis shows the number of times a certain variety appeared on the show board in 1908. The article on Wichuraiana Hybrids by Dr. A. H. WILLIAMS is an admirable disquisition on the subject, and no one should know more of the hybridisation of Roses than Mr. ALEX. DICKSON, who writes on this subject. The history of the Frau Karl Druschki Rose is given by Mr. ALLISON, who states the parents were Merveille de Lyon and Caroline Testout. How this beautiful flower was passed over for a considerable time makes interesting reading. Other chapters deal with Enemies of the Rose; Banksian Roses; Climbing Roses; Rose Growing in Winter on Shallow Benches; and descriptions of some of the newer varieties. The frontispiece is a portrait of the President, Rev. F. PAGE-ROBERTS. Numerous other pictures appear in the text.

* "**GARDEN LIFE YEAR BOOK, 1909.**"—We have just received a Year Book published by the proprietors of *Garden Life*. It contains a calendar of garden operations for each month, and various articles upon subjects of interest to gardeners. For instance, "The Rose Season of 1908," by Rev. JOSEPH H. PEMBERTON; and "Sweet Peas," by CHARLES FOSTER. A list is given of the flowers, fruit, and vegetables certificated by the Royal Horticultural Society in 1908; another of select varieties of common vegetables and fruits, and there are illustrated articles upon certain well-known gardens. An interesting feature of the Year Book is the section "Who's Who in Horticulture." In this appear biographical notes of a number of well-known men in gardening circles. It is the first time such a list has been prepared, and probably for this reason it is far from complete, many well-known names being omitted.

* Hatton House, Great Queen Street, W.C. Price 1s. net.

VANILLA CULTIVATION IN HAWAII.—If there is anything at once easy and profitable left to the horticulturist, it must be Vanilla growing in Hawaii. From the book entitled *Agriculture in Hawaii*, by J. G. SMITH, we learn that the climbing Orchid (*Vanilla planifolia*) is planted as a cutting on any tree or any soil. The cutting soon emits its characteristic aerial roots and begins to flower in its second or third year. A

AN UNSATISFACTORY REPORT.—To those who are aware of the extraordinary activity displayed by the dominions of the Empire, by certain of its Crown Colonies, and by the United States and Germany in furthering the interests of agriculture and horticulture, the annual report on the Botanical, Forestry, and Scientific Department of the Uganda Protectorate (1908) cannot be other than disappointing. All that is apparently worth

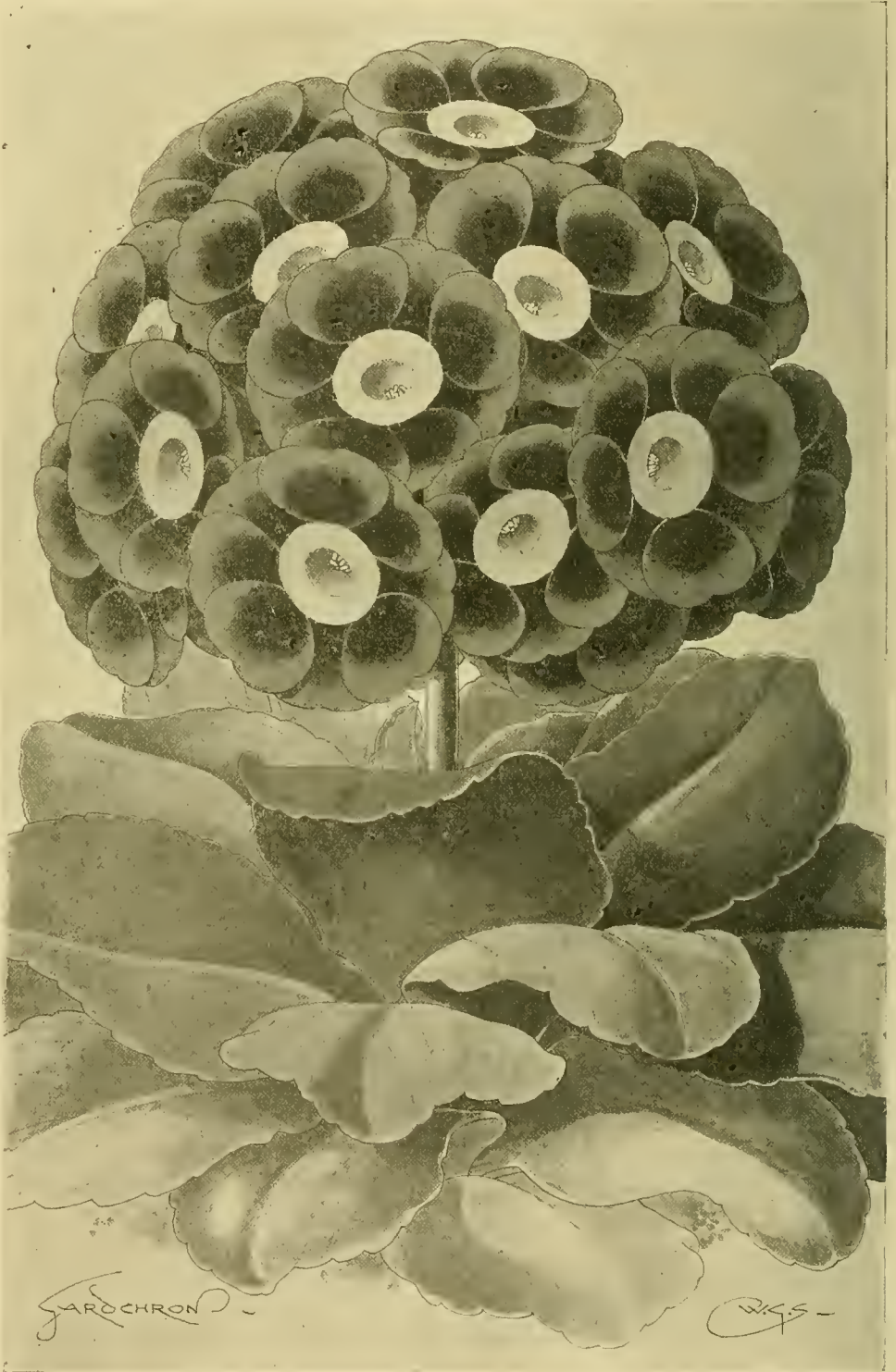


FIG. 128.—ALPINE AURICULA CLAUD HALCRO: FLOWERS YELLOW IN CENTRE, WITH CRIMSON ON EACH SEGMENT, PASSING TO BRONZY-RED AT MARGIN.

(Gained an Award of Merit when shown by Mr. Douglas at R.H.S. meeting on April 20. See *ante* p. 262.)

little weeding is about all that is necessary in the way of cultivation. Artificial pollination is necessary to ensure the formation of the pods. The pods are then cured, by which process the required colour and aroma are induced. The yield is worth from \$400 to \$500 per acre.

recording is contained within 19 pages, of which *all but five* are devoted to meteorological tables. We learn from the introduction to the report that an agricultural department was formed from April 1, 1907 (ominous day), but that no suitable person could be found for the appointment

as head of the department. It is difficult to believe that the search could have been very profound or prolonged. The report contains a few remarks on Rubber, Cocoa, Cotton, &c., but a perusal of its pages does not indicate that Uganda has undertaken the task of developing its undoubted resources in a thoroughgoing and scientific manner.

PRESENTATION TO MR. J. H. GOODACRE.—

The garden-holders of Nottingham have presented Mr. GOODACRE, gardener to the Earl of HARRINGTON, Elvaston Castle, with a silver salver. The presentation took place at the Welbeck Hotel, Nottingham, on Saturday, May 1. The salver was inscribed, "Presented to Mr. J. H. GOODACRE by the garden-holders of Nottingham for the many valuable services rendered them in the art of horticulture."

diminished vitality of the plant strike me as remarkably interesting. *Alfred O. Walker, Ulcombe, Maidstone.* [*Elodea* flourishes now as well as ever it did in rivers and streams under our own observation in the home counties. We shall be glad if it can be proved that the plant is generally less troublesome in this country than formerly.—Eds.]

HIPPEASTRUM [AMARYLLIS].—*Hippeastrums* succeed well in these gardens and make magnificent plants. We have them in flower from December until March. The plants do not require a high temperature, and succeed best if allowed to remain in the same pot for a few years. Our plants are repotted every three years, one-third each season. The soil used is turfy loam, leaf-soil, and sand, with a good sprinkling of bonemeal, charcoal, and lime rubbish. The plants that are not repotted this year are top-dressed with the same soil as is used in potting. The bulbs are started in a

Spinach, Onions, Carrots, Parsnips, Turnips, Broccoli, Cabbage, and Brussel Sprouts. We have also used it as a dressing for new plantations of Strawberries. In all cases it has benefited the crop. I may repeat, however, that it must not be used in a fresh condition. I saw a tennis court marked out with it in the ordinary way as with whitening. It killed all the Grass it touched, and the turf never recovered. Grass land would, no doubt, be benefited by its application if used in conjunction with double its quantity of soil or wood ashes, and spread evenly after it has been exposed to the air for some time. This refuse forms a suitable whitewash for outbuildings or walls, applied in the same manner as lime wash. *F. R. Staddon, East Oakly House, Haats.*

CUPRESSUS MACROCARPUS.—We planted a hedge here some four years ago to protect a Rose garden. It grew rapidly, and is now a thick wall 18 inches through and 5 feet high—the height we require it. At the present time the hedge has a very scorched appearance, owing to the severe winter, and I am afraid a tree here and there is killed outright. *A. Gooden, Burton Park, Petworth.*

PRIMULA FORRESTII.

We have now the opportunity of illustrating a plant of *Primula Forrestii*, which has been in cultivation at the Edinburgh Royal Botanical Garden for the past two years. Professor Bayley Balfour, to whom we are indebted for the photograph, states that the plant has been cultivated in an unheated frame during the past winter, that it flowers and seeds very freely, and that it is likely to become a general favourite. The illustration certainly proves that the plant has good decorative qualities.

SOCIETIES.

ROYAL HORTICULTURAL.

MAY 4.—The Society's Hall was the scene of another brilliant display of floral exhibits on this date, and there was a large attendance of visitors. The main building and the annexes were filled with groups of Roses, bulbous flowers, Orchids, Auriculas, Carnations, forced shrubs and trees, Ferns, Phyllocacti, Rhododendrons, Azaleas, Cinerarias, and many other subjects. An exceptional number of novelties were presented to the FLORAL COMMITTEE for award, and this body granted one First-class Certificate and six Awards of Merit. The ORCHID COMMITTEE conferred one First-class Certificate and two Botanical Certificates. The NARCISSUS COMMITTEE made no award to a novelty. Not much was brought before the notice of the FRUIT AND VEGETABLE COMMITTEE, and no award was made in this section.

At the 3 o'clock meeting, a lecture on "Mendel's Law and its Application to Horticulture" was delivered by Mr. C. C. Hurst. A resumé of the lecture is given on p. 302.

Floral Committee.

Present: H. B. May, Esq. (Chairman), Messrs. George Paul, W. J. James, E. H. Jenkins, W. P. Thomson, C. T. Druery, W. Cuthbertson, Chas. E. Pearson, A. Turner, W. Bain, J. F. McLeod, Wm. Howe, C. R. Fielder, R. C. Notcutt, T. W. Turner, John Green, Jas. Douglas, Jas. Hudson, J. W. Barr, Charles E. Shea, H. J. Cutbush, J. Jennings, Charles Blick, E. T. Cook, A. Kingsmill and R. W. Wallace.

As at the last meeting, there were many beautiful displays of Roses. Mr. G. MOUNT, Canterbury, Kent, exhibited in his usual excellent style a large display of these flowers. The blooms were beautifully fresh and bright, of the largest size, and on long, stout stems, with handsome foliage. The majority were of well-known varieties in large hatches, such as the magnificent white Frau Karl Druschki, shown in splendid condition, Mrs. John Laing, Ulrich Brunner, Mrs. R. G. Sherman Crawford, Mme. Abel Chatenay, and, amongst red Roses, Captain Hayward, General MacArthur and Richmond. There were also numerous other kinds in smaller numbers, the



FIG. 129.—PRIMULA FORRESTII AS CULTIVATED IN EDINBURGH ROYAL BOTANICAL GARDENS.

(See also figs. 117 and 118 in the last issue.)

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

ELODEA CANADENSIS.—In the interesting article on p. 248 on "Plant Invaders," you speak of *Elodea canadensis* as "now ubiquitous in rivers, &c., all over the country." I am curious to know if this is really the case, for certainly in the neighbourhood of Chester, where I used to live, and where I remember some 30 years ago the canal was so blocked with it that the barge traffic was seriously impeded, the plant has now become quite scarce. My friend Mr. J. D. Siddall, of Chester, to whom I wrote on this subject, replies as follows:—"I wanted some *Elodea* two months ago, and had quite a job to find a bit, and what I got at last was feeble and small as compared with the plants of, say, 20 years ago. Then, at any time in the winter or summer, it was plentiful, and in winter the cell contents of the stems were most active and interesting, but I have quite failed this last winter to stir them up into anything like their old activity, even after keeping them warm in the house for a week or two." Mr. Siddall having devoted much attention to this plant, his remarks on the apparently

temperature of 65°, and as the flowers open are removed to a cool house. We grow the plants in 6-inch pots, and give them liquid manure every time they require water until growth is completed. They are then removed to an unheated pit, and are never allowed to become dry, but kept slightly moist. Some of our bulbs carried two spikes, and most of them seven flowers to the spike this season. *J. B. Pow, Dunsany Gardens, Co. Meath.*

ACETYLENE GAS REFUSE.—We have found that a thin layer of this material placed over the ground will rid it of wireworm and other harmful grubs. I have not ascertained if it has killed the wireworm, but they have left the ground where it was put on. It is best applied to vacant land, where it should be dug in, and no plant should be placed on the land for at least two months after the gas lime is applied. The best time for the application is autumn or spring. Do not put it on fresh from the generator when wet, but in some out-of-the-way corner of the garden, where it can stay until it is well drained and nearly dry. I do not advocate using it on the same plot of land every year, once in three or five years being sufficient. We have used it for the following crops:—Potatoes, Peas, Beans, Celery.

whole forming a magnificent display. (Gold Medal.)

Messrs. G. PRINCE & Co., Oxford, exhibited Rambler Roses and a few Hybrid-Tea varieties. Plants of Dorothy Perkins, Hiawatha, Crimson Rambler, and the beautiful single-flowered Blush Rambler were crowded with their pretty blossoms.

Messrs. B. R. CANT & Co., Colchester, had a group of climbing varieties of Roses, amongst which the beautiful Austrian Yellow variety was conspicuous. (Silver Floral Medal.)

Another similar exhibit was staged by Messrs. FRANK CANT & Co., Colchester. (Silver Banksian Medal.)

Messrs. W. PAUL & SON, Waltham Cross, Herts., arranged as a corner exhibit Roses of the climbing Polyantha type, many of the varieties being old, but equally as beautiful as the newer kinds. Waltham Rambler was shown even better than at the last meeting; Bordeaux bears large trusses of blooms tinged with a shade of purple. The colouring of Lyon Rose is superb; perhaps rose shaded with gold best describes it. (Silver Flora Medal.)

A bold display of Himalayan Rhododendrons was made by Messrs. R. VEITCH & SON, Exeter. There were large plants, lifted from the border, of such fine varieties as Doctor Stocker, Glory of Penjerrick, R. niveum, R. Falconeri, and a new variety named Princess of Orange (R. Thomsonii \times indicum). The flowers of this hybrid are suffused with rose on a pale ground. (Silver-gilt Flora Medal.)

Messrs. JOHN WATERER & SONS, LTD., Bagshot, Surrey, staged a magnificent group of Rhododendron Pink Pearl. (Silver Banksian Medal.)

Mr. G. REUTHE, Keston, Kent, displayed Rhododendrons in great assortment, having also many Alpine and garden plants along the front of the group. *Viburnum Carlesii*, which received a First-class Certificate on this occasion, was noticed in this group. (Bronze Flora Medal.)

Rhododendrons were largely exhibited by Messrs. R. GILL & SONS, Penryn and Falmouth. The variety Gill's Triumph (R. Thomsonii \times R. Griffithianum), which received an Award of Merit last season, was one of the most noticeable; the large flowers are a shade of rose. Messrs. GILL also showed R. Falconeri and R. Thomsonii very finely. R. niveum has lilac-coloured flowers; the under surfaces of the foliage are white. Sprays of *Embothrium coccineum* were crowded with the scarlet blossoms. (Silver Banksian Medal.)

Messrs. JOSEPH CHEAL & SONS, Crawley, Sussex, displayed cut branches of uncommon and choice shrubs and trees, *Mespilus canadensis*, Magnolias in variety, the floriferous *Spiraea arguta*, *Exochordia grandiflora*, *Acer palmatum sanguineum*, *Pyrus Malus floribunda*, and many other choice subjects for the shrubbery and pleasure ground were shown by this firm.

Carnations of the Souvenir de la Malmaison type were shown as pot plants by C. F. RAPHAEL, Esq., Shenley (gr. Mr. A. Grubb). They were mostly of the pink Princess of Wales variety, but there were a few plants of the darker Maggie Hodgson kind and others of the scarlet King Arthur, which provided assortment. As examples of high culture, the plants would be hard to surpass; each bore several finely-developed blooms, and appeared in perfect condition. (Silver-gilt Flora Medal.)

There were several exhibits of perpetual-flowering Carnations. Mr. H. BURNETT, Guernsey, displayed popular kinds, such as Britannia, Enchantress, Mrs. H. Burnett, White Perfection, &c., in magnificent examples, a great feature being the high colouring, due in part, no doubt, to the favourable climate in which they were grown. (Silver Banksian Medal.)

Messrs. HUGH LOW & Co., Bush Hill Park, Enfield, also showed Carnations of this type, these plants being a speciality of this firm. The Carnations formed a portion only of Messrs. Low's exhibit, for they had in addition Roses, Hydrangeas, Ericas, Spiraes, *Clianthus puniceus*, *Azalea roseiflora*, and other greenhouse flowering plants. (Silver Banksian Medal.)

Messrs. W. CUTBUSH & SON, Highgate, London, N., displayed an assortment of the perpetual-blooming Carnations. The new Lady Coventry variety of the Souvenir de la Malmaison type was noticed (see fig. 127). Some of the blooms measured 6 inches across. Messrs. CUTBUSH also showed forced shrubs in variety. (Silver Flora Medal.)

Messrs. H. B. MAY & SONS, The Nurseries, Edmonton, showed an assortment of greenhouse plants including Verbenas, scented-leaved Pelargoniums, dwarf Roses, *Statie profusa*, and varieties of Pansies and Violas. Adjoining the flowering plants was a select group of Ferns, all with their spring foliage. The more handsome were *Nephrolepis exaltata Amerpholii*, the best of these new decorative Ferns; *Polypodium Knightiae*, the long fronds being delicately incised; P. *Billardieri cristatum*, a rare variety; *Gymnogramme schizophylla superba*; *Lomaria platyptera*, a fast-growing, elegant tree Fern; and *Leucostegia immersus*, with fronds tinted rose colour. (Silver Flora Medal.)

Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea, showed several exhibits of diverse flowers. On the table they usually occupy was a magnificent collection of Phyllocacti, mostly hybrids raised in the Veitchian nurseries. Especially fine were the varieties *Pytho*, *Thalia*, *Gem*, and *Hilda*. Another exhibit was of *Schizanthus*, the plants representing a choice strain of this greenhouse plant. As a floor exhibit, Messrs. VEITCH showed flowering Cherries—*Cerasus Watereri*, also *Amagdalus persica* fl. pl. (Silver-gilt Flora Medal.)

Mr. JAMES DOUGLAS, Edenside, Great Bookham, Surrey, contributed a grand display of Auriculas. Of the 400 plants which comprised the exhibit each was shown in best exhibition style. There were no fewer than 80 varieties, many of them of Mr. DOUGLAS'S raising. As being especially good, we may enumerate *Argus* (deeply shaded with purple), *Flora MacIvor* (of rosy purple colouring with a yellow centre), *Acme* (a white-edge variety), *Miss Willmott* (a dark maroon self flower of large size and with a perfectly-formed truss: this variety is not yet in commerce); *May Day* (a yellow self variety), *Phyllis*, *Teviot Dale*, *Heather Bell*, and *Mildred Jay*. (Gold Medal.)

Large-flowering varieties of Clematis, intermingled with Ferns and backed by a row of Laburnum plants, were shown by Mr. L. R. RUSSELL, Richmond.

Heliotropes in variety were shown by THE KING'S ACRE NURSERY Co., Hereford. Some of the trusses of flowers were 9 or 10 inches across. (Silver Banksian Medal.)

Messrs. J. CARTER & Co., High Holborn, London, made an attractive exhibit with *Cinerarias*, the brightly-coloured flowers furnishing a gay effect. The group was staged in a formal but attractive manner. (Silver Flora Medal.)

Exhibits of Violas and Pansies were again shown by Messrs. DOBBIE & Co., Rothesay (Silver Banksian Medal), and Messrs. CARTER, PAGE & Co., London Wall, London (Bronze Banksian Medal).

Much the best strain of Polyanthus exhibited was shown by Mr. S. MORTIMER, Rowledge, Farnham, Surrey. The plants were arranged in batches of yellow, crimson, white, and mixed varieties, and their flowers were so numerous as to hide the foliage. (Bronze Flora Medal.)

Messrs. GILBERT & SON, Dyke, Bourne, Lincolnshire, showed their specialities amongst Anemones, the beautiful King of Scarlets variety predominating.

Messrs. H. CANNELL & SONS, Swanley, Kent, made one of their characteristic displays of Zonal Pelargoniums and a row of the Regal or Show type. The following varieties in the Zonal section are all noteworthy:—Dublin (magenta), Sydney (rose-pink), Berlin (scarlet), Claremont (white), Paris (white and pink), and New York (scarlet). (Bronze Flora Medal.)

Messrs. HEATH & SONS, Cheltenham, staged scented-leaved Pelargoniums, of which plants this firm possesses a great variety.

Messrs. W. & J. BROWN, Cheltenham, showed a big white Daisy named *Venus*, a rather coarse-flowered yellow *Gaillardia*, *Lotus peliorhynchus*, and small well-flowered plants of *Olearia stellulata*.

Mr. CHAS. BREADMORE, Winchester, showed Sweet Peas, including a new cream-coloured variety named *Princess Juliana*. Mr. BREADMORE also staged Carnations.

Messrs. R. & G. CUTBERT, Southgate, London, N., showed hybrids of Rhododendron (*Azalea sinense*, the plants being densely covered with their attractive flowers. (Silver Flora Medal.)

Exhibits of Alpine and hardy border plants formed a very considerable portion of the exhibi-

tion. Mr. AMOS PERRY, Enfield, Middlesex, had an interesting group, amongst which we noticed especially fine examples of *Adonis vernalis*, *Corydalis nobilis*, *Mertensia virginica*, *Arnebia echioides*, and a good strain of *Polyanthuses*. (Bronze Flora Medal.)

Messrs. BARR & SONS, King Street, Covent Garden, London, W.C., showed hardy flowering plants, intermixed with bulbous flowers.

Mr. A. R. UPTON, Hardly Plant Nursery, Guildford, showed an assortment of spring flowers. The peerless *Gentiana acaulis*, one of the most beautiful of all blue flowers; *Polemonium confertum melitum*, and *Haberlea rhodopensis* were specially noteworthy.

Mr. MAURICE PRICHARD, Christchurch, Hants, exhibited Alpine and hardy flowers. The plants were finely in flower, and staged with great skill. We noticed many species of uncommon interest, and there were Irises, Anubrietas, Tulips, *Ranunculus amplexicaulis*, and other species. (Silver-gilt Banksian Medal.)

Another excellent exhibit of Alpine plants was shown by Messrs. J. PEED & SONS, Forest Hill, London. Many succulent plants were included in the display. Messrs. PEED also exhibited, as a separate group, an assortment of ornamental-leaved Maples, interspersed with Callas and large-flowered Clematis. (Silver-gilt Banksian Medal.)

Other exhibitors of Alpine and hardy border plants were Mr. W. P. HORTON, Cravenhurst, Seaford, Sussex; Messrs. PHILLIPS & TAYLOR, Lily Hill Nurseries, Bracknell, Berks: some well-flowered Auriculas were shown by this firm; the Misses HOPKINS, Mere Gardens, Shepperton-on-Thames; Messrs. T. S. WARE, LTD., Feltham (Bronze Flora Medal); Messrs. BAKER'S, Wolverhampton (Silver Banksian Medal); Messrs. G. & A. CLARK, LTD., Dover (Silver Banksian Medal); Messrs. GEO. JACKMAN & SON, Woking, Surrey; Mr. H. C. PULHAM, Elsenham, Essex; and Messrs. GEO. BUNYARD & Co., LTD., Maidstone (Bronze Flora Medal.)

Messrs. PAUL & SON, The Old Nurseries, Chess-hunt, showed varieties of ornamental trees and shrubs; also climbers and a few pot plants of hard-wooded species in flower. (Bronze Flora Medal.)

A Cultural Commendation was awarded to Mr. W. Bain (gr. to Sir TREVOR LAWRENCE, Bart., Burford, Dorking) for a splendidly-flowered plant of the curious *Tacca cristata*.

AWARDS.

FIRST-CLASS CERTIFICATE.

Viburnum Carlesii.—This beautiful and fragrant white-flowered shrub has previously received an Award of Merit. This Award is now superseded by a First-class Certificate. The species was described and illustrated in *Gardeners' Chronicle*, May 30, 1908, p. 346, fig. 155. The plant now exhibited had been lifted from the open on the day previous to the meeting, and had been grown without the least protection. Having endured 29° of frost without injury, it is but reasonable to conclude that the plant is perfectly hardy, and thus is a welcome addition to flowering shrubs. Exhibited by Sir TREVOR LAWRENCE, Bart., Dorking (gr. Mr. W. Bain).

AWARDS OF MERIT

Saxifraga Clibranii (see fig. 130).—A deep-red flowering variety of the mossy section. The habit is quite distinct, and the plant flowers profusely. From Messrs. CLIBRANS, Altrincham.

Saxifraga decipiens Arkwrightii.—A handsome, distinct and pure white-flowered variety of this section of the mossy Saxifragas. The flat-tish flowers are nearly the size of a shilling, and the plant blooms very freely. From Messrs. BAKERS, Codsall, Wolverhampton.

Cineraria flavescens (Cineraria Feltham Beauty \times Senecio articulatissima).—A remarkable novelty, and probably the first step to a yellow-flowered *Cineraria*. The exhibited plant was particularly well grown and flowered, the heads of blossoms being equal to those of well-grown *Cinerarias*, with a somewhat modified leaf growth. The opening blossoms are of clear canary-yellow tone, the expanded blossoms merging into a deep cream shade and finally becoming white. From Messrs. JAMES VEITCH & SONS, LTD., Chelsea.

Primula \times Unique improved.—This plant has been raised from a cross between P. Cockburni-

ana and *P. pulverulenta*, the latter species being the seed-bearing parent. The colour is intermediate between the parents, but in size of blossom, leafage and the mealy character of the leaves and stems, there is much to suggest the influence of *P. pulverulenta*. It is a more robust plant than *Primula* × *Unique* figured in *Gardeners' Chronicle*, June 15, 1907. The older plant was raised from the same parents, but in this case *P. Cockburniana* was the seed-bearer. From Messrs. JAS. VEITCH & SONS, Chelsea.

Nephrolepis lycopodioides.—A further addition to this densely plumose set of Ferns. The fronds are smaller than in the case of some other varieties already in commerce. From Messrs. T. ROCHFORD & SONS, Turnford Hall, Herts.

Hydrangea hortensis alba.—A pure white variety, and one that should prove of much value. From Messrs. HUGH LOW & CO., Enfield.

Narcissus Committee.

Present: H. B. MAY, Esq. (Chairman), and Messrs. G. W. LEAK, Henry Backhouse, W. A. MILNER, Christopher Bourne, W. POUPART, R. SYDENHAM, F. W. CURREY, P. R. BARR, Joseph Jacob, R. W. WALLACE, James Walker, F. HERBERT CHAPMAN, E. WILLMOTT, W. T. WARE, A. KINGSMILL, J. T. BENNETT-POE, E. M. CROSSFIELD, G. H. ENGLEHEART, and P. D. WILLIAMS.

A large number of new varieties were submitted for award, but none was considered worthy.

The most comprehensive exhibit was shown by Messrs. BARR & SONS, King Street, Covent Garden. In addition to a large collection of flowers of other types, the group contained an almost unique collection of triandrus hybrids with flowers of varying degrees of size. Not a few of these were flowering for the first time this year. Of the kinds already in commerce we noticed the giant *Leedsii Czarina* with its great perianth 5 inches across; *Masterpiece*, a fine flower of the *Engleheartii* section with characteristic flat and flame-coloured crown; *Challenger*, another handsome variety of the same group; *Lord Morley*, a giant of the hybrid triandrus set, with a creamy, drooping crown; *Snow King*, probably the biggest of the poeticus section; *Cassandra*, *Apricot Phoenix*, with double flowers; *White Lady*, and *Fire King*, which has a particularly rich and intensely-coloured crown, the shade of orange being thrown into greater relief by a base of green; and *N. odoratus rugulosus maximus*, a flower of medium size and a rich tone of yellow. (Silver-gilt Banksian Medal.)

Mr. F. HERBERT CHAPMAN, Rye, had a small collection of *Narcissus poeticus* in variety, a section to which this gentleman directs special attention.

Miss F. W. CURREY, Lismore, Ireland, exhibited choice varieties. *Will Scarlett*, *White Lady*, *Red Star*, *Warley Scarlet* (a fine flower of the incomparabilis type, and *Maggie May* were conspicuous.

Messrs. WM. BULL & SONS, King's Road, Chelsea, displayed a general collection of the later-flowering varieties of *Narcissus*.

Mr. H. D. PHILLIPS, Olton, Warwickshire, who was exhibiting for the first time at these meetings, had a particularly choice assortment of *Narcissus*. Especially good were *Horace*, *Inognita*, *Rymister*, *Seville* (which may be described as a much-improved *Will Scarlett*), *Gloria Mundi* (very fine in colour), *Una* (a big *Leedsii* in which there is more orange colour in the crown or cup than is usual in this section), *Evangeline*, and *Weardale Perfection*. (Silver Flora Medal.)

Messrs. R. W. WALLACE & CO., Colchester, had a capital assortment of Tulips, including early-flowering Cottage and Darwin kinds.

A group of a fine seedling *Narcissus* was shown by Messrs. SUTTON & SONS, Reading. It appeared to be intermediate between *Evangeline* and *White Lady* in colour, but a much larger flower than either of these.

Messrs. R. H. BATH, LTD., Wisbech, brought a rich display of early single, double and other Tulips, also a choice collection of *Narcissus*, the latter including *Torch*, *White Lady*, the large-flowered *Una* of the *Leedsii* group, *Princess Ena* (a giant hybrid from triandrus King Alfred), *Larissa* (a superb *Engleheartii* variety), *Gloria Mundi*, *Sulphur Phoenix*, and *Cassandra*. (Silver Banksian Medal.)

Messrs. HOGG & ROBERTSON, Dublin, displayed an excellent group of early-flowering Tulips, the flowers being characterised by much freshness and beauty. (Silver Banksian Medal.)

Mr. E. H. CAVE, Mangotsfield, near Bristol, showed a beautiful lot of unnamed seedling *Narcissus*. (Silver Banksian Medal.)

Messrs. JAMES VEITCH & SONS, LTD., Chelsea, had a large assortment of *Narcissus* and Tulips, the former including *Primrose Phoenix*, *Sulphur Phoenix*, *Will Scarlett*, *Gloria Mundi*, *Poetaz Aspasia*, *Mme. de Graaff*, and *Thelma*.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair), and Messrs. JAS. O'BRIEN (hon. sec.), de B. CRAWSHAY, H. LITTLE, W. BOXALL, J. FORSTER ALCOCK, R. G. THWAITES, F. M. OGILVIE, Walter Cobb, A. A. McBEAN, J. CHARLESWORTH, J. CYPHER, W. H. HARTECH, H. G. ALEXANDER, A. DYE, W. H. WHITE, H. A. TRACY, H. BALLANTINE, C. J. LUCAS, and Gurney Wilson.

Col. G. L. HOLFORD, C.I.E., C.V.O., Westonbirt, Tetbury (gr. Mr. H. G. Alexander), showed the beautiful *Odontoglossum Phoebe* Westonbirt variety, and it appeared even better than on the previous occasion; *O. crispum Muriel*, a very handsome lilac-tinted flower with fringed petals

Mr. W. H. White), sent the rare *Oncidium stramineum*, and two others. (See Awards.)

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), showed *Zygopetalum Clarksonii* (crinitum × Clayi), with chocolate-purple coloured sepals and petals and violet lip; *Odontioda Lutetia* with 10 fine scarlet-blotched flowers on a spike; *Laelio-Cattleya Feronia* (C. Enid × L.-C. Haroldiana), with cream-coloured sepals and petals tinged with rose, and a very fine, bright-purplish, crimson lip.

Messrs. CHARLESWORTH & CO., Haywards Heath, staged a selection of rare and handsome Orchids, including a grand seedling blotched *Odontoglossum crispum* closely approaching *O. c. Leonard Perfect*; several plants of the bright-yellow *Laelio-Cattleya G. S. Ball*, *Brasso-Cattleya Digbyana-Mossiae*, *Odontoglossum ardentissimum xanthotes* of fine shape, pure white with yellow markings on the lip; *Cattleya Empress Frederick*, the rare pure white *Aerides virens Sanderæ*, and *Masdevallia bella*.

JOHN RUTHERFORD, Esq., Beardwood, Blackburn (gr. Mr. Lupton), sent *Odontoglossum amabile* Beardwood variety, a very large white flower heavily blotched with purple; also a small selection of well-grown *Laelio-Cattleyas*, *Cattleya intermedia alba*, *Odontoglossums*, &c.

Messrs. CYPHER & SONS, Cheltenham, staged a



FIG. 130.—SAXIFRAGA CLIBRANII: FLOWERS CRIMSON.
(See R.H.S. Awards)

bearing some red spots; *O. triumphans* Westonbirt variety of fine form and bright yellow colour, heavily blotched with chestnut brown; and the grand *Laelio-Cattleya Dr. R. Schiffman* Westonbirt variety. (See Awards.)

J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis), showed *Brasso-Cattleya The Baron* (C. Lord Rothschild × B. Digbyana), for which Messrs. Sander received a First-class Certificate April 3, 1906, and which was fully described and illustrated in the *Gardeners' Chronicle*, April 7, 1906. No flower was available for the painting at that time. The Committee confirmed the Award on consideration of the picture being obtained from Mr. J. GURNEY FOWLER's flower.

The Duke of MARLBOROUGH, Blenheim Palace (gr. Mr. Hunter), showed *Odontoglossum crispum Dinah*, a handsomely-blotched form, and *Cypripedium bellatulum* "His Grace."

De B. CRAWSHAY, Esq., Rosefield, Sevenoaks, again showed his unique *Odontoglossum Theodora*, illustrated and described in the *Gardeners' Chronicle*, April 24, 1909, p. 269; and *Odontioda Charlesworthii* Theodora, a very beautiful flower of a deep Indian-red colour with a shade of orange.

Sir TREVOR LAWRENCE, Bart., K.C.V.O. (gr.

group containing good *Cattleya intermedia alba*, and other *Cattleyas* and *Laelio-Cattleyas*, including two very dissimilar varieties of L.-C. Ganymede. Also forms of *Laelia purpurata*, *Epiphronitis Veitchii*, *Phaio-Cymbidium Chardwarensis*, and a plant of the rare bright-yellow *Bulbophyllum Sillemianum*. (Silver Flora Medal.)

Messrs. HUGH LOW & CO., Bush Hill Park, staged a group of Orchids, in which were good forms of *Cattleya Mendelii*, *Dendrobium barbatulum*, *D. Pierardii*, *D. primulinum*, *D. thyrsoflorum*, various *Odontoglossums*, and a specimen of the curious little *Bulbophyllum tremulum*. (Silver Flora Medal.)

Messrs. J. & A. A. McBEAN, Cooksbridge, staged a group in which were some fine *Odontoglossums*. Among the forms of *O. crispum* were the pretty *O. c. Oakfield Sunrise*, and with the hybrids was a finely-blotched form of *O. Lambeauianum*. Others noted were *Cymbidium eburneo-Lowianum* concolor, a fine flower of yellowish-cream colour; *C. insigne rotundum*, a large and finely-formed white flower tinged with rose and closely spotted on the lip; good *Cattleya Mendelii*, *C. intermedia alba*, &c. (Silver Banksian Medal.)

Monsieur MERTENS, Mont. St. Amand, Ghent, showed a selection of hybrid *Odontoglossums*. (Silver Banksian Medal.)

Mr. A. W. JENSEN, Lindfield, Haywards Heath, showed a magnificent specimen of *Cattleya Mendelii* with 96 flowers.

FRANCIS WELLESLEY, Esq., Westfield, Woking (gr. Mr. Hopkins), sent *Cattleya Mendelii* majestic, a white flower with a pearly-pink tinge, the front of the lip being purplish rose, the tube tinged with yellow; and *C. Mendelii* Thalia, a nearly white flower with a purple pencilling on the front of the lip.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), showed *Brasso-Lælia* Rosslyn (*B. Digbyana* × *L. Latona*), white tinged and veined with rose.

E. de QUINCEY-QUINCEY, Esq., Oakwood, Chislehurst (gr. Mr. G. B. Lees), sent *Lælio-Cattleya* Dorothy Heywood (*L. Pacavia* × *C. Warneri*).

Miss EDITH M. ARGLES, The Vineyard, Peterborough, sent a good specimen of *Dendrobium densiflorum* with 10 spikes, which was originally brought by her from Darjeeling.

Mr. C. RAVENS, Odense, Denmark, showed *Cattleya Luddemanniana* Ravens' variety, white with purple markings on the lip, and very near to *C. L. Stanleyi*.

GURNEY WILSON, Esq., Glenthorne, Haywards Heath, showed *Oncidium sphacelatum*.

AWARDS.

FIRST-CLASS CERTIFICATE.

Lælio-Cattleya Dr. R. Schiffman Westonbirt variety (C. Mendelii × L.-C. callistoglossa), from Col. G. L. HOLFORD, C.I.E., C.V.O., Westonbirt (gr. Mr. H. G. Alexander).—A noble hybrid of great size, perfect form and charming colour. The broad, flat sepals and large and beautifully-arranged petals are silver-white tinged and slightly veined with rosy-mauve. The handsome labellum, which opens very widely, as in the best forms of *L.-C. callistoglossa*, is purplish-crimson in front, the disc chrome-yellow, and the base reddish-purple with pale yellow lines. Having *Cattleya Mendelii*, *C. Warszewiczii* and *Lælia purpurata* in its composition, this hybrid is a specially good one. It shows the influence of *C. Warszewiczii* strongly, and hence fine features are in the Westonbirt variety which may not appear in others of the same parentage.

BOTANICAL CERTIFICATE.

Brassavola Martiana, from Sir TREVOR LAWRENCE, Bart., K.C.V.O. (gr. Mr. W. H. White).—A very distinct species of the *B. Perrinii* section, bearing short, upright spikes of several small, white flowers with ovate fringed labellums. The flowers are very fragrant.

Epidendrum densiflorum, from Sir TREVOR LAWRENCE, Bart.—A tall-growing species, in habit resembling *E. paniculatum*, the greenish flowers being closely arranged on the inflorescence.

CULTURAL COMMENDATION

to Mr. H. J. Chapman (gr. to NORMAN C. COOKSON, Esq., Oakwood, Wylam) for a very fine example of *Odontoglossum Andersonianum* *Crawshayanum*.

Fruit and Vegetable Committee.

Present: G. Bunyard, Esq. (in the Chair), and Messrs. J. Cheal, C. G. A. Nix, A. H. Pearson (Vice-chairman), A. R. Allan, W. Barnes, J. Basham, W. Bates, E. Beckett, T. Coomber, A. Dean, C. Foster, J. Harrison, G. Hobday, J. Lyne, H. Markham, F. Perkins, H. S. Rivers, O. Thomas, Jas. Vert, G. Wythes, P. C. M. Veitch, G. Reynolds, H. Hooper, J. Davis, P. D. Tuckett, and W. Poupart.

MESSRS. JAMES VEITCH & SONS, LTD., King's Road, Chelsea, showed several varieties of Apples that had been well kept. The varieties included Bow Hill Pippin, Betty Geeson, Northern Spy, Newton Wonder, Bramley's Seedling, Lord Hindlip, Baxter's Pearmain, Alfriston, Norfolk Beauty, and Barnack Beauty. There were also good fruits of *Bellisima d'Hiver* and *Directeur* Alphan Pears. Messrs. VEITCH also showed varieties of forced vegetables, including Lettuce, Beans, Tomatos, Peas, Turnips, Cabbages, and Radishes.

Messrs. SUTTON & SONS, Reading, showed varieties of forced vegetables, including good examples of Sutton's Market Cucumber, Golden Ball Lettuce, Winter Beauty Tomato, Long Parisian Turnip, Perfection Asparagus, Red

Forcing Radish, Earliest of All Lettuce, Champion Scarlet Horn and April Cabbages. (Silver Knightian Medal.)

Mrs. BISCHOPFSHIEM, Warren House, Stanmore, exhibited pot Strawberries of the Louis Gauthier variety. Each plant had half-a-dozen well-developed fruits.

COMPETITIVE CLASSES.

Classes were provided for Strawberries, Melons and Figs, but only three exhibits of Strawberries were staged, one by Messrs. J. and F. CHATFIELD, Southwick, Sussex, in a class restricted to trade growers for three varieties (Silver Knightian Medal), and two in a class for a box of one variety, the exhibitors being LADY FOLEY, Ruxley Lodge, Claygate, Surrey (Mr. H. C. Gardner), and LORD HOWARD DE WALDEN, Audley End (gr. Mr. J. Vert), who were awarded the 1st and 2nd prizes respectively.

MENDEL'S LAW AND ITS APPLICATION TO HORTICULTURE.

THE following is an abstract of the lecture delivered by Mr. C. C. Hurst at a meeting of the Fellows of the Royal Horticultural Society held in the afternoon of Tuesday last:—

Mendel's Law was founded on simple characters in garden Peas, which behave in breeding as dominants and recessives. In his classical experiments with Peas, Mendel found that round seeds were dominant to wrinkled seeds, which were recessive; similarly, yellow seeds were dominant and green seeds recessive.

Recent experiments have shown that many simple characters in garden plants follow Mendel's Law. For instance, starchy and sugary Maize, palm and fern-leaved Primulas, small and large-eyed Primulas, red and yellow Tomatos, purple and red Sweet Peas, tall and dwarf Peas, etc., all behave as pairs of Mendelian characters, the first of the pair being dominant and the other recessive.

When the Mendelian characters happen to correspond with the horticultural characters, it is a simple matter for the breeder to breed quickly what he wants. For he knows that the recessive character will breed true at once, and that by breeding from several individuals bearing the dominant character one will be found which breeds true. This enables the breeder to dispense with the old and laborious method of so-called "fixing by continuous selection," which, though usually effective in the end, is now recognised as a waste of time. Mendel's Law provides a much quicker and more effective method of achieving the same result.

BREEDING NOVELTIES BY RE-COMBINATION.

The combination of two pairs of simple characters by crossing and the results which follow the self-fertilisation of such crosses are of great utility to the breeder, for in the process of re-combination following Mendelian segregation new forms arise which will breed true in accordance with Mendel's law. Thus Mendel himself crossed a round yellow with a wrinkled green Pea, and obtained in the second generation round green and wrinkled yellow Peas, some of which bred true at once. By following Mendel's Law, Mr. Cuthbertson obtained in the second generation the new and valuable variety of Sweet Pea "Waved King Edward" by simply crossing the plain red "King Edward" with the waved pink "Countess Spencer." In a similar manner Mr. Cuthbertson also raised the new and valuable variety "Primrose Spencer." In my own experiments a few years ago I raised a true stock of the novelty "Black Knight" Cupid in the second generation by crossing Tall "Black Knight" with Pink Cupid. In this case, however, I unexpectedly found three Mendelian characters concerned in the cross, and, consequently, only three plants out of 64 came "Black Knight" Cupid, all of which bred true at once, the characters concerned being all recessive.

COMPOUND CHARACTERS.

In many cases, however, the Mendelian characters do not happen to correspond with the horticultural characters, and interesting complications then arise. For instance, in my experiments with Tomatos, red and yellow fruits behaved as a Mendelian pair of characters, red being dominant. But when the fiery-red "Fireball" was

crossed with "Golden Queen," four distinct forms appeared in Mendelian proportions in the second generation. There were two kinds of reds and two kinds of yellows. This I found to be due to the fact that the fiery-red colour of "Fireball" was really a compound of two distinct Mendelian characters, red flesh and yellow skin, while "Golden Queen" had yellow flesh and white skin. Consequently, in the second generation two new forms arose by re-combination, a carmine or "pink" Tomato, with red flesh and white skin, and a deep yellow Tomato, with yellow flesh and yellow skin. Both these novelties bred true. Similarly, Professor Bateson, by crossing a red Sweet Pea with a cream, obtained whites in the second generation, the white colour being due to a re-combination of the white plastids of the red Sweet Pea with the white sap of the cream.

An even more interesting result of the same nature has also recently been obtained by Professor Bateson, at Cambridge, by crossing the Bush and Cupid forms of Sweet Peas. In the first generation all the cross-breeds were, curiously enough, tall in habit, like the ordinary Sweet Pea. In the second generation, however, there arose in Mendelian proportions, tall, bush, prostrate Cupid, and a new variety called "Erect Cupid," with a peculiar habit of growth something like Box edging. This result has been shown to be due to the compound nature of these horticultural characters, the crossing of which leads to various re-combinations, in accordance with Mendel's Law.

In all, 16 pairs of Mendelian characters have so far been found in Sweet Peas.

Professor Bateson has also found that the red colour of Sweet Peas is due to the presence of two Mendelian characters, in the absence of one or both of which the flower is white or cream. Purple colour in Sweet Peas is due to the presence of a third Mendelian character, which only becomes patent in the presence of the other two, and so on.

From this follows the interesting and important discovery that albinos (white or cream) in Sweet Peas may carry certain colour factors, which may become patent when the albino is crossed with another albino or with a coloured form.

It seems likely that other species of plants behave in a similar way. For instance, *Primula sinensis* "Crimson King" crossed with *P. s. stellata* "Primrose Queen" (an albino form with large, yellow eye) gave in the second generation crimson, pure white, magenta, rose, and tinged white forms: each colour appeared with small eyes and large eyes. All these appeared in *sinensis* and *stellata* forms, there being at least 18 distinct forms, showing the great variety that can be obtained from a single cross. I obtained similar colours by crossing crimson and white *sinensis* forms. In another of my *Primula* crosses, palm-leaved *stellata* with red stems and pink flowers crossed with fern-leaved *sinensis* with green stems and white flowers, I obtained in the second generation 36 distinct forms, of which 34 were new (i.e., distinct from the parents), 14 of which could be bred true, while 20 of the forms were unfixable, being Mendelian hybrids.

ALBINO ORCHIDS.

Recent experiments go to show that, like Sweet Peas and other plants, albino Orchids may carry different colour factors. To the Orchid breeder this is a most important matter, as he naturally wishes to raise new and improved forms of valuable albinos by crossing. Results show that such albinos, for instance, as *Cattleya Mossiae* Wageneri, *C. intermedia* alba, and *C. Gaskelliana* alba are carrying one colour factor alone, and, consequently, breed true albinos inter se. On the other hand, such albinos as *C. Harrisoniana* alba, *C. Schröderæ* alba, and *C. Warneri* alba are carrying a different colour factor, because, whenever the species of these two distinct sets are crossed coloured reversions arise, presumably through the coming together of the two distinct colour factors carried by the albinos. In a similar manner *Paphiopedilum callosum* Sanderæ, *P. Lawrenceana* Hyeunum (and probably *P. insignis* Sanderianum) appear to be carrying one colour factor, while *P. bellatulum* album is carrying a different colour factor, the former species breeding true albinos inter se, whilst giving coloured reversions when crossed with the latter species.

Dendrobium nobile virginale breeds true when selfed, but with D. Wardianum album gives coloured reversions.

Odontoglossum crispum Xanthotes, crossed with O. nobile album, so far has given all albinos. An important point for the Orchid breeder to note is that individual albinos of the same species may vary in their colour factors; thus it might happen that two individuals of the same albino (of different seed origin) might give opposite results in breeding. It is therefore of prime importance for Orchid breeders to adopt some simple method of identification for individual albinos. Once the colour-bearing properties of the albino individual are ascertained by experiment, all future breeding results from that plant (and its many off-shoots) can be foreseen by the aid of Mendel's Law.

"BLOTCHED" CRISPUMS.

Another important matter of great concern to Orchid breeders is the possibility of breeding the valuable "blotched" crispums true from seed, and it seems highly probable that in this respect Mendel's Law can be of assistance.

So far as present results go, it would appear that the "blotched" character in Odontoglossum crispum is a Mendelian dominant to the "plain" character, which is recessive. For instance, "blotched" crispum crossed with "blotched" nobile (Pescatorei) produces from the same seed-pod both "blotched" and "plain" forms of O. X armainvillieriense ardentissimum, and "blotched" forms of this hybrid crossed with the "blotched" X Rolfeae also produce "blotched" and "plain" forms of O. X perculatum from the same seed-pod. On the other hand, "plain" crispums and nobiles bred inter se seem so far to give all "plains." Further, the "blotched" species with yellow grounds, O. triumphans, O. luteopurpureum, and Haryanum, all seem to be dominant to the "plain" crispums and nobiles in primary hybrids.

These facts all point to the dominance of "blotched" character to the "plain."

If this proves to be the correct interpretation of the facts, then "blotched" forms are of two kinds, viz., pure "blotched," which will produce all "blotched" forms, however crossed, and impure "blotched," which will produce both "blotched" and "plain" forms.

The much-to-be-desired pure "blotched" forms may therefore be easily isolated from the impure "blotched" forms by a simple breeding test with a recessive "plain" form. Once proved to be a pure dominant, the pure "blotched" form (and its many off-shoots) may always be relied upon to breed "blotched" forms only. Such a pure "blotched" form—other points being equally good—would, when once tested, become invaluable as a stud plant. Once more Orchid breeders will recognise the absolute necessity of the precise identification of individual plants.

The above are only a few illustrations of the application of Mendel's Law to horticulture, but they may perhaps serve a useful purpose in suggesting to plant-breeders how they may take advantage of recent Mendelian research and apply it to their own advantage, which means the general advantage of horticulture.

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. W. LENNOX, for the past 2 1/2 years Land Steward and Gardener to T. N. EDGEWORTH, Esq., Edgeworthstown, Co. Longford, as Gardener to Lewis Goodbody, Esq., Drayton Villa Gardens, Clara, King's County.

Mr. ARNOLD RIX, Fruit Foreman in the Royal Gardens, Sandringham, as Gardener and Forester to T. A. COOK, Esq., Sennowe Hall, Guist, Norfolk. (Thanks for 5s. sent for R.G.O. Fund.)

Mr. H. HALLEY, late Fruit Foreman at Hillingdon Court, Uxbridge, as Gardener to T. WILSON, Esq., Riseholme Hall, Lincoln.

Mr. JOSEPH SMITH, for the last 2 years Gardener to GEORGE S. F. F. WARD, Esq., Nether Warden, Hexham, Northumberland, as Gardener to Mrs. J. C. BROADBENT, Lascelles Hall, Kirkheaton, Huddersfield, Yorkshire.

Mr. E. J. AINSLEY, as Gardener to H. ARKWRIGHT, Esq., Turville Cottage, Henley-on-Thames.

MARKETS.

COVENT GARDEN, May 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.—E.O.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Anemone fulgens, p. dz. bunches	1 6-2 0	Myosotis, per doz. bunches	3 0-4 0
— double pink, p. dozen bunches	1 6-2 6	Narcissus, Gloriosa, per doz. bunches	1 0-1 6
Azalea, per dozen bunches	4 0-5 0	— ornatus	1 0-1 6
Carnations, p. doz. blooms, best American (var.)	2 6-3 6	Odontoglossum crispum, per dozen blooms	2 0-2 6
— second size	1 0-2 0	Pelargonium, s.d. s.d.	
— smaller, per doz. bunches	9 0-12 0	— show, per doz. bunches	5 0-6 0
Catleyas, per doz. blooms	12 0-15 0	— Zouai, double scarlet	4 0-6 0
Cypripediums, per dozen blooms	1 6-2 6	Ranunculus, per doz. bunches	3 0-5 0
Daffodils, per doz. bunches	1 0-1 6	Richardia africana, per dozen	2 0-3 0
Dendrobium nobile, per dozen	2 6-3 0	Roses, 12 blooms, Niphotos	1 6-2 6
Eucharis grandiflora, per dz. blooms	2 6-3 6	— Bridesmaid	2 6-4 0
Freesia (white), p. doz. bunches	2 0-2 6	— C. Testout	2 0-3 0
Gardenii, s. per doz. blooms	1 6-2 6	— Kaiserin A. Victoria	2 0-4 0
Gladolus, per doz. bunches	9 0-12 0	— C. Mermet	2 0-4 0
Gypsophila elegans, per doz. bunches	3 0-4 0	— Liberty	3 0-5 0
Hyacinths, Dutch, p. dz. bunches	2 0 3 0	— Mme. Chatenay	3 0-5 0
Iris (Spanish), per dozen bunches	4 0-6 0	— Mrs. J. Laing	2 0-4 0
Lilac (English), white, p. bunch	1 6-2 6	— Richmond	3 0-6 0
— manve...	2 0-3 0	— The Bride	3 0-4 0
Lilium auratum, per bunch	2 0-3 0	— Ulrich Brunner	2 0-4 0
— longitorum	2 0-3 0	Spiraea, per dozen bunches	5 0-8 0
— laucofolium rubrum	1 6-2 6	Stocks, double white, per doz. bunches	2 0-2 6
— album	2 0-2 6	Sweet Peas, per doz. bunches	2 0-6 0
Lily of the Valley, p. dz. bunches	6 0-9 0	Tuberose, per doz. blooms	0 3-0 4
— extra quality	12 0 15 0	— on stems, per bunch	0 9-1 3
Marguerites, p. dz. bunches white and yellow	2 0-3 0	Tulips, per dozen bunches, single	6 0-10 0
Mignonette, per dozen bunches	4 0-6 0	— best double varieties	12 0-24 0
		— Darwin varieties	6 0-12 0
		Violets, per dozen bunches	1 6-3 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Adiantum cuneatum, dz. bchs.	6 0-9 0	Galax leaves, per dozen bunches	2 0-2 6
Agrostis, per doz. bunches	1 6-2 0	Hardy foliage (various), per dozen bunches	3 0-9 0
Asparagus plumosus, long trails, per doz.	8 0-12 0	Honesty (Lunaria) per bunch	1 0-1 6
— medium, bch.	1 0-2 0	Ivy-leaves, bronze	2 0-2 6
— Sprenger	0 9-1 6	— long trails per bundle	0 9-1 6
Berberis, per doz. bunches	2 6-3 0	— short green, per dz. bunches	1 6-2 6
Cotton leaves, per bunch	1 0-1 3	Moss, per gross	5 0-6 0
Cycas leaves, each	1 6-2 0	Myrtle, dz. bchs., (English)	4 0-6 0
Daffodil foliage, p. doz. bunches	2 0-2 6	— French	1 0-1 6
Ferns, per dozen bchs. (English)	2 0-3 0	Smilax, per dozen trails	4 0-6 0
— (French)	0 6-0 9		

Plants in Pots, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Acacias, per dozen	12 0-18 0	Clematis, per doz. in flower	12 0-18 0
Ampelopsis Veitchii, per dozen	6 0-8 0	Coccos Weddelliana, per dozen	18 0-30 0
Aralia Sieboldii, p. dozen	4 0-6 0	Crotons, per dozen	18 0-30 0
— larger specimens	9 0-12 0	Cyclamen, pr. doz.	9 0-15 0
— Moseri	4 0-6 0	Cyperus alternifolius, dozen	4 0-5 0
Araucaria excelsa, per dozen	12 0-30 0	— laxus, per doz.	4 0-5 0
— large plants, each	3 6-5 0	Dracenas, per doz.	9 0-24 0
Aspidistras, p. dz., green	15 0-24 0	Erica persulcata, alba, per doz.	12 0-24 0
— variegated	30 0-42 0	— candidissima, per doz.	18 0 24 0
Asparagus plumosus nanus, per dozen	12 0-18 0	Euonymus, per dz., in pots	4 0-9 0
— Sprenger	9 0-12 0	— from the ground	3 0-6 0
— tenuis sinibus	9 0-12 0	Ferns, in thimbles, per 100	8 0-12 0
Azaleas (Indur.), p. dozen	24 0-36 0	— in small and large 60's	12 0-20 0
Boronia megastigma, per doz.	24 0-30 0	— in 48's, per dz.	4 0-6 0
— heterophylla	12 0-18 0	— choicer sorts	8 0-12 0
Calceolarias, herbaceous, per dozen	6 0-8 0	— in 32's, per dz.	10 0-18 0
Cinerarias, per dozen	6 0-9 0	Ficus elastica, p. dz.	8 0-10 0
		— repens, per dz.	6 0-8 0
		Fuchsias, per doz.	8 0-10 0
		Genista fragrans, per doz.	6 0-8 0
		Grevilleas, per dz.	4 0-6 0

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

	s.d. s.d.		s.d. s.d.
Hardy flower roots, per dozen	1 0-2 0	Pelargonium, s.d. s.d.	
Heliotropiums, per dozen	6 0-8 0	— show varieties, per dozen	12 0-18 0
Hydrangea Thos. Hogg, per dz.	10 0-15 0	— Ivy leaved	6 0-8 0
— hortensis	12 0-24 0	— Oak leaved	4 0-6 0
Isolepis, per dozen	4 0-6 0	Zonals	5 0-7 0
Kentia Belmoreana, per dozen	15 0-24 0	Primulas, per doz.	4 0-6 0
— Fosteriana, dz.	18 0-30 0	Rhodanthe, per dozen	5 0-6 0
Latama borbónica, per dozen	12 0-18 0	Rhododendrons, each	2 0-5 0
Lilium longiflorum, p. dz.	12 0-18 0	Roses, H.P.'s, per dozen	12 0-18 0
— lancifolium, p. dozen	12 0-24 0	— Polyantha varieties	12 0-18 0
Lily of the Valley, per dozen	18 0-30 0	— Rambles, each	5 0-10 6
Marguerites, white, per dozen	6 0-8 0	Selaginella, per dz.	4 0-6 0
Mignonette, per dozen	5 0-7 0	Spiraea japonica, p. doz.	8 0-12 0
Pansies, per box of 24 plants, each	2 0-3 0	Stocks (intermediate), white, crimson, and pink, per doz.	6 0-7 0
		Verbenas, per dozen	8 0-12 0

Fruit: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Apples (Tasmanian), per case	9 6-11 0	Cnstar Apples	3 0-12 0
— Ribston Pippin	9 6-11 0	Grape Fruit, case	9 0-11 0
— Scarlet Pippin	9 0-10 6	Grapes (new)	2 6-3 0
— Cox's Orange Pippin	13 0-14 0	Guernsey Figs, dz.	4 0-12 0
— Alexander	8 6-9 0	Lemons, box: — Messina, 300	9 0-13 0
— Prince Alfred.	9 6-10 6	— Do, 360	8 6-13 0
— (Australian), per case:		— (Naples), per case	18 0-25 0
— Dunn's Seedling	11 0-13 0	Limes, per case	5 0 —
— Cleopatra	10 6-12 6	Lychées, per box	1 0-1 3
— Jonathan	10 0-13 0	Melons, each	2 0-3 0
— Ribston Pippin	10 0-12 0	Nuts, Almonds, per bag	28 0-40 0
— California		— Brazils, new, per cwt.	35 0-40 0
— Newtown Pippin, per case,		— Barcelona, bag	10 0-32 0
4 tiers	8 0-9 6	— Cocoa nuts, 100	11 0-14 0
— 4 1/2 tiers	8 0-9 6	Oranges (Denia) seedless, per case	11 0-25 0
— (American), per barrel:		— (Valencia) per case (420)	10 0-20 0
— Nonpareils	18 0-20 0	— per case (714)	10 0-18 0
— Oregon Newtowns, per case	9 0-11 6	— Jaffas	10 0-12 0
Bananas, bunch:		— Palermo Blood	7 0-10 0
— Doubles	9 0-10 0	— Murcia Blood, per case (200)	6 6-9 0
— No. 1	6 6-8 0	Pears (Australian), Winter Nelis, per tray	5 0-5 6
— Extra	8 0-9 0	Pineapples, each	1 9-3 6
— Giant	10 0-12 0	— (Natal), per dz.	4 0-6 0
— (Claret)	5 0-7 6	Strawberries, lb.	2 0-2 6
— Jamaica	5 0-5 6	— second quality	1 0-1 6
— Loose, per dz.	0 6-1 0		
Cranberries, per case	13 0-14 6		

Vegetables: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Artichokes (Globe), per dozen	2 6-3 0	Mushrooms, bnt. tons, per lb.	0 8 —
— white, p. bushel	2 0-2 6	Mustard and Cress, per dozen pun.	1 0 —
— per cwt.	3 6 —	Onions, per bag	9 0-10 0
Asparagus, per bundle:		— (Valencia), case	9 0-11 0
— Dijon	1 0-1 8	— Dutch, pr. bag	8 0-9 6
— Giant	5 0-7 6	— pickling, per bushel	6 0 —
— Spanish	1 4-1 6	Parsley, 12 bunches	6 0 —
— Sprue	0 6-0 8	— 1/2 sieve	4 6-5 0
— Paris Green	1 6-2 0	Peas (French), pkt.	0 4-0 5
Beans, per lb.:		— (French), p. pad	3 6-5 6
— (English)	0 10-1 0	— (English), dried, per dz. packets	2 6 —
— (French)	0 8-0 10	Potatoes (Guernsey), per lb.	0 2 1/2 —
— (Guernsey)	0 8 0 10	— (Algerian), cwt.	10 0-11 0
Beetroot, per bushel	2 6-3 0	— (French), p. lb.	10 0-2 1/2
Cabbages, per mat	3 6-4 0	— Tenerife, cwt.	10 0-11 6
— Greens, per bushel	2 6 —	Radishes (French), per doz. bunches	1 3-1 6
Cardoon (French), per dozen	8 0-10 0	Rhubarb (English), forced, per dz. bundles	0 6-0 9
Carrots (English), dozen bunches	2 6 —	— Natural, p. tally	5 0-5 6
— washed, bag	5 6-6 0	Salsafy, per dozen bundles	4 0-4 6
— unwashed	4 0-5 0	Seakale, per dozen punnets	12 0-18 0
— (French), p. pad	2 6-3 0	Spinach, per crate	4 0-5 0
Celeriac, per doz.	1 6-2 6	Stachys tuberosa, per lb.	0 5 —
Chicory, per lb.	0 3 1/2-0 4	Turnips, per dozen bunches	2 6-3 0
Cucumbers, per dz.	2 0-2 6	— washed, p. bag	4 0-4 6
Endive, per dozen	1 0-1 6	Turnip Tops, bag	2 0-2 6
Horseradish, foreign, per doz. bundles	17 0-21 0	Tomatos (Teneriffe), per bundle of 4 boxes	10 0-18 0
Leeks, 12 bundles	2 0-2 6	— p. 12 lb. basket	4 6-5 0
Lettuce (French), per crate	2 6-3 6	Watercress, p. doz.	0 4-0 6
— Cos, per dozen	3 6-4 0		
Mint, per dozen bunches	6 0 —		
Mushrooms, per lb.	0 8 —		
— broilers	0 6 —		

REMARKS.—Australian and Tasmanian Apples have advanced in value during the past week. Oranges are dearer and fewer are arriving. French Asparagus is cheaper and increased quantities arrive daily. There has been a good demand for Lemons and prices for them have risen considerably. The Strawberry trade is about the same as last week; there are increased quantities, but a small demand. Vegetables generally are cheaper. Rhubarb is very plentiful. Mushrooms will be much cheaper if fine weather continues. Trade generally is quiet. E. H. R., Covent Garden, Wednesday, May 5, 1909.

Potatos.			
Kents—	s.d. s.d.	Lincolns—	s.d. s.d.
Scottish Triumphs ...	3 6-4 0	King Edward ...	3 3-3 6
Up-to-Date ...	3 6-4 0	Blacklands... ..	2 9-3 0
Lincolns—		Dunbars—	
Royal Kidney ...	3 0-3 3	Langworthy, red soil	5 3-5 6
British Queen ...	3 0-3 6	Up-to-Date, red soil	4 0-4 3
Up-to-Date ...	3 6-4 0	" " grey soil	3 0-3 6
Maincrop ...	3 6-4 0	Yorks—	
Evergood ...	3 0-3 6	Up-to-Date ...	3 6-4 0

REMARKS.—Trade is still very quiet. Supplies are plentiful and prices have a downward tendency.—Edward J. Newborn, Covent Garden and St. Pancras, May 5, 1909.

COVENT GARDEN FLOWER MARKET.

Plants for summer bedding are a leading feature in the market, and these sell readily, for although there is still danger from frost, people in the London suburbs plant tender things as soon as the days are sunny. Pelargoniums are plentiful in all sizes, from those in store boxes up to well-flowered plants in 5-inch pots. Good plants in 60 size pots are worth from 2s. to 2s. 6d. per dozen, extra good plants of Paul Crampel in 60's have sold for 3s. per dozen. Yellow Calceolarias are remarkably good; those in 60 size pots realise from 1s. 3d. to 1s. 6d. per dozen and in 48's from 5s. to 6s. per dozen. Short sturdy Dahlias make from 2s. to 2s. 6d. per dozen. Fuchsias are procurable in 60's also in store boxes, and are quoted at low prices. Single Petunias in flower in 60 size pots sell readily at from 1s. 6d. to 2s. 6d. per dozen. Lobelia is at present only seen in store boxes, but soon there will be good plants in 3-inch and 5-inch pots. Carnations for bedding are much better than usual. Pansies are in demand, and those of the best quality are soon sold. Violas sell fairly well. Marguerites are more in demand than formerly; their prices vary according to the quality, and range from 1s. 6d. to 3s. Sweet Peas, Nasturtiums, and various other annuals in pots are procurable.

POT PLANTS.

Rambler Roses are remarkably fine; some sell for 25s. to 30s. each. Lady Gay, Hiawatha, Cant's Blush and Crimson Rambler are the principal varieties. The dwarf polyantha Roses are also good. Hybrid perennials are not well grown. Supplies of Azaleas hold out well, but they will not be procurable much longer. Pelargoniums are well-flowered. Ivy-leaved varieties in 5-inch pots are very suitable for floral decorations. Fuchsias in various sizes are well flowered. Cyclamen are still procurable but are not selling readily. Genistas vary in quality; some plants are rather far advanced in flowering. Hydrangeas are plentiful. Cinerarias are still of good quality. Mignonette is at its best condition, and rather over plentiful. I noted some good pots of Gypsophila elegans. Stocks, Spiræas, Lilium longiflorum, Ericas (including *E. candidissima*, *E. Cavendishii* and *E. propendens*) are all plentiful. Ferns, Palms and other foliage plants are well supplied.

CUT FLOWERS.

Roses have been very abundant for some time past, but there is a prospect of the supplies falling off. During the past week good forced Roses have sold at prices which could not recompense the growers. The value of Carnations has kept up better, but supplies of these flowers have been excessive. Callas have fallen to the lowest prices. Good Lilliums have also depreciated in value. The glut of Daffodils is not quite over. Gardenias are rather scarce. Tulips are chiefly the Darwin, Cottage-garden and Parrot varieties. Hyacinths have been received from Holland in large quantities, but supplies of imported flowers generally are falling off. Sweet Peas are over plentiful; their prices are considerably lower than when they were first grown for market. *A. H., Covent Garden, Wednesday, May 5, 1909.*

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending May 5.

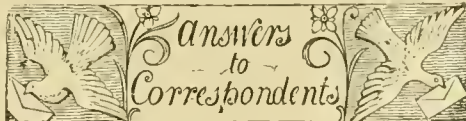
Cold nights and sunny days.—During the past week there have been only two unseasonably warm days, but not a single warm night. On the two coldest nights the exposed thermometer registered respectively 6° and 7° of frost. The ground is at the present time at a seasonable temperature, both at 1 and 2 feet deep. Rain, hail or sleet fell on four days, but to the total depth of only half-an-inch. On one day there was a slight fall of snow. Small quantities of rain-water have come through both percolation gauges on most days of the week. The sun shone on an average for 10 hours a day, or for nearly twice the average duration for this period of the year. On one day the sun was shining brightly for altogether 12½ hours. The wind was high on one day, but during the rest of the week light airs alone prevailed. The mean amount of moisture in the air at 3 o'clock in the afternoon fell short of a seasonable quantity for that hour by 9 per cent.

APRIL.

Exceptionally warm and sunny, with an average rainfall.—There have been here only four warmer Aprils during the last 23 years. The days were, as a rule, decidedly warm, whereas the night temperatures were, as a rule, only about seasonable. The first few days were very cold, both during the daytime and at night. On the warmest day the temperature in the thermometer screen rose to 72°, which is an exceptionally high reading for the month. On the coldest night the exposed thermometer showed 13° of frost, which is slightly below the average extreme minimum for April. On the 9th, the difference between the lowest and highest readings in the thermometer screen amounted to 41°, which is the greatest range in temperature in any day that I have yet recorded here in April. Rain, hail, or sleet fell on 13 days, to the aggregate depth of 2 inches, which is slightly in excess of the average rainfall for the month. No rain at all fell on the first 11 days. On one day there was, for a few minutes, a light fall of fine snow. The sun shone on an average for 7½ hours a day, or for 2½ hours a day longer than the average duration for April—making this the sunniest April, with one exception, of which I have here any record. The wind was, as a rule, of about average strength, and in no hour did the mean velocity exceed 17 miles—direction W.S.W. The average amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by 6 per cent. *E. M., Berkhamsted, May 5, 1909.*

Obituary.

J. G. HILL.—We regret to record the death of Mr. J. G. Hill, for many years in the employ of Messrs. W. Cutbush & Son as traveller, and latterly employed by Mr. L. R. Russell, Richmond. Mr. Hill, who was 59 years of age, passed away at Brecon, on April 21. He leaves a widow and two sons.



* * * The Editor will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for reproduction as Supplementary Illustrations in this Journal.

ASPARAGUS: G. B. The annual dressings applied to the beds are not the cause of the bitterness. Good farmyard manure and salt are both valuable stimulants for this crop. Bitterness is generally due to some check during the growing season from such causes as frost, cold nights, or insufficiency of moisture. The condition is generally more noticeable early in the season than later. Good drenchings of farmyard liquid manure, applied once a week during the present month, will do much to improve the quality of the Asparagus.

AURICULA: W. G. S. The variety you send is not far removed from *Primula auricula*, the parent of the florist's Auricula. It has no especial merit, and would not be classed by the Auricula fancier in any section.

BEAUCARNEA RECURVATA: C. G. Blake. We have not heard of this plant flowering in the British Isles. A plant in flower was exhibited by M. Beaucarnea, of Eename, Belgium, at a horticultural exhibition held at Audenarde, near Ghent, in the autumn of 1861. The plant was shown as *Pincenectitia tuberculata*. The origin of this name being uncertain, it was renamed *Beaucarnea*, in compliment to the grower. It was introduced from Mexico about 60 years ago. Like the Agave, the plant lives to a considerable age before flowering. We should be glad to see a photograph.

CARNATION: Old Plants. It is impossible to name your variety merely from a shoot. If you will send a well-developed flower, we will endeavour to identify it. The variety known as Churchwarden belongs to the Souvenir de la Malmaison type, and has bright crimson flowers. If you wish to induce plants of Souvenir de la Malmaison to flower earlier in the season than is natural, the first thing to do is to procure very early layers. When the layers have been rooted, the young plants should be potted on as they require more rooting space, and be thoroughly established in their final pots before the advent of winter. If such plants are cultivated during the winter in a little warmth, they may flower very early. But it must be remembered that this type of Carnation is very uncertain in its results if cultivated for flowering in winter, and there appears less need for forcing varieties of this type since the recent development that has taken place in the perpetual-flowering Carnation. Varieties of this latter type may be so cultivated that they will flower at any season of the year. Their flowers are of varied and attractive colours, and, being borne upon erect stems of considerable length they are adaptable for almost all purposes for which cut flowers are used. The directions for cutting back plants of the "Malmaison" type are as follow: Cut back some of the old rough plants to the hard wood. Place them in a frame close to the glass and withhold water for a short time. Close the frame early in the afternoon, and lightly spray the stems occasionally until they show the formation of young shoots, when syringing should be discontinued. As soon as these young shoots are about 1½ inch in length replot the plants carefully, and cultivate them in the same manner as is adopted for the perpetual-flowering Carnations.

CATTLEYA WARSCWICZII: A. Y. The growth sent is affected with the "spot disease" of Orchids, but the cause of this is not clearly known. Cattleya Warszewiczii is very liable to "spot," and once a plant is attacked, it is probably better to destroy it.

CELERY ROT: W. T. Dress the ground with an acid manure, superphosphate being the best for the purpose. Avoid using alkaline manures, especially lime, as these favour the development of bacteria in the soil.

FRUIT TREES: J. W. S. After a tree has been worked and before it has been trained, i.e., at its first year from the graft, it is termed a "maiden." An Apple tree on the Paradise stock means that it has been grafted on this stock, which has a shallow, fibrous root-system. A tree worked on the Paradise stock may be expected to fruit earlier, and makes a less robust growth than one grafted on the free stock. This latter stock is raised from seeds (pips), and has deeply plunging roots. It is suitable for raising Apple trees of a large size, such as standards. Trees trained on the bush system would be suitable for your purpose; half-standards are also desirable for plantations, especially in the case of Apples and Plums. Pear trees do exceedingly well trained as pyramids, and these could be planted by the sides of the paths.

NAMES OF FRUITS: W. M. B. French Crab.—*D. Morris.* Pile's Russet.

NAMES OF PLANTS: Miss P. Narcissus Johnstonii var. Queen of Spain.—*J. F. J.* *Prunus sinensis flore pleno.*—*J. C. W.* *Pulmonaria officinalis.* *T. S. P.* *Berberis buxifolia* (syn. *dulcis*).—*R. P.* The *Odontoglossum* is not a true *O. crispum*. It is a form of *O. Adrianæ*, a natural hybrid between *O. crispum* and *O. Hunnewellianum*, with a nearer approach to the *O. crispum* than is ordinarily the case. *S. J. M. 1.* The double-flowered form of *Kerria japonica*; 2, *Escallonia* species, send when in flower; 3, *Fuchsia macrostema*.—*Alba.* 1, *Pelargonium Stapletonii*; 2, *P. crispum*; 3, *P. betulifolium*; 4, *P. cordatum*; 5, *Tritonia crocata*; 6, *Saxifraga "Guildford Seedling."*—*Surrey.* The plant is *Cuscuta epithymum*.—*C. F.* 1, *Thuya orientalis*; 2, *Pinus Cembra*; 3, *Picea orientalis*; 4, *Abies Lowiana*; 5, *Cupressus nootkatensis*; 6, *C. macrocarpa*.—*L. Y.* 1, *Polygala chamaebuxus*; 2, *Ionopidium acaule*; 3, *Aubrietia deltoidea* var. *variegata*; 4, *Prunus nana*; 5, *Lathyrus vernus*; 6, *Epimedium rubrum*.—*W. B.* 1, *Oncidium sphacelatum*; 2, *Oncidium flexuosum*; 3, *Oncidium tetrapetalum*; 4, *Pleurothallis macroblepharis*.—*D. Y.* *Arnebia echioides*.—*G. H. B.* 1, *Epimedium diphyllum*; 2, *Epimedium alpinum rubrum*; 3, *Orobanchis sativa*; 4, *Ornithogalum nutans*; 5, *Forsythia viridissima*; 6, *Berberis (Mahonia) Aquifolium* variety.—*W. T.* *Dendrobium chrysotoxum*.

PEACH LEAVES DROPPING: G. S. The plants are affected with the shot-hole fungus, *Cercospora circumscissa*. Spray the foliage at intervals with the ammoniacal solution of copper carbonate, made with 1 oz. of copper carbonate, 5 oz. ammonium carbonate, and 16 gallons of water. Dissolve the chemicals first in a small quantity of hot water.

TULIPS DISEASED: D. H. The plants are affected with *Botrytis cinerea*. Destroy the diseased lulls by burning.

WARTS ON VINE LEAVES: H. J. The warts are not due to disease, but to unsuitable conditions of culture. They form as the result of intumescence or outgrowth of the tissue, and this is caused generally by a too warm and moist atmosphere in theinery. Afford more ventilation and keep the house somewhat drier than formerly.

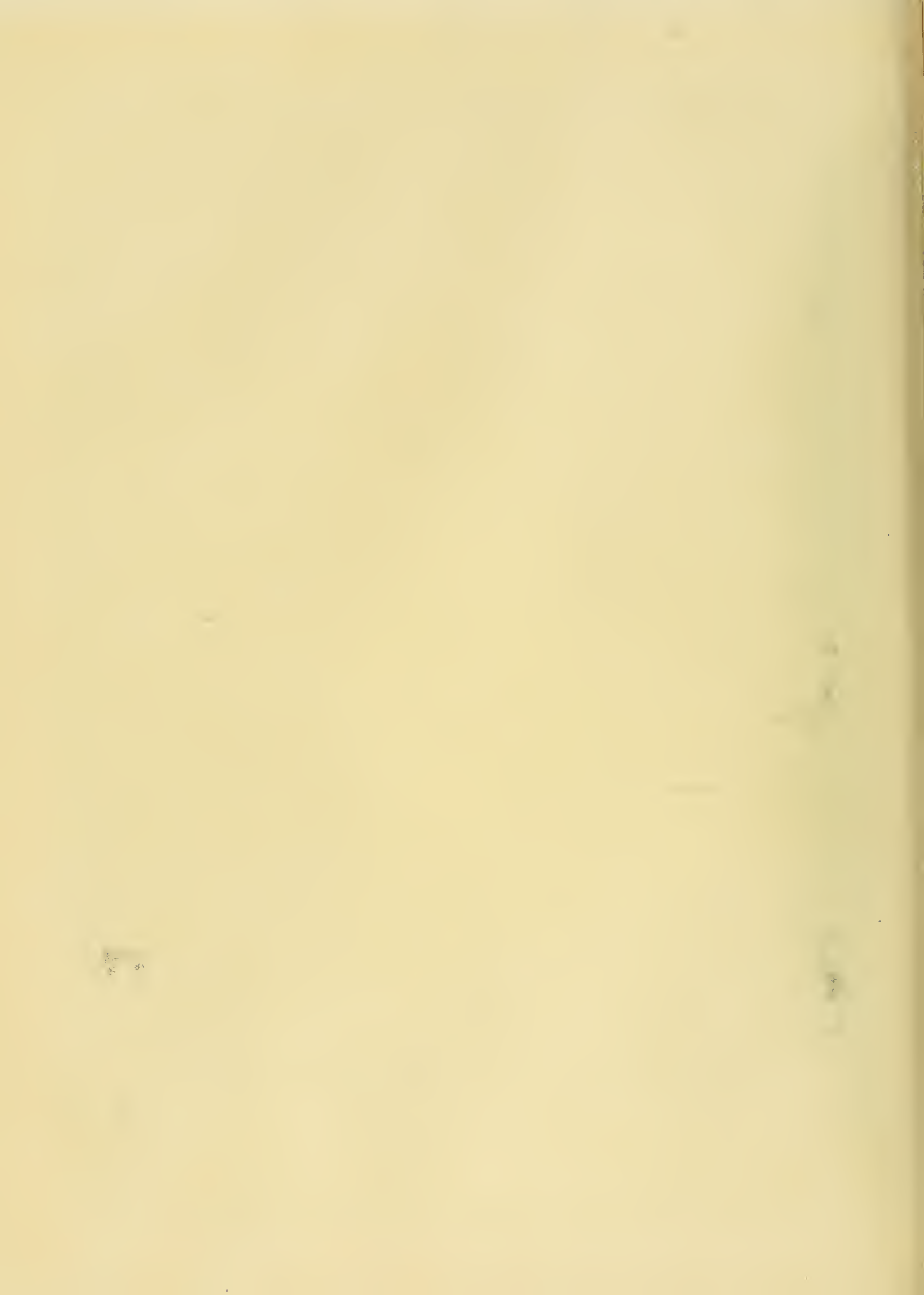
WARTY GROWTHS ON GOOSEBERRY SHOOTS: F. T. The trouble is not due to disease or insect pests, but is the result of adventitious roots pushing from the stems. Adventitious roots are very common on most plants of the same family, especially in the case of *Ribes alpinum*. Their formation is favoured by dampness and overcrowding of the branches.

Communications Received.—*B. C. & Sons*—*W. E. G.*—*A. G.*—*W. W.*—*F. M.*—*A. B. J.*—*J. U.*—*W. D.*—*S. A.*—*Atwood & Binsted*—*J. W.*—*J. A.*—*G. R. H.*—*F. P. P.*—*W. M.*—*M. C. A.*—*A. D. W.*—*Rev. D. R. Williamson*—*W. E. B.*—*J. G. W.*—*J. O. B.*—*J. G.*—*J. W. V.*



PROPAGATION OF HYACINTHS BY BULBILS (SCOOPING METHOD).

1. THE BULB, SHOWING HOW THE BASE IS SCOOPED OUT.
2. EARLY STAGE SHOWING THE ADVENTITIOUS BULBILS FORMING.
- 3 AND 4. SHOWING SUCCESSIVE DEVELOPMENT OF THE BULBILS.
5. YOUNG BULBS READY FOR DETACHING AND PLANTING.
6. PROPAGATOR SCOOPING OUT THE BASE OF A BULB.



THE
Gardeners' Chronicle

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A MARKET FRUIT-GROWER'S YEAR.

EXPERIENCE in April showed, not for the first time, that fruit-growing and Potato-growing do not go well together. Especially is this true when the former preponderates greatly, so that only a small staff of horses is necessary. When preparing the land for Potatos and also when harvesting the crop and carting the ware to the station and the seconds and chats to a clamp, the cultivation of fruit plantations is necessarily hindered. Last month is was particularly disadvantageous to devote much time to the Potatos, because March had been so rainy throughout that but little work could be done on the land, but the first three weeks of April, covering the only settled period of that month, had to be devoted to this vegetable crop. The land had been consolidated by the heavy rains in March, and it required extensive tillage to prepare a good seed-bed for the tubers. In the last eight days of the month, after the Planet Junior cultivator had been run through some of the plantations in transverse directions, rain fell on six days or nights, so that the weeds to a great extent were reset almost immediately after being uprooted. It was the same, of course, with the work done by the hand-hoers, who dealt with the small space around each tree and bush left untouched by the cultivator. If these operations had been carried out in the first 18 days of April, when there was very little rain, they would have been more successful. The hand-hoers made good work in the dry period among the nursery stocks, trees, and bushes, and in part

of a plantation of Apples and Gooseberries too much grown out for horse cultivation; but even this work was partly prevented by the necessity of sifting and picking over seed Potatos for sale, and the breaking, mixing, and sowing of artificial manures for the new Potato crop.

GRAFTING.

This has been a fairly satisfactory season for grafting, and the scions, cut in February, had kept well where they were partly buried in the soil. Among the stocks were a few old ones, which had been grafted or budded unsuccessfully more than once, and had to be cut off at the ground level. With these a plan which had proved successful last season was repeated. The grafting was done below the ground level, and the soil was drawn over the union of stock and scion after the raffia fibre had been tied on as usual, no grafting wax being used. This plan answers well, as the soil excludes air from the union, and moisture causes the raffia-fibre to rot soon enough to prevent girdling, though it is advisable to draw the soil away when the scions have started well into growth, and also eventually to cut the ties. The grafting wax used was a very cheap kind, consisting of 1 lb. of common black pitch and 3 ounces of lard. These were boiled together, and applied whilst warm. This mixture is just as satisfactory as the more expensive grafting waxes commonly recommended. A satisfactory tool for applying grafting wax remains to be invented. A thin lath, which some grafters use, is not satisfactory, as much of the wax drops off it in the process of application, and a good deal of time is spent in covering the union entirely, whilst a hair brush often lasts only a few hours before it has been denuded of its hairs by the dragging action of the wax as it is smeared on to the grafts. This season a wire brush sold for cleaning saucepans was used, and even the wires were soon drawn into a wisp, so that it was not until they had been clipped closely that the tool withstood the strain. The recent rainfall has been the one thing needful for starting the scions well. It may be interesting to record that a few scions cut from the trees and grafted at once were used where there was a deficiency of one variety of stored scions. Last year some that were "worked" in this manner were as satisfactory as any. So long as the buds of the scions are dormant, and the sap is running freely in the stocks, there appears to be no danger in this departure from ordinary usage.

At the time of writing, most varieties of Plum, Pear, and Cherry trees are in full bloom, and a splendid appearance they present. Tall and wide-spreading hushes of Rivers's Early Prolific Plum are profusely covered with bloom from 2 feet above the ground level to the tips of the highest branches. The variety Czar is equally full of blossom, but presents less show, as the trees are much smaller: Victoria and Monarch are both well or fairly well furnished with blossom, whilst the flower-buds of Pond's Seedling and Gisborne are only half expanded. Old Greengage and Coe's Golden Drop are as full of beauty as the less choice varieties. As usual, Black Diamond was the first Plum to show blossom, and this was followed quickly by Monarch, Early Prolific and other early blooming varieties. The dates of full expansion of blossom were as follow:—Black Diamond, April 25; Monarch, April 26; Early Prolific and Coe's Golden Drop, April 27; Czar, Victoria, Old Greengage, and Damson, April 29. The earliest flowers

of Czar opened before those of Victoria, but the latter variety soon caught up. It is to be observed that in consequence of the retarding action of the cold weather, the blossoming of the several varieties has been much more nearly simultaneous than in normal seasons. Pear trees are full of blossom, but they often flower profusely in seasons when very little fruit results. Cherry trees also make a good show. No Apple blossom was fully expanded in my plantations by the end of April, though a few flower-buds of Irish Peach, Gladstone, and Bismarck were half open on April 30. Most varieties of Apples here will be well covered with blossom; but there are trees which bore heavily last year that appear to be taking a rest this season. In some districts, it is reported that Apples show only a moderate quantity of blossom-buds. The weather quite recently has been so cold that there is great anxiety lest much of the fine promise among Plums, Pears, and Cherries should be spoiled by frost. This amount of fruit blossoming relates to only one fruit farm in a district not much devoted to fruit-growing.

PREMATURE FRUITING.

Nothing is worse for fruit trees than allowing them to fruit when they are very young. Certain varieties of Apples planted in the autumns of 1905 and 1906 are giving much trouble in this respect, trusses of blossom-buds having been developed quite up to the tips of the young branches, which are being cut back severely to wood buds. Domino and Golden Spire are the worst in this respect, whilst Allington Pippin, and even Warner's King, reputed to be a tardy fruiter, are also offenders. Some particularly well-furnished young trees, left unpruned or only partially pruned at the winter pruning, because they had plenty of sturdy branches, have trusses of flower-buds on their terminals, which must be cut off. Similarly, some of a number of two-year-old Plums, planted last autumn, are covered with blossom, which must be removed to enable the trees to make proper growth.

INSECT PESTS AND SPRAYING.

Fortunately, the Apple sucker does not trouble my trees. A search for the pest has just been made among all varieties of Apples without a specimen being found. This is the case even in a somewhat old plantation in which there was a bad attack four years ago, but none since. The cure may be attributed to summer and winter spraying, and the subsequent immunity possibly to the use of lime, sulphur, and caustic potash as a winter wash, 20 lbs. each of the first two materials and 12 lbs. of the third to 100 gallons of water. Probably this is the best of the winter washes. Equally striking is the almost complete immunity of the same plantation from aphid up to the time of writing. Two years ago the trees were much damaged by this pest, but last year there was very little fly, and the repeated use of the wash already acted as a preventive. On the contrary, there is an attack of aphid and winter moth caterpillars on some varieties of Apples in the young plantation referred to above, which had no winter spraying. They were noticed first on April 26, and on the 27th a trial on a few trees was made with a nicotine wash—6 ounces of a strong nicotine solution (98 per cent.) to 50 gallons of water. A fine day followed and two days after the spraying hardly a live aphid could be found, while many of the tiny caterpillars of the winter moth

were dead on the fourth day. A general spraying of the affected varieties was carried out on April 28, but a considerable downfall of rain followed the operation immediately—indeed, the work was stopped by rain, and probably fewer than half of the aphides and no caterpillars have been destroyed. The operation, therefore, must be repeated, and possibly after the blossom has fallen, treatment with lead arsenate will be necessary to destroy the caterpillars. On April 27 an attack of aphis was found to have begun on two varieties of Plums, and, no doubt, it will be extended to other varieties. It is not advisable to spray the trees whilst they are in full blossom, even

NEW OR NOTEWORTHY PLANTS.

PHALÆNOPSIS GIGANTEA.

THIS extremely rare Orchid, described by J. Smith in *Bul. du Jardin Bot. de Buit.*, was collected two years ago by Dr. Niemoehnis' expedition through Central Borneo. It flowered in the Botanic Gardens at Buitenzorg, Java, some years ago, and also recently. The plant has the same habit of growth as *P. amabilis* and *P. violacea*, but the leaves are much larger, thicker and very glossy. At the present time the plant has six leaves.

THE SETTING OF MUSCAT OF ALEXANDRIA GRAPE:

THE berries of this variety of Grape often set very unsatisfactorily. For the past 14 years I have adopted the following plan with good results. Cold air is not admitted through the ventilators until the thermometer rises to 95° or 100°, and then only a little is permitted at the top of the vinery. As soon as the temperature falls to 90°, the ventilators are closed. The great secret in getting this Grape to set well in a northern climate early in April, when a low temperature prevails out-of-doors, and, as a rule,



FIG. 131.—PHALÆNOPSIS GIGANTEA: FLOWERS WHITISH WITH DARK-BROWN SPOTS.

with a nicotine solution, which is reported to be harmless to foliage or blossom, lest the wash should prevent fertilisation to some extent. As soon as the petals have fallen, all the trees will be sprayed. Nicotine wash is expensive, but this concentrated solution, though costing 12s. to 12s. 6d. per pound, is the cheapest form, except that of denatured Tobacco, which is of various and unknown degrees of strength. This wash is to be recommended because of its efficiency in the destruction of the aphis, as proved at Woburn, and its entire harmlessness to foliage. *A Southern Grower.*

There are six flowers, less conspicuous than those of *P. amabilis*, and resembling those of *P. sumatrana*, being whitish, with many dark brown-coloured spots. This plant, the only specimen known in cultivation, has been treated at Buitenzorg in the same way as other species of *Phalænopsis*, being planted in a basket, partly filled with broken potsherds for drainage, and containing a rooting medium composed of peat, Sphagnum-moss, and a little sand. It is succeeding splendidly. During the period of flowering we apply much water to the roots and syringe the plant overhead at frequent intervals. *C. Daubanton, Buitenzorg.*

brilliant sunshine, is to allow no cold air to reach the bunches when they are in flower either during day or night. The night temperature should never be allowed to fall below 70°. In the daytime, when the temperature is high, say, 90°, damp the surface of the house heavily, but see that no moisture falls on the water pipes, for if these are hot at the time rust will show itself on any berries that have set. To prevent the sun's rays from scorching the foliage, shade the glass with old herring nets, which will allow sufficient light to pass through, to prevent the shoots from becoming drawn and the foliage from burning. After 4.30 p.m.

the nets should be removed. In the morning, as soon as the temperature inside theinery rises to 75°, the foliage will not be safe from scorching unless the shading is placed on and the ventilators opened. Other conditions being suitable, there should be no difficulty in obtaining a good set of the berries if these directions are followed. See that the borders are properly watered before the vines are in flower. Remove all gross bunches, as these seldom set properly; one good bunch to each shoot is ample; never permit more to remain unless the vine is young and growing very vigorously, when an extra bunch may be left for a time to assist as a check to undue growth. This Grape has set its berries well here under this mode of treatment. I have seen many failures where cold air has been admitted with the object of preventing the foliage from becoming scorched on sunny days. Wherever the cold air reached the bunch the berries did not set. I do not believe in using a camel hair brush or rabbit's tail to pollinate the flowers. A tap of the trellis or even slamming the door of the house is quite sufficient to set the pollen in motion. A plan I always adopt is to have a piece of cardboard about 15 inches square tied to a stout stake, and to fan with this gently through the house. I do not believe in pinching the shoots while the vines are in flower, because at that time it is necessary to promote as free a circulation of the sap as is possible. *T. Lunt, Keir Gardens, Dunblane.*

THE JAPANESE DOUGLAS FIR.

YOUNG plants of the rare Japanese Douglas Fir (*Pseudotsuga japonica*, Sargent) have been in cultivation on the Continent for some years past, but it is only recently that this interesting Conifer has been introduced into this country. At Bayfordbury, Hertford, Mr. H. Clinton-Baker last year obtained four healthy specimens from Messrs. Rovelli's nursery at Pallanza, Italy, and plants from the same source are now growing at Kew.

In the Continental nurseries this Fir has been labelled *Abies japonica*, but the structure of the cone shows clearly that it belongs to the Douglas Fir type, and is probably the Japanese representative of the well-known American species.

It is a native of the mountains of Japan, growing at 1,000 to 3,000 feet elevation in the provinces of Ise, Yamato and Kii. It occurs in forests which are difficult of access, associated with *Tsuga*, Oak, Beech and other trees. It is also recorded from Formosa. It was discovered by the Japanese botanist Shirasawa in 1895 between Owashi and Yoshino, about 10 miles from the coast, and described and figured by him in the *Tokyo Bot. Mag.*, Vol. IX., p. 86, t. 3 (1895), as a tree 100 feet high, with a trunk 9 feet in girth. The leaves are pectinately arranged like those of the common Douglas Fir, but are shorter, $\frac{3}{4}$ to 1 inch long, and are eventually distinctly bifid at the apex, by which character and the glabrous shoots this species may be distinguished. The cones are small, $1\frac{1}{2}$ to 2 inches long, and 1 inch in diameter, with about 20 scales; the bracts are strongly reflexed with a long central awn.

The Japanese name of this tree is "Togasawara." The accompanying illustration (fig. 132) is a reproduction of a photograph of a native specimen sent by Mr. C. J. Davidson, of the British Embassy, Tokio. The leaves apparently do not become bifid until the plants are several years old. In a young state they are mucronate or entire, as shown in the figure. Young plants obtained by Capt. L. Clinton-Baker from Japan have since been received at Bayfordbury; these in the older leaves are distinctly bifid.

The plants at Bayfordbury and Kew are now about 2 feet high. It is too early yet to say whether the species is likely to have any cultural value in this country. *A. Bruce Jackson.*

THE ROSARY.

CULTURAL NOTES FOR MAY.

ROSES have grown very freely during the past week or so, and are rapidly making up for lost time. The maiden buds both on the Briar and the Manetti stocks will claim attention as soon as they begin to push forth. When the bud has developed a few inches, tie the tender shoots carefully to cleft briar or hazel sticks, in order that they may not be damaged by strong winds. If it is found that the buds inserted low down on the Manetti and multiflora stocks do not push freely, or are very late in doing so, cut the stock halfway through, a few inches above the bud. This will have the effect of soon

pillars be picked off and destroyed. The trees should be syringed with a mixture of soft soap, tobacco-water and quassia extract. Apply the spray during the evening, and wash it off again the following morning. Keep the hoe at work to destroy the small weeds that are appearing plentifully on beds and borders. The materials of the old mulchings should be removed and a fresh mulch applied. Besides supplying plant foods, the litter will check excessive evaporation, and it is very desirable to retain the moisture in the soil during early summer. Liquid manure and soot water used cautiously and well diluted may be given twice or so each week during the growing season. These manurial stimulants are especially helpful during dry weather.



FIG. 132.—PSEUDOTSUGA JAPONICA: THE JAPANESE DOUGLAS FIR.

starting them into growth. In doing this the head of the stock must be secured to a stake to prevent it breaking. When the growth of the bud is completed in the autumn this upper part of the stock may be cut away entirely. Standard Briars must be made firm in the soil by treading, and it is advisable that all Roses, including cuttings planted this season, should be attended to in this matter, as the action of frost will have tended to loosen them. During the evening time a beetle infests and eats out the shoots of the Standard Briars as they begin to push. The Rose maggot will also begin to show itself during the month curled up inside the leaf. Later the larvæ burrow into the bud. These pests must be guarded against, and all cater-

In looking over the different stocks of Roses, the damage of the past severe weather, though serious amongst the Teas and Noisette sections, has not been excessive amongst those of the hardier kinds which are now growing splendidly. Any vacancies in the beds and borders can be filled by plants turned out of pots. If the weather continues dry, earth up the soil in the rows of Briar seedlings, so as to form a trench, and give sufficient water to thoroughly soak to the roots. All forced Roses of whatever class will, when they have finished blooming, succeed best out-of-doors. Those of the Tea section, if kept partially dry at the roots for about six weeks or two months, will furnish a good supply of bloom in the autumn. The plants should be well

top-dressed with good turfy loam and bonemeal, after taking out the old surface soil to a depth of 2 to 3 inches. See that the drainage is efficient. The latest batch of Dwarf Roses placed under glass last month are making vigorous growth, and some are showing their flower-buds. Fumigate the house as required, and to keep down mildew admit all the fresh air possible, but avoid creating a draught. Maintain a humid atmosphere by a frequent use of the syringe during the day.

The autumn and spring-grafted plants, after being repotted, should be accommodated in a cool, light house, where they will grow freely; during the month, or, as the weather permits, gradually harden them off previously to plunging them outside in beds up to the rims of the pots and 9 inches to 1 foot apart. Any plants at that stage requiring a shift into a larger pot should be attended to and carefully secured by staking. Later, the straggling or leading shoots can be stopped, and they will then make compact plants by the end of the summer. When the plants are all plunged, cover the pots with well-fermented manure. This will obviate excessive watering in the summer, check evaporation, keep the roots cool, and induce active and vigorous growth during the season. Continue the re-potting of spring-struck cuttings into 4½ and 5-inch pots until the work is completed. Return them into a warm frame until they are re-established. The old hot-bed will now give sufficient heat if turned over afresh, or new linings may be put around the frame to keep the temperature at 65°. The early flowering, established plants should be ventilated more freely as the season advances, and by the end of the month or early in June the glass frames may be entirely removed. The pots should be set out wider apart, and the longest shoots stopped from time to time, not later than the end of July, which will give them an opportunity of ripening up their wood and of forming good, bushy plants by the autumn. In the case of Roses planted out under glass, as the plants finish flowering, all the top lights should, if possible, be removed, so as to give the plants a good rest before the autumn.

Autumn-struck cuttings of Roses outside and Rose stocks should have the soil about them kept well stirred and mulched, and, if drought sets in, an abundant supply of water given them. Standard Briars that were worked but failed last year are making fresh shoots, some of which will be sufficiently ripe at the end of the month for budding. Good, ripened scions for this purpose will be found among the pot plants recently turned out-of-doors. With regard to general budding, the Briars and other autumn-planted stocks for this purpose are not ready much before the end of June, and the bulk of them not until July. *J. D. G.*

ROSE FORTUNE'S YELLOW.

This beautiful, yellow Rose grows and flowers splendidly at Wigganthurpe, where it is trained in precisely the same manner as a Grape vine on the short spur system. It has a main stem growing straight up the roof, about 12 inches from the glass inside a cool greenhouse. The roots are planted outside in a south border, a hole being made in the brickwork to admit the stem. At the time of writing (April 24) there are 165 fully developed flowers on the tree, beside several unopened flower-buds. As soon as the flowering is over, all the side growths are pruned back to one eye from the main stem. The new growths which form are trained evenly on either side of the stem, and when sufficiently ripened they are tied to the wires. It is from these that next season's flowers will be produced. Should the side growths become too rampant it is necessary to root-prune in the autumn. Shoots about one-quarter of an inch in diameter are the most desirable, as these become well ripened and suitable for free flowering. *J. Alderman, Wigganthurpe Hall Gardens, York.*

NOTES FROM A "FRENCH" GARDEN.

THE French garden is now in its best condition. Every inch of the ground is occupied by the different crops, which require careful attention. The Carrots grown on the hot-beds are now practically ready for market. They require abundant waterings daily or at least every two days, when a hose is used. The grower can now judge of the value of the strain he cultivates. The Early Parisian variety has a very short stump-like root and small foliage. It is cultivated not only for its precocity, but also for the small amount of space it occupies in the bed. This last point is important when Cauliflowers are grown concurrently with the Carrots.

When pulling the Carrots for market, we remove all the crop at the same time, as the small roots when left never do well. Two bunches are tied together, each bundle containing from 30 to 35 Carrots. The roots are always washed before sending them to market.

The Cauliflowers planted among the Carrots, or in the cold frames of Lettuces, and outside early in April, are now well established and require ample waterings. We are planting another batch among the Passion Lettuces in the open ground. These Cauliflowers were sown at the end of February in a hot-bed and afterwards gradually hardened. When planting Cauliflowers we are careful to reject all plants with a dark spot at the "collar," as this gradually increases till it kills the plant.

We are now sowing in the open the last batch of Cauliflowers for the season. They will be planted amongst the Melons from July 1 as an inter-crop. The seed bed is kept damp by very light and frequent waterings.

Turnips raised from seeds sown on hot-beds late in March require frequent waterings, as the roots are now forming. They will be ready for market within eight or ten days. It is a satisfactory crop, especially when grown in new soil. Turnips require careful attention in the matters of watering and ventilation, especially when they are in their early stages.

We are finishing the Melon beds. The recent weather has been favourable for this work. The Melons are planted three or four days after the beds are made, and mats are kept on the lights for two days after planting, but afterwards the plants are gradually hardened, and in eight or nine days after the planting fresh air is admitted to the frames. The first batch of plants is doing well, and the female flowers should soon appear. Ventilation is given daily; mats are spread over the lights at night-time.

We are planting Tomatos out in the open ground. The plants are showing the first truss of flowers. They are covered with bell-glasses till they are well established. It is well to prepare a system of cropping to follow the Cauliflowers grown on the hot-beds. We generally grow two crops together, e.g.: (1) Cabbage Lettuces and Cos Lettuces; (2) Endives La Rouennaise and Cauliflowers; (3) Cabbage Lettuces or Endive with Celery; (4) Carrots Bellot and Spinach or Radish.

The Lettuces are sown late in May or early in June according to the development of the preceding crops. The Endives are sown now in frames very thinly. The Cauliflowers are sown with the batch to be planted among the Melons. These different sowings must be made in well-prepared ground and receive proper attention. If the seed is sown too thickly the seedling plants must be thinned out as early as possible to have them strong and well hardened early in July.

All the Celery plants should by now be transplanted from the seed bed. On land in the open that will be at liberty early in July a sowing of Endive La Ruffec in the case of heavy soil, or Endive de Meaux for sandy soils, can now be made. Some growers sow for the same purpose Endive Batavian Green, but this salad does better grown later in the season. *P. Aquatias.*

ORCHID NOTES AND GLEANINGS.

CYMBIDIUMS AS CONSERVATORY PLANTS.

IN the gardens of Ludwig Mond, Esq., The Poplars, Avenue Road, Regent's Park, London (gr. Mr. J. O. Clarke), the larger Cymbidiums are much grown because of their suitability for the decoration of the conservatory or other cool houses. The principal species grown are Cymbidium Tracyanum, of which there are some very handsome varieties, and C. Lowianum, together with smaller quantities of C. longifolium, C. eburneum, and other species. At the present time the conservatory, which has fine statuary on one side, has on the other side an arrangement of Orchids in flower, with a fine selection of showy Hippeastrums. The specimens of Cymbidium Lowianum bear about 60 handsome spikes of flower. All are fine varieties, selected some 10 or 12 years ago, and the colouring of the markings on the labellums vary from orange-red to almost scarlet. The plants are always ornamental, and as they last in flower for several months, Mr. Clarke considers them the most useful conservatory plants in the collection. The Orchids from the warm houses are brought in as they flower, and at present with the Cymbidiums are some good Odontoglossum citrosimum, O. crispum, Oncidium papilio, O. Krameri, Lycaste Skinneri, Ansellia nilotica, and several pretty hybrid Cypripediums. Japanese Maples, in great variety, and Lilies are also included in the floral scheme of decoration.

FLORISTS' FLOWERS.

THE PANSY.

WHEN Mr. Eric Drabble, D.Sc., lectured on Pansies before the Fellows of the Royal Horticultural Society, on April 20, it was expected that the garden Pansy, in its various aspects, would have formed the subject of the address: but Mr. Drabble restricted himself to giving descriptions and illustrations of the numerous native species or assumed species of the Viola. He thus laid the grounds on which the florist could build up theories as to the parentage of the modern Pansy. That form of floral evolution, it is hoped, may be expounded to the Fellows by a capable florist at some future time. The Pansy was once a famous and cherished florists' flower, and its various points and merits were well defined. The old Show Pansies were also known as English Pansies, this name being based, no doubt, on the assumption that the old race was derived from Viola tricolor, the wild Pansy of the fields. That description might also have been needed to differentiate them from the larger and more richly and diversely-marked Belgian or Fancy Pansies, which soon became to these flowers what the Japanese Chrysanthemum is to the old Chinese forms. The Show Pansy, in its day, was divided into "belted" and "self" flowers. The belted flowers, generally of good size and substance, had a clearly defined central blotch of some dark hue, and the rounded petals were margined with a colour distinct from the ground of the flower, which was either white or yellow. Naturally, there was in these flowers, because of the precise requirements in marking, much that was monotonous; so also were the selfs of white, yellow, blue, and plum colour, all having deep-hued central blotches. The florist's Pansy attained to a high state of perfection, and it was cultivated with exceeding care. The names of Turner and Bragg, of Slough, in the sixties of last century, are closely associated with the culture of these flowers. From the florist's Pansy originated a race known as bedding Pansies. The famous trio, Cliveden White, Cliveden Blue and Cliveden Purple, doubtless came from this old Show section, and, later, many others followed, including

Blue King, one of the very best bedding Pansies ever seen. But these bedders were superseded by the bedding Violas, which seem to have originated by crossing *Viola cornuta* with *V. lutea*, or with some of the smaller Pansies. We have not yet forgotten the furor and wordy war which grew out of the simultaneous production of *Viola cornuta* Perfection, the most marked advance made with Violas, some 40 years ago. But that was soon followed by Old Blue Bell, a chance seedling in the late Richard Dean's garden at Ealing Dene, which not only became universally grown, but may even now be seen in many public and private gardens. Numerous *Viola* varieties followed, and now there are hundreds of named sorts, all wonderfully floriferous, all beautiful, and furnishing floral colour in infinite variety. The titles of tufted Pansy and bedding *Viola* have been given to these plants. Possibly the designation carpet Pansies fits them best, as they make some of the best surfacing or

colours, and some are blotched, whilst others are diversely coloured. To have these in the finest form a sowing in the open on fine soil should be made in August. The plants should remain in the seed-bed till the spring, then be planted out into good soil. They will form clumps of 10 inches to 14 inches in diameter, and literally smother themselves with flowers. Every garden should possess some Pansies of one type or another. *A. D.*

FRENCH CHRYSANTHEMUMS AT THE N.C.S. SHOW.

IN an audit of blooms shown at the N.C.S. Crystal Palace show last November it is curious to note how the modern French seedlings have been displaced from the position they formerly occupied. The audit appears in the new N.C.S. schedule for 1909, and contains the names of the Japanese and Incurved flowers shown in the board and vases classes only. At the top of the

CYNOCHES PERUVIANUM.

OUR illustration in fig. 133 represents the plant of *Cynoches peruvianum* "Tracy's variety" imported from Peru and shown by Mr. H. A. Tracy, of Twickenham, at the Royal Horticultural Society's meeting on February 23 last, when it was accorded an Award of Merit. The species was shown in 1894 by Messrs. Sander & Sons, St. Albans, and in 1905 by Sir Trevor Lawrence, Bart., K.C.V.O., whose specimen had longer racemes of much more distantly-placed flowers than the one now illustrated. From a botanical standpoint there is little to separate this species and some others from the *C. maculatum* illustrated in the *Gardeners' Chronicle*, January 9, 1909, p. 26, though Tracy's variety of *C. peruvianum* is singular in having the flowers much more densely set than in any others of the genus. Its flowers are greenish-white sparsely blotched with purple, the rayed centre being white.

The *Cynoches* should be grown with the *Catasetums*, suspended in an intermediate house, the method of treatment required being precisely similar to that given to the deciduous *Dendrobiums*. They require copious waterings during the period of growth and a long rest after the leaves begin to wither, when water should be almost entirely withheld until the growing season again comes round.

THE ALPINE GARDEN.

VERONICA BIDWILLII.

BIDWILL'S Speedwell is one of the shrubby *Veronicas* from New Zealand that are held in increasing favour, especially for planting in the Alpine garden. This species is not the most brilliant of the genus, as the growths are slender and the flowers small and not highly-coloured. So far as I have seen plants in this country, the species is represented by white flowers alone, although it is said to possess violet and pink-coloured forms. Although simple and small, the flowers are pretty, and the rather slender, prostrate growths render the plant more suitable for a rock-garden than a border. The small flowers are borne in whorls.

ERIOPHYLLUM CÆSPITOSUM (SYN. BAHIA LANATA).

OF the small group of plants belonging to the genus *Eriophyllum*, which number under a score, few are in cultivation in British gardens, and only two of these are included in the latest edition of the *Kew Hand List of Herbaceous Plants*. *Eriophyllum cæspitosum* is rarely seen under its correct name, being often called in gardens *Bahia lanata*. It forms a suitable plant for the front of a flower border or for the rockery.

If allowed to remain undisturbed it forms a spreading mass of pretty, whitish, woolly leaves, producing bright yellow flowers of the characteristic Composite type.

The whitish leaves and golden flowers hanging over a ledge of the rock-garden or trailing over the ground in the front of the flower border are very attractive. The plant is not hardy in severe winters, and is especially harmed when frost and snows alternate with mild weather. To lessen the danger from these causes the plant should be given a dry soil and a sunny situation. Old mortar or other calcareous matter mixed with the soil is beneficial.

Eriophyllum cæspitosum is easily raised from seeds, and may also be increased by division. In the broad sense it is hardy, but the difficulties caused by our uncertain winters make it advisable to have a few spare plants in a frame.

DIANTHUS PANCICHI.

THERE is a small section of *Dianthus* not very widely known which comprises a few Pinks of erect-growing habit, and having the flowers in



FIG. 133.—A WELL-FLOWERED SPECIMEN OF *CYNOCHES PERUVIANUM*, TRACY'S VARIETY.

carpet plants we have. But the modern Fancies or Belgians have overshadowed all other Pansies. It is possible now to go to any market and purchase strong plants at 2d. each, carrying large flowers of great substance, fine in form and gloriously coloured; they are, indeed, marvellous in their beauty. But it is unfortunate that these plants are usually grown under somewhat forced conditions, therefore they fail to flower so well when purchased and planted in the open. This strain, come from whence it may, produces flowers as fine in size and form and as superbly coloured as are any that are in commerce under name. Our climate in the southern counties seems to be too arid for these splendid Pansies; they thrive better in cooler conditions. But we can raise Pansies from seed, and from them secure masses of bloom of many colours for a long season. These furnish a wide range of selfs in white, yellow, blue, purple, bronze, claret and other

list in the Japanese section comes *F. S. Vallis*, which was shown 102 times, or more than twice as often as the next most frequently shown. *Mme. G. Rivol* was shown 23 times, *Mme. Paolo Radaelli* 20, *Mme. René Oberthur* 12, *President Viger* 10, *Marquise Visconti Venosta* 6, *Chrysanthémiste Montigny* 4, *Mme. C. Nagelmackers* 4, *M. Paul Randet* 4, *Mme. Albertine Bertrand* 3, *Mme. Gustave Henry* 2, *President Loubet* 2, *Mme. Marg. de Mons* 2, *White Venosta (Marquise Venosta)* 2, *Leon Truelle* 1, *Vivian Morel* 1, *Lt.-Col. Ducroiset* 1.

In the classes for incurved flowers, of course, the number was smaller, as has always been the case. *Emblème Poitevine* comes third in the list, being shown 24 times. Then *Triomphe de Montbrun* 12, *Topaze Orientale* 7, *Boccace* 6, *Ma Perfection* 3, *M. de Meulenacre* 3, *Le Peyrou* 2, *Mme. de Verneuil* 1, and *Chrysanthémiste Bruant* 1.

crowded or clustered heads. They have never acquired great popularity, and they are not in the least likely to supersede other well-known kinds. Yet they possess some points of beauty which commend them, and some qualities which will render them serviceable in certain positions. They are excellent to give variety in the flower border and to break up the uniformity of the other plants flowering in the summer season.

Dianthus Pancicii is a tall-growing species, having sturdy, erect flower-stems reaching a height of about 2½ or 3 feet, and bearing closely clustered heads of light crimson blooms. The leaves are broadly Grass-like and grow in a thick tuft at the base of the stems.

Seeds of a new variety of *Dianthus Pancicii* are being offered this year under the name of *D. Pancicii grandiflorus*. The heads and flowers are stated to be larger than those of the type and purple-carmine in colour. It is also asserted that the stems are so stout that they will withstand strong winds without support. This is true as regards *D. Pancicii* upon the whole, yet the stems of my plants have been broken off at the base by wild, whirling winds, such as we sometimes have. *S. Arnott*.

The Week's Work.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Sweet Cherries.—As the trees pass out of bloom they should be examined for black fly. If this pest is present, syringe them thoroughly with Quassia Extract. They may be sprayed even as a preventive method, for the pest is likely to do great damage if a bad attack breaks out. Remove any specially strong shoots that would be likely to interfere with the proper balance of the trees, and pinch all others back to three or four leaves, except such as are required for extending the trees. The shoots must be kept thinly disposed in order that all of them may be perfectly exposed to the sun and air.

Morello Cherries.—Trees of this variety require different treatment from that just described. They should be disbudded in the manner recommended for Peaches and Nectarines. Morellos are sometimes neglected in this matter, but there is no justification for this. If left to themselves, they soon become a thicket of growths stretching out some distance from the wall. When this is the case, they are difficult to keep clean of pests, and there is less opportunity for the fruits to develop satisfactorily. Do not disbud the trees excessively, for if the shoots are still found to be more numerous than is desired, they may be pinched back to three or four leaves, when it becomes necessary to tie the shoots to the wires or wall. Shoots that are pinched will form small spurs, and these will eventually bear fruit-buds. It is important in the cultivation of Morello Cherries to have enough young shoots each year to take the place of those which have borne fruit in the season immediately preceding the pruning. At the same time, the shoots should be kept sufficiently thinned to allow of the access of sunlight to those which remain.

Protecting material.—If canvas coverings, nets, or other materials have been employed for protective purposes for fruit trees, they should be removed and stored for the present, it being unlikely that they will be needed any longer. If the weather, however, takes a turn for the worse, on no account remove them suddenly, for by so doing the trees would probably receive a check and fall an easy prey to insect pests and fungus diseases. Peaches and Nectarines should be the last to be relieved of the protective material, for if these trees have received protection they will be the more susceptible to injury from cold winds.

General work.—Hoe the surface soil of the fruit quarters as often as possible, choosing periods of fine weather for the work, in order that the weeds may perish immediately after each operation. Mulching with partially-decayed manure or with stable litter is exceedingly valuable for hardy fruit trees, especially such as are growing in light soil or on a gravel subsoil. Never apply a mulch, however, until all weeds have been removed from the ground.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Thinning of crops.—One of the commonest mistakes in vegetable growing is that of allowing the plants to remain too thickly together. It is unreasonable to expect good results if six plants are occupying the ground that is needed by one. To sow fairly thickly and thin early is advice that has been given for many a long year, but it is not followed so commonly as it should be. Thinning of the crops should in nearly all cases be done piecemeal, that is, it should be done by degrees at several operations. In no case should the seedlings be allowed to become crowded, even in the earliest stages of growth.

Celery.—Most plants of the second sowing should now be sufficiently advanced for putting into the trenches. Lift them with as much soil as possible adhering to their roots, and plant them in single lines, drawn from 10 to 15 inches apart, according to the variety. Make the soil very firm. Apply a thorough watering after the plants are inserted. Dust the foliage twice a week with soot, applying it early in the morning, or, better still, late in the evening. Further trenches should be prepared for successional crops as opportunities occur or the ground becomes available.

Celeriac, or Turnip-rooted Celery.—Unless this crop is well grown, it is of little value, but, provided that excellent roots are obtained, they are much appreciated as winter vegetables. Celeriac requires a long season of growth, an abundance of moisture, and rich soil. It should therefore be planted in ground which has been deeply trenched and heavily manured. It may be planted at this season on flat beds or borders. Not less than 2 feet should be allowed between the rows, and 18 to 20 inches between the plants. The foliage should be dusted with soot occasionally, as in the case of Celery.

Turnips.—The earliest varieties such as Early Milan and Long Forcing should be thinned severely, and the surface of the ground between the plants should be frequently disturbed with a Dutch hoe. Apply soot and some chemical vegetable manure in small quantities during showery weather, and do everything that is possible to induce a quick, succulent growth. Sow seeds of Snowball or a similar variety in small quantities once a fortnight. Golden Ball, so great a favourite in the north of England and in Scotland, requires a long season of growth to develop. It should be sown in poor soil during the present month.

Broad Beans.—Make two good sowings during the present month of varieties of the Broad Windsor type; the newer green variety is a great improvement on the older white one. Immediately there are any signs of black aphid on the earlier plants, thoroughly syringe them with soft soap and water.

Marrows.—Early plants which were put into portable frames are now fruiting freely, and these require much more ventilation than hitherto. Thin and peg out the growths, and apply a good surface dressing. At the end of the month the frames and lights should be removed. One more sowing may still be made. Put one seed in each pot and place the pots in moderate heat.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Planting young vines.—If it is intended to plant vines which were raised this season from eyes, the soil had better be got in readiness for the borders, placing it under cover in order that it may be in a suitable condition when required for use. One advantage of planting young growing vines is that a crop may be taken from the old vines which are to be replaced, and the young vines become established during the same year. But this depends upon whether the old crop is fit to be gathered by the end of June. In any case, it involves a considerable amount of work in the busy season. If there is any likelihood of the vines becoming pot-bound before they are planted out, they had better be shifted into larger pots.

Treatment of young vines.—In the case of young vines that were planted early this season, every encouragement must be given them to grow freely. Keep the surface of the border moist by damping it with tepid rainwater and, in order that warmth and air may the better permeate

the border, let the surface soil be occasionally loosened. Syringe the vines freely early in the morning and again when closing the ventilators in the afternoon. Do not use more fire heat than is necessary; the water pipes may be slightly warmed at night or during cold and wet weather, because this is necessary to prevent the atmosphere from becoming stagnant. Pinch the side shoots at the second or third leaf, and tie them neatly to the trellis. Stop the leading growths when they have reached one-third the length of the trellis. Vines which have been planted two or three years must on no account be taxed with a heavy crop. Even after vines have become thoroughly established and have acquired the most robust growth, it is possible to injure them by overcropping.

In-arching of vines.—The present time is suitable for in-arching vines, which is a form of grafting. There are some useless varieties and varieties that do not succeed in certain places. These may be replaced easily by others that are more profitable. Perhaps the process of in-arching is the quickest and most convenient way of bringing about this result. Again, there are some varieties which are much improved by being in-arched on to a fresh stock. For instance, at Frogmore, we have Muscat of Alexandria on a stock of Madresfield Court, which is a decided advantage, as the bunches are more compact, the berries are larger, and the flowers set as well as Black Hamburgs. Lady Hutt gives better results when in-arched or grafted on Foster's Seedling; Melton Constable is best on a stock of Alwick Seedling. The Strawberry Grape, which has very small berries when grown on its own roots, produces berries as large as Black Hamburg if grafted on to Black Hamburg. We are making other experiments with different stocks, but an opinion as to their value cannot yet be expressed. The most suitable scions are vines which were rooted last year, and were subsequently cut back, these being more vigorous than any that may have been rooted this present year. To perform the operation of in-arching, first place the scion near to the shoot on which it is to be in-arched. Make a similar cut on each shoot about 2 inches long. Bind the shoots tightly together with raffia, and cover the parts with moss, which should be kept damp. It is, of course, necessary to supply water to the roots of both stock and scion.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORO, Pencarrow, Cornwall.

Cycads.—Few Cycadaceous plants are grown in ordinary gardens. *Cycas revoluta* and, less frequently, *C. circinalis* being the species generally representing this Order. Sufficient room cannot usually be spared for such genera as *Dioon*, *Encephalartos* and *Zamia*, though their cultivation would be interesting where the presence of large houses renders it possible. Cycads have a distinctly ornamental appearance, and are not unlike sturdy-leaved tree Ferns. Their leaves being of firm texture, the plants may be used for decorative purposes in many positions that would prove ruinous to tree Ferns. The season of growth is surprisingly short, but during that season the plants require a great deal of moisture both in the atmosphere and at the roots. If the roots are permitted to become at all dry, even for a short time, the young fronds, being very succulent, quickly show signs of drooping. It often happens that Cycads will remain inactive during a whole year. Any stems which do not show signs of making new leaves should be immersed in tepid water for two or three days. As soon as the growing season has finished and the new fronds have completely developed, less water must be given the roots, and the plants should be moved to a cooler and drier atmosphere. A sharp look-out should be kept for scale insects, as these pests are very difficult to dislodge from the leaves.

Chrysanthemums.—Most of the plants should now be ready for removing into the final pots. This important operation should not be hurried, as the details in the process require careful attention. The best size of pot to be used is a matter for individual opinion. For general purposes, 10-inch pots appear to me quite large enough, and even a size smaller will allow ample rooting space for many varieties. If still smaller pots be used, it causes more labour in watering

and feeding during the summer months. The pots and the crocks used for drainage should be carefully cleaned, and care must be taken in arranging the drainage material in order to get the best possible outlet for water. A thin layer of fibrous loam should be placed immediately over the crocks to preserve them from the finer particles of the soil. The potting soil should have been turned over several times in order that all the constituents may be thoroughly mixed. A useful general compost is one consisting of good pasture loam three parts, and horse manure and finely-sifted leaf-mould one part, adding a quantity of coarse sand, about a 6-inch potful of an approved chemical manure, and a similar quantity of bonemeal. It should be scarcely necessary to say that a plant should not be dry at its roots when it is removed for potting. Let the potting be done as firmly as possible, taking care not to break the rootball. In finishing off, leave a loose layer of fine soil on the surface. After having been potted, the plants should be placed for a few days in a sheltered and partially-shaded position. They may be frequently sprayed with clear water to keep the leaves from flagging, and in order that water may not be needed at the root until the roots have again become active. To each plant should be placed a large-sized label, on which the name of the variety is written legibly. When the plants have been placed in their permanent position for the summer, affix a stout stake to each, and secure these stakes to slightly-strained wires, in order that the plants shall not be swayed by the winds.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Pruning shrubs.—Any shrubs that have passed out of flower should now be pruned into the desired shape. Some species require to be pruned each year. Such, for instance, as *Prunus triloba*, *P. pissardii*, *P. sinensis* fl. pl. and *P. cerasus* James II. Veitch. These species should have their shoots cut back to a good growth more especially if it is necessary that the plants should grow in a limited space, as they flower better on the young wood. *Pyrus floribunda* and *P. f. atro-sanguinea* need to be pruned in order to keep them in character with other plants, unless they are grown as isolated specimens or in avenues. Other plants that require pruning include *Staphylea colchica*, *Cerasus Watereri*, and *C. Sieboldii*, *Xanthoceras sorbifolia*, *Spiraea media* (confusa), *S. prunifolia*, and *Chimonanthus fragrans*. These species and others of a similar nature are benefited if the pruning is done as soon as the flowers have fallen. If a good mulch can be applied over their roots in hot weather, so much the better, for it is desirable to encourage the plants to make growths of considerable length and strength.

Herbaceous plants.—Many of the herbaceous flowering plants are much in need of staking at the present time. Endeavour to affix the stakes in such a manner that they are not conspicuous, and select those most appropriate for the different plants. It will be found that brushwood, such as is obtainable from Hazel or Beech branches, make excellent supports for certain plants, holding the shoots in a natural position and becoming after a time perfectly hidden by the foliage of the plant. For taller plants, single Bamboo or Hazel rods placed at the back of the specimen are useful. Cleanse the borders of weeds, and use the Dutch hoe as often as necessary. Remove the foliage from flowering bulbs as soon as it is ripened and commences to wither. Thin out annuals that have come up too thickly, allowing space for each plant to develop unhindered by contact with others.

Dahlia.—The position for these plants should already have been prepared. Stakes will be required of various heights, and these should be painted or dipped in creosote. It is too early at present for the plants to be put out, but the ground should be rid in the meantime, as far as possible, of slugs and snails.

Roses.—Examine all Roses, and if aphids are detected upon any, spray them with quassia extract two days in succession. Keep a sharp look-out for caterpillars, and remove by hand-picking as many as can be found. By way of stimulant, about two ounces of guano may be sprinkled around the base of each plant.

Sweet Peas.—Any of these plants showing bloom may be given a mulching of manure after

a good dressing of soot has been applied. Guard later plants from slugs and birds, and afford stakes whilst the plants are still dwarf. If a sowing is made now the plants will flower in August, provided that a rich rooting medium is given them.

Alpine garden.—Much weeding needs to be done just now, or many of the smaller plants will be smothered. The weeding must be done by experienced hands, that valuable plants may not be inadvertently removed with the weeds. Apply a top-dressing to Ferns and other plants growing in cool crevices. Shade *Ramondias* from the mid-day sun. Remove the dead flowers from *Primulas* unless seed is required, in which case the seed-vessels should be secured to short stakes. Prune *Ericas* that have flowered, and top-dress them if necessary.

Phlœsia buxifolia.—Give this plant a top-dressing consisting of peat, leaf-mould, and sand. It succeeds best in a sheltered corner in a north aspect where the position is moist. Its *Lapageria*-like flowers are much appreciated.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Phalœnopsis.—Most of these plants are now producing fresh leaves and roots. The grower should ascertain if fresh rooting material is necessary, or if new baskets, pots, or cylinders are required. Those plants that are well established in teak-wood baskets or cylinders, and which need additional space for root extension, are sometimes difficult subjects, as the numerous roots adhere firmly to the wood, and no matter how careful the operator may be, some are sure to be damaged. Where newly-imported plants have been established in small baskets, instead of removing them, additional root room may easily be afforded by dropping the baskets, or even cylinders into larger receptacles, filling the space between with crocks or pieces of broken brick, and afterwards surfacing the whole with a layer of chopped Sphagnum-moss, which should be well incorporated with small crocks. As regards those plants which were similarly treated some years ago, it will be found that the old basket has decayed. The remains may be removed piece by piece without causing the least disturbance to the plant, and the space should be refilled with drainage materials. If the old potting material has decayed, carefully remove it from between the roots, add more crocks, and resurface with fresh Sphagnum-moss. Very little water is required after potting, &c., the principal thing being to induce the moss to grow on the surface and the new roots to cling to the woodwork of the basket. For this purpose apply tepid rain-water by means of the fine sprayer. Keep the surface of the moss and the sides of the basket just moist. On no account saturate the materials. Where no separate house is set apart for the culture of *Phalœnopsis*, the plants should be placed on the shady side of the East Indian house or in the mixed plant stove. Wash the leaves of these plants occasionally with a sponge and clean rain-water, to keep them clean and free from thrip insects.

Anguloa.—The species and varieties of *Anguloa* should be potted either immediately they commence to grow, or directly they have gone out of flower. These plants succeed well in the *Osmunda* and *Polypodium* mixture, with plenty of small crocks added. It is not necessary to employ Sphagnum-moss. Being strong-growing plants they need a moderate amount of rooting space and require to be potted rather firmly. Stand the plants in a light position in the *Cattleya* or intermediate house. Apply water rather sparingly during the first few weeks, but afterwards until the bulbs are thoroughly made up, afford them a plentiful supply of moisture. The large broad leaves of these *Anguloas* should be sponged frequently. Avoid overhead syringing, as the water remains low down in the centre of young growths and eventually causes decay.

Lycaste.—*Lycaste Skinneri* and its varieties, also other plants of the same genus that are starting to grow, should be repotted if necessary. They should be potted in similar compost to that recommended for the *Anguloas*. Give them plenty of root room, thorough drainage, and leave a good space on the surface for holding water. They require a plentiful supply of moisture when well established in the new potting material. Although moisture-loving plants, they

must not be given much water during the early stages of growth. The *Odontoglossum* house is the proper place for them, or a cool, shady corner of the intermediate house. Other species and varieties of *Lycaste*, such as *L. cruenta*, *L. aromatica*, and *L. Harrisonia*, should not be repotted until the flowers have faded.

PUBLIC PARKS AND GARDENS.

By W. W. PETTIGREW, Superintendent of City Parks, Cardiff.

Women's Gardens.—At the present moment, when the question of woman's equality with man is receiving so much attention in this country, any suggestion which involves the segregation of the sexes in our public parks will be regarded as a retrograde movement by one section of the community. However, this may be, *The Times* recently reported and favourably commented upon a movement which is now on foot in the metropolis to set aside a small open space in the city for the exclusive use of women. That there is much to be said in favour of such a movement—even though it may not as yet come quite within the range of practical park politics—most park officials will admit, and the time may very well come when one or two such gardens will find a place in the park systems of all our larger towns and cities. Few people other than those intimately connected with public park work realise the annoyances—often petty and trivial, but sometimes of a serious character—that women have to put up with from a certain class of men who habitually frequent public grounds. So long as these individuals do not violate any by-laws by openly making themselves a nuisance to visitors, they are not merely at perfect liberty to enter any public grounds, but have as much right to use the seats as any other citizen. The very presence of unkempt men, whether they occupy the same or an adjoining seat, often mars to a sensitive woman the whole of the pleasure to be derived from a visit paid to a public park. To women in general, and to those of a nervous temperament in particular, a conveniently-situated garden, set aside for the exclusive use of women and young children, would be much appreciated.

Nursemaids and children.—One class of women to whom the "Women's Garden" might prove a great blessing, although she may not herself realise it, is the nursemaid. If many parents who send their children in charge of nurses to the parks (thinking that at such places they are free from all dangers) only knew how their little ones are neglected there, they would, in all probability forbid their maids to enter the parks. The reason for all this is that these grounds are very often the rendezvous of a great number of idle young fellows, who take up the time and attention of the nursemaids to the neglect and even danger of the children. Were women's gardens to become an established fact employers could easily see that their nurses took the children to these places, rather than to an ordinary park—an arrangement which might prove alike beneficial to the young charges and their custodians.

The legal aspect.—Although the general principle underlying the suggestion of the establishment of such gardens has already been recognised by our public libraries in the institution of ladies' reading rooms, yet the question naturally arises whether a park authority can legally set aside any ground which has been gifted or purchased for the purpose of a public pleasure ground for the exclusive use of any section of the public, or whether it has power to spend the rates on the upkeep of such places if they were once in existence. Judging by an analogous case—where the council of a certain town, anxious to give special facilities to women travelling to and from business, ran cars reserved for the use of women, but had to discontinue doing so, as they found they were acting illegally—I fear that before women's gardens are possible a short Act of Parliament would be necessary to enable municipalities to find money for their establishment and upkeep.

Women gardeners.—The park superintendent who may in future have the control of one of these gardens will certainly find himself faced with some delicate problems when working out the details of management. He may find that here at last a suitable opening has arisen for the entrance of the lady gardener into public life.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

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

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

Illustrations. The Editor will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens or of remarkable plants, flowers, trees, &c., but he cannot be responsible for loss or injury.

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

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MAY 18—

Roy. Hort. Soc. Coms. meet and Nat. Tulip Soc. Combined Show at Hort. Hall, Westminster (Lecture at 3 p.m. by Mr. A. Clutton Brock, on "Alpines in their Native Homes").

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—53°5'.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, May 12 (6 P.M.): Max. 71°; Min. 45°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, May 13 (10 A.M.): Bar. 30.2; Temp. 54°; Weather—Sunshine.

PROVINCIALS.—Wednesday, May 12 (6 P.M.): Max. 63° Bury St. Edmunds; Min. 41° Scotland E.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Border Plants and Perennials, Hardy Bulbs and Tubers, &c., at 12; Ornamental Palms, Bays, Ferns, &c., at 1.30; by Protheroe & Morris, at 67 & 68, Cheapside, E.C.

FRIDAY—

Imported and Established Orchids from various sources, Orchids in Flower and Bud, at 12.45; by Protheroe & Morris, at 67 & 68, Cheapside, E.C.

The Orphan Fund.

Among the many schemes that were adopted in 1887 for the purpose of celebrating the Jubilee of Queen Victoria's beneficent reign surely none was better calculated to appeal to human sympathy than the Royal Gardeners' Orphan Fund! The excellent work that it achieves is done more or less silently and without ostentation, and it is only on such occasions as the annual meeting in February or the Festival dinner that the public mind is informed of the amount of poverty and misery which the Fund is the means of relieving. From month to month the Committee carries on the work unceasingly, receiving applications for help, enquiring into every case that is brought before them and making grants in aid of those cases in which immediate help is most needed. All but the actual secretarial work is done gratuitously by men whose sympathies for gardeners' orphans are strong enough to lead them to devote a considerable portion of their time for this purpose. It is one of the most satisfactory features of the social life in this country that there are ever to be found men willing to come forward and take a share in the active management of this and similar institutions. The annual events we have mentioned, therefore, would be useful if they merely served to remind the public of the circumstances that have to be met and to awaken or quicken practical

sympathy with the efforts made to deal with them satisfactorily. As a matter of fact, however, the more showy function that has just taken place has a purpose of even greater importance, for it is one of the chief means by which the Committee is able to raise the money necessary for providing relief. The amount received from annual subscriptions is comparatively small, and although this state of things is not exactly what we ought to accept as a permanent condition, its existence at the present time is sufficient to make the annual Festival and all the work which it entails a necessity of the situation.

It is therefore with satisfaction that we print the report which will be found on another page, inasmuch as it records a result which, if somewhat less than last year, when special efforts were made to make the Coming-of-Age year memorable in the annals of the Institution, is nevertheless of a gratifying character.

A representative gathering of upwards of 120 influential horticulturists was convened, with the Duke of Rutland in the chair, to plead the orphans' cause. A sum of £800 was contributed by those present and other sympathisers who were unable to attend. The Orphan Fund has grown in importance and influence ever since its establishment, and the facts we have mentioned demonstrate unmistakably that it is increasing its hold upon the charitable public. We are confident that the Committee will go on cheerfully fulfilling the duties of their office, relying with confidence on the supporters of the Fund for a continuance of the means that until the present have always been forthcoming. Since its establishment 22 years ago, political and social conditions have altered in many ways, but fortunately in the same period there has been an increased amount of private benevolence, therefore we have every reason to believe that the changes that may yet take place, and to which the Chairman alluded with a certain amount of misgiving, will not operate to the prejudice of such an Institution as the Orphan Fund. Only when there are no longer any orphans to care for will the need for such a Fund cease to exist or the means necessary for its support fail to be forthcoming.

In the meantime, let us remember what Mr. Edward Sherwood, the Treasurer, related in regard to the present number of applicants for relief. Since the election in February, but three months ago, as many as 14 fresh cases have been enquired into and accepted by the Committee, this being an abnormally large number to be registered in such a period. But this is not all, for in every case the Committee have found the circumstances to be so urgent that they have felt compelled to grant temporary relief of two shillings and sixpence a week until the candidates can be put forward for election at the next annual meeting. It looks very much as if there will be a larger number of applicants seeking relief at that election than has ever been the case before. Will gardeners and others be satisfied if any of them are denied the full amount of relief? We think not. But if more than usual are to be elected the income must be proportionately increased. This will not be difficult if all will contri-

bute towards this object. There are many who do all that can be expected of them for this Fund, but there are others who do comparatively little. If these can be induced to come to the aid of the fatherless in their affliction all will be well. It should be an encouragement to them to know that the small amount necessary for the management expenses is more than met by the income derived from invested funds, and that therefore a subscription goes straight to the relief of distress without deduction. A subscription of five shillings a year is less than a penny-farthing a week. How many can afford to give this amount who have in the past thoughtlessly ignored the claims of the Fund?

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will take place on Tuesday, the 18th inst., in the Hall, Vincent Square, Westminster. At the afternoon meeting a lecture on "Alpines in their Native Homes" will be given by Mr. A. CLUTTON BROCK.

VACANT LANDS AS GARDENS.—In most large cities there are vacant lands awaiting the builder. Not infrequently these neglected areas are eyesores to the public, and remain unprofitable for many years. The VACANT LAND CULTIVATION SOCIETY has for its object the acquisition of such ground without rent charge, until the owner desires to utilise it, in order that men in humble circumstances may cultivate the sites as gardens. The work is already past the experimental stage, for the first Report has been issued, giving particulars of what the society has accomplished in 1908-9. The ground is first prepared for cultivation, and is then let, either free or at a nominal charge, to approved applicants, men with large families being first considered. The society provides the seeds at a cheap rate, and, in some cases, free; whilst a supervisor (Mr. R. LEWIS CASTLE) gives the necessary instruction in tillage. There has been a good response to the appeal for the loan of land. The London County Council has lent various sites, and both the Wandsworth and the Hackney Borough Councils have assisted in this direction. Others have assisted by making presentations of tools, manure, seeds, and other necessaries. At West Ham, when the whole of the land is under cultivation, plots, each containing 20 rods of land, will be provided for about 300 men. The society merits success. The work it is doing has advantages, not only for those who cultivate the gardens, but for the general public. In place of what were little better than rubbish heaps, there are now to be seen gardens. The healthful recreation derived by those who work the gardens may prove an incentive to some to return to the country. The man who becomes a keen gardener seldom abandons his love of cultivating flowers, fruits and vegetables, and should he become dispossessed of his holding, he will be likely to seek another. Thus these men may, in time, become allottees, and we regard an allotment as the finest acquisition a working man can make. Gardening extends its scope every year; the boys in rural districts are taught how to plant and sow, and the men in crowded cities are shown how to make the vacant town lands bring forth plenty. We commend the appeal made by Mr. FELS in our issue of April 24, p. 267, to the sympathy of readers.

THE CULTIVATION OF THE NARCISSUS.—That the home market is no longer chiefly dependent on Holland for the supply of bulbs is well known, though it will be news to some that the South Lincolnshire and Cambridgeshire Fen districts are actively developing an export trade in



FIG. 134.—ANDROCYMBIUM MELANTHOIDES FROM MR. GUMBLETON'S COLLECTION. BRACTS WHITE, WITH GREEN LINES.

(See p. 315)

Narcissus bulbs. In the course of a valuable article by Mr. JAMES WAUGH in the March number of the *Journal of the Board of Agriculture*, attention is drawn to this fact, and it is suggested that bulb cultivation for trade purposes might be adopted with advantage by occupiers of small holdings and allotments. Mr. WAUGH describes the best methods of cultivation, the preparation of the soil, the marketing both of the cut flowers and of the bulbs, and gives figures to show that Narcissus growing may result in a net profit of something over £50 per acre. We commend the article to all interested in the subject, but would add the caution that, before a small holder puts money into this branch of horticultural industry, he shall satisfy himself of the accessibility of a market for his produce and of the cost of carriage.

CALCIUM SULPHIDE AS INSECTICIDE AND FUNGICIDE.—The following method of preparation of this useful material was given by Dr. CONTANT in a lecture to the Société Nationale d'Horticulture de France, published in the February number of the *Journal of the Society*. Prepared in this way, the calcium sulphide (or polysulphide) is said by Dr. CONTANT to be extremely efficacious. A large kettle, capable of holding eight gallons, is set up in the open air over a fire. Three to four pints of water are poured into the kettle and boiled, and then about 3 lbs. of quicklime are added gradually; the kettle is then half-filled with water. Fine sulphur passed through a sieve is dropped in little by little, the liquid being stirred meanwhile. The liquid is then boiled for half an hour; water is added till the kettle is full, and the liquid is allowed to stand for six hours at least. A sediment settles down, leaving a clear orange liquid. The deposit serves as an excellent winter wash for fruit trees, &c. The liquid to be used for spraying is diluted with nine times its volume of water, and is serviceable both for the destruction of fungus pests and also for the aphid of Roses, Peaches, &c. It is particularly useful for vines and makes "sulphuring" unnecessary. It should be noted that the liquid to be kept must be syphoned off into receptacles—such as carboys—which can be corked, since by exposure to air the sulphides become decomposed, forming sulphur and calcium sulphate.

ADVICE IN SPRAYING APPLE TREES.—The following notes are from the Experiment Station *Bulletin* 253 (Michigan State Agricultural College, Horticultural Division), entitled "Can the General Farmer Afford to Grow Apples?": Time to spray Apple orchards: 1. Just before the blossoms open, Paris green or arsenate of lead should be added to Bordeaux ($\frac{1}{4}$ lb. of the first or $1\frac{1}{2}$ lb. of the second to 50 gallons of Bordeaux). 2. Just after blossoms fall: the mixture as before. 3. Two weeks later: as before. 4. Early in August: to destroy the second brood of Codling caterpillars and check Apple scab, use one-half as much copper sulphate, i.e., 2 lbs. instead of 4 lbs.; otherwise as in 1, 2, 3. To use the colloquial language of the *Bulletin*: Do a thorough job; squirting a little mixture on a limb is poor business. Drench the whole tree. Let the wind help you. Spray with it. Finish the work on a still day, or when the wind blows in a direction opposite from that from which it blew during the first spraying. Bordeaux stood overnight is not so good as fresh mixed. A little vinegar will cleanse the hands of Bordeaux. To make Bordeaux mixture: 50 gallons of water, 6 lbs. lime, 4 lbs. copper sulphate; dissolve the copper sulphate in 2 gallons of hot water; make up to 25 gallons in a barrel. Slack the lime to a thin paste; make up to 25 gallons. Pour together. When emptying into the spray-tank strain through a brass wire strainer.

SULPHUR FUMES FOR FRUIT PRESERVING.—

Though the following method for preserving Peaches, Apples, Pears, and Tomatos would not at first sight seem very likely to be successful, yet, according to the *Queensland Agricultural Journal*, March, 1909, it may be adopted with confidence. Peel Peaches, or other fruit, cut in halves, remove seeds, put in a wooden tub having a hole in the centre for the vessel containing the sulphur. If four gallons of fruit are required, prepare enough for six gallons to allow for shrinkage. Place sulphur at the rate of one teaspoonful per gallon of fruit in the tub, ignite the sulphur, and cover the tub for four hours. Remove the fruit, place in stone jars, and cover. According to the journal quoted, fruit preserved in this way keeps fine all winter, and tastes like fresh fruit.

SALE OF AN ESTATE.—The Earl of EGMONT'S estate of Cowdray, including over 13,000 acres, has just been purchased by Sir WEETMAN PEARSON. Cowdray Park lies in the Midhurst country, surrounded by the estates of Lord LECONFIELD, the Duke of RICHMOND, and the Duke of NORFOLK. The present mansion was built in 1875, and stands in a park of 600 acres.

KEW GUILD DINNER.—We are requested to remind our readers that the annual dinner of the Kew Guild will take place at the Holborn Restaurant on the 25th inst., the first day of the Temple Flower Show, at 7.30 p.m., not as heretofore on the eve of that show. The secretary, Mr. W. N. WINN, will be glad to hear before the 18th inst. from those who intend to be present.

NATIONAL CHRYSANTHEMUM SOCIETY.—This Society having decided to hold but one exhibition in 1909, has increased the prize list. The Crystal Palace is again selected for the holding of the exhibition, which has been fixed for November 3, 4, and 5. A conference on Chrysanthemums will be held at the Essex Hall, Essex Street, Strand, W.C., on Wednesday, October 6, 1909, commencing at 3 p.m. Papers will be read on various aspects of Chrysanthemum culture, and discussion will be invited. The annual outing will take place on August 9, when a visit will be paid to Friar Park, Henley-on-Thames. We are requested to notify the secretary's change of address. In future communications should be addressed Mr. R. A. WITTY, 72, Savernake Road, Gospel Oak, London, N.W.

THE WILLIAM WOOD FUND.—We are pleased to learn from Mr. GEORGE MONRO that the sum of £195 13s. has been raised as the result of the appeal made on behalf of Mr. WILLIAM WOOD, of Heathside Nurseries, Dartford Heath. It will be remembered that Mr. Wood's glasshouses were destroyed by a snowstorm in March last.

THE LORD PENZANCE SWEET BRIARS.—We read in the American journals that the demand for varieties of the Penzance Sweet Briars is quite exceptional this year. They are certainly to be classed amongst the most charming plants in the Rose garden.

A PROLIFIC PLANT.—*Cynoches chlorochilens* holds for the present the record for number of seeds per capsule. According to the *Kew Bulletin* (No. 4, 1909), the number of seeds in a capsule of this plant presented to Kew by Messrs. HUGH Low & Co. is, at a low estimate, about 3½ million. Dr. SCOTT, who estimated the number, adds that the weight of each seed is about .0000036 grams—that is about 20,000 seeds to the grain—and that the progeny of the single flower would, if all the seeds came up, be about equal to the population of London.

FLOWERS IN SEASON.—Messrs. BAKER'S, Wolverhampton, have sent four new Saxifrages, including the new variety *S. decipiens Arkwrightii* (see fig. 135), which received an Award of Merit at the meeting of the Royal Horticultural Society on May 2. The flowers of this variety, when expanded, measure 1 inch across and are of great substance; the unopened buds are suffused with a pale rose tint, which disappears almost completely in the mature flowers. From the number of unopened flower-buds the variety is evidently a profuse bloomer. *S. Camposii* has flowers of purer whiteness than those of *S. d. Arkwrightii*, but not nearly such large or vigorous inflorescences. The other varieties include *P. W. Hosier*, a robust variety bearing rich crimson flowers; *A. Lynes*, with rosy-crimson blossoms; and *Lady Dean*, the most vigorous of the quartette, the blossoms being suffused slightly with rose. —Mr. F. FLEETWOOD PAUL, Botley, Hants., who sends varieties of Sweet Peas, writes: "I am sending you herewith a few of my improved Telemly strain of winter-flowering Sweet Peas. The plants from which these blooms were cut commenced flowering at the end of February. Of course, the blooms are not so fine as those of the Spencer type, but they can be had at any season."

—A correspondent sends two new varieties



FIG. 135.—*SAXIFRAGA DECIPIENS ARKWRIGHTII*: FLOWERS WHITE.

of Sweet Peas, one a long-stemmed white variety, the other of a rose-salmon tone of colour. He writes: "I send for your inspection a new Sweet Pea, raised by Mr. James Agate, of Havant. The colour is of the deepest shrimp-pink, after the style of Earl Spencer but more intense. The standard is beautifully waved and of the size of that of the John Ingman variety. The other variety is Agate's White, a long-stemmed flower suitable for market purposes." —Messrs. JAS. VEITCH & SONS have sent us a beautiful bouquet of *Schizanthus*. The strain is described as "Veitch's hybrids," and it is certainly remarkable for the distinct, pretty colours. We hope to see them exhibited at the Temple Show.

MR. W. MARSHALL, V.M.H.—Our readers will extend their congratulations to the Chairman of the Floral Committee of the Royal Horticultural Society on the occasion of his golden wedding. Mr. W. MARSHALL was married on May 10, 1859, at Auchinvaith, Blantyre, N.B., to MARGARET, younger daughter of DAVID BRAND, of Glasgow. It will be remembered that Mr. MARSHALL was successful in first blooming *Odontoglossum crispum* in this country. He was one of the founders of the United Horticultural Benefit and Provident Institution

and the Royal Gardeners' Orphan Fund, two excellent institutions in which he continues to take practical interest. He has been a member of the Royal Horticultural Society's Council for many years past, and Chairman of the Floral Committee for 23 years. His wide knowledge, geniality and firmness are qualities for which he is universally esteemed by those who are associated with him in horticultural work. In every capacity Mr. MARSHALL has worked with distinction to himself and benefit to horticulture. We hope that he and Mrs. MARSHALL have yet many years of happy and useful life before them.

GIFT OF A PUBLIC PARK TO SHEFFIELD.—

It is announced that the Duke of NORFOLK has presented Norfolk Park to the inhabitants of Sheffield. It has been maintained hitherto entirely at the expense of the Duke for the use of the public. The Duke's Sheffield residence adjoins it. The park is about 60 acres in extent, and was laid out by the grandfather of the present Duke in 1841. It is situated on a hill overlooking the town, not far from the Midland Railway Station.

IMPORTS OF FRUIT AND VEGETABLES FROM FRANCE.—

The value of fruit and vegetables imported from France alone reached in 1906 the enormous sum of £2,400,000. In the course of six years (1899-1906) the value of the imports increased from less than one million sterling (23 million francs) to almost three times that sum. According to the *Journal* of the Horticultural Society of France, this increase has been due in considerable measure to the enterprise shown by the French railway companies in establishing express goods trains with properly ventilated trucks at reduced rates. We commend this enlightened policy to the notice of the railway companies of our own country.

BULBOUS FLOWERS IN THE BIRMINGHAM PARKS.—

The planting of bulbs in the municipal parks of Birmingham extends every year. The Cannon Hill Park receives the largest share, but extensive planting is also undertaken at Summerfield, Victoria, Aston, Ward End, Highgate, Calthorpe, and Queen's Parks. The influence of the smoky atmosphere on the blooms in some parts of the town is illustrated by a comparison between the flowers in this park with those in more outlying gardens. One has merely to look at a bed of Hyacinths at, say, Aston, or even Cannon Hill, and compare it with a similar display at Queen's Park, Harborne, which is in comparatively open country, free from the smuts and acid-charged vapours of an industrial centre. Looking at the blooms one can hardly imagine that they are of the same kinds as those planted nearer the centres of industry.

A NEW DISEASE OF CUCUMBERS AND VEGETABLE MARROWS.—

A new disease of Cucumbers and Marrows is described in *Die Gartenwelt*. The disease in question, which has recently appeared in Europe, is due to a fungus, *Pseudoperonospora cubensis*, and like so many other fungal diseases has made its way to Europe from America, where it is endemic on wild members of the Cucurbitaceæ. The symptoms of the disease are:—dry, yellow-brown spots, at first rounded, later angular, on the young leaves; on the underside of the leaf the mycelium of the fungus forms violet to grey, irregular patches. In certain cases, at all events, the diseased plants fail to produce fruits. Spraying with dilute Bordeaux mixture is recommended. Fortunately moisture and warmth do not appear to favour the spread of the disease, so long as ventilation is not neglected.

NARCISSUS CHALLENGER.

THE variety shown in fig. 136 was raised by Mr. E. M. Crossfield, Cossington House, Bridgewater, and exhibited by Messrs. Barr & Sons at the meeting of the Royal Horticultural Society on May 4. The plant belongs to the flat-cupped or incomparabilis (sometimes called Engleheartii) section. The corona is a rich shade of orange, and very broad. The segments of the perianth also are very large and of almost perfect symmetry. The plant is a tall grower and of fine bearing. It is a seedling from the same cross as that which produced the remarkable Pixie variety.

according to the vigour of the plant, and have long sheaths closely investing the underground stem. Nestling in the uppermost leaves are two to eight ovate bracts, which form the most conspicuous feature of the plant, for at least the two innermost bracts are white, with longitudinal green veins, and sometimes $3\frac{1}{2}$ inches long and 2 inches wide, forming an involucre round the flowers as in some species of *Hæmanthus*. The flowers are numerous, but small, and of the true Liliaceous type; they are borne on short stalks, and have six long-clawed segments in the ovate-hooded blades, of which the stamens are fixed and reach to or beyond the tips. The three styles are quite distinct, and

been introduced from South Africa by Mr. Bowie in 1823.

The generic name is derived from *aner*, a man, and *cymbos*, a cavity, in allusion to the stamens nestling in the hooded perianth-segments. *C. H. Wright*.

GROWERS AND THE RAILWAYS.

WIDESPREAD satisfaction has been created amongst the trading community by the withdrawal of the Bill laid before Parliament to sanction the amalgamation of the Great Northern, Great Central, and Great Eastern railways, this withdrawal being necessitated by the storm of opposition raised against the Bill throughout the country.

The attitude adopted by the traders has throughout been perfectly clear. They do not for one moment contend that railways companies shall be compelled to continue their policy of cut-throat competition for the purpose of securing passenger traffic, and they recognise that any reasonable arrangement which would prevent the running of almost empty passenger trains in certain districts, merely on account of the jealousy existing between competing lines, is a policy which is bad both for railway shareholders and for the commercial community, as it involves the unnecessary expenditure of money which might usefully be devoted to encouraging the merchandise traffic of the country, so as to swell the profits available for railway dividends.

The question at issue goes, however, much further than this. Traders find that there is a strong tendency to a retrograde policy when once the spur of competition is removed, and that when they are at the mercy of a single company, or of two or more concerns combined into a single company, it is almost impossible to obtain reasonable treatment for goods traffic; in such cases the efficiency of the service becomes decreased, rates have a tendency to rise higher than ever, and complaints meet with no redress. It is notorious that Kent growers (as well as the shareholders) find themselves even worse off than they were before the amalgamation of the South Eastern and London, Chatham and Dover railways; growers in the Channel Islands have met with the same experience since various "mutual understandings" have been come to between the South Western and other railways as regards goods traffic arriving at ports on the south coast. This is, in fact, the result that may usually be anticipated where anything in the nature of a monopoly arises, and even those who are most strongly opposed to the nationalisation of our railway system are sometimes tempted to ask themselves whether, if they are to be at the mercy of a monopoly, such monopoly would not be safer in the hands of the State rather than in the hands of a limited company. There is the additional factor that the nationalisation of railways (on lines somewhat similar to those adopted in the Postal Service) stands on a different footing to any question of municipal trading. In the latter case, municipalities actually enter into competition with the private citizen, whereas, by the very nature of their undertaking, railways compete with no one but each other (except in the case of sea-borne traffic), although their policy inevitably affects for good or evil the commercial prosperity of the country to an extent which is practically incalculable. If, however, the spur of competition can be maintained, there is undoubtedly much to be said in favour of matters of this kind being left to the energy of private enterprise.

It is, therefore, scarcely to be wondered at that traders should experience a considerable feeling of relief at the success of their efforts to oppose the monopoly which would have been established by the parliamentary Bill referred to above. Their success proves that those who advocated a policy of laissez-faire on the ground that the railways were too strong for the trader, and that



FIG. 136.—NARCISSUS CHALLENGER: PERIANTH PURE WHITE
CORONA ORANGE-COLOURED.

ANDROCYMBIUM MELANTHOIDES.

ANDROCYMBIUM MELANTHOIDES, Willd. (see fig. 134) was described as long ago as 1808, and was in cultivation in 1823, but seems to have been lost until its recent re-introduction by Mr. W. E. Gumbleton, who received bulbs of the species from Mr. George Thornecroft, of Barberton, Transvaal. The bulb is like that of a minute Tulip, and very small in proportion to the size of the plant which develops from it. The main part of the stem is underground and very slender, and bears at the ground level two to four lanceolate leaves, which vary in length from 3 to 9 inches,

the capsule bursts septically. This species is not uncommon in the central region of Cape Colony, and extends through the Orange River Colony, Natal, the Transvaal, and Rhodesia, to Nyasaland. Several varieties have been described which differ chiefly with respect to robustness. A pencil drawing of this species by the late Prof. W. H. Harvey, of Dublin, is in the collection at Kew.

Another species, *A. eucomoides*, Willd., appeared as *Melanthium eucomoides* in the *Botanical Magazine*, t. 641, published in 1803, and a coloured drawing is preserved at Kew of a plant which flowered there on March 14th, 1824, having

"the inevitable was bound to happen," were neither wise nor far-sighted; the result also enforces the lesson that "combination must be met by combination," as well as by constant watchfulness and vigorous action on the part of those whose interests are attacked.

It often happens, however, that in the moment of victory danger is greatest. There is always the possibility of "counter-attack" at the moment when the victors are lulled into a false sense of security. In the present instance, it is by no means certain that the companies concerned will accept their rebuff with equanimity, and they may yet take further steps with a view to achieving their desired ends. There is, for instance, the possibility that they may now enter into "mutual understandings" or "tacit arrangements" not to compete with each other in respect of various "reasonable facilities" hitherto granted to traders, and the President of the Board of Trade has already hinted at the possibility of agreements of this kind being "driven underground" in the case of an open request for leave to amalgamate being vetoed. It is obvious, therefore, that the necessity for watchfulness is increased rather than diminished at the present stage of the conflict.

It must also be borne in mind that the only result of the successful opposition to the Bill is that, for the present, traders are relieved from the danger of further encroachment in this particular direction upon their existing rights, and that their many grievances still remain unremedied. For the past 12 months a Conference, originally convened by Mr. Lloyd-George, has been sitting for the purpose of considering the numerous complaints of hardship put forward by traders, but as yet no definite result has been made known. It is, in fact, rumoured in some quarters that the railways experts at the Conference have succeeded in engineering the proceedings in a manner which has been considerably successful from their own point of view. Time is, of course, on their side, and some months ago a highly-placed railway official remarked, in the presence of the writer, that he thought there would be no difficulty in prolonging the proceedings, at all events, beyond the life of the present Government! At the moment of writing, the President of the Board of Trade has announced his intention "of considering the best form and scope of a parliamentary enquiry into the question of railway amalgamations and working agreements." Growers will, doubtless, be able to give useful and, in certain instances, remarkable evidence in such an enquiry, but it is to be hoped that the President of the Board of Trade may realise the necessity of conducting the proceedings with all possible despatch. So far as may be feasible, any such enquiry should be proceeded with from day to day in the same way as actions are tried in the law courts. A commission or committee, which would sit at intervals (sometimes of several weeks), as in the case of the present Conference, would probably prove to be worse than useless if any real attempt at reform is to be made.

In addition to the successful opposition of the Amalgamation Bill above discussed, traders may also take heart from the result of the recent struggle between Messrs. Elders and Fyffes, Ltd. (the Banana merchants), and the combined strength of the railways of the United Kingdom. It is, of course, well known that merchandise conveyed by rail is charged at rates varying according to the "class" in which any particular article is placed by statute. Excluding the classes which deal only with heavy traffic, those which affect the ordinary trader are the classes known as Nos. 1, 2, 3, 4, and 5. Articles in Class 1 pay the lowest rate, and the charges increase through the different classes until Class 5, which pays the highest rate, is reached. Hitherto, unripe Bananas have stood under statute in Class 3. For practical purposes, however, they have been placed in the railway working classification in

Class 2 if sent in minimum loads of one ton per wagon, but in this case they have been subjected to various onerous conditions, as the railways would only consent to carry Bananas loose in bunches, "at owner's risk as regards deterioration, damage, loss by pilferage, or from other causes." Furthermore, the rates charged only entitled the trader to haulage "from station to station," and the companies did not undertake to supply labour for loading or unloading their trucks.

After negotiations extending over several years, Messrs. Elders and Fyffes decided some months ago that the time had come when application should be made to the Board of Trade for an order compelling the railway companies to extend to them lower rates and more reasonable treatment, and accordingly they applied for "unripe Bananas, loose, in minimum loads of one ton per wagon" to be placed in Class 1. In due course, the Board of Trade sat to hear the application, and seven railway rate experts, representing the seven principal companies of the kingdom, attended to oppose. After considering the matter for several days, the Board of Trade notified the parties concerned of their intention to make the order asked for by Messrs. Elders and Fyffes, with the exception that the minimum load to be carried at Class 1 rates should be two tons instead of one ton. To this Messrs. Elders and Fyffes raised no objection, but a chorus of indignation arose from the railway companies, and they promptly applied to the High Court for an order forbidding the Board of Trade to make the order. Mr. Justice Jelf and Mr. Justice Coleridge, however, declined to interfere, and the order of the Board of Trade has now become law by publication in the *London Gazette*. The order in question contains a schedule of the Railway Acts thus affected, and some idea of the complicated state of affairs with which the ordinary trader is faced in his dealings with the railway companies on the question of rates may be gathered from the fact that the Acts affected by the order amount to no fewer than 35 in number. Messrs. Elders and Fyffes are to be congratulated on their courageous stand in the matter, and it is to be hoped that the result may prove to some of the less enlightened railway companies of the kingdom that it is not always a wise policy to drive the trader too far, and that in litigation of this kind it is not necessarily a foregone conclusion that the combined strength of the railway companies must win. H. M. V.

BULBS IN BATTERSEA PARK.

THIS beautiful South London park is now displaying the varied beauties of tree and shrub, of flowering bulbs and other early plants. It is, perhaps, the skilful arrangement of the masses of mixed shrubs and their distribution at suitable points in the landscape, and the garden-like character of the laying-out of this park that are its chief charms. The beauty of the shrubs and trees, which are now clothed with their fresh foliage and flowers, inconspicuous as the latter mostly are, is much appreciated at this season. Willows and Poplars, with their grey young leaves are the most striking. Near the reserve garden by the Albert Bridge are bold beds of Tulips. The adjacent panel garden has four circular beds, which are furnished with crimson Tulips of one variety, with a larger bed, also circular, in the centre. Two squares of a yellow Narcissus and two of *N. bicolor* flank these; the whole making a bold display.

In this part of the park are several showy specimens of *Prunus persica*, old trees, 10 feet high, densely covered with their semi-double flowers of various shades of crimson. Following the diagonal path leading to the Avenue, there are batches of Narcissi in the grass, and a group of Kaiser Kroon Tulips and yellow Wallflowers.

In the sub-tropical garden, two beds are planted with scarlet and yellow Tulips, together

with Mascari (Grape Hyacinth). Other beds of Tulip Cottage Maid and *Arabis albida* produce a pretty effect. Beds are also planted with purple Tulips and Polyanthus of fine quality; with brown-coloured Wallflowers, Daffodil Sir Watkin, and Tulip La Belle Alliance; others contain Hyacinth gigantea, of a light pink colour, and Tulip La Belle Alliance. The large heart-shaped beds at the corner of the grass plot contain variously shaped groups of bulbs and Primula Polyanthus, crimson and yellow Tulips, Hyacinth King of the Blues, Tulip Joost van Vondel, Primula Polyanthus being intermingled with the bulbs with good effect. Hereabouts, a big circular bed displays strong-growing Cinerarias in various colours, and having *Dicentra* (*Dielytra*) spectabilis planted thinly over it. A curious mixture of dull purple and blue Hyacinths is not altogether pleasing to a critical observer.

A quiet effect is made in a bed filled with Mme. Van der Hoop Hyacinth (white) and Primula Polyanthus. One of the most attractive beds is filled with the soft crimson-coloured Tulip La Reve and crimson-flowered Daisies, the latter just showing flower. Tulip Proserpine, with white *Arabis* and yellow Wallflowers is excellent.

The beds of Rhododendrons and Azalea sinensis show great promise for flowering; and so also do bushes of *Magnolia conspicua*. Tulipa fulgens, a late-flowering species, is in full blossom, and amongst its bulbs are clumps of Pyrethrum roseum varieties. By the lakeside, a bed is planted with Azalea sinensis and *Iris germanica*, and if these flower simultaneously the effect should be good. The young growth of *Gunnera manicata* by the lakeside is magnificent. F. M.

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

AN INTERNATIONAL HORTICULTURAL EXHIBITION.—The wish suggested in your concluding remarks (see p. 232) on the great International Exhibition at Berlin, that this country may soon see a great international show will find a response in the heart of all who love horticulture. Whilst we have had many good exhibitions, no really great international show has been held in London since 1866. Very few are now alive who saw that display, but it was the finest horticultural show Great Britain had seen. If another international exhibition were held, it would be likely to excel that of 1866, just as that excelled all others which had preceded it. The chief difficulty to overcome in relation to such a show is that of getting a fitting place in London or its suburbs. There is, for choice, doubtless the Crystal Palace, the White City, Earl's Court, the Royal Botanic Gardens, and last, but by no means least, Holland Park. But so much would depend on the time of year at which the show was held. It is unsafe to hold shows here under canvas earlier than the end of May. No one would dream of doing so in April. Probably the most favoured time for canvas would be in June. If it were held much earlier than that, permanent buildings such as are found on some of the sites named would be essential. I do not wish at this moment to discuss the possible suspension of the Temple shows, but it is by no means improbable that the conditions imposed on those shows have become too onerous to be longer endured. The fact that no refreshment other than lawn teas will be permitted there this year affords proof that the Society is to be gradually expelled from the gardens. In any case, much as may have been the prestige of the Temple shows, those at Holland Park are far more enjoyable. If any movement is made in the direction of promoting a great international show in London, necessarily the chief force must come from the Royal Horticultural Society. But that fact need not prevent outside influence being brought to bear on the Council in the matter. The work of organising the exhibition should be, as in 1866, in the hands of a powerful representative horticultural committee. A.

SPRING FLOWERS AT HAMPTON COURT PALACE.—Seldom have spring flowers made so brilliant a display at Hampton Court as this year. Bulbs, especially both early and late Tulips, figure prominently, and of these very many seem to be so new to visitors that note-books are brought into use constantly. The long border which margins the broad promenade on the palace side is a mass of Tulips almost from end to end, early and late varieties being intermingled on carpets of dwarf plants; there is no break, as the succession is well maintained. The broad edging to this border of double Arabis is like a trail of snow. In the beds on the opposite side of the walk masses of various-coloured Polyanthus, wondrously fine Pansies, giant double Daisies, Violas, Wallflowers, yellow Alyssum, and various Aubrietias with the snowy Arabis afford delightful carpets for many diverse double and single Tulips. I have never seen the beds better furnished or more effectively filled A. D.

ACETYLENE GAS REFUSE.—During the past few years we have used a considerable quantity of this material in the gardens here. It is certainly advisable to allow the refuse to be exposed to the atmosphere some time before using, say, 12 months. At first I tried it on land used for Potatos, Peas, and a bed of Godetia, and with no ill-effects. Since then it has been used generally in the kitchen garden, especially for working into the subsoil, which is of a clayey nature. During the winter of 1907 and 1908 we trenched an old disused timber yard, with the intention of adding it to the kitchen garden. The refuse was used very freely for mixing with the staple, with any other available material, such as manure from old hot-beds, leaf-mould, burnt garden refuse and decayed sawdust. One of the finest crops of Potatos I have seen was taken from this land last season. Other crops have succeeded, including Globe and Jerusalem Artichokes, Borecole, Brussels Sprouts, Turnips, Spinach, Beet, Peas, and Spring Cabbage. If the refuse were used whilst fresh it would probably prove injurious, for, on taking charge here, I found the Onion crop useless, and it was attributed to the refuse having been emptied directly on to the land after it had been taken from the gasometer. G. H. Head, Kingsdon Manor Gardens, Taunton.

LAW NOTES.

THE SALE OF POISONOUS COMPOUNDS.

A SUB-COMMITTEE of the Public Health Committee of Edinburgh Town Council recently considered applications by seedsmen for licenses to sell poisonous substances used for horticultural purposes under the Poisons and Pharmacy Act, 1908 (Section II.). Mr. A. E. S. Thomson appeared on behalf of thirteen seedsmen making application. The Edinburgh Chemists' Society opposed the applications.

Mr. Thomson held that the chemists were only rivals in trade. The regulations regarding the sale of poisonous substances were directed, he said, against vendors other than the seedsmen. What the seedsmen wanted was to get the benefit of the statutory authorisations. The seedsmen manufactured those substances, and if they were refused the licenses the trade would pass from the seedsmen to the chemist. This was manifestly unjust. Nineteen such licenses had been granted in Glasgow.

Mr. T. B. Morison said he was informed that no licenses had been granted either in Glasgow or elsewhere in Scotland. He appeared on behalf of the Chemists' Association in Edinburgh, and on behalf of numerous vendors of these poisonous substances. The Act provided that such licenses were to be granted only where there were not in the particular localities facilities sufficient to meet the reasonable requirements of the public. In Edinburgh the facilities were ample. Counsel also argued that the applications from firms were incompetent, as licenses could be granted only to individual persons.

Before the committee rose for lunch, it was decided that the applications be withdrawn, to be amended so as to become applications by individual persons.

Thereafter the committee sat in private and decided after considerable discussion to recommend that the three applications made by individuals should be granted.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MAY 4.—*Present:* Mr. E. A. Bowles, M.A., F.L.S. (in the chair), Sir Daniel Morris, K.C.M.G., Messrs. J. Fraser, J. W. Odell, H. J. Elwes, J. T. Bennett-Poë, A. Worsley, H. T. Güssow, G. Masee, J. Douglas, F. J. Baker, E. H. Holmes, W. Hales, R. Hooper Pearson, W. Cuthbertson, R. A. Rolfe, F. J. Chittenden (hon. secretary), and W. E. Ledger (visitor).

Hybrid Narcissus.—Mr. J. DOUGLAS showed specimens of a hybrid Narcissus obtained by crossing *N. calathinus* (which is not quite hardy) with the bicolor trumpet Daffodil *Wear-dale Perfection*. The hybrid was a white trumpet Daffodil with a somewhat short trumpet. It has proved hardy.

Variations in Primroses.—Mr. DOUGLAS commented upon the considerable variations often seen in cultivated Primroses in the comparative lengths of the style and the positions of the stamens, and showed specimens to illustrate his remarks. The extreme examples of departure from the normal conditions were seen in a flower in which the anthers and the stigma were both level at the base of the corolla tube, and in another where the style projected much beyond the mouth of the corolla tube.

seen in these Tulips. The exhibit was particularly interesting since it was stated that the branching character had become perfectly fixed when the plants were reproduced vegetatively, and that seedlings give a considerable proportion of plants showing the same character. In the case of Tulips the branching character cannot be due to the union of several flowers, as is usually the case in fasciation, since normally the Tulip is generally one-flowered. It must, therefore, be due to division of the flower-forming tissue at a very early stage of its development.

Hybrid Orchids.—Mr. ROLFE showed flowers of *Epidendrum evectum* (purple) and *E. xanthinum* (yellow), and the hybrid raised by crossing them (= *E. × kewense* of a salmon colour). He also showed flowers of *E. × kewense* crossed with *E. evectum*, producing a hybrid having purple flowers (but not of the same shade as *E. evectum*), and of *E. × kewense* crossed with *E. xanthinum*, this cross bearing flowers resembling *E. × kewense*. When *E. × kewense* was self-pollinated it reproduced flowers of three sorts bearing great resemblance in colour to *E. evectum*, *E. × kewense*, and *E. xanthinum* respectively.

Various plants.—Mr. G. PAUL sent specimens of the two shrubs *Plagiospermum sinense*, an interesting plant belonging to the Rosaceæ, with flowers nearly approaching the Celastraceæ in structure, and bearing thorns a little distance above each of the leaf axils in addition to the



FIG. 137.—BRANCHED TULIPS FROM BULBS IN WHICH THE QUALITY OF BRANCHING IS FIXED.

(See note in "Scientific Committee.")

Hybrid Salices, &c.—Mr. J. FRASER exhibited living and herbarium specimens of the following plants:—

(1) *Salix fragilis × triandra* (alopeuroides Zausch.) gynandrous specimens of the tree, which is normally male. Some of the smaller branches bore female catkins with a few stamens amongst them. The ovary is similar to that of *S. fragilis*, and the stigmas recall *S. triandra*. The posterior gland is often changed into one or two ovaries, separate or combined. The stamens are usually three; in the female catkin there may be one, two, or three ovaries, and sometimes one stamen and one ovary (collateral).

(2) *Salix myrsinites × nigricans* (punctata, Wahlb.).

(3) *Salix arbuscula × herbacea* (simulatrix, F. B. White). Mr. FRASER also exhibited specimens showing sepalody of the petals in Wallflower, and pistillody of the stamens in the same flower, and fasciation of the flower stem of *Cardamine pratensis*.

Branching in Tulips (see fig. 137).—Mr. R. HOOPER PEARSON showed branched stems of Tulips of the Darwin form from Mons. Bouy, Clermont-Ferrand, France, the varieties representing considerable variety in colour. There were usually four flowers, but sometimes as many as seven from a single bulb. The stems showed some degree of fasciation such as is frequently

usual axillary bud, and *Gleditschia Delavayi*, a species from Yunan. Both of these have proved hardy at Cheshunt, but Mr. HALES stated that the latter had been killed by frost at Chiswick.

Mr. WORSLEY showed an inflorescence of *Oncidium verrucosum* var *Rogersii* to illustrate the great amount of variation in the lobing of the labellum seen in this plant.

Mr. ELWES exhibited a number of fine flowers of the recently-introduced *Regelio-Oncocyclus* hybrid Irises raised by Mr. van Tubergen. He found that if kept dust dry for about five months they could be successfully grown in this country, and did not die out as the *Oncocyclus* Irises usually do.

SPILSBY DAFFODIL.

APRIL 29.—The eighth annual exhibition of spring bulbous flowers was held at Spilsby on the above date. The exhibits all round were remarkably good. For a collection of Daffodils in 30 varieties (not to include *Polyanthus Narcissus* nor double varieties), Messrs. Barr & Sons, Covent Garden, London, offered a silver vase, which was won by Mr. C. MILLER, Spilsby, for the second year in succession. The Challenge Cup, given by the late Mrs. Thompson, East Keal, open to residents within the Horncastle Parliamentary Division, for 20 distinct varieties of Daffodils (not including *Polyanthus* varieties),

was awarded to the Rev. H. G. ALINGTON, Candlesby Rectory. Three premier prizes were offered, silver medals being awarded to Mr. J. F. RAWNSLEY, Candlesby, for the best flower of a Magni-coronati variety; to Mrs. POCKLINGTON-COLTMAN, Hagnaby Priory, for the best Medio-coronati variety; and to Mr. T. SIMPSON for Parvi-coronati. The principal prize-winners were Mrs. POCKLINGTON-COLTMAN, the Rev. G. H. HALES, the Rev. H. G. ALINGTON (Candlesby Rectory), Dr. M. C. MOXHAM (Stickney), Messrs. C. MILLER, T. SIMPSON, H. SHARP, P. W. FREEMAN (Spilsby), S. F. STAFFURTH (Freiston), J. F. RAWNSLEY, and H. HAND (East Kirkby). Messrs. R. H. BATH, LTD., Floral Farms, Wisbech, and Mr. A. M. WILSON, East Keal, showed non-competitive exhibits.

KENT, SURREY & SUSSEX DAFFODIL.

APRIL 30.—The exhibition which took place at Tunbridge Wells on this date is the fourth in succession held by these counties. The exhibition, although not the finest of the series, was certainly superior, from a cultural point of view, to that of last year. Trade exhibits greatly contributed in making the show a success. Messrs. BARR & SONS, King Street, Covent Garden, London, and Mr. F. HERBERT CHAPMAN, Rye, Sussex, both staged excellent stands of choice Narcissi, whilst Messrs. GEO. BUNYARD & Co., Maidstone, Mr. G. REUTHE, Keston, and Messrs. G. & A. CLARK, LTD., Dover, showed Alpine and other hardy plants, also cut flowers of spring-flowering subjects. Local exhibitors in Messrs. A. CHARLTON & SONS contributed a grand display of cut flowers of Anemones, Tulips, Narcissi, &c., whilst Mr. A. ASHTON, of Camden Park, showed well-grown Orchids. A collection of Narcissi seedlings not for competition was exhibited by the Rev. G. P. HAYDON.

In the class for a collection of Daffodils in not fewer than 30 nor more than 40 varieties containing representative blooms of three groups, Magni-Coronati, Medio-Coronati and Parvi-Coronati, Mr. G. A. NIX was awarded the 1st prize. Prominent varieties were Lady Margaret Boscawen, Glory of Leiden, Homespun, White Lady, Crown Prince, Weardale Perfection and Pilgrim. 2nd, Mr. C. J. NIX.

The best 12 distinct varieties of Daffodils belonging to the sections mentioned were shown by Mrs. BENSON. Especially good were the blooms of Virgil, Vesuvius, Albatross and Mme. Plemp. 2nd, M. GOURLÉ.

Mrs. BENSON was also awarded the 1st prize in the class for 12 distinct varieties of Trumpet Daffodils (Magni-Coronati), showing Capt. Nelson, Weardale Perfection, J. B. Camm, Mme. de Graaff, &c.; 2nd, Rev. G. P. HAYDON.

This lady also won in the class for 12 distinct single varieties of chalice-cupped Daffodils (Medio-Coronati). The Rev. G. P. HAYDON was again placed 2nd.

Mr. F. H. CHAPMAN won the 1st prize for six distinct Parvi-Coronati varieties with excellent blooms of Cassandra, Barcarolle, Horace, Kingsley, &c., the last-named being a remarkably fine specimen; 2nd, Mr. E. W. NIX.

ROYAL GARDENERS' ORPHAN FUND. (FESTIVAL DINNER.)

MAY 6.—The usual gathering at dinner of those interested in this Charity took place on this date at the Hotel Cecil, London. A large company, representative of all branches of horticulture, assembled under the chairmanship of his Grace the Duke of Rutland. Dinner was served in the handsome and spacious Victoria Hall, which was lavishly decorated with flowers and plants contributed by various friends of the Charity. It was a brilliant and successful function, and we are glad to be able to record that it resulted in a considerable addition to the funds of the Institution.

The former hon. treasurer, Mr. N. N. Sherwood, whose absence through indisposition has been greatly regretted on former occasions, was present, and signalled his return by one of his usual generous gifts.

After the loyal toasts had been proposed, the Chairman proposed that of the Royal Gardeners' Orphan Fund. His Grace asked the indulgence of his hearers, as he was singularly ill qualified to make any serious remarks on the industry which concerned most of those present. He was

gratified to know that in these days, when it is not easy to find any concern which is clear of financial difficulty, the Royal Gardeners' Orphan Fund was in a satisfactory condition. Although he doubted if such a good financial year as 1908, which celebrated the coming of age of the Institution, could be expected, he, nevertheless, appealed for liberal generosity to the Fund, and expressed the hope that the efforts made this year might produce a handsome contribution to the funds of the Society. The members of the gardening craft were exposed to trials and accidents as those in other branches of work. It was gratifying to know that the orphans of those who passed away before they had time to make adequate provision for their children's up-bringing, were assisted by such a Fund. In these days when charitable contributions were not so easily procured as in the past, it was very necessary to bring before the public and gardeners themselves the claims of the Society. Although gardening was one of the most interesting occupations the world had ever known, those occupied in its pursuit were never able to amass large fortunes, and such institutions as the Royal Gardeners' Orphan Fund especially needed generous support by the general public. His Grace expressed the hope that those persons who had come forward to aid it in the past might do so in the future, and that the generosity and goodwill of the public would always be extended to the charity.

The hon. treasurer, Mr. Edward Sherwood, expressed thanks to his Grace for the kind words in which he had couched his appeal on behalf of the Fund. Last year a great effort was made to make the occasion memorable, and he was glad to state that the revenue from all sources for 1908 constituted a record, but the number of applicants seeking relief was also a record. Since February 14 applications for relief had been received, and these were found to be so necessitous as to warrant the committee granting a measure of temporary assistance. At the present time 123 children, of ages ranging from 2 years to 13 years, were in receipt of the full yearly allowance of £13. He appealed for increased annual subscriptions, and thought that gardeners should subscribe more generally to the Fund. In some parts of the country the Institution was looked upon as a London Fund, but this was erroneous, for the candidates were selected from all parts of Great Britain. In several districts the local gardening societies were working in the interest of the orphans, and he appealed to gardeners to support these local funds. The administrative expenses were small, and were more than covered by the income from invested funds, so that all donations received were devoted directly to supplying the needs of the orphans.

The toast of "Gardeners and Gardening" was proposed by Mr. Edward White, who declared that horticulture was responsible for the livelihood of a vast number of persons, and it was remarkable that the members of the gardening world did not exercise more influence in forwarding the interests of this industry. The official mind should be disabused of the notion that horticulture is little more than an appendage to agriculture. He would like the support of a few good speakers in Parliament on matters horticultural. It was regrettable that when an employer felt the pinch of bad times, economy was usually first directed to the garden staff.

Dr. F. Keeble responded. When he regarded the extraordinary and beautiful results of the gardener's skill in producing new forms, he could not but admit that the encomiums passed on gardens and gardeners were well deserved. He was, therefore, able to accept on their behalf—the more readily because they were true and well deserved—the praises which had been that evening lavished upon gardeners and their gardens. It was sometimes said that the English mind was slow to perceive the advantages of co-operation; but for the practice of the noblest co-operation of all—that for the relief of distress—Englishmen, as that meeting testified, showed no lack of aptitude.

The toast of "The Visitors" was given by Mr. N. N. Sherwood, who expressed his pleasure at finding himself again at the dinner after an absence of six years. He was present when the Society was founded, and did not miss one of the dinners for 15 years. He had seen the Institution grow, and he was delighted at its prosperity. It commended itself to all who were charitably disposed. Last year he was pleased to endow the Maybud Campbell Fund,

in commemoration of the birth of his granddaughter: he now wished to provide a similar fund, so that her brother might be able to nominate an orphan to receive the benefits of the Fund. Mr. John Douglas, in a humorous speech, replied on behalf of the visitors.

The toast of "The Press" was proposed by Mr. William Poupart, who emphasised the fact that horticulture in general, and its benevolent aspect in particular, were well served by the horticultural Press. Mr. John Collingridge, in the course of his reply, stated that he was happy to be able to say on behalf of the horticultural Press that all that lay in its power would be done to further the interests of such admirable charitable institutions as the Royal Gardeners' Orphan Fund.

The secretary, Mr. Brian Wynne, announced that as a result of the dinner the Institution had benefited by £800. This was not so large a sum as that of the previous year, but it exceeded that subscribed in former years. Some of the principal subscriptions were as follow:—The Duke of Rutland £10, Mr. N. N. Sherwood and his sons £100, Messrs. N. M. Rothschild & Sons 25 guineas, Baron Schröder 10 guineas, Mr. Leonard Sutton £50, Mr. Reynolds £44 2s. 6d., Mr. David W. Thomson £25 4s., Mr. J. F. McLeod £21, Mr. E. S. Mansfield £20, Mr. R. Hooper Pearson £18 8s., Mr. W. Nutting £15 9s. 6d., Mr. R. Ker £12 10s. 6d., Messrs. Barr & Sons, 10 guineas, Mr. F. Noakes 10 guineas, Mr. J. C. Eno 10 guineas, Messrs. James Veitch & Sons 10 guineas, Mr. H. J. Veitch 5 guineas, and supporters at Covent Garden Market £195 10s. 6d., making a grand total of about £800.

NATIONAL AURICULA & PRIMULA. (MIDLAND SECTION.)

MAY 5, 6.—The tenth annual exhibition was held at the Botanical Gardens, Edgbaston, on the above dates, in ideal weather. Hitherto the Society's shows have been confined to one day, but the present show extended over two. There was a large attendance, and on the evening of the first day visitors were entertained with an excellent promenade concert.

Mr. C. WINN exhibited a grand lot of flowers, including several new seedlings. He beat all his competitors in the local classes, and won the Silver Medal offered by the Birmingham Botanical and Horticultural Society to the most successful exhibitor. The Bronze Medal offered as 2nd prize to the runner-up was awarded to Mr. W. M. SHIPMAN. Messrs. H. W. MILLER and T. STEVENS were successful in the classes reserved for less experienced amateurs. Mr. GEORGE SAVORY is to be congratulated upon winning 1st prizes in both the Show and Alpine classes reserved for maiden growers. First-class Certificates were awarded to seven Auriculas, and one Award of Merit to a new Primrose.

Honorary exhibits were received from Mr. C. WINN, who sent two dozen well-flowered plants of a very good strain of Schizanthus, for which a First-class Certificate was awarded.

Mr. W. A. WATTS contributed a large group of choice yellow and white Polyantheses, together with a small but interesting collection of Daffodils. (Silver Medal.)

SHOW AURICULAS.

Twelve classes were provided for these, and some very good flowers were exhibited. There were two exhibits in the principal class, which was for eight dissimilar varieties. The 1st prize was won by Mr. WALTER M. SHIPMAN, Clovely, Altrincham, with handsome flowers of Eucharis, Harrison Weir, Abraham Barker, Mikado, Acme, Richard Headley, Mrs. Potts, and Shirley Hibberd; 2nd, Mr. C. WINN, Selly Park, Birmingham (gr. Mr. T. T. Sheppard), whose best varieties were Perseverance, Harrison Weir and Eucharis.

Six Show Auriculas, dissimilar.—1st, Mr. C. WINN, with well-developed plants of Olympus, Lancashire Hero, Shirley Hibberd, Gerald, Henry Wilson, and Harrison Weir; 2nd, Mr. W. M. SHIPMAN.

Four Show Auriculas, dissimilar.—Mr. RICHARD HOLDING, Bournville, was awarded the 1st prize for splendid examples of Cleopatra, Diomedé, Mikado, and Acme; 2nd, Mr. J. COLLIER, junr., Ludlow.

Mr. A. J. WADLEY, Aston Manor, had the best pair of Show Auriculas, dissimilar, in Shirley Hibberd and Mrs. Potts.

SINGLE PLANTS.

Green-edged.—1st, Mr. H. W. MILLER, with a superb specimen of Shirley Hibberd; 2nd, Mr. W. M. SHIPMAN, with Prince Charming.

Grey-edged.—1st, Mr. W. M. SHIPMAN, with a sturdy, well-flowered plant of George Lightbody; 2nd, Mr. C. WINN, with Richard Headley.

White-edged.—Mr. W. M. SHIPMAN secured both the 1st and 2nd prizes with splendid plants of Conservative and Acme respectively.

Selfs.—This was a popular class, no fewer than 22 exhibits being placed before the judges, who awarded the 1st prize to Mr. A. LAWTON, Aston, for a grand plant of Mrs. Phillips; 2nd, Mr. RICHARD HOLDING, with Harrison Weir.

Selfs, yellow, primrose, orange or buff.—1st, Mr. W. M. SHIPMAN, with Daffodil; 2nd, Mr. C. WINN, with Joan Peacock.

ALPINE AURICULAS.

Eight Alpine Auriculas, dissimilar.—1st, Mr. C. WINN, with Richard Dean, Mrs. Danks, Argus, Thetis, Golden Acme, J. F. Kew, Majestic and Ettrick; 2nd, Mr. W. H. PARTON, King's Heath.

Six Alpine Auriculas, dissimilar.—Here again Mr. C. WINN was placed 1st with Mrs. Danks, Thetis, Richard Dean, Argus, Ettrick and J. F. Kew; 2nd, Mr. T. M. EGLINGTON.

Mr. A. LAWTON was placed 1st in classes provided for (1) four Alpine Auriculas, and (2) two Alpine Auriculas.

Mr. RICHARD HOLDING had the best plant possessing a gold centre with Majestic; and Mr. W. M. SHIPMAN beat 24 contestants in a class for a variety with a light centre with a splendid specimen of Perseverance; 2nd, Mr. C. WINN, with J. F. Kew. The best unshaded Alpine Auricula was named Unexpected and was shown by Mr. RICHARD HOLDING.

SEEDLING SHOW AURICULAS.

Two Show Auriculas.—1st, Mr. E. DANKS, with two unnamed varieties of much promise; 2nd, Mr. C. W. G. LUDFORD, Sutton Coldfield, with David Copperfield and Charles Dickens. The last-named exhibitor beat seven competitors in a class for a grey-edged variety with a lovely plant of Barnaby Rudge. The best single specimen of a green-edged variety was Charles Dickens, shown by Mr. C. WINN.

SEEDLING ALPINE AURICULAS.—The principal prize-winners in these classes were MESSRS. WINN, COLLIER and HOLDING.

FANCY AURICULAS, POLYANTHUS AND PRIMROSES.—These were not well shown, and competition was meagre. The successful prize-winners were MESSRS. WINN, COLLIER, LUDFORD and WATTS.

AWARDS.

First-class Certificates were awarded each of the under-mentioned Auriculas:—

Charles Winn (green-edged), *Dorothy Westmacot* (gold centre), *Edith Winn* (light centre), all from Mr. C. WINN. *David Copperfield* (self), shown by Mr. C. W. G. LUDFORD, Sutton Coldfield. *Bournville* (gold centre), *Salome* (light centre), *Unexpected* (gold centre), all from Mr. RICHARD HOLDING.

An Award of Merit was awarded to Primrose Miss Watts. This is a strong growing variety, with substantial cream-white, circular flowers nearly 2 inches across. It has a "thrum" eye, and the basal portion of the petals are heavily blotched with lemon-yellow.

PREMIER BLOOMS.

The premier Show Auricula was Richard Headley, shown by Mr. W. M. SHIPMAN. The premier Alpine was Golden Acme, shown by Mr. C. WINN, who also had the premier, seedling, Show in Charles Winn and the premier, seedling, Alpine in Dorothy Westmacot.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

MAY 10.—The monthly committee meeting of the Society was held at the Horticultural Hall, Vincent Square, Westminster, on this date. Two new members were elected and one nominated. Three members over 60 years of age withdrew their interest as per Rule 18. The sum of £45 5s. 5d. was ordered to be paid to the representatives of the late Mr. David James Nightingale. The amount of sick pay for the past month has amounted to £65 7s.

MARKETS.

COVENT GARDEN, May 12.

[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.—E.C.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Anemone fulgens, p. dz. bunches	1 6	2 0	Mignonette, per dozen bunches	4 0	6 0
— double pink, p. dz. bunches	1 6	2 6	Myosotis, per doz. bunches	2 0	3 0
Azalea, per dozen bunches	4 0	5 0	Narcissus, per dz. bunches	1 0	1 6
Carnations, p. doz. blooms, best American (var.)	2 6	3 6	— second size	1 0	2 0
— smaller, per doz. bunches	9 0	12 0	— larger, per doz. bunches	10 0	12 0
Catleyas, per doz. blooms	10 0	12 0	Cypripediums, per doz. blooms	1 6	2 6
Daffodils, per doz. bunches	1 0	1 6	Dendrobium nobile, per dozen	2 0	2 6
— second size	1 0	2 0	Eucharis grandiflora, per dz. blooms	2 6	3 6
— smaller, per doz. bunches	9 0	12 0	Freemans (white), p. doz. bunches	2 0	2 6
Gardenias, per doz. blooms	1 6	2 6	— second size	1 0	2 0
— smaller, per doz. bunches	9 0	12 0	— larger, per doz. bunches	10 0	12 0
Gypsophila elegans, per doz. bunches	3 0	4 0	Hyacinths, Dutch, p. dz. bunches	2 0	3 0
Iris (Spanish), per dozen bunches	4 0	6 0	Lilac (English), white, p. bunch	1 6	2 6
Lily of the Valley, p. dz. bunches	6 0	9 0	— mauve	2 0	3 0
— extra quality	12 0	15 0	Lilium auratum, per bunch	2 0	3 0
— second size	10 0	12 0	— longiflorum	2 0	3 0
— smaller, per doz. bunches	9 0	12 0	— lancifolium rubrum	1 6	2 6
— larger, per doz. bunches	10 0	12 0	— album	2 0	2 6
— second size	10 0	12 0	— white, p. bunch	1 6	2 6
— smaller, per doz. bunches	9 0	12 0	— mauve	2 0	3 0
— larger, per doz. bunches	10 0	12 0	Lilium auratum, per bunch	2 0	3 0
— second size	10 0	12 0	— longiflorum	2 0	3 0
— smaller, per doz. bunches	9 0	12 0	— lancifolium rubrum	1 6	2 6
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— second size	10 0	12			

Potatoes.					
Kents—	s.d.	s.d.	Lincolns—	s.d.	s.d.
Scottish Triumphs...	3 6	4 0	King Edward...	3 0	3 6
Up-to-Date ...	3 6	4 0	Blacklands...	2 6	3 0
Lincolns—					
Royal Kidney ...	2 9	3 3	Langworthy, red soil	5 0	5 3
Up-to-Date ...	3 3	3 9	Up-to-Date, red soil	3 6	4 0
Maincrop ...	3 3	4 0	" grey soil	2 9	3 3
Evergood ...	2 9	3 3	Yorks—		
			Up-to-Date ...	3 6	4 0

REMARKS.—Trade is very bad, and large stocks of tubers have accumulated in the markets. Supplies of new Potatoes from Teneriffe, Lisbon, &c., tend to make the trade for old tubers still worse. Edward J. Newborn, Covent Garden and St. Pancras, May 12, 1909.

COVENT GARDEN FLOWER MARKET.

All the stands in the flower market are fully occupied, and there are in addition many temporary stands under the foreign flower market. Trade was brisk this morning (Wednesday), and yet a considerable quantity of flowers remained unsold. Roses seem to be a drug on the market, and it is disappointing to see so many good blooms unpurchased. I was offered fine blooms at 6d. per dozen. At one time Roses at this season would have sold for 6s. per dozen. The varieties with strong stems are in most demand. The varieties Kaiserin Augusta Victoria, Fran Karl Druschke, and The Bride take the lead. Pink varieties of the Catherine Metmet type have decreased in value since blooms of Mrs. J. Laing, Mrs. Sharman Crawford, and others with good stems have become more plentiful. In red Roses Capt. Hayward is the most prominent, but Richmond is also a favourite. Carnations are plentiful; fairly good prices are sustained for the best blooms. Flowers of the Enchantress variety have been over plentiful, and some blooms are sold at very low prices. Spanish Irises are now taking the place of Daffodils, which are seen in much fewer quantities. There is a great difference in the prices of these Irises; those from the Channel Islands do not make more than from 4s. to 6s. per dozen bunches, while those home grown reach 9s. per dozen bunches. Darwin Tulips are very good, but they do not sell well. Large supplies of Hyacinth blooms have arrived from Holland, but the inflorescences are cut without foliage, and are sold cheaply. Liliums have been extra plentiful; the best blooms can be purchased at about 3s. per bunch. Sweet Peas are abundant and their prices low. The white varieties seen are very fine, and Dorothy Eckford remains the favourite. Miss Willmott and Lady Grisell Hamilton are also popular with market buyers. Stephanotis, Eucharis, and Gardenias are procurable; some growers have considerably reduced their stocks of Gardenias. Callas (Richardias) continue plentiful and cheap.

POT PLANTS.

Pelargoniums are a feature. The Ivy-leaved varieties include Gaillee, Mrs. Hawley, Madamie Crousse, and Chas. Turner. The show or decorative sorts are better than I have seen them for some years past. Amongst the Zonal type Paul Crampel is most in demand. Verbenas, Miss Willmott and Princess of Wales, are very good. Good spring-grown Mignonette is seen, but plants raised from autumn-sown seed are not yet finished. A few good Azaleas are noticed, but they are nearly over for the season. Ericas Cavendishii, candidissima and persolita alba are all good. Cinerarias are becoming scarcer, and Genistas are nearly over. Marguerites in all sizes are good. Other plants include Rhodanthe, Yellow Calceolarias and Intermediate Stocks. Palms are making better prices; Kentia seeds promise to advance considerably in value, which will raise prices still higher. Ferns are well supplied and their prices are low. Aralia Sieboldii and the variety Moseri are plentiful, but some have soft foliage still. Aspidistras are not making such good prices as in previous years. Araucaria excelsa also is cheaper. There is a brisk trade in summer bedding plants. Plants in store boxes are making barely half the prices they did a few years ago. A. H., Covent Garden, Wednesday, May 12, 1909.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending May 8, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The weather.—Except in parts of Scotland quite early in the week the condition was dry and almost cloudless over the whole Kingdom.

The temperature was low at the beginning of the week, but afterwards high for the time of year, and in all districts the mean for the period was in excess of the average, the greatest divergence being about 3° in Scotland N. and in Ireland. The highest of the maxima, which were generally recorded between the 6th and 8th, ranged from 75° in Scotland E., and 74° in Scotland W. and England N.W., to 66° in England E. and N.E. Along the east coast the maxima were little above 50°. The lowest of the minima occurred on the 2nd, and ranged from 24° in Scotland E., 25° in Scotland W., and 27° in England S.E. and Ireland N., to 32° in Scotland N., and to 38° in the English Channel. On the grass the thermometer fell to 14° at Llangamarch Wells, 18° at West Linton, 19° at Burnley, 20° at Greenwich, Newton Rigg, and Southport, 21° at Hereford and Markree Castle, and below 25° in several other localities.

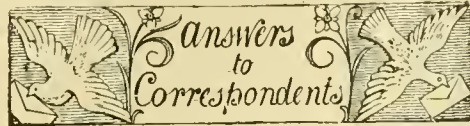
The rainfall.—Over the greater part of England the week passed without rain, but on Sunday or Monday a few slight falls were experienced in the west and north of the Kingdom.

The bright sunshine was unusually abundant, the number of hours being twice as great as the average in most parts of England. The percentage of the possible duration ranged from 89 in England S.E., 87 in England E., and about 80 in most other English districts, to 63 in Scotland W., 57 in Ireland N., and to 51 in Scotland N. The greatest number of hours at individual stations were 95 at Worthing and Great Yarmouth, 94 at Southend-on-Sea, Brighton, Hastings, and Jersey, and 93 at Cambridge, Oxford, Wisley, Southampton, Bournemouth, Weymouth, and Cardiff, from 90 to 94 per cent. of the possible.

THE WEATHER IN WEST HERTS.

Week ending May 12.

Cold nights and warm sunny days.—During the past week the days proved warm, and on two days the highest reading in the thermometer screen rose to or exceeded 70°. On the other hand the nights again proved cold, the exposed thermometer on the two coldest nights registering respectively 8° and 7° of frost. On the 11th the difference between the lowest and highest readings in the thermometer screen amounted to as much as 40°, which is the greatest range in temperature in any one day that I have yet recorded here in May. The temperature of the ground is still about seasonable at 2 feet deep, but 1° warmer than the average at 1 foot deep. No rain has fallen for ten days, and no measurable quantity of rain-water has come through either percolation gauge for more than a week. The sun shone on an average for 12½ hours a day, or for more than twice the usual duration at the beginning of May. The first four days of the week proved exceptionally sunny, the record of bright sunshine on each of those days exceeding 13½ hours. The winds proved rather high in the early part of the week, but in no hour did the mean velocity exceed 14 miles—direction E.N.E. The average amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by as much as 15 per cent. A Blenheim Pippin Apple tree growing in my garden first came into flower on the 7th, which is one day later than its average date for the previous 23 years, but nine days earlier than last year. E. M., Berkhamsted, May 12, 1909.



CORRECTION. For *Rhododendron adenopodium* on p. 291 read *Rhododendron adenopodum*.

CUCUMBERS DISEASED: E. A. H. The plants are affected with the blotch disease (*Cercospora melonis*). The best plan is to burn the plants, sterilise the soil, thoroughly cleanse the house (using carbolic acid in the water), and start afresh. Correspondents have stated that carbolic acid diluted with water and placed in pans about the houses has proved effectual in combating the disease.

GOOSEBERRIES: W. M. In order to preserve Gooseberries by bottling, take some bottles with air-excluding stoppers, and nearly fill them with carefully-selected fruits. The fruit should be as nearly perfect as possible. Put them into the oven, and let them remain there for a few minutes, until the fruits show signs of cracking, then pour boiling water over them and seal the bottles at once. This is a very simple method, and there being no sugar used, the fruits remain as nearly as possible in a condition similar to that of fresh fruits. Another plan is to place the berries, after first wiping them on a clean cloth, in a bottle filled almost to the top with cold water. Take a large, deep saucepan or fish-kettle, and stand the bottles in this. Fill the pan with water, and bring to the boil. When the water in the bottles is at boiling point insert the cork or bung. Place a little hay between the bottles in the pan to prevent them knocking together and breaking. This system is that known as sterilising by steam.

GRAPE VINES UNHEALTHY: J. A. There is no disease present in the vines. The cause of the foliage dropping prematurely appears to be due to some cultural error. If the borders are allowed to become dry or, on the contrary, the roots are dosed with strong applications of chemical fertilisers, trouble of this nature generally follows.

GRAPES DISEASED: J. W. and G. R. Your Grapes are affected with Grape-rot, caused by *Gleosporium ampelophagum*. Dredge the bunches and foliage with flowers of sulphur mixed with about one quarter of its volume of quicklime. Remove all diseased fruits and leaves and burn them.

HELIXINE SOLEIROLII: Aquatics. The plant has not been in cultivation for many years, and its name does not appear at the present time in the gardening books. It is a native of Sardinia, and belongs to the Nettle family. The plant resembles *Sibthorpia europaea* in appearance, and is valuable for covering bare spaces in a warm plant-house. It grows with great freedom in the Economic House of the Royal Botanic Gardens, Regent's Park, where it forms a carpet of greenery over large pots and stonework.

INSECTS ON ROSE AND FIGS: G. N. P. The insects on the Rose twig are all females of the common Greenhouse Scale (*Lecanium hesperidum*); the cocoons on the creeper (*Ficus stipulata*) are those of a species of *Ichneumon*. The

latter are harmless, and may have parasitised the larvæ of a moth of some kind, though there is no trace of the host left. The scale is most injurious, and the insects should be removed with a stiff brush at once, as the young are already hatching out from beneath their parents (the brown scale). In the autumn dress the tree with paraffin emulsion.

NAMES OF PLANTS: Aquatics. This may be *Scirpus sylvaticus*, but it is impossible to identify the species with certainty from such a specimen.—G. R. H. 1, *Salix Caprea* (Goat Willow); 2, we cannot name this without better material; 3, *Prunus triloba* fl. pl.; 4, *Cupressus obtusa* var. *nana*; 5, *Sequoia sempervirens*; 6, *Rhododendron myrtifolium*.—T. H. C. Your specimen appears to be the Rough Meadow Grass, *Poa trivialis*.—L. M. No. 1, *Prunus Pseudo-cerasus* James H. Veitch; No. 2, also a form of *P. Pseudo-cerasus*, the varieties of which, in Japan, are almost as numerous as varieties of Apples and Pears in this country.—C. W. W. 1, *Kerria japonica*; 2, *Berberis Darwinii*; 3, *Cephalotaxa drupacea*.—R. T. 1, *Pteris arguta*; 2, *Adiantum hispidulum*; 3, *Selaginella caesia*.—W. C. S. *Lælia Boothiana*, often called *Cattleya lobata* in gardens.—J. L. *Cælogyne ochracea*.—F. G. *Dendrobium albo-sanguineum*.—Constant Reader. *Gardenia florida* and *Ixora coccinea*.—T. C. A species of *Ruscus*, but it is impossible to determine which from the scrap you send. The portion bearing the red berry, which you refer to as a leaf, is a phylloclade or flattened stem.—L. F. 1, *Prunus japonica* fl. pl.; 2, *Berberis Aquifolium*.—Arbor. *Prunus japonica* fl. plena.—Novice. 1, *Asphodelus albus*; 2, *Choisya ternata*; 3, *Tienilla cordifolia*; 4, *Saxifraga* (*Megasea*) sp.; 5, *Skimmia Fortunei*; 6, *Thalictrum flavum*.

PEACH MILDEW: J. H. M. The fruits are affected with mildew—*Oidium leucoconium*. The leaves should be dusted with flowers of sulphur whilst damp, or if the attack is serious, let the pipes be painted with sulphur when they have been made very hot, performing the operation at dusk, and closing the house for an hour afterwards. Guard against a damp atmosphere insufficiently heated; also dryness at the roots.

SOWING CABBAGE SEEDS: Anxious. The best time to sow Cabbage seeds for raising plants for use early in spring is at about July 21. A second sowing may be made in the first week of August. Veitch's Model Broccolis should be sown some time between the third week of April and the end of that month. Unless the ground is exceptionally hard it should not be dug, except for very late plantings, but in all cases the soil should be made very firm about the young plants with a view to promote slow, firm growth; thus the plants will become well hardened before winter.

WHITE WEB FROM VINE: Northants. The web is the nest of the vine-coccus (*Pulvinaria vitis*). The brown scale-like object is the female, the white "web" the egg sac. As the young are now hatching you should lose no time in removing the webs from the vines before the young escape and take up fresh positions among the branches. Give the vines a thorough dressing in the winter with some good insecticide; any scale which may not be destroyed by the spray should be removed in the early spring before the white egg sacs are formed.

WIREWORM ATTACKING TOMATOS: W. C. You appear to have dosed the border with sufficient insecticides to kill all insect life in the soil. Try traps of some vegetable placed near the roots of the Tomatos. Place a Potato or a portion of Carrot below the soil, and mark the spot with a stick; examine the baits at intervals. Bisulphide of carbon may be effectual where the proprietary articles failed. Pour a quarter of an ounce of this liquid into a small hole made not too close to the plants, and cover the hole with a piece of slate. You must not bring a light near to this substance, as it is highly inflammable, and poisonous. The quantity of bisulphide given is sufficient for each square yard of surface.

Communications Received.—H. L., W. J. D.—A. G.—G. O. P.—F. W.—E. M.—F. M.—T. H. C.—W. W. P.—J. O'B.—F. J. C.—E. B.—J. W. P.—Rev. C. B.—J. G. W.—T. M.—H. W. W.—E. A. B.—S. A.—W. D.—C. H. P.—A. D. W.—H. S. Thompson—F. J. C.—R. A., Cap d'Antilles—M. M. M. S.—G. P.—W. M.—T. H.

THE
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DAVIDIA.

THE question as to whether there is more than one species of *Davidia* in cultivation has been put to me more than once, and I answered it in detail in the *Kew Bulletin*, 1907, p. 301, though not conclusively. I gave it as my opinion that the differences observed in herbarium specimens and cultivated plants were not sufficient to justify specific segregation. Since then Mr. L. A. Dode has attempted (*Revue Horticole*, September 1, 1908), to define three species, with what success I will endeavour to explain. I have re-examined all the materials previously under observation, and I have seen additional cultivated specimens.

Several articles on *Davidia* have already appeared in the *Gardeners' Chronicle*, the most important being in vol. xxxiii. (1903), p. 235, where there is a full-page representation of flowering and fruiting branches from dried specimens; and vol. xxxix. (1906), p. 346, where the first flowering in Europe is illustrated by a specimen received from Mr. Maurice de Vilmorin.

Dode's differential characters of his species are taken from the leaves:—

1. Leaves silky beneath.—*D. involucreta*, Baillon.
2. Leaves glabrous and glaucous beneath.—*D. Vilmoriniana*, Dode.
3. Leaves glabrous and yellow-green beneath.—*D. læta*, Dode.

The characters given in the foregoing key to the species do not correlate with any others given in the detailed description, so that it is justifiable to say that the "species" are based solely on these differences. True, the author describes the petioles of *D. Vilmoriniana* as green and the bud-scales as red-brown, and those of *D. læta* as red and green respectively; but most persons practically acquainted with the range of variation usual

in plants raised from seed would not accept these shades of differences as of more than individual value. Dode's Latin diagnoses of his species are reproduced below:—

Davidia Vilmoriniana, Dode, species nova, foliis subtus glaucis, glabris vel glabrescentibus, longe setaceo-dentatis, ovario brevius attenuato, fructu magis globoso.

Davidia læta, Dode, species nova, foliis subtus glauco-lutescentibus, glabris vel glabrescentibus, breve setaceo-dentatis, ovario breve attenuato fructuque subgloboso.

To his *D. Vilmoriniana* he refers Dr. A. Henry's dried specimens numbered 5,577, and Mr. E. H. Wilson's specimens numbered 642. He also refers the figure in Hooker's *Icones Plantarum*, t. 1961, to this species, which he states is the one raised by Vilmorin in 1897. To *D. læta* he refers the plants raised by Messrs. Veitch & Sons from the seed sent home by Mr. Wilson when on his first journey, which, he states, is also in cultivation at Barres-Vilmorin and other places in France. He further states that the *Davidia* figured in Veitch's List of Novelties, 1903, is *D. læta*, as well as the germinating seeds in the fruits by the writer in the *Journal of the Linnean Society*, vol. xxxv., p. 556, t. 19; but it is



FIG. 138.—ODONTIODA × ERNEST HENRY.
(Awarded R.H.S. First-Class Certificate on April 6 last.)

difficult to understand how he arrives at these conclusions.

As recorded in the *Kew Bulletin*, Kew possesses fragments of the types of *Davidia involucreta*, Baill., collected near Moupine, Western Szechuen, and Mr. Wilson collected corresponding specimens, n. 3702, in the same district. They differ from all the other specimens collected by Wilson and Henry in the mature leaves being clothed on the under surface with a white tomentum. In other respects the Moupine specimens differ less from the glabrous or glabrescent-leaved specimens than the latter do from each other. I was of opinion at first that there were two species, but as I failed to find any other character to support this view, I held my hand. In this decision I was influenced by the fact that the leaves of seedlings of the Moupine hairy variety sent to Kew by Messrs. Veitch were glabrous, except for the presence on the under surface of some long appressed hairs along the principal veins. I was assured that there could be no mistake about the parentage of these seedlings. If so, the only difference is not hereditary.

With regard to the differences between *D. Vilmoriniana* and *D. læta*, Dode, the descrip-

tions speak for themselves. From communications on the subject with Mr. M. de Vilmorin, I think I am right in saying that he is in accord with me that the variations are individual; and he has also put on record that there is considerable variation in the shape, size, and coloration of the bracts of the inflorescences of the plants he has in cultivation.

After all, the principal point, so far as the potential purchaser is concerned, is that the differences exhibited by the plants at present in cultivation are so slight that one is apparently as good as another. I wish to state in conclusion that I am giving my opinion on the subject without any pretension to superior knowledge as to the limits of species, and I may add that the naming of plants is not a science: it is a means to an end to make clear what we are writing or talking about. *W. Botting Hemsley, Strawberry Hill.*

NEW OR NOTEWORTHY PLANTS.

RHODODENDRON VICTORIANUM.

IN the temperate house at Kew there is now in flower a hybrid *Rhododendron* of extraordinary interest and beauty. It was purchased two years ago from M. Jules de Cock, nurseryman, Meirelbeke, Ghent, under the name of *R. Dalhousiæ Victorianum*, which is the name of a *Rhododendron* figured in *Flore des Serres*, t. 2466 (1879), and described as a hybrid between *R. Dalhousiæ* and *R. Nuttallii*, raised and flowered in 1877 by M. Victor Cavellier, a Belgian amateur, after whom it was named. But as the plant is unquestionably a hybrid between the two species mentioned, the original name is misleading, and both custom and propriety will be satisfied if the name is altered to *R. Victorianum* simply.

The habit of the hybrid is an improvement upon that of either of its parents, which are somewhat straggling and awkward, whereas *R. Victorianum* forms a compact bush with numerous short erect branches. It is also very free-flowering, the flowers are large and lasting, delightfully fragrant and milk-white with a tinge of yellow in the throat.

There are from three to six flowers in each head, and each flower is 4 inches long and the same across; the segments of the corolla are elegantly recurved, and at the base there are five deep depressions as though the tube had been finger-pinched. The charm of all the big-flowered *Rhododendrons* is due quite as much to their fragrance as to their form and colour. We have already a race of *Dalhousiæ × formosum* hybrids, which are grown here and there as conservatory plants, though not nearly as well known now as they were 30 years ago. It is evident that *R. Dalhousiæ* is a good breeder, and it would be quite worth while to turn it to account in the same manner as has been done with *R. Aucklandii*, the hybrids from which have become so popular. *W. B.*

ODONTIODA × ERNEST HENRY.

OUR illustration (see fig. 138) represents a flower of this richly-coloured hybrid, which was raised from seed obtained by crossing *Odontoglossum × Queen Alexandra* (*Harrayanum × triumphans*) and *Cochlidia Noezliana*. The flowers, in general appearance, are nearest to *O. Charlesworthii*, but the colour is of a bright mahogany-red with an orange-coloured tint around the yellow crest of the lip. It was shown by H. S. Goodson, Esq., Fairlawn, West Hill, Putney (gr. Mr. G. E. Day), at the Royal Horticultural Society's meeting held on April 6 last, when the Orchid Committee awarded it a First-class Certificate.

NOTICES OF BOOKS.

* THE SMALL HOLDER'S GUIDE.

THIS pamphlet is useful for those who may be desirous of taking advantage of the Small Holdings Act and becoming cultivators on a small scale. It tells them what they would have to do in managing a small garden and farm, and the capital required for the development of a holding of the usual character. The little work

himself. It is essential that he should possess experience in matters connected with the working of the land and the farming stock. It is this that no work on these subjects can supply. We are constantly being informed of the work requiring to be done, but rarely are we told how it is to be performed. We would, therefore, advise all town-bred men to undergo a two to three-years' course of instruction on a farm of small dimensions before

to adapt himself to the existing conditions of a district, for it is not always easy to obtain land just where it is wanted. The proper course is to ascertain the kind of produce that is saleable in a district, and endeavour to make the land yield that produce. The booklet contains useful advice in regard to common rights, compensation for improvements, the buying and renting of land, the planting of fruit trees and bushes, and on the cultivation of Strawberries, Asparagus and Rhubarb. *M.*

THE JOURNAL OF THE BOARD OF AGRICULTURE.

FROM our occasional references to the subjects dealt with in the *Journal of the Board of Agriculture* our readers are cognisant of the fact that the *Journal* deals not only with matters of purely agricultural interest, but also with those concerning horticulture. We would point out that the *Journal* is issued monthly at the cost of fourpence per month, and would suggest that all interested in the progress of horticulture should both support the *Journal* by becoming subscribers and by bringing it to the notice of others. We learn from the March number that the bound volume of the Board's leaflets, Nos. 101 to 200, is now ready, and can be obtained from the Secretary, Board of Agriculture and Fisheries, 4, Whitehall Place, London, S.W., price 6d., post free. The leaflets deal, among other subjects, with insect and fungus pests, and contain brief descriptions of the diseases, illustrations of the appearances presented by the diseased plants, and recommendations as to remedies.

† TREES AND SHRUBS OF THE BRITISH ISLES.

PART II. of the work of the above title, by Messrs. C. S. Cooper and W. Percival Westell, is now published. The work, to be completed in 16 parts, contains brief descriptions and numerous full-page plates, many in colours, of the chief British trees and shrubs. The text, though concise, is brightly written, and many of the illustrations are excellent.

‡ BEAUTIFUL FLOWERS AND HOW TO GROW THEM.

PART 12 of this copiously illustrated work deals with the subject of arches, pergolas, pillars and stumps, beautiful walls and fences, and with Orchids. As in preceding parts of this work, so in the present instalment, a large amount of useful information is conveyed in pleasant form. Of the six coloured plates included in the number, that of Pansies is particularly effective.

CINERARIA FLAVESCENS.

(CINERARIA FELTHAM BEAUTY × SENECIO AURICULATISSIMUS.)

THIS hybrid has been raised by Messrs. James Veitch & Sons, Ltd., and exhibited by them at recent exhibitions of the Royal Horticultural Society. When presented to the Floral Committee at the meeting held on May 4, it received an Award of Merit. The plant has the appearance of a rather compact-growing Cineraria with creamy-yellow flowers, the younger blossoms being of a richer, almost canary-yellow tone. As a new break the cross has considerable promise, and no doubt it will prove the forerunner of a useful race of winter-blooming plants. The greenhouse Cineraria has a wide range of colours in its flowers, but there is always room for greater variety, and the addition of pleasing yellow tones will be acceptable. The peculiar constriction in the middle of the leaf is well shown in Mr. Worthington Smith's sketch (see fig. 139), which is from material kindly supplied by Messrs. Veitch. It may be mentioned that, since Cineraria cruenta is synonymous with Senecio cruentus, the hybrid is properly a Senecio.

† J. M. Dent & Co.

‡ Edited by Horace J. Wright and Walter P. Wright. Complete in 17 parts, each 1s. net. (T. C. & E. C. Jack).



FIG. 139.—CINERARIA FLAVESCENS ×: FLOWERS YELLOW, PASSING TO PALE CREAM COLOUR OR WHITE.

will do good by showing how the small holder can increase the food supply of the country by raising vegetables, poultry, milk from cows and goats, rearing rabbits, pigs, sheep, calves, horses, by bee-keeping, and making butter and cheese.

The most important factor for success or failure is, as the author states, the small holder

taking a farm. There is so much to learn by practical work, under experienced teachers, that is essential to the small holder; moreover, the prudent landowner insists on the persons applying for a holding having a practical acquaintance with gardening or farming. It is usually the lack of this knowledge on the part of the holder which causes his failure, but the need of sufficient capital is another cause. Mr. Sanders advises the prospective small holder to select land of a fertile nature in a locality near to good markets, and

* By T. W. Sanders. Published by W. H. and L. Collingridge, 148-149, Aldersgate Street, London, E.C. Price 1s., in cloth 1s. 6d.

THE WARREN HOUSE, STANMORE.

THE beautiful estate which forms the domain of The Warren House, the residence of Mrs. Bischoffsheim, is in the Metropolitan area, and little more than half-an-hour's journey from London. But the visitor, unacquainted with this fact would scarcely conceive this possible, but, from the sylvan beauty of the place, would imagine himself in some remote part of the country. An important part of the boundary of the estate consists of original woodland, in which some of the old tracks formerly used by the wayfarer still remain. The views through the glades of Oak, Beech, Birch, and Fir trees, with the undergrowth of Hazel, and, occasionally, the more recently-introduced clumps of Rhododendrons, or other flowering shrubs, are charming at all seasons, but at the present time, when the undulating surface of the ground is carpeted with myriads of Bluebells, the tints of blue varying with light and shade and blending with the soft, green tints of the young foliage, the effect is indescribably beautiful. Acres of the bright blue flowers are seen on either side of the woodland

The grounds are studded with fine old Oaks and Conifers, including a grand Cedar and a good specimen of *Araucaria imbricata*. Dense masses of Rhododendrons are about to furnish their magnificent display of flowers. In a sheltered nook is a Deodar planted by his Majesty King Edward VII.

The Dutch garden of clipped Box and Yew, with a few Hollies, is an extensive and well-arranged feature, effective as a whole and also interesting by reason of the quaintness of many of the specimens. Backed by the tall Pines and other trees, this nook is sheltered from cold and heat, and forms a pleasant retreat in summer.

Showy herbaceous perennials are planted in the borders and shrubberies wherever space is available, and an enclosed, herbaceous plant garden, containing the best varieties, is a never-failing source of interest, for a varied succession of flowers appear there during the greater part of the year. On one side are tanks planted with Nymphaeas and other aquatic plants; on the walls of this garden is a variety of flowering climbers.

The glasshouses were constructed a few years

The two large intermediate houses contain fine plants of *Cattleya Mossiæ*, *C. Mendelii*, *C. Dowiana anrea*, *C. Warscewiczii*, *Lælia purpurata*, and other showy species. All are thriving well, and a good show of flowers is made by *Lælia purpurata*, *Cattleya Schröderæ*, *C. Skinneri*, and other *Cattleyas*. With them in flower are *Brasso-Cattleya Digbyano-Warscewiczii*, *Cattleya Parthenia Prince of Wales*, *Lælio-Cattleya highburyensis*, and other *Lælio-Cattleyas*, *Dendrobium Brymerianum*, *D. primulinum*, *Odontoglossum citrosmum*, &c.

Separate glasshouses are devoted to the growing of *Souvenir de la Malmaison* and winter-flowering Carnations; also for Roses, which have furnished a supply of fine blooms for a considerable time and are still flowering abundantly. Stove plants for decorative purposes are grown in batches; one house is filled with *Anthuriums*, the plants being well furnished with their banner-like scarlet spathes. The scarlet-flowered *Clerodendron fallax* (see fig. 141) is especially well grown, and forms an excellent decorative plant when in flower. Various florists' flowers are grown, with a view to keeping up the succession of blooms for decorative purposes. This supply is in succession to forced plants such as Daffodils, Arum Lilies, and Lily of the Valley. The corridors of the plant-houses are brightened by densely-flowered *Schizanthus*, *Cinerarias*, annual *Chrysanthemums*, of which the large canary-yellow variety called "Morning Star" is the most beautiful, and other annuals. In one of the houses *Tritonia Prince of Orange* is very bright, and in others the *Codiaeums* (*Crotons*) and other foliage plants are in good condition.

The long range of fruit houses promises good crops of Peaches, Nectarines, Grapes, Figs, and other fruits. Strawberries in pots have furnished fine fruits for some time past, and there are others for providing a succession.

Mrs. Bischoffsheim takes a personal interest in the gardens, and has herself designed some of its most effective improvements. J.



FIG. 140.—THE WARREN HOUSE, STANMORE, MIDDLESEX.

walks; sometimes in dense patches, forming with their surroundings a natural wild-garden, more lovely than any other part of the grounds. The outlying portions of the grounds are used as golf links, the course measuring four miles, and there is a bungalow for the accommodation of the players. For a considerable distance the links are bounded by an irregular herbaceous border and a grass path at the back, all being in harmony with the woodland surroundings. In a nook, the orchard, with its Apple trees now in full bloom, and the range of forcing-houses are situated. The more modern garden surrounds the residence, and contains a display of flowers throughout the season. At the present time the flower-beds are glowing with the colours of variously-tinted Tulips, each bed having a carpet of dwarf blue Forget-me-not, the latter plants forming a sheet of colour that will continue long after the Tulips are over.

Below the terrace are beds of Roses, and beyond this is a Rose garden, with festoons of rambling and trailing Roses. Roses are similarly trained in other parts of the garden, and by the herbaceous borders (fig. 142).

ago by Messrs. Mackenzie and Moncur. In the Orchid houses are many plants of *Odontoglossum crispum*, and also smaller numbers of most of the showy Orchids. Many plants of fine forms of white and rose-tinted *Odontoglossum crispum* are in bloom, together with others of *O. Hallii*, *O. luteo-purpureum*, *O. Pescatorei*, *O. Andersonianum*, *Cymbidium Lowianum*, a clear white form of *C. eburneum*, a batch of brilliant scarlet *Sophronitis grandiflora*, some clear yellow *Oncidium concolor*, and various other pretty Orchids. But the most striking feature in the cool houses, and one which shows the skill of Mr. Taylor, the Orchid grower, is a batch of about 90 robust plants of the scarlet *Disa grandiflora*, with very stout growths, promising well for flower. These have been propagated and grown from the few original plants at The Warren House, by removing the stronger offsets and potting them as required. The thick, shining, green leaves are in perfect health. Mr. Taylor considers that once the culture of *Disa grandiflora* is understood, the plant gives less trouble than many other Orchids, and yet a large proportion of our best Orchid growers fail to cultivate it satisfactorily.

THE FERNERY.

THE NEWER VARIETIES OF NEPHROLEPIS.

ELEVEN months ago I secured plants of *Nephrolepis exaltata Piersonii*, *N. e. Todeaoides*, and *N. e. Whitmanii*. They were in 5½-inch pots, but have been shifted until now they are in 14-inch pots. The plant of *N. Piersonii* is at the present time more than 7 feet through and 5 feet high, whilst the specimen of *N. Todeaoides* is 5 feet through and 4 feet high. This latter variety forms an excellent specimen plant. The habit is stiff and the fronds are of a pale green colour; they are fringed and beautifully tasselled. The fronds of *N. Whitmanii* are not so densely divided as in *N. Todeaoides*; it is described as a sport from *N. Fosteri*. My specimen of this plant is 5 feet 6 inches wide and 4 feet high. Another Fern worthy a place in gardens is *Nephrolepis exaltata superba*. The compost I use for the Ferns consists of one part turfy loam, one part leaf-mould, a small quantity of bone-meal, and a little of some approved fertiliser, with a fair sprinkling of broken crocks and lime rubble. *Microlepia speluncea* is another fine decorative Fern that soon develops into a large plant. *Davallia braziliensis*, for which Messrs. H. B. May & Sons received an Award of Merit from the R.H.S. in 1907 is an advance in the *Davallia* section. The habit is close, and the fronds finely cut. Amongst other Ferns doing remarkably well in these gardens are *Asplenium Belangeri*, *Polypodium irioides ramo-cristatum*, and *Adiantum polyphyllum (cardiochilana)*. Wm. R. Prince, Norton Manor Gardens, near Taunton.

NOTES FROM COOMBE WOOD.

A visit paid to Messrs. J. Veitch & Sons' branch nursery at Coombe Wood on May 13, was for the purpose of inspecting some of the introductions of Wilson, and, incidentally, those of the late James Herbert Veitch from Japan in 1892. Wilson's introductions from Western China are of great value to cultivators in all the temperate and sub-tropical countries of the world. The following notes, however, are not confined to plants introduced by the explorers I have mentioned.

Quercus acuta (Buergeri) is a half-tree with evergreen foliage of a dark green colour and of large size, and with shoots of an olive tint. It was introduced in 1861 from Japan. *Q. cuspidata* is another evergreen Oak from the same country, and forms a small tree, graceful in habit, with pendant, slender branches. Its leaves measure from 3 to 5 inches in length, and 1 to 1½ inch in breadth; they are bright green above, and glabrous, silvery-white beneath. There is a variegated form of this, differing from the type in that its leaves are smaller and have irregular creamy-white blotches. *Acer vitifolium* is a

midrib and chief veins of a silvery tint. The leaf tints change, as regards the ground colour to red, whilst the veins and midrib remain silvery. Plants of this vine in process of forcing at the present date were perfectly indicating the leaf markings. *V. armata* is a valuable ornamental plant, the dark green leaves of summer changing to bright red tints in the autumn. *V. armata* var. *Veitchii* is one of the best decorative vines. The large leaves acquire in the autumn a rich crimson tinge, whilst in the summer months they present a bright bronzy-green tint. *V. repens* is a self-climbing plant, and a robust grower. The older leaves, about 5 inches in length, are somewhat three-lobed and of a deep, velvety green tint. The young growths are brownish, and the young leaves of a red-brown colour. As objects for covering a wall or clothing pillars, chains, arbours, or such outstanding objects as Fir poles in a flower border, they are finely ornamental. They require the same kind of treatment as the Wild Vine (*Ampelopsis*). *Actinidia chinensis* is a woody climbing plant, having yellow-coloured flowers 1½ inch across and sub-orbicular leaves. It is hardy and flowers with freedom on the

ing flowers pretty freely. *Philadelphus Le-moinei purpureo maculatus* makes a small compact bush of 2 to 3 feet in height, producing, at the end of short axillary shoots, flowers about 2 inches across, white with a light purple spot in the middle. *P. Banniere* is a white-flowered variety, having semi-double, fragrant flowers. A large plant was noted of that rare Japanese plant *Trochodendron aralioides*. It measures 12 feet in height and rather less in diameter. The flowers are greenish and inconspicuous, but the plant grows with rapidity in this country. The leaves on the Coombe Wood plant were about 4 inches in length, dark green and shining. *Berberis acuminata* is an attractive evergreen with arching growths, the rind of which in the young state is of a red tint. The bronzy-yellow flowers come in clusters in the axils of the leaves.

The neat-growing *Ilex Perneyi*, whose mature leaves are 1½ inch long, and pale in tint on the young shoots, become of a very dark green on the older ones.

Clematis montana var. *rubens* is an acquisition, resembling the type in foliage and habit but the flowers are of rosy-red tint, making an effective contrast to *C. montana*.

One of the finest lots of *Sciadopitys verticillata* to be observed anywhere was noted in the peaty soil at the lower end of the nursery; oft-transplanted, symmetrical, healthy plants. The Umbrella Pine is bad to beat as a specimen on the lawn.

Cotoneaster applanata is a free-growing plant, with ovate leaves, dark green in colour, with a greyish felt on the lower surface. The fruits are scarlet, and are produced abundantly. The plant is excellent as a solitary specimen on the turf.

The remarkable *Primula pulverulenta*, which in leaf and habit resembles *P. japonica*, was noted in some quantity in the open ground. The dark, rich purple flowers are larger than those of *P. japonica*. *F.*



FIG. 141.—A FINE PLANT OF CLERODENDRON FALLAX AT THE WARREN HOUSE GARDENS.

(See p. 323.)

handsome half-tree or big bush with leaves now of a greenish yellow tint which changes to red and yellow in the autumn, a specially fine lawn tree. A white-flowering weeping plant is *Cytisus elongatus*, looking at its best worked on stems 8 feet high. *C. × kewensis*, raised at Kew, is a very free-flowering hybrid similarly useful. *Vitis megalophylla* is a remarkable plant with bipinnate leaves 2 to 3 feet in length when full grown; they are glabrous, dark green above, and pale glaucous green beneath. The plant makes growths of 10 feet in one season. I saw some plants being forced, which had leaves 1½ feet long already. The pole to which a plant of this species growing in the open border was fixed was 18 feet high. Other species of *Vitis* being forced or in cultivation in the open ground included *V. leecoides*, with leaves resembling those of *Leea amabilis*; *V. flexuosa* var. *Wilsonii*, a very decorative plant with leaves the upper surface of which is of a dark bronze tint and metallic lustre, whilst the lower surface is bright purple. *V. Henryana*, a most attractive plant with leaves of a digitate form and five serrated leaflets. The leaf is a deep velvety-green, with

matured shoots. *Rubus flagelliflorus* is a showy species having white flowers borne on shoots 7 to 8 feet long. Its chief attraction are its cordate acuminate leaves, which are of a metallic line and irregularly serrate at the edge. Like other *Rubus* species, the underside is covered with a thick tomentum. *Viburnum rhytidophyllum* (see *Gardeners' Chronicle* June 30, 1906, p. 418, fig. 167), is a fine evergreen shrub with broadly lanceolate leaves about 8 inches in length and 2 inches in breadth, dark green, channelled on the upper surface, and having a thick tomentum beneath. Its growths support corymbs of whitish-yellow flowers, which are succeeded by red berries. The plant retains a handsome appearance throughout the winter months. *Jasminum primulinum* (*Gardeners' Chronicle*, March 28, 1903, p. 197, fig. 83) is a native of Yunnan, where it is found in copses and hedgerows at considerable elevation. The flowers bear resemblance to those of *J. nudiflorum* but are larger. So far it has proved hardy at Coombe Wood, but if planted out in the open the species may need some protection. I observed some plants in pots in a forcing-house that were show-

VEGETABLES.

ASPARAGUS.

To have Asparagus in quantity and of the best quality it is necessary to raise fresh plants occasionally. If forcing is practised it becomes necessary to sow seeds annually, sowing is best done in April. Select an open position, with a rather light soil if possible, and draw drills 1 inch deep and 1 foot apart. Sow the seeds wide apart, so that no thinning will be necessary. There is much variation in the seedlings, and if thinned in the rows the chances are that those plants which would otherwise form the best crowns are thrown away. The better plan is to leave all the seedlings, and when planting them in their permanent positions select only the best and strongest crowns. Asparagus is largely grown as a market crop, and it is easily produced, provided the soil be sandy or loamy up to a heavy stage, without being clayey, and fairly moist. There is not the least necessity for trenching the soil and applying large quantities of dung deep down. The plant is not nearly so deep-rooting as is thought by many, and if rotten dung is freely employed in the composition of new beds many of the thick, succulent roots will turn black and die outright during the winter months. At Reading we have two extremes as regards soil: one portion is light and sandy overlying a coarse, red gravel, and the other, a greasy loam, overlying clay. In neither case have animal manures been given to the soil before planting or since, and I question if the results would have been much improved had such been applied. Young roots of this plant grow very freely in quite ordinary field or garden soil; moreover, the produce from young beds is always earlier than that from established beds. For forcing purposes crowns three and four years

old are far superior to those that have yielded crops in the open for a number of years. I have tested planting in single rows 1 yard apart upon the flat; in beds 3 feet wide containing two rows of plants at 18 inches apart, allowing, when the beds are shaped, 9 inches from each row of plants on either side of the beds, and also three rows of plants in a 3-foot wide bed, one row down the centre and the two outer ones a foot on either side, leaving 6 inches to the edge of the bed upon either side. The beds 3 feet across planted with two rows give the best results. In forming a series of beds space is allowed for an alley 18 inches wide, which allows the plants between two beds 3 feet of space, with 18 inches space between the two rows. When planting, no raised bed was formed; a simple flat-bottomed trench was dug out, about 3 inches deep, with a spade in the case of the garden, and with the plough in the case of the farm land. The roots were laid in the trench, being either one or two-year-old crowns. They were planted in April, when growth had started, and covered with 2 inches of soil, the ground being quite flat. Strong stakes were driven in at the end of each row to indicate the lines. These stalks are necessary because catch crops are taken from between the rows and also from between the plants during their first season's growth. As the crowns increase in size a line is stretched across the ground, and alleys are formed by removing soil from the centre to place upon the beds on either side. Thus, raised beds result, and, if this system is tested upon light soil against plants grown upon the flat, it will be found to produce Asparagus nearly a fortnight earlier. According to the soil the grower has to deal with, so should he regulate the raising of his beds. The quantity of earth placed over the crowns will also have some effect upon the earliness or lateness of the produce. I never cover Asparagus beds in the autumn with rotten manure, as is usually done, but as soon as cutting ceases, quickly soluble, stimulating manures are applied to assist the growths to form good crowns for another season. Cow dung applied when growth has practically ceased keeps the air out of the soil, makes it cold and wet, and, in old beds, causes many of the roots to decay. The temperature of the soil is also lowered, and the shoots in consequence are later in developing. Far better give manure from spent hot-beds to light soils when cutting has ceased. I use soot freely and apply it early in the year, because I find in ordinary winters young roots begin to push early from crowns from one year up to 10-year-old plants, after which stage they are later in starting. A light sprinkling of lime given every three years or so in the case of heavy soils and powdered chalk to light, sandy soils are also beneficial. Superphosphate of lime three parts (37 per cent. solubility) and ammonia sulphate one part, mixed and applied at the rate of 2 to 3 ounces per square yard during February or March, will assist the crop. Salt is recognised as a necessity, but from trials made over a number of years its application has no effect upon the yield, although in the case of light soils weeds are less troublesome when it is applied. I have found kainit of value to this crop, and when given there is no necessity to apply other saline matter. Of all potash manures given, none has proved so good as wood ashes. It should be used at the rate of one pound to the square yard. It tends to make light, chalky soils more retentive of moisture. Varieties of Asparagus are few; amongst the best are Perfection, Conover's Colossal and Giant French. In France greater attention is paid to the selection of stocks for planting than in England, although in the Evesham district the growers mark good crowns that produce best sheets with close scales. This selection has been continued for several years, and many of the Evesham nurseries have very uniform stocks. I have had under observation for some years past marked crowns that produce varying quantities of seeds, and, however heavy

the crop may be, it does not appear to influence the general vigour of the stems the following spring. There is doubtless good work to be done yet with regard to further testing the possibilities of this plant. It will grow well in sandy wastes where other plants would perish. *Charles Foster, University College, Reading.*

PEACH CULTURE IN SPRING AND SUMMER.

FAILURE to produce a satisfactory crop of Peaches in spring and summer may generally be traced to improper cultivation, such as allowing the trees to suffer from insect pests, neglect to afford sufficient root waterings, or the improper disbudding of the young shoots. The blossom is usually afforded protection in some shape or another, but this avails little if the trees do not receive the necessary attention afterwards. The blossoming of the trees this season has been all that could be desired, and the weather in this western locality has been favourable for the setting of the fruits, so that with good management one may safely predict a satisfactory crop of Peaches out-of-doors. Mild weather usually favours green and black aphids, the last-named being the worst pest that attacks the Peach and Nectarine. Unless prompt measures are taken to eradicate them, they quickly cripple the young growths upon which next year's crop is developed. In some seasons black aphid appears in clusters around the fruit-buds before they are expanded, at which stage it is most difficult to dislodge them, because the application of liquid insecticides at that period is attended with considerable danger. Tobacco powder is the safest specific to apply, and this should be dusted well amongst the buds. The removal of surplus shoots should afterwards be undertaken, removing a few only at a time, and allowing a week or ten days to intervene between the thinnings. Remove the shoots which develop on the under side of the fruiting branches right and left of the tree, and some of those on the upper side of the same branches, retaining the nearest basal shoot, which will be the fruit-bearing shoot for next year. As a rule, this one growth is sufficient, besides the leading growth on the fruiting branch, if the latter is necessary for the extension of the tree; if not, the point can be nipped out at the fourth or fifth leaf and the old shoot cut clean out close back to the new branch which is to be retained, as soon as the fruit has been gathered. Occasionally a second shoot midway may be left, provided a space can be found for it, but it must be remembered that overcrowding the young wood during summer prevents the proper ripening of the fruiting shoots, an evil that cannot be too strongly condemned. The thinning of the fruits where they have set freely demands attention when they are of the size of Peas. This thinning should also be done at intervals, retaining the most promising and best placed fruits, which should not be closer to each other than 12 inches on a healthy tree. The young shoots should be carefully secured to the wall when they are long enough for training, but I am never in a hurry to do this, as they not only protect the young fruits from frost, but they themselves grow better when left undisturbed for a time. Root waterings must be given whenever necessary, affording a stimulant each time to well-established trees. As young trees usually make very strong growths they are better without manual assistance. Frequent syringings or washings of the foliage are necessary during the active growing season—that is, from early June onwards—evening being the best time for the work. Apply the spray well under the foliage where red spider generally congregates. The border should be covered with a strawy mulch towards midsummer to retain the moisture in the soil; in wet seasons this mulching is best dispensed with. Should leaf-curl put in an appearance, the affected foliage should be picked off at once and burnt. *James Mayne, Bicton.*

THE ROSARY.

ROSE-GROWERS' PROBLEMS.

WE extract the following racy remarks from a paper read before the New York Florists' Club by Mr. William H. Elliott, and reported in *Horticulture*, April 24, 1909.

After emphasising the need for those who take up the cultivation of the Rose for commercial purposes to consecrate their lives to this work, and to put forth every ounce of energy they possess, Mr. Elliott described how to plan an establishment, and indicated the necessity for procuring a level tract of land near a railway station. In respect to size of houses, he went on to say: "My recommendation is the large house. My latest house—60 feet by 1,340 feet—I find none too large. The advantages over smaller houses are many, and are summed up in the fact that they produce better stuff and more of it. We do not find that those who have built the large houses have given them up and gone back to the smaller ones. If they build again they build larger houses.

"The best Roses are not grown by any secret process, but by the most careful attention to every detail. Eternal vigilance is the price of good Roses. . . . If anything has been accomplished by the use of chemicals, I should like to know it. I find plenty of care and cow manure produce much better and surer results. Aim to cut your Roses when the demand is good. The grower that produces a large supply on an overstocked market, and a small supply when the market is short, must not expect to get a very large return. How do you decide which old variety to give up to make room for the new? What are you going to take out to make room for White Killarney? Will you give up The Bride this year? Do you think White Killarney will replace The Bride? Have you given up your Maids, and are you growing Killarneys instead? I have given up Maids; next year I expect to give up Brides. What about the other new varieties? Rhea Reid I shall continue to grow, but not very extensively. This Rose came very near to being one of the best Roses ever produced. Maryland I think very well of, and a good safe one to grow. William B. Smith is a very promising Rose for summer. I intend to grow it, but only to a limited extent. Kaiserine does not give any light-coloured, summer Rose much show. Mrs. Jardine and Queen Beatrice I have discarded."

COMPARISONS OF VARIETIES FOR MARKET PURPOSES.

AT a meeting of the Gardeners' Club, held at Boston, in April, in speaking of Roses, Mr. Reuter said that his plants, with the exception of Chateau and a few of My Maryland, were grafted stock. Regarding the latter, he said that the grafted plants seemed more disposed to take a winter rest than the own-root plants, and for this and other reasons he is disposed to favour the own-root method for this variety. He will, however, try a few more grafted stock in the coming year, with a little higher temperature, and will also give this promising variety a trial for summer flowering. Mr. W. H. Elliott said that, in his experience, Richmond Bride and Bridesmaid had yielded scarcely one-half of the results which Killarney had given him. Rhea Reid had been a disappointment at the finish, but it just narrowly missed being a big success, and he proposed to hold on to it for another trial. Mr. Eber Holmes pronounced Killarney to be the best paying Rose grown, and Bridesmaid better than Bride. Certain people had propagated White Killarney surreptitiously from pieces of stems, therefore the wise man would keep his novelties under lock and key. He estimated that in the hands of a clever propagator, with adequate facilities, a single eye might be increased to a quarter-million rooted cuttings within two years. *F. M.*

The Week's Work.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Thyrsacanthus rutilans.—Cuttings of this plant may be inserted either singly or by putting three or four around the sides of a small pot containing sandy soil. The pots should be plunged in the propagating frame until the cuttings have formed roots, at which stage the cuttings should be potted up singly into 5 or 6-inch pots. Until the plants have become well established in the larger pots they should be grown in the stove, but afterwards they may be removed into an intermediate house.

Camellia.—When it is seen that the new shoots have finished their growth the plants may be given cooler treatment. Gradually increase the ventilation, so that after the lapse of a few weeks the ventilators may be opened to their full extent by night as well as by day. Those specimens which are growing in pots or tubs may then be placed out-of-doors.

Hippeastrum.—Let the plants which have finished flowering be exposed to full sunshine. Do not hasten the ripening of the bulbs, however, by withholding water from the roots, but rather encourage growth as long as it is possible to keep the leaves green. An occasional application of weak manure water will be beneficial until the decay of the leaf. Care must be exercised at all times to avoid excessive watering.

Carnations.—Any plants which are in flower, or that are about to flower, should be lightly shaded from the midday sun. They require a comparatively dry atmosphere and abundant ventilation whenever the weather is favourable. Cuttings that have been rooted in the present spring should be removed to a frame, placing them close to the glass. Keep a sharp look-out for aphids, and destroy them directly they appear.

Selaginella Kraussiana.—This well-known *Selaginella* is most useful for surfacing the pots containing Palms and other plants used for house decoration. It is usual, therefore, to cultivate a considerable stock in small pots which are crocked to one-half their depth. We use a rough, lumpy soil so that when the plants are turned out of the pots the root mass does not fall to pieces, but a little fine soil is necessary for surfacing. Dibble cuttings thickly into the pots, and place them in partial shade in a warm, moist atmosphere. If they are removed to a cool house for a few days before they are needed for the dwelling-rooms they will last all the longer in good condition.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Early-fruiting vines.—As much air as outside conditions will allow must be given the vines during the time the fruit is ripening. If the roots are at all dry, they must be given a moderate watering with clear, tepid water, but the atmosphere should now be kept dry. When the fruits are ripe, let a double thickness of fish netting be placed on the glass. It will break the power of the sun's rays, and the Grapes will therefore keep fresh over a longer period. Keep a sharp look-out for mealy bug.

Grapes to ripen at midsummer.—Examine the vines, and if the berries need to be further thinned, let this be done before they get overcrowded, or there will be a greater danger of some of them getting rubbed. Assuming that there is a sufficient covering of foliage over the trellis, the lateral growths must now be kept constantly pinched out. If the least evidence of red spider is to be seen, let the affected leaves be sponged with a weak mixture of soft soap and sulphur in water. Vines affected with this pest should be syringed with soft water in the afternoon at closing time, but this should be discontinued when the berries commence to colour. After the second thinning has been done, the borders should receive a liberal surfacing of rich, decomposed farmyard manure, and following this a thorough watering with tepid water.

Madresfield Court Grape.—This most excellent, mid-season Grape requires a little extra care and attention during the ripening period, as the berries are liable to cracking. I believe this cracking often occurs as the result of some degree

of drought felt by the roots. It is a mistake to lessen the supply of water at this critical stage, when the vines probably absorb as much moisture as at any other season. When colour commences to develop on the berries, the atmosphere should be kept freely circulating, but the strictest care must be taken to prevent draughts of cold air. It is well to allow the laterals a certain amount of free growth until the danger of cracking is passed. In order to prevent excessive moisture rising from the borders after they have been watered, a surfacing of clean straw is useful. Madresfield Court Grape should be cultivated in a well-drained border of restricted size, and one in which the soil is rammed thoroughly firm.

Cucumbers.—The stopping and regulating of shoots should be carried out at least once each week. As soon as numerous roots are seen on the surface of the border, apply a top-dressing of loam and decomposed horse manure. Open the ventilators a little during the forenoon, but close them again about 3 p.m.; when the house and plants are syringed. Should the Cucumber blotch disease (*Cercospora melonis*) appear on the plants, cut off any affected leaves and burn them. Discontinue the syringing for a time, but maintain the atmosphere moist by frequently damping all the available surfaces in the house. Another

large measure it may be prevented if a mulch of some suitable material is placed on the soil sufficiently early. For all the larger growing vegetables there is nothing better than stable litter, but for smaller growing crops, such as Beet, Onions, Carrots, Lettuces and Turnips, manure obtained from a spent Mushroom or hot-bed, with some leaf-mould, are the best materials. These materials should be passed through a coarse meshed sieve in order that they may be easily worked between the plants and rows. If nothing better is obtainable, the mown grass from the lawns will answer the purpose.

Watering.—It will now be necessary to commence watering in dry weather. Whenever water is applied let sufficient be given to thoroughly saturate the soil as deeply as the roots penetrate. Manure water of some kind is essential to most of the crops if the best results are to be obtained. Ordinary house sewage, if used with care, is an excellent stimulant, therefore, provision should be made for preserving a sufficient quantity for kitchen-garden purposes. Drainings from the farmyard are excellent if care is taken to dilute them sufficiently before applying them to the crop. As far as circumstances will allow, all watering should be done late in the afternoon or during the evening.



FIG. 142.—ROSE FESTOONS IN THE WARREN HOUSE GARDENS, STANMORE.

(See p. 323.)

bunch of plants will be necessary to take the place of those now fruiting when the latter cease to be productive. Excellent Cucumbers may be grown at this season of the year in unheated frames. The recommendations given in a previous Calendar for the cultivation of Melons in frames may be followed in the case of Cucumbers, with the additions that a covering of decayed leaves be placed over the whole of the bed 3 or 4 inches thick, and the young Cucumber plants be planted on mounds composed of loam and leaf-mould in equal proportions.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Mulching.—It would be difficult to overestimate the value of a good mulch to most vegetable crops, whether they are cultivated in light or heavy soil. Contrary to the general belief, I am convinced that a mulch is even more necessary on heavy ground than on light, porous soils. Heavy land contracts during dry weather in summer, and exhibits much cracking and the crops suffer from this condition of the soil. In a

Dandelion.—The Dandelion is regarded by many as one of the best salads obtainable, and by some as one of the best vegetables for cooking purposes. Seeds should be sown thinly in rows 15 inches apart, and the seedlings thinned as early as possible to 1 foot apart.

Potatoes.—Use the flat hoe over the ground between the rows and Potato sets directly the growth appears above the ground level. Whenever there is the slightest fear of frost (and it should be remembered that frost is possible during the whole of the present month), let the tops be either covered with soil or protected with some other material. Examine frequently old tubers which have been stored for use. Rub off any growths that appear upon them and make sure that they are in the coolest place available.

Spinach.—The earliest sowings made this spring should now be affording leaves for consumption. The plants in successional batches should be thinned out to 6 inches apart in order that the finest produce possible may be obtained. Continue to sow small quantities of seed once a fortnight, selecting the sites between rows of Peas or some other partially-shaded situations.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart.,
Leonardslee, Sussex.

Bamboos.—Any varieties of *Bambusa*, *Arundinaria*, and *Phyllostachys* that have been recently planted should be given occasional waterings, as these plants become dry very quickly in the presence of a drying wind. It is useful also to spray the foliage occasionally with clear water. *Arundinaria nitida* and *A. anceps* are greatly affected by dry conditions, the leaves frequently showing signs of shrivelling during an east wind. Large clumps of Bamboos can be improved in condition by applying water from the hose. It must be remembered that the arrangement of the leaves tends to divert much of the water that falls upon them to an area not covered by the roots. If a small jet of water is made to run for several hours in the centre of a plant it will be sure to do that plant good. Any other trees and shrubs that have been moved should be examined for the same reason. First of all make the soil thoroughly firm about the roots and then apply water.

Narcissi.—The foliage of *Narcissus* and all bulbs should be allowed to die naturally. Therefore, if the site where the *Narcissi* are growing is needed for any other plant the *Narcissi* should be lifted carefully and laid in a trench where they may finish the ripening process.

Calceolaria.—Any *Calceolarias* to be used in the scheme of summer bedding not already planted in their permanent position should be removed thereto without delay. They require deeply-dug and richly-manured soil, and planting should be done very firmly or the plants will die suddenly during a period of hot weather.

Hollyhocks.—Turn up a leaf occasionally to see if there are signs of the fungus disease (*Puccinia malvacearum*). If the plants are sprayed sufficiently early with permanganate of potash or sulphide of potassium the disease will be checked. Hollyhocks are noble border plants and their culture is recommended.

Senecio.—*S. japonica*, *S. Veitchii*, and *S. Wilsonianus* are apt to have their leaves disfigured by insects. Therefore sprinkle about the plants a quantity of soot, lime, or kainit, these being distasteful to creeping insects.

Helleborus.—Plants that were shifted at the commencement of the month must be watered from time to time.

Rhododendron.—As *Rhododendrons* pass out of flower, especially the Himalayan species, let the seed vessels be picked off, as this will have the effect of making the plants grow more strongly. Afford any plants water that appear to require it, and apply a mulch to isolated specimens that, having no shade, would be liable to very warm soil about their roots.

Alpine plants.—See that shade is afforded such plants as *Schizocodon Shortia*, and *Ramondia*. Many of the *Saxifragas* do better if shaded from the midday sun. They should be planted in a north-west aspect.

Gerbera Jamesonii.—Plants of this species are now growing freely. Take away a little of the surface soil and apply a top-dressing.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE,
Bart., Burford, Surrey.

Calanthe.—In the warmest house the deciduous *Calanthes* are in various stages of growth. Those which have unfolded their leaves are rooting freely towards the sides of the pot. Such plants must now be afforded more water at the root, and the quantity should continue to be gradually increased as the plants make further progress. Those that are more backward should be set aside by themselves, for great care must still be exercised in watering them. At Burford I find it necessary to give extra shade from sunshine to these *Calanthes* until the plants are thoroughly established, and for this purpose, in addition to the lath blinds, we use thin archangel mats which are half worn out; these are kept on the glass during the hottest part of the day. Such evergreen *Calanthes* as *C. veratrifolia*, *C. Masuca*, and *C. macroloba* should now be opening their flowers, and if the plants are placed in a cool, shady part of the intermediate house, they will remain beautiful for several weeks. Whilst in bloom, the plants only require about half as much water as when they are in full growth—a too liberal supply at

this time will cause the flowers to become spotted and to fall away prematurely. The proper time to repot these plants is when new growth commences, which usually occurs about a month after flowering. Being strong, free-rooting subjects they require rather large pots, which should be one-third filled with drainage. For a compost, use one-half of fibrous loam, one-fourth leaf-mould, one-eighth *Osmunda* fibre cut up rather small, and for the remainder small broken crocks and coarse silver sand. Pot the plants moderately firmly, as when planting an ordinary stove or greenhouse plant, and allow a good space for water on the surface. Brown scale insects and green and yellow aphids often attack these plants just as the flowers commence to open, and if not destroyed at once, they spoil the whole inflorescence.

Thunias.—*Thunias* have grown strong and well. As the flowering racemes commence to appear on the apex of the new growths, afford copious waterings at the root, and weak liquid manure water about once or twice a week until the flowers expand. When in bloom, the flowers will last longer if the plants are arranged in the less warm atmosphere of the *Cattleya* house.

Pleiones.—Such *Pleiones* as *P. maculata*, *P. lagenaria*, and *P. concolor* now suspended to the roof of the *Cattleya* or intermediate house, and others as *P. humilis* and *P. Hookeriana* which are near a ventilator in the cool house, must receive sufficient water to keep them decidedly wet, and a good spraying overhead several times a day so that the foliage will be fresh and clean. When thoroughly established in the potting material, all of these *Pleiones* enjoy exposure to light, and will keep the tips of their leaves green longer than when grown in a shady position. They should not, however, be exposed to strong direct sunshine.

Chysis.—In the *Cattleya* house, plants of *Chysis bractescens*, *C. Linninghii*, *C. aurea*, *C. Sedenii*, and *C. Chelsonii*, &c., are now in full growth. Those that were repotted last year and need no disturbance now, will require abundance of water at the root. If any require repotting the operation should be done at once. The plants grow well in equal parts of *Osmunda* and *Polypodium* fibre cut up moderately fine and with plenty of small crocks intermixed. Pot each plant firmly and suspend it in the lightest position in the house. Instead of the usual shallow *Orchid* pans, we find the ordinary flower-pot more suitable, these having three holes drilled just under the rim, and with copper wire handles they are easily suspended. All through the growing season these plants are extremely liable to the attack of small yellow thrips. When these tiny insects get a footing low down in the funnel-shaped growths, it is difficult to dislodge them. A good plan is to dip the growths in some safe insecticide, afterwards rinsing it off in clean, soft water, then lay the plants down on their sides until the water has drained out of each growth. It is advisable to place the plants in any house whenever it is being fumigated with a vaporising compound.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell
Park, Kent.

Forced Strawberries.—Where the later batches of these have not been too hardly forced, they should be set aside and hardened off gradually, with a view to planting them in the kitchen garden. This class of plant, if well rested, will usually produce a good crop of Strawberries in the autumn, and a heavier crop in the following season. Strawberry plants under glass are very susceptible to red spider and mildew, and sometimes whilst the plants are standing about, previous to being sufficiently hardened for planting, these pests increase in number. As a precautionary measure, it is well to dip the foliage in a strong mixture of sulphur or other insecticide, so as to ensure the plants a clean start in their new quarters. Where this method of cultivation is practised yearly, a piece of ground will have been already prepared, and the soil by this time will have settled down. All that now remains to do is to loosen the top soil, and, before planting, to work in a mixture of soot, lime and wood ashes. Rake the surface level and draw lines at 2½ feet apart. If Strawberry plants grow strongly in the garden as a rule, then allow the plants the same distance in the rows. For some of the more compact or weaker-growing varieties

2 feet will be found sufficient. Thoroughly break the ball and disentangle the roots, or the latter will have some difficulty in establishing themselves in the new soil. Plant firmly and apply a thorough watering afterwards. In the event of a spell of dry weather, watering must be continued till the plants are well established. Where a large number of runners is required for raising plants for forcing, it is a good plan to set apart a bed of late-planted Strawberries, and to use these merely for providing runners. The blooms should be pinched off as soon as they appear. This is a better plan than to depend on a fruiting plantation for the runners—as before the fruit is cleared a considerable time will have elapsed, and the runners may be damaged by the pickers. Where early forcing is done, it is a gain to get the plants established in the fruiting pots early.

Early Strawberries.—If the present dry weather continues, warm borders set apart for the production of early fruit will require frequent waterings, otherwise the plants will be checked in their growth and the fruits prevented from swelling sufficiently. If extra fine fruits are desired, thin them out as soon as the bloom is set, leaving about 12 fruits on each plant. This will be a considerable help to the plants, and will hasten the development of the fruits by a few days.

THE APIARY.

By CHLORIS.

Water for Bees.—Now that the bees are raising large quantities of brood, much water will be required, and where there are no natural supplies of pure water it is necessary to afford a supply. The best and simplest way to provide water for bees is to fill a 3-lb. jam bottle with water, and invert it on a plate in the vicinity of the hives.

Arranging an apiary.—Bright sunshine has a great influence upon the activity of bees, and the hives should be so placed that the entrances catch the early morning sun, that is, facing the south-east. Some protection, such as is afforded by a high hedge, should be given against the north and east winds, but the hives should not be crowded under hedges, although this is often the case. Such a situation prevents easy manipulation of the hives, and causes them to be damp from the constant drip from the trees. The hives should be so placed that a person can easily get behind them. Place the hives about two yards apart; let the alighting board be sloping, and not more than a foot from the ground. If the apiary is in a field keep a space around each hive clear of grass and weeds, so that the bees will be able to enter the hives freely. Should the queen be lost when examining the hive she will be more readily found if the ground around is clear. An apiary should, if possible, be established in the midst of honey-producing flowers.

Plants that furnish honey in quantity.—Many persons imagine that any and every flower will give its share of nectar to the honey bees, but this is not so. There are many blooms which are of no value to the bee because the nectar is situated too far down the corolla for the tongue of the bee to reach it. The following plants are especially valuable for honey producing: All fruit trees, Lime, White Clover, Borage, Mignonette, Mustard, Heather, and plants of the Brassica family, especially when grown in large quantities for seed.

Swarms.—May is one of the best months to commence beekeeping, especially if good swarms can be obtained. One of the readiest means of judging whether a new stock is strong is to weigh it. A good swarm, when just hived, should weigh from 4½ to 5 lbs.; a medium one from 3 to 3½ lbs. Before bees swarm they consume a considerable amount of honey, which they convert into wax for building comb in their new home. When bees are dispatched some considerable distance by rail they consume some of this honey as food, therefore the swarm weighs less on arrival than when dispatched.

Fitting a hive for a swarm.—A swarm generally builds worker comb during the first season after swarming. Fit the frames with starters about an inch and a half deep. Over these frames place zinc queen excluders, and above these place shallow frames containing drawn-out comb. The bees will then have a place in which to store their nectar and thus leave plenty of room for the queen to lay her eggs.

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Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

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

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MAY 24—Anniversary meet. of Linnean Soc.

TUESDAY, MAY 25—

Roy. Hort. Soc. Sh. in Temple Gardens, Thames Embankment (3 days). Ann. meet. and dinner of the Kew Guild at the Holborn Restaurant.

WEDNESDAY, MAY 26—

British Gardeners' Association Annual Meeting at Essex Hall, Strand, London, at 7 p.m. Bath and West and Southern Counties Sh. at Exeter (6 days).

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—55.7°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, May 19 (6 P.M.): Max. 66°; Min. 41°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, May 20 (10 A.M.): Bar. 30.2; Temp. 68°; Weather—Sunshine.

PROVINCES.—Wednesday, May 19 (6 P.M.): Max. 63° Bury St. Edmunds; Min. 54° Scotland E.

SALES FOR THE ENSUING WEEK.

TUESDAY—

Unreserved sale of 150 Magnificent Orchids, including some rare Cattleya Rex, by order of Messrs. Sander & Sons, by Protheroe & Morris, at 67 & 68, Cheapside, E.C., at 2.30.

WEDNESDAY—

Choice and Rare Orchids, many being certificated plants, by Protheroe & Morris, at 1.

THURSDAY—

Hardy Bulbs and Tubers, at 12; Palms, Bays, Ferns, &c., at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

Imported and Established Orchids, Orchids in flower and bud, at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

The Blood of Plants.

It has long been known that the blood of animals contains substances—respiratory pigments—which act as carriers of oxygen; that is, which are capable of uniting with oxygen and of yielding it up to the tissues of the body. Such respiratory pigments are contained, for example, in mammalian blood, and to them that fluid owes its characteristic colour. The change of colour which blood undergoes in passing from the arterial to the venous state is due to the change in colour of the respiratory pigment. When united with oxygen it is bright red, and when deprived of oxygen it is of a darker colour.

Again, it is well known that in the process of respiration, both in plants and animals, the energy which this process releases and puts at the disposal of the organism is in part due to oxidations. The raw materials of respiration are complex organic compounds—sugar and also nitrogen-containing bodies: the final "waste" products of the process are fully oxidised substances, such as carbon-dioxide, water and the like.

It has always been a puzzle to physiologists to understand by what chemical course of events the respired substances are oxidised in the cells of the plant or animal.

It has been evident for some time that respiration is not a simple oxidation process, for if it were, then increasing the supply of oxygen should result in increased respiration. This is not the case with plants, for the amount of oxygen in the air supplied to the plant may be varied within extraordinarily

wide limits without increasing the rate of respiration.

That certain processes go on in the plant preliminary to the oxidative processes which constitute the last stage of respiration is evident from the study of fermentation by yeast.

Yeast is a fungus which, as is known to all, converts certain sugars into alcohol and carbon dioxide. Yeast (*Saccharomyces cerevisiae*) is remarkable in as much as it may live in the presence or in the complete absence of oxygen; or, in other words, it can live aerobically or anaerobically.

When oxygen is present yeast, besides fermenting a certain amount of sugar to alcohol, converts some sugar into carbon dioxide and water, that is, it sets up fermentation and also respire like an ordinary plant. When oxygen is absent yeast obtains its supplies of energy solely by breaking sugar molecules into alcohol and carbon-dioxide.

Yeast, as an aerobe, derives the major part of its energy thus:—



as an anerobe, thus:—



and since the energy obtainable from a given weight of fermentable sugar is greater when the oxidation is complete, as in the former case, than when the sugar molecule is split into an unoxidised part (alcohol) and an oxidised part (carbon-dioxide), it follows that, to get the energy necessary for its routine work of living, yeast as an anerobe must decompose considerably more sugar than when it is living as an aerobe. This is confirmed by the experience of brewers, who limit the amount of oxygen available for the yeast during alcoholic fermentation. Till recently the facts of alcoholic fermentation were regarded rather as curious than significant. Two sets of observations have forced them into prominence as throwing light on the chemistry of respiration. The first set of observations indicates that alcoholic fermentation is not confined to yeast and various other micro-organisms, but may be demonstrated to occur among the higher plants. That this is so, anyone may determine very readily by keeping Bean seeds under water for a few days, and then rubbing the seeds between the fingers, when a distinct smell of alcohol is to be recognised. Experiments on the behaviour of the higher plants when deprived of oxygen have led to the conclusion that in these circumstances, though no oxygen is absorbed, carbon-dioxide continues for some time to be evolved; and, as we have just seen, alcohol is also produced. This process of respiration without oxygen is called generally intra-molecular respiration. It agrees in the most exact manner with the alcoholic fermentation of sugar by yeast, and, indeed, only takes place in plants which contain sugar in their tissues. The second set of observations bearing on the chemistry of respiration are due to Buchner, who has succeeded in isolating from the living yeast-cell a definite substance which he terms zymase and which, like the living yeast-cell itself, has the power of decomposing sugar into alcohol and carbon-dioxide.

From these results it would appear probable that in yeast, living in oxygen, respiration takes place in a series of stages, of which the first is the disruption by zymase and similar agents of complex, organic substances such as

sugar (and also nitrogen-containing bodies), and the second the oxidation of the alcohol and other substances, produced by this disruptive action. If this is the probable course of events in the respiration of yeast it is also, for the reasons already given, the probable course of events in the respiration of all plants.

In this scheme the respiratory pigments find a definite place. These pigments consist of readily oxidisable bodies, and, under the influence of special agents of oxidation called oxidases and peroxidases take up oxygen. They act as temporary storers of oxygen. The oxygen, which they hold but loosely, is taken from them and induced to combine with the products of the disruptive process described above, with the consequent production of fully-oxidised substances—the so-called products of respiration—such as carbon-dioxide and water. A respiratory pigment may have different colours according as it is in the oxidised or the reduced state: thus indigo is blue in the former, but colourless in the latter condition. Various fungi, such as species of *Boletus* turn blue when broken and exposed to the air owing to the taking up of oxygen by the respiratory pigment. Many of the common colour changes in vegetables, as, for example, the browning of Apples, may be the visible sign of a similar oxidative process whereby a respiratory pigment is converted from its reduced, colourless state to its oxidised, coloured condition: the oxygen so taken up being destined for respiratory purposes. In as much as bodies, having these peculiar relations to oxygen and exhibiting marked colour characteristics when oxidised, exist in the sap of the most varied kinds of plants, it has been suggested by Palladin, to whom the most recent investigations are due, that the cell-sap of plants, because it contains these respiratory pigments and also the oxidising agents, is to be regarded as fulfilling the same respiratory functions as the blood of animals.

Looking at matters from the standpoint of the plant, the problem which it solves by respiration is how to obtain the energy for doing its work. The complex substances which it manufactures contain potentially great stores of energy. All that is required is that these substances should be oxidised. At the low temperature at which plants work this cannot be done directly. It is done indirectly in two series of operations. First, by special, clastic (decomposing) agents, like zymase, the organic substances are split up into intermediate bodies. In the second set of operations oxygen is brought into close association with the respiratory pigments. In the last place, this store of oxygen is introduced to, and caused to combine with, the decomposition-products of the first stage. Thus more or less fully-oxidised products are evolved, the fulness of oxidation being a measure of the completeness with which the potential energy of the original food substance is liberated. Although it cannot yet be described in simple language, easy of apprehension to the layman, the great problem of the mode of origin of the vital energy of organisms, by virtue of which they live and move and have their being, begins to be intelligible.

OUR SUPPLEMENTARY ILLUSTRATION represents a view of the Rhododendrons in the pleasure grounds at The Beacon, Dormans Land, Sussex. The bushes, many of them 30 feet high, form an undulating hedge on either side of the path known as the "Broad Walk." This path measures 16 feet across and extends a distance of 90 yards. The plants are principally varieties of *R. ponticum*, though here and there are hybrids, some with white flowers. The bushes have been planted for upwards of half a century. The soil varies in texture from a more or less light loam to a stiff clay, being a staple that is not considered very suitable for Rhododendrons. Nevertheless, they flourish and produce annually a grand display of blossoms. Through the kindness of the owner, opportunity to witness the display is extended to all who care to do so, and no permission is necessary. The site is shaded slightly by big trees, which afford protection for the flowers without obscuring the light to any great extent. The group of Rhododendrons shown in fig. 143 is the beautiful variety *Rosa mundi*, growing by the side of the formal lake opposite the Palm house in the Royal Gardens, Kew. This spot is one of the gayest in these famous gardens at all times, and especially in spring, when the large beds which face the Palm house are filled with a beautiful display of bulbous plants, most of them massed in colours. The Tulips have been especially fine this season. The Rhododendron *Rosa mundi* is early in flowering, and, as will be seen from our picture, it is extremely floriferous. Later, when the flowers are over, the dark greenery of the foliage affords a pleasing contrast to the wealth of summer-flowering subjects which take the place of the bulbs in the flower-beds. The stone vases, which appear in relief against the water, are then filled with showy trailing and other plants. The lake is of considerable extent, and numerous and varied water-fowl make it their home. The tiny island seen in the middle of the lake is a favourite spot for a pair of cormorants, which birds, disporting themselves and diving into the water after the food thrown them by their keeper or visitors, provide a constant source of entertainment. On a fine summer's afternoon, and especially on Sundays, the margins of the water are crowded by visitors, the vicinity of this lake and the Palm house being the most frequented spot in the gardens.

FLOWER SHOWS AT BIRMINGHAM.—The Birmingham Botanical and Horticultural Society have decided to hold, in accordance with precedent, two summer flower shows at the Botanical Gardens, Edgbaston, this season. The forthcoming shows will be held on June 9 (Orchids and early summer flowers) and July 21 (Roses and midsummer flowers). Schedules may be obtained from the hon. secretaries, Messrs. HUMPHREYS and WHITELOCK, at the Botanical Gardens.

KENSINGTON GARDENS.—The *Times* on the 13th inst., reports the following questions and answers in the House regarding the management of Kensington Gardens:—Mr. REES asked the First Commissioner of Works whether he would consider the propriety of extending the ride from Hyde Park into Kensington Gardens? Mr. L. HARCOURT: I cannot give any encouragement to this suggestion. It would destroy the amenities of Kensington Gardens, and I am glad to think the cost would be prohibitive. Mr. REES: Will the right hon. gentleman consider the desirability of keeping members of Parliament and others in good health, and the difficulty of getting sufficient exercise at present? Mr. L. HARCOURT: I attach more importance to keeping the children in Kensington Gardens in good health.

THE HURST AND SON MUSICAL SOCIETY AND THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—This society gave a performance of a musical play entitled "In Cyderland" on the 10th inst., at the Cripplegate Theatre, Golden Lane, London. The play was written by Mr. R. CAREY TUCKER, and the music composed by Mr. EDWARD SHERWOOD. There was a good attendance, and the performance was greatly enjoyed. We understand that Mr. EDWARD SHERWOOD will be enabled to make a contribution of £100 to the funds of the Gardeners' Royal Benevolent Institution as a result of the performance.

A PROPOSED NATIONAL VEGETABLE SOCIETY.—A meeting of several persons interested in vegetable culture was held in the Board Room of *Country Life*, Limited, on Tuesday afternoon last. Those present included Mr. A. DEAN (in the chair), and Messrs. O. THOMAS, G. WYTHES, W. POUPART, C. FOSTER, H. MARKHAM, C. HOB-DAY, E. T. COOK, J. T. QUICK, and F. W. HARVEY. The feeling in favour of the formation of a Vegetable Society was unanimous, and it was agreed to convene by circular a meeting of all interested in the project. This will be held in the Essex Hall, Essex Street, Strand, at 4 p.m. on Tuesday afternoon next. At that meeting full opportunity will be given for discussion and proposals will be submitted. Mr. A. DEAN is to preside, and Mr. QUICK will act as hon. sec. pro tem.

MR. H. J. VEITCH.—We have received the following note upon a subject which we are quite sure will have the active sympathy of our readers:—"With the increasing love of plants and gardens it may possibly be forgotten to what a really vast extent the present and succeeding generations are indebted to Mr. HARRY J. VEITCH, V.M.H., not only for his invaluable work amongst plants, but also for the assistance he has invariably rendered, personal as well as financial, to the great gardening charities. A few of his friends and admirers (both amateur and professional) are, therefore, desirous of having his portrait painted by one of our leading artists, in order that it may be hung permanently in the buildings of the Royal Horticultural Society. A sum of 600 guineas will be required. Of this a very substantial sum has already been received, but it is thought that amongst many of his friends there will exist a feeling that an opportunity to subscribe should also be afforded them. It is proposed, should the funds admit, to present each subscriber of one guinea and upwards with an engraving of the portrait. Subscriptions may be sent to either Mr. H. B. MAY, of Stanmore, The Green, Chingford, or to the Revd. W. WILKS, Shirley Vicarage, Croydon."

BRITISH GARDENERS' ASSOCIATION.—The annual general meeting will be held in the Essex Hall, Essex Street, Strand, London, on Wednesday, May 26, at 7 p.m. (the second day of the Temple Show). Mr. E. F. HAWES, Chairman of the Executive Council, will occupy the chair.

THRIPS IN GREENHOUSES.—Experiments made by Mr. A. C. BEALE on the best means of destroying thrips on Cucumbers and published in the *Gardeners' Chronicle of America* (No. 1, vol. ix., April, 1909) have led to the following conclusions: Hydrocyanic acid gas, at the rate of 1 ounce of potassium cyanide per 1,000 cubic feet, is effectual. (This method must not be used unless the operator adopts proper precautions, since hydrocyanic acid gas is extremely poisonous). Spraying with a 40 per cent. nicotine preparation (one teaspoonful to a gallon of water) will keep down thrips on Cucumber without injury to the plant, provided that the nicotine water is washed off, before it has had time to dry on the leaves, by spraying with ordinary water.

BEQUEST TO A GARDENER.—The late Dowager Duchess of MARLBOROUGH (Lady WILLIAM BERESFORD), whose will has just been published, made a number of bequests to her servants, among them a sum of £500 to Mr. F. CHAMBERLAIN, her gardener at Deepdene, near Dorking.

RHODODENDRON PINK PEARL.—Speculations having been advanced in a contemporary as to the parentage and origin of this Rhododendron, Messrs. JOHN WATERER & SONS, LTD., Bagshot, ask us to state that it was raised in their nursery. Messrs. WATERER state that they are making similar crosses to that which produced Pink Pearl, and have hopes of raising even better varieties.

PROTECTION OF WILD PLANTS IN SURREY.—In order to preserve as much as possible the beauties of rural waysides in the area under its administrative authority, the County Council of Surrey has recently passed the following by-law:—"No person shall uproot or destroy any Ferns or other wild plants growing in any road, lane, roadside waste, wayside, bank or hedge, common or other public place, in such a manner or in such quantities as to damage or disfigure such road, lane, or other place. Provided that such by-law shall not apply to persons collecting specimens in small quantities for private or scientific purposes. Any person offending against this by-law shall be liable to a penalty not exceeding £5." Lord FARRER asked that the middle clause be omitted, as members of so-called Nature Study classes uprooted everything. It was decided that as the by-law was identical with that adopted in Devonshire, the proposed rules should be passed, without alteration, to see how they worked.

NITROGEN-FIXING BACTERIA AND NON-LEGUMINOUS CROPS.—In a paper read before the Royal Society on May 6, Professor BOT-TOMLEY gave an account of the results of his experiments on applying to the roots of non-leguminous crops (Oats, Barley, Parsnips, &c.) cultures containing two nitrogen-fixing micro-organisms, viz., *Pseudomonas radicola* and a species of *Azotobacter*. Pot experiments with Oats grown in sand and manured with phosphates, potash, and lime gave:—Treated pots, watered once with the mixed culture solution, average weight for plant = .74 grams; untreated, .42 grams; increase in favour of treated plants = .32 grams, i.e., 76 per cent. Barley: Field experiments on limed plots of 484 square yards. Seed only treated with bacterial culture. Yield of treated, 691 lbs.; of untreated, 608 lbs.; increase, 83 lbs., or 13.6 per cent. With bulbs, *Galtonia candicans*, 250 bulbs in each plot, grown in sandy soil, manured and limed, Professor BOT-TOMLEY obtained the following results:—Weight of bulbs when lifted and dried at end of season: treated, 82 lbs. 1½ oz.; untreated, 69 lbs. 3 oz.; increase, 12 lbs. 14½ oz. = 18.6 per cent. in favour of the treated bulbs. Parsnips, grown in garden soil, manured and limed, half the bed watered once with mixed culture solution, showed, with respect to weight of the roots:—Treated, 65 roots weighed 26 lbs. 10 oz., average per root = 6.55 oz.; untreated, 68 roots weighed 22 lbs. 14 oz., average per root 5.38 oz.; increase per root, 1.17 oz. = 21.7 per cent.

TREE GRUBBING BY STEAM ENGINE.—On an estate near Bulwell, Nottinghamshire, belonging to Messrs. RICHARD SANKEY & SON, LTD., a seven-acre wood has been cleared by means of a powerful traction engine. The soil at the foot of each tree was slightly loosened, a chain placed around the trunk, the engine put in motion, and the tree hauled out of the ground.

A NARROW ESCAPE.—Under the title, "A Warning to Gardeners," the *Hants and Sussex County Press* for May 15 reports a narrow escape from death from nicotine poisoning. It appears that a boy employed at a nursery took home some nicotine preparation used for fumigating purposes, and that his mother employed it on the heads of two little girls. Both children were rendered unconscious by the poison, and only prompt medical aid saved them from death. It cannot be too often insisted upon that all poisonous preparations used by horticulturists should be properly labelled, and, above all, kept under lock and key.

THE EVOLUTION OF THE ORCHIDACEÆ.—Under the above title Mr. R. A. ROLFE commences in the May number of the *Orchid Review* a series of articles on the relations in which the several genera of this most interesting group of plants stand to one another. He points out that the most primitive of existing Orchids is the genus *Newiedia*, with some half-dozen species, and insists that, though the flowers of this genus differ very considerably from those of other genera, *Newiedia* is rightly included in the Orchidaceæ. He describes in brief but adequate fashion the characters of the sub-orders, *Diandra* and *Monandra*. The distinguishing features of the two tribes, *Apostasiæ* and *Cypripediæ*, into which the former sub-order is divided, are given, the classification of the *Monandra* being left for subsequent treatment. We commend Mr. ROLFE's article to the notice of all those who are interested in what DARWIN rightly called "the most singular and most modified forms in the vegetable kingdom."

SCAB ON POTATOS.—It having been observed in Yorkshire that scab is more prevalent in a dry than in a wet season, experiments were instituted by the Agricultural Department of the University of Leeds (*Bulletins* 63 and 70) in order to ascertain whether by treating land with substances capable of holding water the disease might be prevented or reduced. The substances used were:—sawdust, shoddy, Rape meal and peat moss, each of these substances being used with and without salt. The sawdust and peat moss were soaked in water before being applied over the sets at planting time. The best results were obtained by the use of 50 cwts. of wetted sawdust; the addition of salt, however, reduced the yield. Steeping the "seed" in formaline (8 fluid ounces of commercial formaline to 15 gallons of water) reduced the amount of scab in the crop.

COKE FOR KEEPING POTATOS.—According to a German publication, the *Practical Adviser in Fruit Raising and Gardening*, Potatos may be kept and prevented from sprouting by placing them on layers of coke. Though it is not apparent by what properties of coke this effect is produced, the fact would appear to be well vouched for. It is stated that by the use of layers of coke Potatos may be kept in good condition till July.

A NEW METHOD OF PACKING GRAPES.—An improved method of packing Grapes for market, devised by M. BARODY, is described in the *Revue Horticole* (May 1, 1909). A portion of the stem is left attached to the bunch, and the two cut ends of the stem are covered with wads of cotton wool well soaked in water. Pieces of waterproof paper are wrapped over the wool and kept in place by elastic rings. The Grapes are then put up in boxes, with the usual packing between the bunches. *L'Agriculture Commerciale* gives an account of the success which attended an exacting trial of this method. Bunches packed by M. BARODY's method and

others packed in the usual manner were despatched from one part of France to another, and after having travelled over a thousand miles were inspected by competent judges. Those specially packed were found to be as fresh as when cut; the others, packed in the ordinary way, were in a lamentable state. The extra cost of the special packing comes to two or three shillings per 100 lbs.

PUBLICATIONS RECEIVED.—*Insect Pests on Fruit*, by Fred. V. Theobald, M.A., &c. (Published by the author, Wye Court, Wye.)—*Ecology of Plants: An Introduction to the Study of Plant Communities*, by Eug. Warming, Ph.D., assisted by Martin Vahl, Ph.D. (Oxford: Clarendon Press.) Price 8s. 6d. net, cloth; 10s. net, morocco.—*Kew Bulletin*. (No 3.) Containing The Flora of Ngamiland, A Funtumia Disease, The Herbarium Savatier, &c. (London: Wyman & Sons, Ltd., Fetter Lane.) Price 6d.—*Beautiful Flowers and How to Grow Them*, by Horace J. and Walter P. Wright. (Part XII.) (London: T. C. & E. C. Jack.) Price 1s. net.—*Trees: A Handbook of Forest-Botany for the Woodlands and the Laboratory*, by the late H. Marshall Ward, Sc.D., F.R.S. Vol. V.: Form and Habit, with an Appendix on Seedlings. (Cambridge: University Press.)—*The Journal of the Cooper Research Laboratory*, edited by Walter E. Collinge, M.Sc., F.L.S., F.E.S., Director. (Berkhamsted: The Cooper Research Laboratory.) Price 3s.—*Agricultural Bulletin of the Straits and Federated Malay States*. (April) (Singapore: The Methodist Publishing House.)—*The Women's Agricultural and Horticultural International Union Monthly Leaflet*. New series, No. 11. (London: 64, Lower Sloane Street, S.W.) Price 2d.—*The Tropical Agriculturist and Magazine of the Ceylon Agricultural Society*. (March.) (Colombo: A. M. & J. Ferguson.)—*Tenth Annual Report on the Destruction of Charlock*. (London: Spottiswoode & Co., Ltd.)—*Twenty-first Annual Report of the Agricultural Experiment Stations of the Louisiana State University and Agricultural and Mechanical College for 1908 to the Governor*, by W. R. Dodson, Director. (Baton Rouge: *The New Advocate*, Official Journal of the State of Louisiana.)

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

AN IRIS DISEASE.—Growers of *Pogoniris* will welcome Mr. Dyke's timely note (p. 294) on the treatment of the combined fungal and bacterial disease which has been increasingly in evidence during the last few years. It is satisfactory, especially in the case of seedling Irises, to know that it need not necessarily involve the loss of the whole plant. Last season, however, I observed a final stage of the disease, which leads me to suggest that it is important to thoroughly destroy every portion of the rhizome that is actually diseased. Three Iris seedlings that had been attacked, but not entirely destroyed, were left in the ground, and in November I found the rotted main rhizome of each of these swarming with a quantity of small grubs, some of which I sent to the R.H.S. Scientific Committee for identification and advice. I was informed that they were larvae of a two-winged fly, and probably had no connection with the disease. But it seems not unlikely that as they were feeding on the diseased tissue they might act as disseminators of the bacteria, either mechanically, or, perhaps, as migration hosts (as in the case of the trypanosome and the tsetse fly), and that later on, when the mature insect lays its eggs in the Iris rhizome, it may at the same time introduce the bacteria again. Indeed, the way in which single plants are attacked at random here and there throughout a bed of seedlings planted in fresh soil suggests this as one way in which the bacteria may be disseminated. *A. J. Bliss.*

PERPETUAL-FLOWERING CARNATIONS FOR SUMMER BEDDING.—We are so accustomed to see Carnations cultivated near the vegetable quarters that the impression exists that they are only useful as plants to afford flowers for cutting. In the case of the border Carnation this is easily

understood, principally owing to the fact that they require to be planted in the autumn or early spring, thus putting early spring bedding stock out of the question. But in the case of the perpetual-flowering Carnation it is possible to put out the plants in May after the spring bedding has been removed. We plant our Carnations at the same time as the *Pelargoniums* and *Fuchsias*, and they commence to flower very soon afterwards. Cuttings rooted late in the previous spring and wintered in cool or cold frames provide ideal stock for this purpose. If stopped for the last time in September, the growths will be elongating for flower at the time of planting in May, when they should be in 5-inch pots. Plants which have flowered during winter under glass will produce quantities of bloom all summer if planted out during the spring. The superiority of the perpetual Carnation over the border Carnation, from a flowering standpoint, will be apparent to all, for the former commence to bloom in the spring and continue until the autumn. A friend residing at Bournemouth says: "I regularly gather a bunch of perpetual Carnation bloom on Christmas Day from the garden." So, like the Rose, we never quite know which is the last Carnation of summer. The question of varieties is not a perplexing one. For the best reds I would recommend *Britannia* and *Beacon*; pinks, *Enchantress*, *Rose Pink Enchantress*, *Mr. Burnett*, and *Winsor*; white, *White Perfection*, *White Enchantress*, and *Lady Bountiful*; while *The President* is the best crimson flower for the purpose. *Montagu C. Allwood.*

A FINE HARDY PRIMROSE.—Whilst the whole world has been scoured to collect specimens of the great Primrose family, yet of all the numerous forms in cultivation perhaps none excel in attractiveness or beauty the cross-bred products of *Primula Auricula* and *P. vulgaris*, these being our garden *Auriculas*, *Polyanthuses*, and *Primroses*. All of these flowers have been seen this year in many directions in wondrous beauty as ordinary greenhouse or border flowers. But at Wisley, in a retired spot beneath the trees and, oddly enough, quite alone, I saw recently a strong plant, with leaves veiling in luxuriance with the foliage of *P. japonica* which grows so finely, so beautifully, and so naturally here, the finest, richest coloured, single crimson Primrose I have ever observed. How it came there, or what is its origin, perhaps no one can tell, but it is a recent seedling. Such a plant if it seeds, as it is hoped it may, should prove to be the progenitor of a new and superb race of garden Primroses. *A.*

SCHIZANTHUSES AT WISLEY.—In one of the large span-roofed houses at Wisley there is at present a collection of superb plants of *Schizanthus*. The plants are in 6-inch pots, and were raised from seeds sown in August last. Many of the plants range from 24 to 30 inches in height, and are of corresponding breadth. It is unfortunate that such a fine group of this simple, yet beautiful, hardy annual should be so remote as to be seen only by visitors to Wisley. Apart from the merits of the strain, the culture reflects high credit on the Wisley staff. *D.*

TEMPLE SHOW AND REFRESHMENT TENTS.—Referring to your correspondent A.'s remarks, p. 316, I would suggest that the secretaries of the Gardeners' Royal Benevolent Institution and the Royal Gardeners' Orphan Fund ask the permission of the Temple Garden authorities to place collecting boxes in prominent places. If a portion of the amount usually spent in refreshment at this show be contributed to the boxes these deserving charities will be benefited. *An Old Subscriber to Both.*

TRADE NOTE.

MR. JOHN FORBES.

THE well-known and old-established business of John Forbes, nurseryman, Hawick, has been incorporated as a private limited company under the Companies (Consolidation) Act 1908 under the name of "John Forbes, Hawick, Limited." We understand that the shares are all taken up by Mr. Forbes and his family, and that the incorporation is made for family purposes only.

SOCIETIES.

ROYAL HORTICULTURAL.

MAY 18.—The usual fortnightly meeting of the Society was held on Tuesday last in the Horticultural Hall, Vincent Square, Westminster, concurrently with the annual exhibition of the National Tulip Society, a report of which appears on p. 333. The building appeared more crowded than ever with exhibits, and so numerous were visitors that it was at times almost as congested as a Temple Flower Show. The Committees all met in the upper rooms, the annexe, usually utilised as a meeting place for the Orchid Committee, being occupied mainly with the exhibits of the National Tulip Society. From a spectacular point of view, the exhibition was a great success, but there was no feature of exceptional

Floral Committee.

Present: W. Marshall, Esq. (Chairman); and Messrs. Chas. T. Drury, John Green, T. W. Turner, G. Reuthe, J. W. Barr, R. C. Notcutt, W. J. Bean, A. Kingsmill, C. W. Dixon, Arthur Turner, Wm. Cuthbertson, W. P. Thomson, E. H. Jenkins, Wm. J. James, George Paul, Ed. Mawley, F. Page Roberts, W. A. Binney, Geo. Gordon, J. F. McLeod, Wm. Howe, Jas. Hudson, and E. T. Cook.

Messrs. H. CANNELL & SONS, Swanley, Kent, again showed their brilliantly-flowered Zonal Pelargoniums, and some equally attractive Phyllocacti, having exceptionally choice varieties of these latter plants splendidly in bloom.

Messrs. W. CUTBUSH & SON, Highgate, London, N., again staged varieties of the perpetual-blooming Carnation, and a selection of flowering shrubs. (Silver Banksian Medal.)

Mr. CHARLES TURNER, Slough, showed varieties of Lilacs, the double-flowered varieties being very choice; we also noticed a batch of seedling *Athurium Scherzerianum*, elegant little plants of *Primula Sieboldii* in numerous shades, and a row of the pretty-leaved *Saxifraga sarmentosa*. (Silver Banksian Medal.)

Miss WILLMOTT, Warley Place, Great Warley (gr. Mr. J. Preece), exhibited a new Wallflower labelled *Cheiranthus Allionii hybrida*; the inflorescence bears a number of brownish-yellow flowers about the size of those of the Common Wallflower.

Some very pleasing subjects were shown by Messrs. HUGH Low & Co., Bush Hill Park, Enfield, their Roses and Carnations being very attractive, also Hydrangeas, *Meterosideros floribunda*, Acacia, *Schizanthus*, and *Cerbera Jamesonii*. (Silver Banksian Medal.)



FIG. 143.—RHODODENDRON GLORIA MUNDI IN BLOOM IN ROYAL GARDENS, KEW.

(See p. 329.)

[Photograph by A. J. Hartless.]

interest if the exhibit of new Primulas, shown by Messrs. BEES LTD., be excepted, and these were disposed in an out-of-the-way corner in one of the annexes. The exhibits under the jurisdiction of the DAFFODIL COMMITTEE comprised some very showy and extensive groups of bulbous flowers, mainly Tulips, the largest group staged being composed of Tulips in pots. This Committee granted an Award of Merit to a variety of Tulip; the FLORAL COMMITTEE conferred two First-class Certificates and two Awards of Merit. The ORCHID COMMITTEE awarded one First-class Certificate. The FRUIT and VEGETABLE COMMITTEE granted two Awards of Merit to new varieties of Strawberry.

At the 3 o'clock meeting a lecture on "Alpines in their Native Homes" was given by Mr. A. Clutton Brock.

Mr. L. R. RUSSELL, Richmond, Surrey, exhibited a trailing form of *Cytisus scoparius* Andreanus.

A batch of about 40 varieties of the common Hartstongue Fern, *Scolopendrium vulgare*, formed the principal feature in the group displayed by Messrs. H. B. MAY & SONS, The Nurseries, Edmonton. The fronds were serrated, crested and tasselled in the most elegant manner, whilst the splendid culture evinced in the specimens rendered the plants additionally handsome. A row of *Lygodium japonicum* and *Vitis heterophylla* formed a suitable setting at the back. Adjoining the Ferns, Messrs. MAY & SONS showed Verbenas in variety, *Ixoras*, *Pelargonium Clorinda*, and bunches of Zonal *Pelargoniums* in variety. (Silver Flora Medal.)

Messrs. HEATH & SON, Cheltenham, showed about 40 varieties of Fancy *Pelargoniums* and a large assortment of the scented-leaved type. Amongst the newer varieties of the fancy class were *Souvenir de Marie Aldebert* (white, semi-double flowers), *Souvenir de Mme. Royer* (dark crimson), *Monsieur Duvillard* (a very free-blooming kind, the carmine petals having darker spots), *Mons. Gaston Allery* (red and purple), and *Heroine d'Orleans* (a fine white variety). Messrs. HEATH also showed Alpine plants on a rock-garden exhibit.

Sir EDMUND LODER, Bart., Leonardslee, Hordham, Sussex (gr. Mr. W. A. Cook), showed many interesting plants from his noted collection. The *Rhododendrons* were especially choice, the more notable being *R. cinnabarinum*, *R. kewensis*, *R. Collettianum*, *R. yunnanensis*, and *R. Princess*

of Wurtemberg. Other plants of interest were *Larix Griffithii* and *L. microcarpa*, both with cones; *Magnolia Lennei*, *Fendlera rupicola*, *Rubus deliciosus*, *Limonia trifoliata*, *Akebia quinata* and *Ranunculus amplexicaulis*. (Silver Banksian Medal.)

Mr. G. REUTHE showed *Rhododendrons* in variety, also many plants of hardy species. We noticed a fine basket of the crimson-flowered *Primula pulverulenta*. (Silver Flora Medal.)

Messrs. BEES LTD., Liverpool, showed batches of three new *Primula* including *Primula Bulleyana* (see Awards), *P. muscarioides*, a small-flowered species having an inflorescence resembling a purplish blue *Lantana*; *P. cortusoides* var. *lichiangensis*, with rose-red flowers with greenish-yellow "eye." Another interesting plant in this group was *Incarvillea Bonvalotii*, which may be likened to a glorified *L. Delavayi*.

A group of a tall-growing *Calceolaria*, after the type of *C. Burbidgei*, was shown by LEONARD SUTTON, Esq., Reading (gr. Mr. F. Townsend). It was labelled *Calceolaria profusa*; the flowering is free and the plant highly decorative.

Displays of *Roses* were staged by most of the leading *Rose* firms. Mr. GEO. MOUNT, Canterbury, again staged cut blooms of remarkable quality, having well-known varieties in large batches of beautiful flowers. (Silver Flora Medal.)

The most imposing group of these flowers was a bank of pillar varieties staged by Messrs. T. ROCHFORD & Co., Tunford Hall, Broxbourne. The varieties were the best of the class, those that produce a wealth of blossoms forming huge bouquets of flowers. We noticed *Crimson Rambler*, *Dorothy Perkins* (the loveliest of all), *Lady Gay*, *Tausendschon*, *Cant's Blush*, &c. The group had a frontage of 45 feet. High culture was exemplified in a striking manner in this group, which is a feature of this firm's exhibits. Their nurseries were not inappropriately termed by a visitor a "plant factory." (Gold Medal.)

Messrs. WM. PAUL & SON, Waltham Cross, Herts., also showed climbing *Roses* with baskets of H.P.s and others along the front. The new variety *Elsie* is a *Wichuraiana* hybrid with good-sized flowers slightly flushed with rose colour. *Coquina* is a charming single variety with long sprays of beautifully-crippled, rose-pink blossoms. The yellow *Claire Jacquier* was also admired. (Silver Banksian Medal.)

Messrs. BEN CANT & SONS, Colchester, showed *Roses* of the rambling type, with large-flowered varieties in boxes along the front of the group.

Messrs. PAUL & SON, Cheshunt, showed *Roses* and *Rhododendrons*. *White Dorothy Rose* was well shown by this firm.

Messrs. FRANK CANT & Co., Colchester, showed *Roses* as tall plants and cut blooms. Among newer kinds were the red-coloured *Rhea Reid*, *Mme. Maurice de Luza*, and *Austrian Striata*, a cross between *Austrian yellow* and *Austrian copper*. The variety *Lady Roberts* was in fine condition.

Mr. MAURICE PRICHARD, Christchurch, Hants., exhibited *Alpine* and hardy garden plants, including a fine selection of *Bluebells*. Among these last-mentioned we noticed large batches of *Scilla campanulata Excelsior*, a fine shade of blue; *Scilla nutans rubra*, *S. n. rosea maxima*, *S. n. violacea*, *S. n. Rosalind* (blush-colour), and others. (Silver Banksian Medal.)

Mr. H. HEMSLEY, Crawley, Sussex, showed a rock-garden exhibit of considerable pretensions, the stonework being well disposed and planted with a variety of subjects, including, at appropriate spots, dwarf *Conifers* and shrubs. The very dark-coloured *Viola Bowle's Black* was noticed.

Mr. AMOS PERRY, Enfield Chase, Middlesex, set up a good exhibit of bulbous and hardy flowers. It contained a wealth of beautiful subjects arranged with excellent effect. We noticed many choice *Irises*, including *I. longipetala*, *Lithospermum prostratum Heavenly Blue* (a charming carpet plant), the double-flowered *Cardamine pratense*, *Camassia Cuisickii*, *Asphodelus ramosus*, *Helonias bullata*, *Paeonies*, with *Tulips* in numbers and many other spring-flowering subjects. (Silver-gilt Banksian Medal.)

Messrs. GEO. BUNYARD & Co., LTD., Maidstone, Kent, filled a large table with flowering plants and sprays of shrubs and trees in bloom. *Lilacs* in variety, *Azaleas*, the floriferous *Pyrus Malus Scheideckeri*, pink-flowered *Astilbes* (*Spiræas*), large batches of *Tulips*, *Meconopsis*

integrifolia, *Saxifragas pyramidalis* and *McNabiana*, *Irises*, and a large selection of border and *Alpine* plants were included in the display. (Silver Banksian Medal.)

M. HENRY CORREYON, Floirane, Chêne-Bourg Genève, showed a small group of rare *Alpines*. *Matthiola pedemontiana* was nicely in flower, also *Brassica repanda* and *Androsace helvetica*. (Silver Flora Medal.)

Exhibits of *Alpine* plants were staged also by Messrs. WHITELEGG & PAGE, Chislehurst, Kent; Misses HOPKINS, Mere Gardens, Shepperton-on-Thames; Messrs. JOHN PEED & SON, West Norwood (Bronze Flora Medal); Messrs. G. & A. CLARK, LTD., Dover; and Messrs. T. S. WARE, LTD., Feltham, Middlesex. This last-mentioned firm showed finely *Androsace Chumbyi*, *Globularia vulgaris*, *Iberis Garrexiana*, and *Gentiana acaulis*. (Silver Banksian Medal.)

Messrs. J. CHEAL & SONS, Crawley, Sussex, staged an interesting lot of shrubs in flower, having cut branches of *Lilac*, *Magnolias*, *Cherries*, *Caprifolium tartaricum*, *Exochorda grandiflora* (remarkably fine), *Staphylea colchica*, &c. (Silver Banksian Medal.)

Messrs. W. & J. BROWN, Stamford and Peterborough, showed cut shrubs. *Verbenas* in variety, the large-flowered *Gaillardia Lady Rolleston*, *Lotus peliorhynchus*, and *Pelargoniums*.

Messrs. JOHN WATERER & SONS, LTD., Bagshot, Surrey, staged a floor group of the beautiful rose-flowered *Rhododendron Mrs. E. C. Stirling*. (Silver Banksian Medal.)

Messrs. CARTER, PAGE & Co., 52 and 53, London Wall, London, showed *Cactus Dahlias*, a selection of *Violas*, some charming vases of the pretty *Viscaria oculata*, and the showy *Dimorphothea aurantiaca*.

Messrs. DOBBIE & Co., Rothesay, again showed *Violas* and *Pansies* having exceptionally fine blooms of all the leading varieties. The same firm showed vases of *Sweet Peas*, including the varieties *Earl Spencer*, *Mrs. A. Ireland*, *Improved Mrs. H. Bell*, and *The King*. (Silver Banksian Medal.)

Messrs. BAKER'S, Wolverhampton, exhibited their varieties of *Saxifraga decipiens* described on p. 314 in the last issue; also a new one named after *Miss Willmott*, which is described under Awards. This firm also showed a selection of bedding *Violas*.

Mrs. BISCHOFFSHEIM, The Warren House, Stanmore (gr. Mr. E. Anderson), showed large groups of *Chrysanthemum Morning Star* and *C. Lord Beaconsfield*, both admirable subjects for furnishing a supply of cut blooms. The varieties may be raised easily from seeds.

AWARDS.

FIRST-CLASS CERTIFICATES.

Rhododendron Soulici.—A miniature species from China, with relatively large flowers of bright rose colour suffused on a pale ground. The leaves are ovate-cordate and in the young state covered with a glaucous bloom. They are then reddish, as also are the young shoots, but afterwards they become green. The widely-expanded segments are divided not lower than one-third their depth, the blooms being about 4 inches in diameter. The stature of the plant, which was exhibited by Messrs. JAS. VEITCH & SONS, was about 9 inches. The plant has proved perfectly hardy in the Coombe Wood Nursery.

Primula Bulleyana.—Another newly-introduced species from China, where it was collected by Mr. Geo. Forrest, on behalf of Messrs. BEES LTD., Liverpool, who exhibited a batch of plants in flower. The tall inflorescences bear orange-buff-coloured flowers in whorls, sometimes as many as three tiers. The leaves are very like those of the common *Primrose* or *Polyanthus*. The calyx is mealy and the flower-stem is also farinaceous in the upper part. Mr. Forrest states that *P. Bulleyana* is a tall, moisture-loving plant sometimes 3 feet high. In foliage it somewhat resembles *P. serratifolia*. The plant grows in huge colonies covering several acres. Shown by Messrs. BEES, LTD.

AWARDS OF MERIT.

Rose Lyon Rose.—A Hybrid Tea variety of exquisite colouring, being a tone of coral red shaded with chrome. The flower and bud are of charming form. Shown by Messrs. T. ROCHFORD & SONS, Turnford Hall Nurseries, Broxbourne, and Messrs. HUGH LOW & Co., Enfield.

Saxifrage decipiens Miss Willmott.—A variety with flowers as large as those of *S. d.*

Arkwrightii illustrated in the last issue, p. 314, fig. 135, but having a chocolate-coloured base in the interior of the blooms and dark-coloured flower-stems. The variety is very free in flowering, and forms an admirable plant for the rock-garden or as a border subject. Shown by Messrs. BAKER'S, Codsall.

Narcissus and Tulip Committee.

Present: H. B. May, Esq. (Chairman), and Messrs. G. H. Engleheart, F. H. Chapman, W. M. Copeland, H. A. Denison, W. W. Fowler, J. Walker, F. D. Hall, J. D. Pearson, G. W. Leak, J. Jacob, W. T. Ware, E. A. Bowles, Chas. T. Digby, R. Sydenham, W. Goldring, W. Poupard, and Chas. H. Curtis (hon. sec.).

Rarely if ever have so many fine collections of *Tulips* been staged at these exhibitions, and never in a more perfect condition.

One of the finest collections was a magnificent group exhibited by Messrs. SUTTON & SONS, Reading. It was chiefly composed of *Darwin* kinds arranged in bold and effective groups. (Silver-gilt Flora Medal.)

Messrs. BARR & SONS, Covent Garden, showed a large and representative collection of *Tulips*. We noted, in addition to a very fine assortment of the *Darwin* varieties, a large number of *Parrot*, *May-flowering* and *Cottage* sorts. (Silver-gilt Flora Medal.)

Messrs. R. & G. CUTBUSH, Southgate, displayed a very fine collection of the *Darwin* and *May-flowering Tulips* in pots, arranged the whole length of the western end of the Hall. The exhibit was slightly raised above the floor level so that the whole of the varieties were seen to advantage. The method adopted of arranging about half-a-dozen pots in a group was pleasing, the batch taking the form of a massed bed in the open and with a full complement of leafage. All the leading *Darwin* sorts were represented. (Silver-gilt Flora Medal.)

Messrs. ALEX. DICKSON & SONS, Newtownards, also showed a magnificent display of these handsome flowers in a large number of the best sorts. (Silver-gilt Flora Medal.)

A notable group of *Tulips* was shown by Messrs. R. W. WALLACE & Co., Colchester, who arranged a long table with the best of the *Darwin* and *May-flowering* kinds. The rich yellow colour of *Bouton d'Or*, the lovely shades found in the *Inglescombe trio*—yellow, scarlet, and pink, the unique orange colour of *The President*, with the beautiful forms of *Gesneriana*, rendered this a most charming group. (Silver-gilt Flora Medal.)

Messrs. R. H. BATH, LTD., Wisbech, also displayed an excellent collection of *Darwin* and other *Tulips* in many diverse and beautiful varieties. (Silver-gilt Banksian Medal.)

Messrs. JAMES VEITCH & SONS, LTD., Chelsea, brought a representative collection of these flowers, in which *Darwin* and *Cottage* varieties were of excellent quality. (Silver-gilt Banksian Medal.)

Messrs. HOGG & ROBERTSON, Dublin, obtained a Silver Flora Medal for a fine assortment of *Tulips* that embraced *May-flowering* and *Darwin* sorts in considerable quantities.

Lord HILLINGDON, Uxbridge (gr. Mr. Allan), and the Rev. Canon FOWLER, Reading, were each awarded a Silver Banksian Medal for a capital display of these flowers.

Messrs. WM. BULL & SONS, Chelsea, staged an assortment of *Tulips* in many varieties. (Silver Banksian Medal.)

AWARD OF MERIT.

Tulip The President.—A striking and effective variety of the *May-flowering* or *Cottage* class. The flower is of the largest size and coloured a reddish-orange. The expanded blossoms disclose a dark or clouded base. This remarkable *Tulip* appeared unique in its colouring in the large collection of these flowers staged by Messrs. R. W. WALLACE & Co., Colchester.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair), and Messrs. Jas. O'Brien (hon. sec.), Henry J. Veitch, de B. Crawshaw, R. Brooman-White, W. Bolton, Gurney Wilson, H. A. Tracy, F. M. Ogilvie, J. Forster Alcock, R. G. Thwaites, J. Cypher, H. G. Alexander, J. Charlesworth, A. Dye, W. H. Hatcher, A. A. McBean, J. Wilson Potter, W. P. Bound, W. H. White, W. Boxall, H. Little, and Sir Jeremiah Colman, Bart.

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), secured the only Certificate of the day, viz., a First-class Certificate for his very handsome *Odontioda Vuylstekeæ* *Crawshayanum*, a very brilliant flower (see Awards). Mr. CRAWSHAY also showed *Odontoglossum Valkyrie* (*Wilckeanum* × *Nevadense*), with deep-brown-blotched sepals and petals and large white-fringed lip, with brown blotches on the lower half; and *O. Nerissa* (*nævium* × *crispum*), elegant in form, white, spotted with red.

HENRY LITTLE, Esq., Baronshalt, Twickenham (gr. Mr. Howard), was awarded a Silver Flora Medal for a fine group of *Lælia purpurata* made up of 36 well-flowered plants. Scarcely two were exactly alike in form or tint, the best noted being the pretty varieties *Russelliana*, *Bella*, *rosea*, and *picta*.

Colonel G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. H. G. Alexander), showed *Lælio-Cattleya Zoroaster* variety *Rex* (*L. Latona* × *L.-C. Canhamiana alba*), a fine hybrid with the general characters of *L.-C. Canhamiana*. Flowers yellowish-cream colour with a violet-purple lip having a cream-white margin and yellow base. Colonel HOLFORD also sent a fine spike of five flowers of the handsome *Cymbidium Parishii Sanderæ*, the large, ivory-white flowers having the labellum spotted with deep crimson; and a magnificent spike of *Odontoglossum Pescatorei* with 125 flowers.

Baron Sir H. SCHRÖDER, The Dell, Egham (gr. Mr. Ballantine), sent the unique *Cattleya tricolor* described by the late Professor Reichenbach in the *Gardeners' Chronicle*, 1874, p. 126, and which has never been introduced since. It was originally acquired by Messrs. Veitch, but there is no information as to its origin. The flowers are white with a yellow disc to the lip, which has purple markings; they are very fragrant.

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), showed a very fine plant of *Cattleya Dusseldorfei* var. *Undine* with eight large, white flowers; and *Odontoglossum illustre* (*Vuylstekei* × *ardentissimum*) with claret-coloured flowers margined with white.

Mr. A. W. JENSEN, Lindfield, Haywards Heath, staged a small group of fine varieties of *Cattleya Mendelii*, *C. Mossiæ*, and *Odontoglossum crispum*.

Monsieur MERTENS, Mont St. Amand, Ghent, showed a selection of hybrid *Odontoglossums*.

J. FORSTER ALCOCK, Esq., Exhams, Northchurch, showed a hybrid *Cymbidium* said to have been raised between *C. Tracyanum* and *C. elegans*. The flowers, of which there were two on an upright spike, were cream-white, and resembled *C. Colmanie*.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontioda Vuylstekeæ Crawshayanum (*O. Pescatorei* × *C. Noezliana*), from DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables).—A hybridist's surprise and of great beauty, although differing in a remarkable degree from the original form, which had a light ground colour, blotched and tinged with red and rose. The present variety retains all the fine form and breadth of petal acquired through *O. Pescatorei*, but the flowers are of a uniform brilliant scarlet-red, the crest being marked with orange colour. There are varying tints in the glowing colour of the flower, but no indication of the spotting seen in Monsieur Vuylsteke's original form. At the same time, it may be said that Mr. CRAWSHAY's variety is more what might be expected from the cross which gave it than the original, in which probably a blotched form of *O. Pescatorei* was used.

THE LATE MR. COOKSON.

The Chairman spoke of the loss which the Committee had sustained by the death of the late Norman C. Cookson, a vice-president of the Committee. On the motion of Mr. R. Brooman-White, seconded by Mr. James O'Brien, a resolution was passed tendering the deep sympathy of the Orchid Committee to Mrs. Cookson and her family.

Fruit and Vegetable Committee.

Present: G. Bunyard, Esq. (in the Chair), and Messrs. A. H. Pearson, J. Cheal, H. Somers Rivers, C. Foster, G. Wythes, O. Thomas, J. Davis, H. Markham, W. Pope, E. Beckett, P. D. Tuckett, A. Dean, W. Poupert, A. R. Allan, and J. Vert.

A trial of Strawberries forced in pots having taken place at Wisley, a sub-committee who had seen them recommended two varieties as being much the earliest and best. These were Royal Sovereign and Climax, the latter not previously certificated.

H. STAPLES, Esq., Swanley (gr. Mr. W. G. Sims), sent six plants in pots, and in fruit, of Strawberries "George Munro" and "Sims' Prolific," both seedlings from Royal Sovereign and Sir Charles Napier. They were prolific croppers, but George Munro was the earlier and better. It was decided that both varieties should be tried at Wisley, outdoors and as forced plants in pots.

A collection of four dishes of richly-coloured fruits of Peach Alexander, from a tree forced for 30 successive years, two dishes of fine Royal Sovereign Strawberries, and two fruits of Melon Hero of Lockinge came from P. BRANDT, Esq., Bletchingley, Surrey (gr. Mr. Banks). (Silver Knightian Medal.)

THE JAMAICA AGENCY sent fruits of the large Mango. The flesh was yellow, soft, and very pleasant to the palate. From the same source came some Sapodillas. These fruits were about the size of hen's eggs, but pointed at one end; in colour russet-brown, and with pulpy flesh, sweet like an over-ripe Pear.

Messrs. SUTTON & SONS, Reading, set up a collection of vegetables not merely of excellent quality, but most tastefully arranged. There were 50 dishes and baskets, and the group included Cabbages Flower of Spring and April, Lettuce Golden Ball, Peas Ideal and Early Giant, Carrot Champion Scarlet, Asparagus Perfection, Climbing French Beans Princess of Wales, the Sutton Rhubarb, Market Cucumber, Mushrooms, and numerous Radishes. (Silver-gilt Knightian Medal.)

Messrs. JAS. VEITCH & SONS, Chelsea, also staged a large collection of vegetables, but the group needed more room. Cabbages, Lettuces, Marrows, Broccoli, Carrots in variety, Tomatos, Asparagus, Peas, Kidney Beans, Ashleaf Potatos, Radishes, Rhubarb, Turnips, and other vegetables all contributed to make a very varied and fine display. (Silver Knightian Medal.)

THE STOUR VALLEY GARDENING Co. sent a varied collection of vegetables that would have looked better if more effectively arranged. Some of the vegetables had been cultivated under cloches. (Silver Banksian Medal.)

Countess COWPER, Panshanger (gr. Mr. Staward), staged a collection of Lettuces, the best being *Fermot* and *All the Year Round*.

COMPETITIVE CLASSES.

The classes for collections of vegetables were poorly contested. In the class for nine kinds, the Hon. VICARY GIBBS, Aldenham House (gr. Mr. E. Beckett), was an easy first-prize winner, his products showing superb quality. His selection included Asparagus, with mounds of small Cauliflower on one side, and of Moore's vegetable cream Marrow on the other. Favourite Carrots, supported by Perfection Tomatos and Early Giant Peas, with May Queen Potatos, Matchless Cucumbers, and Canadian Wonder Beans. 2nd, Mr. STAWARD.

There was no entry in the class for six dishes. Mrs. DENNISON, Little Gaddesden (gr. Mr. Gentle), was the only exhibitor in the class for four dishes, having good Record Onions, Heartwell Cabbages, rather drawn Seakale, and small Asparagus. A second prize only was awarded.

AWARDS OF MERIT.

Strawberry "George Munro."—This new variety somewhat resembles Royal Sovereign, but it is a much heavier cropper and the fruits are of excellent flavour. From Mr. Sims (gr. to H. STAPLES, Esq., Swanley).

Strawberry Climax (Laxton).—Also much like Royal Sovereign. The awards were made in both cases for their value as forcing varieties.

NATIONAL TULIP. (SOUTHERN SECTION.)

MAY 18.—The sixteenth annual exhibition of this Society was held in conjunction with the fortnightly meeting of the R.H.S. on this date, when a capital display of the English Tulip in all its phases was brought together. The display of blossoms did not afford much spectacular effect,

but the individual flowers were extremely beautiful. So far as the show itself is concerned, we have it on the authority of the officials that the quality of the exhibits was in all respects good and decidedly above the average of last year.

Twelve dissimilar rectified Tulips, two feathered and two flamed in each class.—Mr. C. W. NEEDHAM, Hale, Cheshire, was awarded the 1st prize in this class, his best flowers being Stockport (feathered), Rosalie (rectified flamed), George Hayward (feathered bizarre), Dr. Hardy (flamed), Mrs. Lea (feathered rose), with Sir Joseph Paxton and Masterpiece. Altogether the display constituted a dozen admirable flowers; 2nd, Miss WILLMOTT, Warley Place, whose best flowers were Wm. Annibal (feathered bizarre), Annie McGregor (rose flamed), Duchess of Sutherland (flamed Bybloemen), and Sir Joseph Paxton; 3rd, Mr. A. D. HALL, Harpenden, who had excellent flowers of Duchess of Sutherland and Samuel Barlow.

Six dissimilar rectified Tulips.—Miss WILLMOTT secured the leading place with Sam Barlow and Wm. Annibal, the latter an exceptionally well-feathered variety. Mr. DUNN, Cambridge, was placed 2nd, displaying in excellent form Sam Barlow and the flamed Annie McGregor; 3rd, Mr. A. D. HALL, Harpenden.

Three feathered Tulips.—Miss WILLMOTT was again placed 1st for flowers of Bessie, George Hayward, and Mrs. Atkins, all of excellent quality. Mr. HALL and Mr. DUNN took the 2nd and 3rd prizes respectively, the latter exhibitor having a fine bloom of Masterpiece.

Three flamed Tulips.—Miss WILLMOTT was again awarded the 1st prize, having good flowers of Sam Barlow, Annie McGregor, and Talisman; 2nd, Mr. DUNN, with Sir Joseph Paxton, Annie McGregor, and Adonis; 3rd, Mr. PETERS, Cambridge.

Six dissimilar breeder Tulips.—Mr. NEEDHAM was placed 1st, Rose Hill, Mabel, and Sam Barlow being his best examples; 2nd, Mr. A. D. HALL, Harpenden, who showed Gleam, Rose Seedling, and Jasper; 3rd, Mr. DUNN.

Three dissimilar breeder Tulips.—The 1st prize was secured by Miss WILLMOTT, who had a very good example of Annie McGregor; 2nd, Mr. HALL, who showed an excellent flower of Linnett Rose breeder.

There were classes for single blooms of each of the following:—Feathered Bizarres, Roses, and Bybloemens, Flamed Bizarres, Roses, and Bybloemens.

Feathered Bizarres.—Miss WILLMOTT was placed 1st with Wm. Annibal; 2nd, Mr. A. D. HALL, with George Hayward.

Feathered Rose.—Mr. A. D. HALL won the 1st prize with Sarah Ann.

Feathered Bybloemens.—Mr. HALL showed the best flower of this section, having Stockport; Miss WILLMOTT followed with Guido.

Flamed Bizarres.—Mr. NEEDHAM won the 1st prize with Sir Joseph Paxton; Mr. A. D. HALL and R. W. HALL winning the 2nd and 3rd prizes respectively with Sam Barlow.

Flamed Rose class.—Miss WILLMOTT won both the 1st and 2nd prizes with Annie McGregor and Mme. St. Amaund respectively.

Flamed Bybloemens.—Miss WILLMOTT won all the prizes with Duchess of Sutherland, Talisman, and Adonis in the order given.

For single blooms of each of the three classes of Breeders, Bizarres, Roses and Bybloemens, Mr. DUNN took the 1st and 2nd prizes with J. Heap in the former class; Miss WILLMOTT being 3rd with Goldfinder. In the Roses, Mr. C. W. NEEDHAM obtained the 1st prize with Loveliness; Mr. A. D. HALL winning the 2nd and 3rd prizes with seedlings. For Bybloemens, Mr. DUNN was placed 1st with a capital bloom of Agnes; 2nd, Miss WILLMOTT with Northern Light.

The "Samuel Barlow" prizes for the best pair of Rectified Tulips was won by Miss WILLMOTT with flamed Annie McGregor and Wm. Annibal (feathered); 2nd, Mr. A. D. HALL with Samuel Barlow (flamed) and Attraction (feathered).

The best three flamed Tulips were shown by Mr. R. W. HALL, Cambridge, the varieties being Rose Hill, Queen of May, and Sam Barlow; 2nd, Mr. W. L. S. LOAT, Oxon.

Miss HARDCASTLE, Hardenden was placed 1st

in the class for three dissimilar breeder Tulips with Goldfinder.

For two rectified Tulips, Mr. R. H. HALL, Cambridge, was 1st, having a good flamed flower of Dr. Hardy.

Mr. W. L. LOAT showed the best twelve varieties of garden Tulips; and Miss WILLMOTT the best twelve varieties of Darwin Tulips.

Premier classes.—Mr. NEEDHAM was placed 1st, with George Hayward (feathered); Miss WILLMOTT with Annie McGregor (flamed), and Mr. A. D. HALL with his handsome seedling Gleam (breeder).

GHENT HORTICULTURAL.

MAY 1.—At a meeting of the Chambre Syndicale des Horticulteurs Belges and the Société Royale d'Agriculture et de Botanique de Gand on the above date the following Awards were made:—

CERTIFICATES OF MERIT to Odontioda Bradshawia (C. Neuziana × O. crispum, from M. LE DR. BALLION; *Miltonia* Bleuana superba, *Sophro-Cattleya* Calypso, *Odontoglossum* crispum Oakfield Sunrise, *Cypripedium* Juliana Princesse d'Orange-Nassau (*Callosum* *Sanderæ* × *Maudie*), *Trichopilia* Backhousiana, *Cattleya* Schröderæ Praetii, all from M. F. LAMBEAU; to *Cattleya* Schröderæ Cæsar, from M. E. PRAET; *Cattleya* Lawrenceana Orchid Villa variety, *Odontoglossum* crispum var. Louis Valcke, and *Cattleya* Schröderæ alba, from M. TH. PAUWELS; C. Schröderæ, *Cattleya* Trianae, from MME. LOUIS DE HEMPTINNE; *Rhododendron* Pink Pearl and R. White Pearl, from M. PYNART-VAN GEERT; *Vriesia* Sceptre d'Or, from M. FIRMIN DE SMET; *Clanthus* Florida alba, from M. JULES DE COCK; *Azaleas* l'Azur, Sultan, and Joseph Kratz, all from M. EUG. DE COCK; *Azaleas* Roi des Blancs and MME. Blommaert, from the SOC. AN. LOUIS VAN HOUTTE PÈRE; *Dracena* Marcellii (seedling 1908), D. Perle de Gendbrugge (seedling 1908), D. Princess Juliana d'Orange-Nassau, all from MM. G. PENNING ET FILS; *Saintpaulia* ionantha var. pulchra, from M. LE COMTE JOS. DE HEMPTINNE; *Anthurium* Rothschildianum striata, A. R. Charles Fraeys, and A. R. Jules de Cock, from LA SOCIÉTÉ AN. HORTICOLE GANTOISE; *Anthurium* Rothschildianum Vulcan and A. R. translucens, from M. LOUIS DE SMET; *Azalea* Souvenir de Rudolf Seidel, from M. RAPHAEL VERVAENE; collection of 30 plants of *Cineraria* polyantha stellata, *Diosma* ericoides alba, *Eriostemon* linearifolium, *Epiphyllum* Mackoyanum, *Grevillea* rosmarinifolia, *Adenandra* fragrans, *Vriesias* magnesiana, flamea, conferta, Gravisii, Leonii, Sparanza, Kitteliana × Floriosa, Poelmanii, Poelmanii × mirabilis, Memoria Moensii, all from M. FIRMIN DE SMET; collection of 12 *Calceolarias*, from M. Alph. Van Kerchove (gr. to M. J. J. DIERMAN; *Ataccia* cristata, from the SOCIÉTÉ AN. LOUIS VAN HOUTTE PÈRE.

L'ASSOCIATION FRANÇAISE DES AMATEURS ET JARDINIERS CHRYSANTHEMISTES.

THIS recently-formed French Chrysanthemum Society, whose headquarters are at Paris, deserves the congratulations of all interested in the flower. Its first balance-sheet has just been published, showing a total on the credit side of about £124; the expenses amount, roughly, to £108 odd, leaving a balance of nearly £16 in hand. The number of members at this date is 651—a most satisfactory result for so young a society, but then, of course, Chrysanthemum exhibiting in France is in full swing, and reminds us of the palmy days of the flower here in England, 20 to 25 years ago.

ROYAL GARDENERS' ORPHAN FUND. (LEEDS BRANCH.)

THE local committee of the above branch recently held a successful spring flower show in aid of the funds of the Charity.

After the necessary expenses have been met a sum of about £10 10s. will be available for the fund. A sum of more than £7 was received from the sale of flowers at the close of the show.

DUTCH BULB-GROWERS.

The following Awards have been given at recent meetings held at Haarlem:—

FIRST-CLASS CERTIFICATES to single early Tulip "Mr. Burger," with pure yellow, globe-shaped flowers, raised from the single early Tulip Verboom; to double-flowered early Tulip Schoonoord, a variety with pure white flowers, raised from the double-flowered early variety Murillo.

AWARDS OF MERIT to *Cyclamen latifolium* (persicum) "Baroness Burdett-Coutts," a variety having large pure white flowers and oblate petals; to double early Tulip Boule de Neige (Purity), with large pure white flowers, resembling the variety Murillo, but of a somewhat rounder form; to single early Tulip "Yoost van Vondel rose striata," with large, long flowers, white, feathered rosy, and raised from the variety "Yoost van Vondel"; to single early Tulip Duchess of Connaught, a variety having rosy-red flowers.

BRITISH GARDENERS' ASSOCIATION. (LONDON BRANCH.)

MAY 13.—The first annual general meeting of this branch of the B.G.A. took place at Carr's Restaurant, Strand, W.C., on the above date. The progress of the branch and the association as a whole was considered satisfactory. The officers were re-elected and Mr. A. C. Barnes was appointed to the new office of treasurer.

After the formal business was concluded, Professor W. B. Bottomley delivered a lecture on "Nitrogen Fixation in Plants." He thought the British Gardeners' Association was capable of doing good work for gardeners. He felt that gardeners and botanists should work together.

The lecturer gave details of the work of bacteria in the soil, illustrating his remarks by means of lantern slides. The extraordinary rapidity by which these organisms multiplied was demonstrated. He stated that experiments had been carried out, which, at no very distant date, would have a far-reaching effect on the culture of plants. Details of the trials with nitro-bacterine conducted at the Royal Horticultural Society's gardens at Wisley were given, and the lecturer appealed to gardeners to undertake practical tests on large plots of ground, to assist in solving the great problem of the fixing of nitrogen in the soil.

The Chairman, Mr. E. F. Hawes, said he was prepared to carry out experiments, and he hoped others would follow the suggestions of the lecturer.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending May 19.

A very cold week.—The last two days have been moderately warm during the daytime, but with these exceptions both the days and nights proved very cold for the time of year. In fact, on two nights the exposed thermometer registered 6° of frost, on one night 8° of frost, and on the coldest night 11° of frost. In no previous May in the last 17 years has such a low temperature as the one last mentioned been recorded here. During the almost constantly recurring cold period in May, 9th-14th, the exposed thermometer this year showed 8° of frost on the coldest night. The ground has become a little warmer the last two days, but is still 1° colder than is reasonable, both at 1 and 2 feet deep. Rain fell on five days, but to the total depth of less than half an inch. There has been no measurable percolation through the bare soil gauge for more than a fortnight, and no percolation at all through that on which short grass is growing for more than a week. The sun shone on an average for 6½ hours a day, or for half an hour a day longer than is usual in the middle of May. The wind has been very variable in direction, and as a rule light. The mean amount of moisture in the air at 3 o'clock in the afternoon fell short of a reasonable quantity for that hour by 8 per cent. The first Rose to bloom in my garden in the open ground was a variety of *Rosa alpina*, which was out on the 17th, or four days earlier than last year, but six days later than in 1907. E. M., Berkhamsted, May 19, 1909.

SCHEDULES RECEIVED.

Hemel Hempstead Horticultural Society's 50th annual floral fête, to be held in the Bury Meadows, Hemel Hempstead, on Wednesday, August 18. Exhibition of Roses and Sweet Peas on Wednesday, July 7. Hon. secretary, Mr. Geo. Burrows, Shendish Gardens, Hemel Hempstead.

Croydon Horticultural Society's 42nd exhibition, to be held in the Park Hill Recreation Ground, Croydon, on Wednesday, July 7. Secretary, Mr. A. C. Roffey, St. Andrew's Villa, 53, Church Road, Croydon.

Chester Paxton Society's annual exhibition of Fruits and Chrysanthemums, on Wednesday and Thursday, November 17 and 18, at the Town Hall, Chester. Hon. secretary, G. P. Miln, Grosvenor Museum, Chester.

Obituary.

NORMAN C. COOKSON.—The news of the death, on the 15th inst., of Mr. Norman C. Cookson, of Oakwood Hall, Wylam-on-Tyne, in his 69th year, will be received with the deepest regret by all interested in the cultivation of Orchids. During Mr. Cookson's residence at Oakwood Hall, extending for 30 years past, he has been an ardent horticulturist in its various branches. But his personal and active interest in Orchid cultivation and cross-breeding was best known to the public. As early as 1880 Mr. Cookson had commenced the crossing of *Calanthes*, amongst some of the best of his earlier hybrids being *Calanthe Alexanderi*, *C. Cooksonii*, *C. Clive*, *C. Bryan*, and *C. Wm. Murray*. The hybrids *Oakwood Ruby*, *Angela* and *Chapmanii* especially indicate what great results may be obtained by skilful breeding, for these flowers, although almost entirely of a ruby-crimson hue, were obtained from the crimson eye of the otherwise white *C. vestita*. Mr. Cookson was equally successful in raising hybrid *Phaius* of extraordinary value, *P. Cooksonii*, obtained from *P. Wallichii*, and *P. tuberosus* appeared in 1890. In 1895 came *P. Cooksonia*, obtained from *P. grandifolius* and



THE LATE NORMAN C. COOKSON.

Humboldtii, *P. Phoebe* was an improvement upon the hybrid just mentioned, and was obtained from *P. Sanderianus* and *P. Humboldtii*. In 1897 *P. Norman* and its beautiful varieties appeared. Of *Dendrobium* hybrids raised by Mr. Cookson, we may mention *D. Sibyl*, *D. Murrayi*, *D. Kenneth*, *D. Venus*, *D. Owenianum*, *D. Harold*, and *D. Doris*. Numerous *Cypripedium* hybrids have been raised at Oakwood, and it will be remembered that Mr. Cookson reproduced from home-raised seeds the coveted *Cypripedium* *Lawrenceanum* variety *Hyeatum*. In *Odontoglossum* Mr. Cookson, assisted by his skilful grower, Mr. H. J. Chapman, has not been less successful than in the genera we have already mentioned. Excellent hybrids from *Odontoglossum* *crispum* *O. Pescatorei*, and other species have been shown from time to time at meetings of the Royal Horticultural Society, at which Mr. Cookson was one of the most frequent visitors, being a member of the Orchid Committee. A few of the crosses effected by Mr. Cookson in other genera include *Lælio-Cattleya* *Clive*, *Cattleya* *Harold*, *C. William Murray*, and the reproduction of the natural hybrid *Cattleya* *Hardyana*. Mr. Cookson had been ill for some little time, and the end was not totally unexpected.

MARKETS.

COVENT GARDEN, May 19.

[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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

Table listing various cut flowers and their prices, including Anemone fulgens, Azalea, Carnations, Eucharis grandiflora, Freesia, Gardenias, Gladiolus, Gypsophila, Iris, Lilac, Liliolum, Lily of the Valley, Marguerites, Mignonette, and Tulips.

Cut Foliage, &c.: Average Wholesale Prices.

Table listing various cut foliage and their prices, including Adiantum, Agrostis, Asparagus plumosus, Berberis, Croton, Cycas, Ferns, and Smilax.

Plants in Pots, &c.: Average Wholesale Prices.

Table listing various potted plants and their prices, including Acacias, Ampelopsis, Aralia Sieboldii, Araucaria excelsa, Aspidistra, Asparagus, Botania, Calceolarias, Chrysanthemum coronarium, and Grevilleas.

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

Table listing various potted plants and their prices, including Hardy flower roots, Heliotropiums, Hydrangea, Isolepis, Kentia, Latama borbonica, Liliolum longiflorum, Lily of the Valley, Marguerites, Mignonette, and Musk.

Fruit: Average Wholesale Prices.

Table listing various fruits and their prices, including Apples, Bananas, Cherries, Custard Apples, Gooseberries, Grape Fruit, Lemons, Messina, Nuts, Oranges, Pears, Pineapples, and Strawberries.

Vegetables: Average Wholesale Prices.

Table listing various vegetables and their prices, including Artichokes, Asparagus, Beans, Beetroot, Cabbages, Cardoon, Carrots, Cauliflowers, Celery, Chicory, Cucumbers, Endive, Horseradish, Lettuce, Mint, Mushrooms, Onions, Parsley, Peas, Potatoes, Radishes, Rhubarb, Salsafy, Seakale, Spinach, Stachys, Turnips, and Tomatoes.

REMARKS.—English Gooseberries are arriving in slightly increased quantities: the cold weather of the past week has largely checked the development of the berries. Cherries are now being received from France in half sieves as well as in boxes: their quality is still very poor. French-grown Strawberries are received in crates containing four chip baskets. The prices of Australian and Tasmanian Apples remain about the same as those of last week. English

forced Strawberries are still very plentiful, 2s. 6d. being an average price per lb. for best fruits. Vegetables generally are a little firmer in prices. E. H. R., Covent Garden, Wednesday, May 19, 1909.

Table listing various potatoes and their prices, including Kents, Scottish Triumphs, Up-to-Date, Lincoln, Royal Kidney, Maincrop, Evergood, King Edward, Blacklands, Dunbars, and Jerseys.

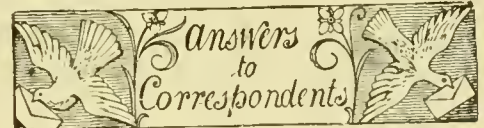
REMARKS.—Trade is still very slow. Prices are lower and stocks in London are large. Potatoes are arriving from Jersey in increased quantities, and in the course of two weeks the season for Jersey Potatoes will be in full swing. E. J. Newborn, Covent Garden and St. Pancras, May 19, 1909.

COVENT GARDEN FLOWER MARKET.

Trade seems to have revived a little, but it is a difficult matter to give accurate prices. This morning (Wednesday) there was considerable demand for Liliolum longiflorum and the value of this flower advanced considerably. Good blooms of L. lancifolium (speciosum) are rather scarce. Yellow Daffodils are over for the season, and yellow Irises are making better prices. This morning best samples were worth from 10s. to 12s. per dozen bunches; white and mauve varieties were also selling well, but blue kinds were overplentiful. Narcissus poeticus ornatus is plentiful; the double variety is also seen in large quantities. Roses, which were scarce on Saturday, 15th inst., are cheaper again, yet there is a prospect of a considerable advance in the near future, for the indoor crops will be over before flowers from the open are ready. Carnations are fairly plentiful, and their value is low. There is plenty of Stephanotis on the stands, but as several growers have given up the culture of Gardenias and Eucharis supplies of these are not excessive. Callas (Richardia africana) are marketed in large quantities, and many are sold at clearance prices. Of Sweet Peas only those with long stems make good prices; the best varieties for market purposes are Dorothy Eckford, Miss Willmott, and Lady Grizel Hamilton. Gladiolus Colvillei and several other varieties are plentiful. Iceland Poppies are very pretty.

POT PLANTS.

There is not much variation to record in this department. Intermediate Stocks are becoming scarcer. Spring raised Mignonette is good. The yellow Chrysanthemum coronarium (or segetum) is good. Genistas are over for the season, and Cinerarias are nearly finished. Pelargoniums of all sections are plentiful. The only varieties that promise to be scarce are the single white Zonal kinds. Ivy-leaved varieties are remarkably good. Tall Fuchsias and Heliotropes are in demand. There is a considerable trade in bedding plants, for which good prices are obtained. Carpet bedding having largely gone out of favour, suitable plants are not so largely cultivated for market as formerly, consequently care should be taken in accepting orders for such plants. A. H., Covent Garden, Wednesday, May 19, 1909.



BLANCHING CHICORY OUT-OF-DOORS: H. A. The seeds should be sown at once in rows made 12 inches apart on fairly good ground which has been deeply worked. The seedlings should be thinned, after they have developed their second leaf to 9 or 10 inches apart. The best way to blanch this useful vegetable is to lift the roots as required, placing them together rather closely in deep boxes, and standing the boxes in the darkest place available in a temperature of about 50°. The labour of lifting is much less than would be required to blanch it satisfactorily in the open. For late spring use, however, inverted flower-pots covered entirely with soil and ashes may be used for blanching purposes, but it is essential that every ray of light be excluded. The heads should be cut for use precisely in the same manner as Seakale, when it may be used either as a vegetable or as a salad.

FIGS DECAYING: C. A. B. The fruits are affected with "rot" caused by Botrytis cinerea. If growth is too much stimulated by the excessive use of fertilisers the fruit exudes a little sugary juice at the pore, on which the fungus spores germinate.

FORMING A FRUIT PLANTATION: J. W. P. The soil being, as you state, a good deep loam resting on gravel, it should prove suitable, other conditions being equally favourable, for the planting of Apple trees. As you intend to plant the trees next autumn, you should prepare the land beforehand, and the sooner the better, as any manure incorporated will be the better decomposed in the soil. The turves may be removed and used for potting purposes, but you must remember that the top layer, and especially old turf, is the richest in plant food, there-

fore it should be allowed to remain. No system of tillage is so thorough as trenching, and even bastard-trenching is superior to ordinary digging. Work in plenty of farmyard dung as the ground is turned over, but place no manure about the roots when planting. If dug and manured at once, the land may then be utilised for a crop of green vegetables. November will be a suitable month to commence the planting of the fruit trees.

ANEMONE DISEASED: *T. W. C.* The leaves are badly infested with the disease known as "Cluster-Cups." The little cup-like structures (Aecidia) contain the spores of the fungus which is known as *Puccinia fusca*. It is a virulent disease, because when the plant is attacked it remains infected for the rest of its

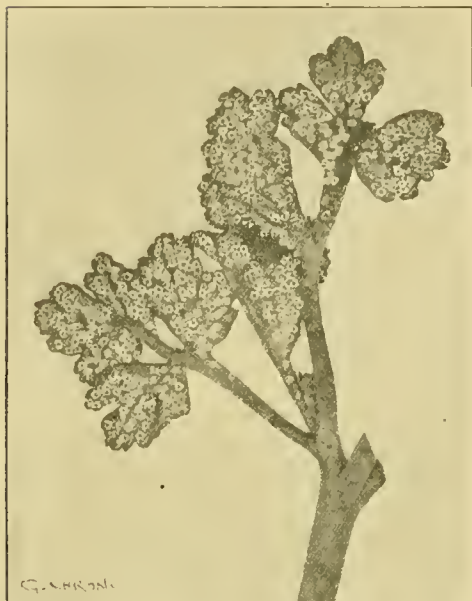


FIG. 145.—AECIDIAL STAGE OF THE ANEMONE RUST.

life, as the mycelium passes into the root-stock where it is perennial. Diseased plants never produce flowers and should be removed and destroyed directly the complaint is detected. Be careful to burn all these diseased specimens, as the spores will infect healthy adjoining plants, and even those at a considerable distance away.

LOGANBERRY SHOOTS INJURED BY MAGGOTS: *S. B.* The shoots are bored by the larvæ of the Raspberry moth (*Lampronia rubiella*). As long ago as 1853 the late Professor Westwood called attention to the injury caused by this pest in an article published in the *Gardeners' Chronicle*. The life history is briefly as follows: The female lays her eggs in the flowers, these hatch in a few days, and the young caterpillar at once enters the centre of the young fruits without causing any apparent injury. Just before the ripening of the berries the insect crawls away and spins a silken cocoon in some convenient shelter on the canes or stakes, or near the ground on bits of sticks or stones. In such places it passes the winter. In spring the caterpillar leaves its cocoon usually about the end of March, ascends the canes or plants, attacking the partly-opened buds and shoots. The moths appear in May and June, and thus the life cycle is completed. The use of wooden stakes, especially those having rough bark, should be discontinued. Prune the plants back as much as possible; remove all rubbish from them and fork the ground deeply. It has been found a good plan to smear the canes with a band of soft soap early in spring, about the end of April.

NAMES OF FRUITS: *R. S.* The specimens are out of condition, but No. 1 is probably Dumelow's Seedling (Wellington). Can you send fresher fruits? If not, send again earlier next season.—*A. B. Earle.* Lemon Pippin.

NAMES OF PLANTS: *E. S., Scarborough.* *Phacelia tanacetifolia.*—*J. E.* *Ixia speciosa.*—*H. H.* 1, *Zygopetalum rostratum*; 2, *Epidendrum*

ochraeum; 3, *Oneidium triquetrum*; 4, *Broughtonia sanguinea*; 5, *Lælia monophylla*; 6, *Oncidium pulchellum.*—*W. E. S.* *Odontoglossum triumphans*, showing an unusual amount of white in the petals.—*Holyrood.* *Scilla nutans.*—*H. C. S.* Small-flowered *Sophora* (*Edwardsia*) *microphylla*, figured in *Botanical Magazine*, t. 1442. *Sophora tetraptera*, figured in *The Gardeners' Chronicle*, June 8, 1878, p. 729.—*Subscriber.* 1, *Swainsonia galegifolia alba*; 2, *Choisya ternata.*—*Correspondent.* 1, *Tecoma* (*Bignonia*) *jasminioides*; 2, not recognised, send when in flower.—*J. M.* *Anemone coronaria.*—*Novice.* 1, *Polemonium cœruleum*; 2, *Genista pilosa*; 3, *Ranunculus aconitifolius flore pleno*; 4, *Arenaria trinervis*; 5, *Primula cortusoides*; 6, *Asphodelus luteus.*—*W. H. A.* *Cratægus Crus-galli.*—*F. A. F.* *Cardamine pratense flore pleno.*—*S. K.* *Oncidium obryzatum*; *Coronilla* (next week).—*C. B.* 1, *Cardamine pratense*, a Cruciferous plant; 2, *Luzula sylvatica.*—*A. J.* *Spiræa bracteata.*

PLAN OF A CROQUET GROUND: *B. R. C.* For many years a croquet ground was laid out in accordance with the plan given on p. 238 in the issue for May 1, and the game is still played according to these rules where the influence

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 13 inches out of the ground, and be firmly fixed. The setting of the hoops and pegs shall be in accordance with one of the diagrams following, 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 Harold 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.

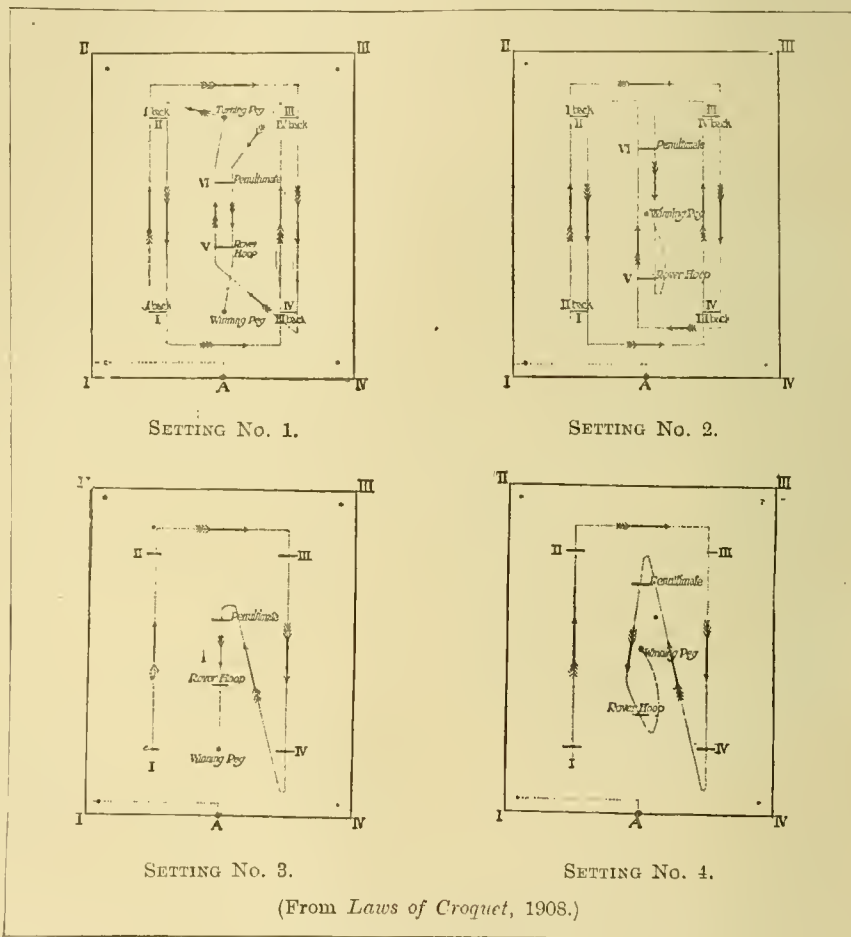


FIG. 146.—THE CROQUET ASSOCIATION'S DIAGRAMS.

of the Croquet Association is not felt. The Croquet Association, however, is the only recognised authority for those who wish to play the game in the approved manner. We are indebted to the courtesy of the hon. secretary, Mr. F. Kenrick, for the following particulars as to the present regulations:—"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 haulk (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

TULIPS INJURED: *H. B. H. L.* Although, in one case, we can detect a slight puncture which may be due to insect pests, we think the unsatisfactory condition of flowering is due to some irregularity in the bulbs themselves. The inflorescence seems so weakened and attenuated as to point to improper flower formation in the bulbs last autumn. We have had several similar cases this season, and we attribute it to the unsuitable weather last autumn for proper bulb ripening.

Communications Received.—*R. L. C.*—*W. W. P.*—*T. H.*—*R. H. B.* (with thanks)—*J. Weathers*—*G. C.*—*W. J. D.*—*H. L.*—*Cholsey*—*H. H.*—*A. S.*—*Baker's*, Wolverhampton—*W. P.*—*E. B.*—*Lucas*—*A. O.*—*C. C.*, Wales—*M. B.*, Java—*R. I. L.*—*J. D. G.*—*J. O. B.*—*S. F. W.*—*A. C.*, Westonbirt—*F. M.*—*W. D.*—*S. W. F.*—*W. C.*—*A. G.*—*G. O. P.*—*F. W.*—*R. A.*—*R. A. K.*—*H. J. G.*—*W. S.*—*J. C. & Sons*—*W. A. C.*—*J. G. W.*—*Frank C. A.*—*C. & Co.*



RHODODENDRONS IN "THE BEACON" GARDENS, SUSSEX.

Photograph by W. Page.



THE
Gardeners' Chronicle

No. 1,170.—SATURDAY, May 29, 1909.

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Wilderness Park, Sevenoaks (Supplementary Illustration).

CACTUS DAHLIAS.

IN the *Gardeners' Chronicle* for October 4, 1879, there is an illustration of Dahlia Juarezii (Mexico), the parent of our modern Cactus Dahlia. It is a fairly double, star-shaped flower, holding its head erect on a fine, long stalk. Its resemblance in colour to *Cereus speciosissimus* was the reason for its being termed a Cactus Dahlia. The plant was introduced into commerce in England by Mr. Henry Cannell in 1880. Seedlings were raised in great numbers by many growers, and such old varieties as Cochineal (crimson), Constance (pure white), and Glare of the Garden (crimson-scarlet) will be remembered by many. Why was the grand, decorative habit of the early plants gradually lost, and why was the ability of the flowers to hold themselves erect on long, upright stems also lost? The answer must be in the case of the Cactus Dahlia—and it holds good regarding many other flowers—the demands of the show bench. There seems to be a period in the life-history of every favourite flower when its virtues as a show flower are considered and developed almost to the exclusion of every other quality. A little reflection will convince everyone of the truth of this remark. At a big show where the Dahlia classes are strong, the stands of 24 single blooms of Cactus are marvellous examples of the cultivator's skill, and so are the stands of flowers in bunches, but the latter are all wired. A revulsion against wiring is entering strongly into the horticultural mind, and the day will come when even Cactus Dahlias set up at the National Dahlia Society

and the Royal Horticultural Society will be "passed" if wired. During the last few years more attention has been paid to this matter of improved habit.

The Royal Horticultural Society has carried out trials in its gardens at Wisley "to discover those varieties possessing the floriferous character and showy habit of holding their flowers well above the foliage, though not losing sight of form and quality in the flowers." These trials have been carried on for four years. In 1905 and 1906 the trials were judged by a sub-committee of the Floral Committee of the Royal Horticultural Society. In 1907 and 1908 the judging was done by a joint committee from the R.H.S. and the National Dahlia Society.

In 1905 the following varieties were highly commended for garden decoration:—Amos Perry, Arab, Aunt Chloe, D. A. Dunbar, Dainty, F. A. Wellesley, Floradora, J. H. Jackson, King of Siam, Mary Service, Mavis, Mrs. John Barker, Mrs. John Goddard, Mrs. J. S. Brunton, Mrs. McKergow, Orion, Peace, Reliable, Spotless Queen, Standard Bearer, Waterloo.

In 1906 the following were highly commended:—A. D. Stoop, Crepuscle, Mont Blanc, Pink Pearl, Prince of Yellows, Reggie, West Hall Scarlet.

In 1907 the following were highly commended:—Beacon, Eclair, Lustre, Meteor, Molly, Primrose.

In 1908 the following were highly commended:—Avoca, Brightness, Flash, Mary Carpenter, Miss Willmott, Stalwart.

The R.H.S. gardens at Wisley are of a very sandy nature, and for this reason Dahlia growing there has never been a conspicuous success.

By way of collecting the opinions of the growers as to the best varieties for garden decoration and cut flowers, I have been in communication with the undernamed, most of whom are growing several acres of Dahlias each season and whose opinions, therefore, are the very best obtainable. They are men who are living among Dahlias and constantly making observations and notes:—Messrs. Bakers, Wolverhampton; Mr. W. Baxter, Woking; Messrs. Burrell & Co., Cambridge; Messrs. H. Cannell & Sons, Swanley; Messrs. Carter Page & Co., London; Messrs. Cheal & Sons, Crawley; Messrs. Dobbie & Co., Rothesay; Messrs. Keynes, Williams & Co., Salisbury; Mr. S. Mortimer, Farnham; Mr. J. B. Riding, Chingford; Mr. Seale, Sevenoaks; Mr. H. Shoesmith, Woking; Messrs. Stredwick & Son, St. Leonards; Mr. Fred Treseder, Cardiff; Mr. J. Walker, Thame; Messrs. Ware, Ltd., Feltham; Mr. J. T. West, Brentwood.

In the lists of varieties kindly supplied to me by the foregoing growers, each of whom I asked to name what they considered the best 12 Cactus Dahlias for garden decoration and cutting, there were over 100 varieties given. In order to arrive at a consensus of opinion, I made an election with the following results:—

Order.	Notes.
1	7 Caradoc, yellow (Keynes).
2	7 Star, yellow and bronze (Stredwick).
3	6 Amos Perry, XXX, R.H.S., crimson (Hobbies).
4	6 Lustre, XXX, R.H.S., bright crimson (Burrell).
5	6 Primrose, XXX, R.H.S., light yellow (Stredwick).
6	6 C. E. Wilkins, salmon pink and yellow (Stredwick).
7	5 Mrs. McMillan, white and pink (Stredwick).
8	4 A. D. Stoop, XXX, R.H.S., crimson (Carpenter-Baxter).
9	4 H. Shoesmith, crimson-scarlet (Shoesmith).
10	4 Harold Peernan, yellow (Stredwick).
11	4 Rev. A. Bridge, rose pink on yellow (Stredwick).
12	4 Thomas Wilson, reddish-fawn (Keynes).
13	3 Alexander, maroon (Mortimer).
14	3 Australian, purple (Kerslake-Keynes).
15	3 Drea brought, crimson-maroon (Dobbie).
16	3 D. licatissima, pale pink (Keynes).

Order.	Notes.
17	8 Flame, orange-scarlet (Shoesmith).
18	3 Ibis, orange (Burrell).
19	3 Mauve Queen, clear mauve (Cheal).
20	3 Mrs. H. L. Brousson, pale salmon (Stredwick).
21	3 Mrs. G. Stevenson, yellow (West).
22	3 Thos. Parkin, terra-cotta (Stredwick).
23	3 Tressie, cardinal (West).
24	3 White Lady, white (Shoesmith).

These varieties having been tested in different parts of the country, one may feel safe in coming to the conclusion that they are likely to prove satisfactory in most localities. This year a number of new varieties are being put on the market having claims to be considered effective for garden and cutting purposes.

Messrs. Stredwick & Sons are offering a new pure white variety named "Snowdon," which has long, wiry stems, and also a yellow and rose variety named "Rev. J. W. Jamieson," with flowers also on perfectly rigid stems. Both varieties have received the National Dahlia Society's First-class Certificate, "Snowdon" also having been honoured by the R.H.S.

Messrs. Keynes, Williams & Co. have two new varieties this year possessing the desired qualities. They are "Miss Hessey," a fine pink, and "Success," beautiful clear yellow.

Messrs. Ware are offering "Vivid," a grand variety equally good for massing or planting out singly, with flowers of bright orange-scarlet.

Messrs. Dobbie & Co. claim for their new introduction, "Sentinel," that it has a dwarf, sturdy habit, throwing its rich, yellow flowers well above the foliage.

Mr. H. Shoesmith sends out "Ideal," bronzy-yellow with lighter centre, and "Splendour," rich crimson, claiming for both that they belong to the improved and desired type.

Mr. J. T. West's "Nellie Riding" is a bicolor, rich crimson with pure white tips. It certainly has a double qualification, having received both the National Dahlia Society's and Royal Horticultural Society's Certificates and having a good, garden habit.

Mr. W. Baxter is sending out "Brightness," a beautiful carmine-red with a bushy and free-flowering habit. This variety stands in the unique position of having received an award from the R.H.S. and N.D.S. at Wisley last year.

Messrs. Hobbies and Mr. S. Mortimer have for many years been persistently working towards the end I have in view in this article, and many of their varieties have received recognition at the hands of the R.H.S. "Amos Perry" (Hobbies) had the honour of receiving Mr. Alexander Dean's Silver Medal offered for the best garden Cactus Dahlia in commerce.

Mr. Mortimer began as far back as 1889 working for erect stems in his flowers, and the R.H.S. has recognised quite a number of his varieties, notably "Mrs. J. S. Brunton" and a fine new crimson variety of last year named "Stalwart."

Messrs. Burrell are offering no fewer than five new varieties for exhibition, all of which they claim to have a remarkably free and erect habit. The names are "Brigadier," bright crimson; "Echo," silvery-rose; "Mercia," amber-shaded salmon; "Monarch," bronzy-red, with yellow centre; and "Una," rose-pink. A garden Cactus variety emanates from the same firm, named "Magnet," salmon-buff.

A word as to cultivation. For the purposes in view plants should only be grown moderately strong to get the best results. Some varieties will want thinning, but this should be done in moderation. My ideal plant should require little or none of it. In the words of a well-known grower, "grow naturally and well and do not poison the plants by over-feeding with either manure or chemicals." *William Cuthbertson.*

FUCHSIA SPLENDENS AND THE ALLIED SPECIES.

THE Fuchsia cultivated in European gardens under the name of *F. splendens* was introduced by the Royal Horticultural Society, through their traveller Hartweg, in 1841. Whether it is the same as *F. splendens*, Zuccarini (*Flora*, 1832, vol. ii., Beiblatt, p. 102), incompletely described from

great elevations up to 10,000 feet, and is one of the most brilliantly coloured in a genus abounding in striking species. The broad, fleshy tube of the flower is of a deep, shining crimson, the erect calyx-lobes and somewhat shorter petals are green, and the shortly exerted stamens are yellow, offering a contrast brilliant rather than beautiful. Although introduced nearly 70 years ago it is seldom seen in cultiva-

of which there is a coloured figure in the *Botanical Magazine*, t. 4174. Coloured figures of the plant here represented in black and white are to be found in the *Botanical Magazine*, t. 4082, and the *Botanical Register*, 1842, t. 67, that in the *Botanical Magazine* being especially characteristic. The closely allied *F. cordifolia*, Bentham, was discovered and introduced by Hartweg in 1840, and there is a coloured figure



FIG. 147.—FUCHSIA SPLENDENS: FROM SPECIMENS IN THE ABBOTSBURY CASTLE GARDENS, DORSETSHIRE.

dried specimens, is uncertain. Indeed, I am of the opinion that *F. cordifolia*, Bentham (*Planta Hartwegiana*, p. 74), is Zuccarini's plant, the flowers of which are described as 2 inches long; but I have not the means at present of clearing up this doubtful point.

F. splendens, as generally understood and as here figured, is a native of Mexico, growing at

tion nowadays, but as exhibited by Mary Countess of Ilchester at a meeting of the Royal Horticultural Society it was a highly attractive object. There has since been received from the same source an even more floriferous specimen, one small branch bearing nearly 20 flowers.

It was exhibited under the name of *F. serratifolia*—a very different South American species,

of it in the *Botanical Register* for 1841, t. 70. It was collected in Guatemala at an altitude of 10,000 feet; it is less brilliantly coloured than the plant now figured. The tube of the flower also is longer and narrower and tapers to the base, and the petals are relatively broader.

A third species, *F. intermedia*, of this affinity, was described by the writer in 1880 (*Biologia*

Centrali-Americana, Botany, vol. i., p. 457), the name being given to express the fact of its being intermediate between *F. splendens* and *F. cordifolia*. This was founded on a specimen, collected by Hartweg in Mexico at an altitude of 10,000 feet, and referred by Bentham to *F. splendens*.

The fruit or seed-vessel of this group of the genus *Fuchsia* is remarkable, being cylindrical and from 1 to 2 inches long, and is, I believe, always green in colour when ripe. I have somewhere seen a record of its being eaten by the natives of Central America. Mr. Worthington Smith, who made the drawing, calls attention to a peculiarity in the shape of the pollen (which is usually trigonal in the *Onagraceæ*, but which in *F. splendens* is bipolar), as represented in the figure.

So far as I know, the early history of cultivated *Fuchsias* contains no record of *F. splendens* being employed in hybridisation. Focke, in his *Pflanzen Mischlinge*, 1887, does not mention it, nor the allied *F. cordifolia*; but I have been told that some interesting results have been obtained recently with these species.

A few years ago, however, Graf von. Sohns Laubach made some experiments in crossing these two species, as he suspected that *F. intermedia*, Hemsley, was a natural hybrid, and he gives the results in the *Botanische Zeitung*, 1907, p. 60. One cross of *F. splendens* (female) with *F. cordifolia* (male), from which seven plants were raised, yielded four near the female parent, two near the male, "and one was exactly the *F. intermedia*, Hemsley." He adds that there could be no mistake, as all possible precautions were taken in conducting the experiment. W. Botting Hemsley.

THE CARRIAGE OF FRUIT AND VEGETABLE PRODUCE BY RAILWAY.

REGULARLY every year, as the seasons come round, there arises in the mind of the market-gardener, the fruit-grower, and the dairy farmer the thought of high rates—rates, that is to say, for the carriage of their produce by railway. In years of plenty the thought becomes somewhat disheartening, because the producer—and especially the small man—foresees, from his experience in previous years, that his profits will be swallowed up by railway charges. A little study, however, will prove that this is a contingency which may, in a large measure, be avoided.

To put the matter briefly, it may be said that salvation lies in both intensive and extensive cultivation and co-operation. On the Continent, such co-operation is carried out to a very high degree. In France, for example, there are more than 600,000 producers banded together in some 2,500 agricultural associations for the collective sale of their products. In Germany there are more than 1,000 societies for the co-operative purchase of agricultural necessaries, and nearly as many for production and sale. Of Denmark's population of 3,000,000, quite 300,000 are members of co-operative societies. That is the policy which must be adopted by the agriculturists in this country. The benefits to be derived therefrom, merely so far as the bulking of produce for conveyance by rail is concerned, will be seen from what follows.

The following are the rates for Plums from the Vale of Evesham:—

Small lots.	10 cwt. lots.	1 ton lots.	2 ton lots.	3 ton lots.
per ton.	per ton.	per ton.	per ton.	per ton.
s. d.	s. d.	s. d.	s. d.	s. d.
28 0	23 9	22 1	20 10	19 7

But the small man finds, when he sends a consignment by rail, that he has to pay at a rate much higher than any of these. Here, for instance, are the railway company's charges for the conveyance of three small lots of Plums from Evesham to London:—

cwts.	qrs.	lbs.	s. d.
0	2	0	@ 23s. per ton = 1 3
1	0	0	@ " " = 1 11
1	2	0	@ " " = 2 8

It will be seen that, although the rate is quoted as 28s. per ton, the sender is actually charged at the rate of 50s. per ton for the first lot, 36s. 8d. per ton for the second, and 35s. per ton for the third lot. These charges are, of course, calculated in accordance with the "small scale"—which, by the way, far exceeds the ordinary scale, but which is perfectly legal, having been authorised by Part 6 of the Railway Rates and Charges Orders Confirmation Acts, 1891 and 1892—hence the apparent overcharge. But now let us see how easily the anomaly can be overcome.

Let us assume, for the purpose of illustration, that 10 Evesham fruit-growers, each having the small quantity of 1 cwt. of Plums to send to London, decide to give the co-operative principle a trial. They bulk their several lots, that is to say, lump them together, and forward them as one consignment, whereupon the railway company is bound to calculate the carriage in this way:—

cwt.	qrs.	lbs.	s. d.
10	0	0	@ 23s. 9d. per ton = 11 11

From this we see that the cost of conveyance of each lot is just under 1s. 2½d., as against 1s. 11d., if sent as a single parcel. Obviously, too, the more there are in the combine, the better it will be for each individual, because, as the weight increases, the rate decreases pro rata.

Take another example. The rates for Apples and Pears between Evesham and London are:—

Small lots.	10 cwt. lots.	1 ton lots.	2 ton lots.	3 ton lots.
per ton.	per ton.	per ton.	per ton.	per ton.
s. d.	s. d.	s. d.	s. d.	s. d.
23 2	17 6	16 8	15 10	15 5

And the cost of conveyance of a small consignment of Apples weighing, say, 2 cwts. (at the "small" scale), would be 2s. 9d.; but if 20 such lots were bulked and sent forward as one lot, the carriage would be charged at 15s. 10d. per ton, total 31s. 8d., or 9½d. per 2-cwt. lot. In other words, there would be a saving of 1s. 11½d. in the carriage on each consignment!

IN SALOP AND KENT.

The same method can be employed with equal effect in any district, and with every class of goods. There are two rates for the conveyance of vegetables from Newport (Salop) to London, namely, 26s. 11d. for 1-ton lots, and 33s. 8d. per ton for smaller quantities. A 2-cwt. consignment between these points would therefore cost 4s.; but 10 such lots lumped together could be sent for 26s. 11d., or, approximately, 2s. 8½d. apiece.

Between Rainham (Kent) and London, too, there are several rates, ranging from 7s. 1d. to 15s. 2d. per ton, and in their "Fruit and Vegetable Tariff" the South-Eastern and Chatham Railway Co. give notice to this effect:—

"When a sender forwards from the same station or siding to the same salesman and market in London, a consignment of fruit or vegetables, or a consignment consisting partly of fruit and partly of vegetables, and elects to lump and tender such consignment at one time, the rate or rates applicable to such consignment will be subject to a reduction of 10 per cent. when the aggregate weight exceeds 2 tons, and to 15 per cent. when the aggregate weight exceeds 4 tons.

"The same allowances will be made when a consignment of fruit or vegetables, or consisting partly of fruit and partly of vegetables, is the property of two or more senders, but in such cases, one of their number is, by arrangement amongst themselves, to be selected as the nominal sender. His name is to appear as such on the consignment note handed to the company, and he is to be authorised by his co-senders to receive, on their behalf, the allowances above referred to."

THE ONLY ALTERNATIVE.

There is no gainsaying the fact that the horticulturist of this country is severely handicapped by high railway rates; but from the foregoing it is perfectly obvious that he can, to say the least of it, considerably lessen his burden by taking an example from his Continental brother, and co-operating with his neighbour for the collective sale of his produce. A suggestion to this effect was thrown out by the Departmental Committee (on Railway Rates) of 1906, which reported that:

"The most effective way in which the home producers can claim and can obtain lower rates is to combine and co-operate with the object of sending their produce in larger quantities, and packed so as to give good loading in the trucks . . .

"The desirability of co-operation seems to be so generally recognised, that it is to be regretted that its adoption should make so little progress . . .

"The committee are of opinion that co-operation affords a practical method of enabling farmers to meet foreign competition and to put themselves in a position to obtain lower railway rates for the conveyance of agricultural produce. Co-operation has the advantage over other suggestions that have been made, of being a remedy which the railway companies have shown themselves ready to welcome and assist."

Seeing, therefore, that co-operation has been tried with beneficial results on the Continent, it but remains for the English horticulturists to embrace the principle and do exactly the same as the railway companies themselves are doing, namely, amalgamate for the good of each other, for, as has been shown, an enormous saving can be effected by this means in the matter of railway charges, often to the extent of 50 and 60 per cent. Geo. B. Lissenden.

HYBRID GERBERAS.

I HAVE been interested so long in Gerberas that I would like to make a few remarks supplementary to the notice of the article in the *Revue Horticole* by Mons. Ph. de Vilmorin, a digest of which has recently appeared in these pages. I received my first seeds of *G. Jamesonii* in January, 1888, and in 1891 a Certificate for an exhibit was awarded me by the Royal Horticultural Society. The flower-heads exhibited on that occasion were gathered from a plant growing at the foot of a south wall, a fine example, flowering for six months at a time, bearing 1½ heads at once (at its best period), and each 4½ inches in diameter. Our interest, however, lies for the present with the hybrids.

GERBERA VIRIDIFOLIA.—Seeds of this very important parent I received in 1894 from Mr. R. W. Adlam, and in the following year the name adopted was given me from the Kew Herbarium. Both parents are therefore as authentic as they can be, and it is possible even that the specimen of *G. viridifolia* I sent to Kew may have been preserved. Authentication now proves important, as the plant used in hybridising was lost, but here I desire to remark that its loss had nothing to do with difficulty of cultivation. The plant, in fact, was easy to grow, and, if *G. Jamesonii* is really difficult, *G. viridifolia* has given a perfect facility of culture to the hybrids. In Herbaria one name is not uncommonly used to cover several plants that are really seen to be different, and which on cultivation are proved to be quite distinct. It may be that this name is used for more than one plant, for, by the courtesy of the Kew authorities, I have another *G. viridifolia*, which is quite distinct, though, no doubt, in Herbaria it would be quite right to include both under the same species. There are numbers of plants which it is impossible to understand without growing them. This plant from Kew is now in flower, and besides having much rounder leaves than the original *viridifolia*, has shorter flower-stems and ray florets distinctly purple below. My *G. viridifolia*, so named for me at Kew, had rather erect foliage, which M. Adnet notes in the hybrids. It was quite a pale-flowered plant, and this may have been advantageous for purposes of hybridising, in making a strong break without interfering too much with other colours, except as a white. I am trying some crosses, however, with the Kew plant.

MENDELIAN RECORDS.—It is much to be regretted that I could not keep a full record of all the crosses I made, and so work with a scientific as well as an ornamental object in view. I went a long distance, however, in doing it, but it became impossible. It is a comfort, however, to know that a great authority does not think that Gerberas are important for Mendelian observations. There are two species, however, still available when wanted, and also some of my first crosses, which I still have. The leaves show *G. viridifolia* strongly, and the flowers are some shade of pink.

GERBERAS IN THE FUTURE.—It is impossible, I think, that there can be other than a great future

for hybrid Gerberas. In *G. Jamesonii* we have a plant that is far finer than the original *Chrysanthemum*, and the hybrids of *Gerbera* have already shown evidence of perhaps all the variations that are now found in the *Chrysanthemum*. In purity, brilliancy, and variety of colour they are already a good match for the *Chrysanthemum*. Moreover, the plants are quite easily grown. They can be had in flower from seed in from seven to nine months. As examples of what I have now in flower, I may mention a pure, clear yellow $3\frac{3}{4}$ inches in diameter, a deep ruby pink, a beautiful Peach colour with two flowers on same small plant, salmon, pink, rich red, orange, each $3\frac{1}{2}$ inches in diameter and all

pinks inclined to "double," and it is curious that doubling should appear in flowers of the same colour but not of quite the same parentage. It has been remarked that the flower-heads of these hybrids are larger than those of either parent. This is not a new thing to happen. I once crossed a *Fuchsia*, I believe, *corallina*, with one of the indoor varieties, and it was remarkably larger in all its parts than either of the parents. Its stalk and sepals were so long as to suggest a great hanging spider.

SELF STERILITY.—I have always held that *Gerberas* were self-sterile, and I still believe them to be so. For on this theory, for a number of years, I was able to supply as many *G. Jamesonii* as I

that *Gerbera Jamesonii* is self-sterile. Under the same conditions pollen from another plant produced seed.

CULTIVATION.—I begin to doubt whether *G. Jamesonii* was ever difficult to grow. Not knowing how to do a thing and the presence of a real difficulty are not quite the same thing. It seemed to be decidedly difficult to grow, but now one never has any trouble. The plant, as seems to be not infrequently the case, is perhaps becoming accustomed to cultivation. Or it may be that attempts were formerly made to grow it without sufficient moisture. Imperfect information of habitat—conditions of wild life being never possible of entire reproduction—has often



FIG. 148.—VIBURNUM CARLESII AS GROWING IN THE ROYAL GARDENS, KEW.

[Photograph by C. P. Raffill.]

(See p. 311.)

in 48 pots. When gardeners get the right idea of cultivation, as they very soon will, there is no doubt that the various selections of colours and forms attracting attention will be grown from seed to order just as are *Primulas*. It is a bold venture to refer to *Primulas* or to *Chrysanthemums*, but neither of them has so brilliant and continuous flowering a progenitor in composition as *Gerbera Jamesonii*. Some of the colours now come fairly true from seed, and there is no doubt that any forms may be fixed. I have one or two not indicated by M. Adnet. I have, for instance, yellow tipped with red, and a salmon with remarkably short ray florets. I have two

wanted for correspondents by pollinating for and saving my own seed. A paragraph in Mons. Ph. de Vilmorin's article may be understood better if I remark that first of all the flower-heads of *Gerbera* are exclusively female, then for a time, while the styles and stigmas are still in perfect condition, the pollen ripens and self-fertilisation of the head would be quite possible—but it does not happen. Later on, the head becomes exclusively male. On the point of fertility as hybrids, it may be remarked here that they are perfectly fertile. Since writing this paragraph, Miss Saunders has kindly informed me of her results, which show conclusively by actual experiment

done very much more harm than good in gardens. Gardening must always be an experimental art, and though information may be valuable, it is sometimes fatal to be influenced by travellers' notes, true though they may be—so far as they go. The cultivation of the hybrids is the same as for *G. Jamesonii*, except that they are easier to grow, and, I believe, likely to be less tender. Of several plants I tried in the open, with slight protection, last winter, two have survived. *G. Jamesonii* under the same conditions was killed. Mons. Adnet has also found that the hybrids are the hardier. While growing, *Gerberas* like a fair amount of atmospheric moisture, occasional use

of the syringe, and a moist surface to stand upon, and they do not like to be dry at the root. Moreover, pot Gerberas certainly like a little shade. It has often been said that Gerberas are liable to rot, but I think it may be that, after being starved for want of water, they are unable to bear contact with it when they do get it. While at rest, Gerberas may be kept on the dry side, but while growing they require moisture. The soil they like is good loam, some peat, and sand, the usual half-and-half mixture suiting them very well. Having command of good loam I have had fine flowers without manure of any kind, but I have no doubt that Gerberas may often benefit by it. They are very liable to the Begonia mite, and this immediately checks growth, but it can be cured by means of liquid XL-All, in which the foliage should be dipped. A check of any kind during growth is distinctly injurious. No one seeing my batch of plants, now in an intermediate house, could suppose that they are any more difficult to grow than weeds. When *G. Jamesonii* was valuable for exchange, it was my custom to raise young plants from seeds in the tropical pit in the early part of the year, and good plants were then ready for planting out in the beginning of June, but seeds of the hybrids have been sown when ripe. Plants now in strong flower for young plants were raised from seed sown last June and July.

GERBERA JAMESONII "CLIBRAN'S ORANGE."
—I may draw attention to this form, and so give it a name. I was going through Clibran's nursery two years ago, and found this fine variety, which differs from typical *Jamesonii* in colour and also somewhat in foliage. *R. Irwin Lynch, Cambridge Botanic Garden.*

P.S.—Since the above note was written I have obtained further evidence in regard to self-sterility. I have pollinated several of the hybrids with their own pollen, and find that good seeds have been formed, so that self-sterility cannot be universal. As this does not agree with the result of Miss Sanders' experiment, it is possible that the hybrids are not so self-sterile as *G. Jamesonii*. Protogyny (a term meaning that the stigmas are ripe before the anthers) in any case is always a pronounced feature in *Gerbera*, and no seeds can be expected without artificial pollination. *R. I. L.*

VEGETABLES.

SOME GOOD EARLY DWARF BEANS.

WHEN the soil is in a cold, wet condition, much can be done to procure an early crop of this vegetable by sowing the seeds under glass, otherwise the seeds germinate slowly, and the seedlings are often much crippled by the cold. For an early supply there is no better plan than to make a sowing in 3-inch pots, raise the seedlings in frames, and, when large enough, to plant them in deep drills. If the soil is heavy in texture, it can be made suitable by adding lighter materials, such as manure from an old hot-bed, or charred refuse. The dwarf Bean is valuable because it can be obtained early in the season, when the supply of vegetables is limited. The plant does not thrive in a cold, heavy, wet soil, therefore the ground should be selected with care, and be prepared in advance. Though I advise a change of site for vegetables as far as is practicable, a change of quarters cannot always be given in the case of early crops of vegetables, because they require a warm, dry border and prepared soil. In the case of dwarf Beans, a change of soil is the less important, as the plant is not a gross grower, does not remain in the soil a long time, and can readily be fed with fertilisers. Even with the earliest varieties, it is not well to crowd the plants.

Of late years there have been some excellent varieties introduced to commerce. The pods of these early kinds are of a medium size, and are freely produced. One of the best in this respect is *Early Favourite*, an early

variety, having long pods of superior quality. It is a cross between the older Mohawk and the small, but early, *No Plus Ultra* varieties. Another even earlier variety, but with pods a little smaller, is *Early Gem*, the result of crossing *Sion House* with *Progress*. This is the earliest Bean I have cultivated, and I have grown all the early kinds. *Progress*, having well-shaped pods of superior quality, is a splendid early Bean, and a variety with robust growth. It is especially valuable in a cold soil, and is not readily affected by drought. One of the dwarfest Beans grown, and, for its size, wonderfully productive, is *Sutton's Forcing*. It is valuable for frame or pot culture. Sown on a warm border, it requires little space. The well-known *Plentiful* is a very fine, early Bean, stringless, and a great cropper. The stringless Beans are much less cultivated in this country than on the Continent, and this is easily accounted for because we do not cook Beans in the same manner as is practised there. Abroad, Beans are cooked when quite young and whole. This system is better than slicing them, for flavour, colour and general appearance are all

VIBURNUM CARLESII.

THIS distinct and handsome species was well shown at the meeting of the R.H.S. on May 4 by Sir Trevor Lawrence, Bart., when it received a First-class Certificate. It flowers at the end of April and early part of May in the open air, and is one of the most beautiful shrubs which bloom at that time. It is a native of Corea, and was raised from seed received from that country by the well-known nurseryman, L. Boehmer, of Yokohama, Japan, by whom it was first introduced to the Royal Gardens, Kew, in 1902, where it flowered for the first time in Europe in May, 1906 (see illustration of flowering spray in *Gardeners' Chronicle*, May 30, 1908, fig. 155). The plant has grown freely, and has proved to be quite hardy, having passed through the severe weather experienced during the early part of this year without any protection, although growing in an exposed position. Writing in the *Gardeners' Chronicle* of October 11, 1902, in regard to this plant, A. Anger stated that it was his belief that it



FIG. 149.—VIEW OF A JAPANESE GARDEN EXHIBITED BY MESSRS. JAS. CARTER AND CO. AT THE TEMPLE SHOW ON TUESDAY LAST.

preserved, and there is less waste of the plant's energies when the pods are gathered young.

A new Bean of excellent merit is *Superlative*. I have not forced it, but for the open ground it is splendid, being a robust grower and a variety that will thrive with less shelter than others, owing to its free growth. As a summer dwarf Bean, it is a splendid introduction, being a very heavy cropper, and bearing long, handsome pods in profusion. I have alluded to the stringless type; another excellent variety is *Stringless Holborn Wonder*, a remarkably prolific variety, excellent for cooking whole, and of very delicate flavour. It is suitable either for forcing or for cropping in the open. Another very distinct type of dwarf French Bean is *Perpetual*. The plant yields pods over a long period, hence its name. In addition to being a remarkable cropper, it bears very early. It requires plenty of room, food and moisture. The haulm is very robust; the pods are long, thin, quite straight, and delicious if cooked whole. *G. W.*

"would be quite as hardy as *Magnolias*, *Pyrus*, *Cydonia*, &c., and that it would form a valuable addition to European gardens." His opinion has been amply verified by the behaviour of the plant at Kew during the last seven years. The flowers are disposed in clusters nearly 4 inches in diameter. They are borne at the ends of the branches, are pink in colour, fading to white, and are half-an-inch in diameter, with a tube half-an-inch long. They emit a delicious odour such as is possessed by few plants, and which alone renders the plant well worthy of cultivation. The habit is that of a rather loose-spreading shrub, with dark green, ovate or orbicular leaves from 1 to 3 inches long, with serrate margins, and densely clothed with stellate hairs. Its early-flowering habit and fragrant flowers should render this plant of considerable service as an early-forcing shrub. It is certainly one of the most promising shrubs of recent introduction, and likely to become a general favourite in the near future. *C. P. R.*

PLANT NOTES.

AN ELEGANT CALCEOLARIA.

In the conservatory attached to Sir William Farrar's residence, Sandhurst Lodge, I saw recently a fine *Calceolaria* some 3 feet in height and having a head of bloom nearly as broad. This is a new or rare *Calceolaria* of which Mr. Townsend, the gardener, did not give me the name, as he said that even the Kew authorities had been unable to identify it. The clusters of bloom are borne on long, slender stems; the flowers are rather long and narrow and of a pleasing straw-yellow colour. The plant has long, lanceolate or pointed leaves, somewhat Sage-like, and the plant is distinct from both the well-known *C. amplicaulis* and *C. Burbidgei*. It has been grown for several years at Sandhurst Lodge. That it is a distinct species seems probable. Can it be identical with the variety now being offered by a Cheshire firm, the description of which seems to fit the Sandhurst Lodge *Calceolaria*? A. D.

SCOTLAND.

A MANSE GARDEN IN MAY.

To the ardent horticulturist and lover of Nature, this is the most interesting and picturesque season of the year. Its greatest glories are, unquestionably, the flowering trees. Seldom have I seen these more luxuriant in their beauty, notwithstanding the cold weather, which has been somewhat modified by bright sunlight. Fortunately, my own garden is protected by Sycamore trees and high Hawthorn hedges from the east and north winds. *Prunus Pissardi*, the Persian Plum, has been especially fine; during the last fortnight its blossoms have been so exceptionally abundant that I am hoping it may, with more favourable atmospheric conditions, be successful for the first time in forming and developing its fruit. This is one of the loveliest of all flowering trees, and would be of the highest value for garden decoration if only in virtue of its exquisite, chocolate-coloured leaves, which are especially conspicuous among those of its fairest contemporaries during the summer months. Two years ago, by way of experiment, I grew *Tropæolum canariense* among its dark branches, with very memorable effect. Another highly ornamental tree, which is extremely profuse with its delicate blossoms at present is *Pyrus Malus florihunda*, a native of Japan. Its flowers resemble somewhat those of the Apple, but they are of a deeper shade of pink, and extremely small. The Almond (*Amygdalus communis*) has flowered in my garden this season for the first time for several years. This may be partly attributable to an application of lime given to all my "stone fruits" during last October, and partly also to the ripening influence of the sunlight of last summer upon the flowering shoots. Both influences are required by Oriental trees in our somewhat too cold and variable climate.

My Plums, Cherries and Damsons are at present exhibiting a gratifying quantity of bloom, especially such familiar varieties as the Early Rivers, Black Eagle, May Duke and Morello Cherries, the Prolific, Czar and Victoria Plums, and the American Superb Greengage. My first flowering Apple, the Irish Peach, showed its bright colour in the blossom on May 1. This variety is usually followed in my garden by Beauty of Waltham and Duchess of Oldenburg, the flowers of the latter, greatly admired by pomologists, being almost pure white. Under such promising floral conditions, it will be nothing short of a calamity if the frost which, for some time past, has prevailed in the early mornings, sometimes to the extent of 10° or 12°, does not soon disappear, and more favourable atmospheric conditions supervene. Otherwise, even our finest Rose trees, on which we rely so

greatly for artistic effects and combinations in the garden, will assuredly suffer. In April of last year we had during one evening 21° of unexpected frost, and the consequence was that all of my Austrian and Penzance Briar Roses lost their entire first flowering shoots, while some of my strongest Hybrid Teas were so seriously affected that, for a very long period, they refused to grow. *Magnolia Watsonii*, which did not flower last season, promises well for this year. David R. Williamson.

The Week's Work.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Late Strawberries in pots.—Endeavour to prevent any break occurring between the indoor and the outdoor crops. At this time of the year forced Strawberries need a house devoted entirely to their culture, and, if the roof is fitted with canvas blinds, which can be lowered during the hottest part of the day, it will be beneficial, but, should blinds not be available, syringe a little limewash over the glass. Late batches of Strawberries do very well in cold frames; if the pots are partially plunged in a bed of leaves the plants will not require nearly so much attention in regard to watering as those grown on shelves. If space in the pots permits, a top-dressing of loam mixed with a little appropriate fertiliser should be given the plants, as the roots will have absorbed most of the nourishment from the soil, and Strawberry plants need very liberal feeding to mature a good crop of berries. About 8 or 10 fruits on each plant will be sufficient. The flower trusses should be securely staked to prevent the stems becoming broken. Except when the plants are in flower, the foliage should be thoroughly syringed two or three times a day. The atmosphere of the house must also be kept moist by damping at frequent intervals all bare spaces about the plants, as moisture is necessary to prevent red spider, whilst a humid atmosphere assists the fruits to swell freely. The special plants in the open from which it is intended to secure the runners for next year should have all their inflorescences removed in order that all the nourishment may be devoted to the plantlets. Hoe the soil between the rows and see that all weeds are destroyed. Then apply a mulching of short litter and, if necessary, afford the plants a copious watering.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Calogyne cristata.—This plant, and the varieties *lemoniana* and *hololeuca*, hold a prominent place in Orchid collections, and even in gardens where Orchids are not largely grown *C. cristata* is valued for supplying flowers during the winter. By cultivating a considerable number of plants, a succession of bloom can be maintained if some are placed in various degrees of warmth just at the time when their flower-spikes begin to push from the base of the newly-made pseudo-bulbs. *C. cristata* is too well known to need description. Its variety *lemoniana* is distinguished by its flowers having a lemon-coloured centre, and it blooms several weeks later than *C. cristata*. The pure white variety *C. c. hololeuca* is also later in flowering, and this variety, being a scandent grower, the leading bulbs quickly get beyond the limits of the receptacle. However, these can be easily turned in, and, if pegged down firmly on to the compost, will soon become well-rooted, and make strong-flowering bulbs. *Calogynes* are now beginning to grow; established specimens in good condition not requiring room for further development, should be elevated well up to the roof glass in a cool part of the intermediate house. The span-roofed *Odontoglossum* house will not be found too cool for them during the summer months, provided that they are exposed to sufficient light. If grown in too shady a position, the plants seldom produce their full complement of flowers. When watering, carefully examine each plant, and, if the soil is dry, give it a thorough soaking. Unless the plants are in a

very exposed position, they may not require watering again for another fortnight. Keep the surroundings well moistened by damping between the pots several times every day, and spraying them overhead occasionally with tepid rain-water on warm, sunny days. All the plants should be thoroughly cleaned, and any specimens which have reached an inconvenient size may be divided and repotted. Plants which are to be grown into large specimens should be repotted. It matters little whether they are grown in pots, shallow pans, or baskets, but, whatever the receptacle, it should be filled two-thirds its depth with material for drainage. Over the crocks place a thin layer of rough Sphagnum-moss, and for a compost use good, turfy loam, peat, and *Osmunda* fibre in equal parts. Cut the fibre up moderately small before mixing it with the other materials. A little Sphagnum-moss and plenty of small crocks may also be added. Last year, as an experiment, I potted some pseudo-bulbs of *C. c. hololeuca* in the *Osmunda* and *Polypodium* mixture, with a liberal addition of small crocks intermixed, but no Sphagnum-moss or peat, and at the present time the little specimen is doing well. It will generally be observed after repotting the divided plants that the pseudo-bulbs shrivel slightly. The plants should not be watered heavily with the idea of inducing plumpness, for if kept in a saturated condition the old roots will decay, and the pseudo-bulbs continue to shrivel. A better practice is to afford them occasionally a gentle dewing overhead with the fine sprayer, keeping the atmosphere around them moist, and at the same time carefully shading the plants from all sunshine. Towards the end of the growing season expose the plants to more light and air.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Gooseberries.—We have a splendid crop of this fruit, and the berries are swelling rapidly. Where they have set very thickly a portion of them should be gathered for present use, whilst some may be used for preserves. Gooseberries that are grown especially for dessert purposes should be very freely thinned, and if the work has not already been done a mulching of manure should be applied. To secure extra fine Gooseberries, copious waterings must be given, also manure water and artificial stimulants, the latter in small quantities at intervals of a few days while the fruits are swelling; directly the berries show signs of ripening all feeding should be withheld. The nets must be got in readiness to protect the berries from birds. Guard against caterpillars and other insect pests; up to the present our bushes are very free from these insects. Cordon-trained Gooseberries are suitable for planting by the side of paths, especially when the owner prefers to gather the fruits for consumption on the spot. In planting in this manner and for this purpose be careful to provide for a succession of fruits by having both early and late varieties. Cordon-trained Gooseberries require considerable attention to keep the shoots within proper limits to allow the sunlight and air to reach the fruits. This pruning is best done by pinching when the growths are quite young. Pinch the side-shoots to five leaves, and, if the buds on these growths start, the secondary shoots may be taken off entirely. The leading shoots may be allowed to remain intact, unless the plants have already filled their allotted spaces.

Cherries.—The trees have, in most cases, set their fruits well, although doubtless a considerable quantity will drop during the stoning period. Any shoots not required for extension should be pinched back to four or five leaves.

Raspberries.—The frost in many parts very severely damaged the canes, and, where only a limited number is cultivated, and especially when Raspberries are valued highly, every effort must be made to assist the crop. Allow as much light as possible to reach the fruiting canes and afford a thick mulching of manure about the roots. If, when the fruits are set, the weather is dry, root waterings must be afforded, particularly on light, porous soils.

Loganberries.—The cold of last winter has killed our plants half-way to the ground level. This emphasises the need of having the young shoots thoroughly ripened before winter arrives. Therefore thin the canes early in the season, retaining only those that are absolutely necessary.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Summer bedding.—This work may now be commenced. But the more tender plants, such as Iresine, Alternanthera, and Mesembryanthemum, should be planted after the hardier subjects, such as Pelargoniums, have been put out. The season for summer bedding being very short, the plants should be placed rather thickly together that they may soon produce a good effect. When the planting is complete, sprinkle the plants overhead occasionally with clear water. Before any planting is done, the colour effect and the general design should have been well thought out, in order that the most may be made of the subjects available.

Violas are exceptionally good plants for carpeting the ground beneath tall-growing species such as Palm, Phoridium tenax and tall Fuchsias. If the plants are kept well watered and the old flowers are removed before setting seeds, Violas will flower all through the season. A bed of Marguerites, with a groundwork of blue Violas and dot plants of Lobelia Queen Victoria is a pleasing combination. Salvias, especially the

water or guano dissolved in water are beneficial. Remove all the haws as soon as the petals have fallen.

Half-hardy annuals.—Those that were sown in the open ground should be thinned well apart, and both they and also transplanted plants should be sprayed with clear water late in the day.

Dahlias.—Plant Dahlias 3 feet apart. Before planting ascertain that the soil is moist, and when the operation is finished place a mulching of horse-droppings or cow manure over the soil to keep the roots moist.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Chrysanthemums.—These plants will require very careful attention during the next five or six months, especially in the matter of watering at the present time when the roots are penetrating into the new soil. As growth proceeds, the shoots need to be tied securely to the stakes and unnecessary side growths must be removed. The growing points should be dusted frequently with

Coleus thyrsoides and *Moschosma riparium* are two valuable plants for decoration in late autumn and winter. Cuttings of both these plants make roots and grow very quickly. After they have been potted singly into small pots, the leading shoots should be pinched two or three times. In the case of the Coleus, if plants are required for flowering in small pots, a batch may be grown specially for this purpose, leaving the shoots unstopped.

Cyclamens.—These should now be moved to an unheated frame. Although sunlight is necessary for their well-being, the foliage should not be unduly exposed to bright sunshine. Keep the surroundings moist or thrip will soon infest the leaves.

General work.—The plants in the various houses should be rearranged at intervals of a few weeks. Advantage should be taken when rearranging the plants to cleanse at least the lower portion of the structures such as the stage or shelves and to tidy up the plants themselves. At the same time lightly prick up the surface soil in the pots, and, notwithstanding that they may appear to be clean, scrub the outsides of the flower-pots.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Runner Beans.—Plants which have been raised under glass, if properly hardened, may now safely be planted in trenches out-of-doors. A space of at least 12 inches should be allowed between the plants, and it is best to place two rows in each trench. Insert each plant well up to the seed leaf, and make the soil very firm about the root. When all is finished, apply a thorough watering, and place a little finely-sifted cinder ashes around the collar of each plant. Staking must be done immediately after planting. Insert them firmly into the ground, and apply longer and stouter stakes at intervals to give greater support to the others. On these longer and stouter stakes cords should be stretched. Make a final sowing of seeds out-of-doors some time in June.

Dwarf or French Beans.—Like Runner Beans, these also may be planted out-of-doors. Plants growing in frames should be liberally mulched with half-rotten manure. During dry weather water them liberally at the roots and drench the foliage twice each day with water applied by a syringe.

Maize or Indian Corn.—During a favourable season satisfactory returns may be expected from this crop in this country. It is necessary, however, to raise the plants in heat, grow them on in pots and plant them out into fairly good ground in the most sheltered and sunny part of the garden. For an earlier supply, a few plants might be put out in a hot-bed and covered with frames, but they must not be forced severely.

Asparagus.—Although very late this season, Asparagus is now yielding a good supply. Give the beds a good soaking with farmyard manure water and keep them free from weeds by hand-pulling. The strongest Asparagus growths should be cut every day, severing them with an Asparagus knife. Seedling beds should be thinned until the plants are 6 inches apart. If from any reason the seed has failed to come through the soil, it will be well to sow fresh seeds in 3-inch pots, placing two or three in each, afterwards thinning the plants out to one in each pot. Later the pots should be plunged in ashes, and in autumn they should be covered entirely to a depth of about 4 inches with very fine ashes. Such plants will be in a fit condition for planting into permanent beds early next April. Take care to select only the best varieties.

Lettuce.—Sow seeds of both Cos and Cabbage varieties once each fortnight. Thin out previous sowings whilst the plants are still quite small. Plant a few Lettuces in various parts of the garden, as by this means a supply can be obtained at all times. Lettuces require abundant supplies of water, both at the roots and overhead.

Endive.—Sow seeds of the Batavian and curled-leaved varieties at intervals, but only sufficient for immediate use, as Endive in summer-time quickly runs to seed.

Radishes.—Sow seeds once a fortnight in the shadiest part of the garden, affording protection against birds.



FIG. 150—*SANIFRAGA DECIPIENS* "MISS WILLMOTT": FLOWERS WHITE WITH REDDISH-BROWN COLOURED CENTRE, EXHIBITED BY MESSRS. BAKER'S AT THE TEMPLE SHOW.

(See ante p. 332.)

scarlet kinds, form exceedingly showy beds. *Cosmea bipinnata* and the pink-coloured form, if planted in moderately-rich soil, will make tall and effective plants in the flower-beds.

Vases and boxes.—The colours of the plants should be so blended that they will not clash with plants in the adjacent beds. For climbing and trailing plants Ivy-leaved Pelargoniums and *Tropæolums* are especially suitable. Taller plants for the centre include *Grevillea*, *Fuchsia*, *Abutilon*, and *Canna*. On terraces, where there is a lot of stone work, scarlet flowers are very effective; in fact, flowers of this colour are suitable for almost any vase work. Very tall or tender plants should not be employed in situations exposed to winds.

Roses.—Various insect pests will cause much mischief among these plants unless means are taken to destroy them. The foliage should be syringed with quassia extract at rather greater strength than is recommended by the makers. Roses in flower on walls and other warm situations need to be syringed occasionally with cold water, and if the soil is dry, water should be supplied to the roots. Applications of manure

tobacco powder, applying it in the evening and washing it off again with clear water on the following morning. The tobacco powder will destroy aphids, but the leaf-miner is not very easily combated. If the fly which deposits the eggs of the leaf-miner is seen upon the plants, dust the foliage with fresh soot, and at once pick out with a pointed stick any maggots that are detected in the tissues of the leaves. On dry days sprinkle frequently the outsides of the pots and their surroundings with water.

Reinwardtia tetragyna and *R. trigyna.*—Cuttings of these winter flowering plants should now be inserted in sandy soil, placing the pot in a brisk bottom heat. After the cuttings have rooted, pot them singly into small pots, keeping them in a close and warm atmosphere for a few days, subsequently removing them to an intermediate temperature. The plants should be potted finally into 5 or 6-inch pots filled with fairly light soil, that must be pressed firmly. The foliage should be syringed freely. Pinch out the ends of the growing shoots occasionally. Towards the end of June the plants may be placed in an unheated frame until the autumn.

APPOINTMENTS FOR JUNE.

THURSDAY, JUNE 3—Linnean Soc. meet.
 SATURDAY, JUNE 5—
 Soc. Franç d'Hort. de Londres meet.
 TUESDAY, JUNE 8—
 Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by the
 Rev. Prof. G. Henslow, on "Old Superstitions about
 Plants"). British Gard. Assoc. Ex. Council meet.
 WEDNESDAY, JUNE 9—
 Roy. Cornwall Sh. at St. Columb (2 days).
 MONDAY, JUNE 14—
 United Hort. Ben. and Prov. Soc. Com. meet.
 WEDNESDAY, JUNE 16—York Gala (3 days).
 THURSDAY, JUNE 17—Linnean Soc. meet.
 TUESDAY, JUNE 22—
 Roy. Hort. Soc. Coms. meet. (Masters' Memorial
 Lecture, on "Masters' Vegetable Teratology," by
 Prof. Hugo de Vries at 3 p.m.).
 WEDNESDAY, JUNE 23—
 Gard. Roy. Ben. Inst. Ann. Festival Dinner at Hotel
 Métropole, London.
 THURSDAY, JUNE 24—Midsummer Quarter Day.
 SATURDAY, JUNE 26—Windsor and Eton Rose Sh.
 MONDAY, JUNE 28—Isle of Wight Rose Sh. (provisional).
 TUESDAY, JUNE 29—
 Southampton Roy. Hort. Soc. Summer Sh. (2 days).
 Brighton Fl. Sh. (2 days). Canterbury and Kent Rose
 Show at Canterbury.
 WEDNESDAY, JUNE 30—
 Richmond (Surrey) Fl. Sh. Ipswich Fl. Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week,
 deduced from observations during the last Fifty Years
 at Greenwich—57.8°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, May 26 (6 P.M.): Max. 62°;
 Min. 49°.

Gardeners' Chronicle Office, 41, Wellington Street,
 Covent Garden, London—Thursday, May 27
 (10 A.M.): Bar. 29.6; Temp. 60°; Weather—
 Sunshine.

PROVINCES.—Wednesday, May 26 (6 P.M.): Max. 64°
 Oxford; Min. 49° Yorkshire.

SALES FOR THE ENSUING WEEK:

WEDNESDAY—

Gladiolus, Begonias, Lilioms, Carnations and numerous
 other plants and bulbs, at 12; Palms, Bay, Ferns, &c.,
 at 1.30; by Protheroe & Morris, at 67 & 68, Cheapside,
 E.C.

THURSDAY—

Clearance Sale of Greenhouse and Bedding Plants, at
 the Gardens, Effingham Hill, near Dorking, by order of
 the Executors of Czarnikow, Esq.; by Protheroe &
 Morris, at 12.

The
Temple
Show.

As these pages go to press, the twenty-second annual exhibition of the Royal Horticultural Society in the Inner Temple Gardens is drawing to a close. It was opened on Tuesday last amidst a downpour of rain, which gradually decreased until the afternoon, when the weather became fair but dull. On Wednesday the weather was even worse. The month of May, however, has been so uniformly dry, and rain was so badly needed in every part of these islands, that there was some compensation for the inconvenience suffered in consequence of its fall.

The Temple Shows have been so well managed that they have never failed to represent the very best products of British horticulture. On these occasions there are always new hybrid Orchids, new varieties in florists' flowers and other plants. Less often the public is startled by the appearance of some extraordinary novelty, such, for instance, as the first *Odontioda*, which was shown three years ago. There was no such outstanding novelty on the present occasion. The Orchids, whilst filling a space equal to that of former years, appeared even more showy and brilliant than ever; but there were no bi-generic hybrids which we have not previously seen. Perhaps one of the most striking Orchids exhibited was the variety of *Odontoglossum crispum* known as *Solum* in Messrs. Sander's group. This had a magni-

ficient spike of its unique flowers, with pure white segments and claret-red labellum. But it is two years since we first saw flowers of this variety, though never such fine ones as on this occasion. It becomes increasingly difficult to obtain Orchid novelties of superior merit to those already in cultivation, but the magnificent groups contributed by such skilful and enthusiastic amateurs as Sir Jeremiah Colman, Bart., the Duke of Marlborough, and Mr. F. Menteith Ogilvie and such nurserymen as Messrs. Sander & Sons, J. Charlesworth & Co., and G. F. Moore, Ltd., collectively represent most of the choicest varieties in existence. It may be stated here that this year there was no exhibit from Sir Trevor Lawrence or Colonel Holford. The group of *Vanda teres* from the collection of Mr. Leopold de Rothschild, at Gunnersbury Park, was the finest exhibit of this somewhat difficult species that Mr. Rothschild or any other cultivator has ever exhibited. Messrs. Sander & Sons exhibited excellent specimens of most of the new plants which they contributed to the Ghent International Exhibition of last year, but owing to the fact that they have been longer in cultivation, several of these plants were shown in better condition than we have previously seen them. Most of them have been already illustrated in these pages. We now figure *Sansevieria Laurentii*, an interesting and ornamental plant introduced from the Congo by the late M. Laurent.

Messrs. Cannell & Sons showed a new pillar Rose from America in a most enchanting manner in the large group mainly composed of this variety, and staged in the large marquee containing the Orchids. The variety is known as "American Pillar." It is a profuse bloomer, and the flowers, as large again as those of *Hiawatha*, are pink with a white centre. The charm of the flower consists more in the peculiar richness of the shade of pink than in its large size and excellent form.

M. Adnet, from Cap d'Antibes, contributed an exhibit of cut flowers of his extraordinary hybrids of *Gerbera*, which were beautiful and elegant, notwithstanding the fact that they had travelled a distance of 1,000 miles since being cut from the plants. M. Adnet found it impossible to exhibit the flowers in so natural a manner as they were seen at Berlin, or in such great variety, but such as were sent excited great admiration, and there can be little doubt but that *Gerberas* will be largely cultivated in this country. In Sir Trevor Lawrence's garden at Burford, some plants have proved sufficiently hardy to remain in an open position out-of-doors all the winter, although they received but slight protection. At Kew they survive out-of-doors at a distance of about 2 feet from the wall of a heated house. It seems pretty certain that beds or borders might very well be planted with *Gerberas* in most localities, if the plants were covered with temporary frames during winter. Mr. Lynch's article on these plants, printed on another page, deserves to be widely read.

Tuberous Begonias from Messrs. Blackmore & Langdon, Ware, Ltd., and others were as brilliant and as large as ever, and, notwithstanding the great variety now existing in these flowers, we noticed several novelties.

Roses, always one of the prominent features of a Temple Show, were even more

gorgeous and plentiful than usual. Probably many would be inclined to the opinion that the group exhibited by Messrs. William Paul & Son, was one of the finest ever seen, whilst the groups from Messrs. Paul & Son, Chesnut, and others were all remarkable for excellent quality.

Carnations were shown well, and the rich colouring in the corner group of Messrs. W. Cutbush & Son was worthy of special remark. Messrs. Sutton's *Cinerarias*, *Gloxinias* and other florists' flowers showed the highest possible development in cultivation, the *Clarkias* being interesting as showing what excellent specimen plants in pots may be obtained even from this hardy annual under suitable treatment. As for *Rhododendrons*, Messrs. Waterer, Cutbert, and others have added to their tints so much in recent years that, arranged as they usually are on the side of the tent facing the Orchids, they are now not a whit less brilliant than their more aristocratic associates.

Hardy flowering plants appear to receive an increased amount of attention each year, and at no exhibition in this country may they be seen in better condition or in larger numbers than at the Temple Shows. It was unfortunate that during the first day of the exhibition, most of these flowers being staged in the narrow tent, their colours could scarcely be seen, owing to the saturated canvas obstructing the light.

Fruit and vegetables were not more numerous than on previous occasions. Nevertheless, Messrs. Bunyard's Apples were as well preserved as usual, notwithstanding the advanced season. Messrs. Laxton's Strawberries, Messrs. Rivers' magnificently-cropped fruit trees in pots, and Messrs. Sutton & Son's choice vegetables were alike of excellent quality.

A number of visitors present from the Continent declared that the Show contained more variety, more brilliantly-coloured flowers, and represented even better culture than any of its predecessors.

ORCHID SALE.—The sales of Orchids held annually by Messrs. PROTHEROE & MORRIS during the Temple Show week, prove that high prices can still be obtained for exceptionally fine Orchids. In the sale held on Wednesday last, six rare *Cypripediums* from the collection of Colonel G. L. HOLFORD, C.I.E., C.V.O., Westonbirt, caused very spirited bidding, the beauty of the plants being well known and the quality of the specimens sent up by Mr. H. G. ALEXANDER, the Orchid grower at Westonbirt, superb. Lot 201, *Cypripedium nitens* *Leeanum* var. *Hannibal* was purchased by Mr. E. ROBERTS, of Eltham, for 100 guineas; Lot 202, *Cypripedium Moonbeam* (*Thompsonii* × *Sallieri Hyeatum*) fell to Mr. CYPHER's bid of 210 guineas. The next lot, *Cypripedium Sultan* (*Mons. de Curte* × *Milo Westonbirt* variety) was purchased by Mr. WILLIAM BOLTON, of Warrington, for 130 guineas; the same buyer secured Lot 206, *Cypripedium Beryl* (*Mrs. Wm. Mostyn* × *Beekmannii*) for 55 guineas. The other two lots, viz., *Cypripedium Actæus Bianca* (*Leeanum Prospero* × *insigne Sanderæ*) and *Cypripedium Helen II. Westonbirt* variety, were purchased by Messrs. CHARLESWORTH & Co., Haywards Heath, for 110 guineas each. The plants were all duplicates of the original certificated specimens, and were offered without a reserve price.

FUCHSIA SPLENDENS (see p. 333).—Since our front pages were stereotyped we have received the following additional information from Mr. W. BOTTING HEMSLEY:—"I have just had an opportunity of seeing the type of *F. splendens*, Zuccarini at Kew, whither it was sent on loan by Dr. RADLKOFER, the Director of the Munich Botanic Garden. I am now able to say that the plant figured on p. 333 is correctly named. Our

staff took place at the Holborn Restaurant on May 25, the opening day of the Temple Flower Show, Dr. L. C. BURRELL, M.A., presided. Previous to the dinner the annual meeting was held in the same building, there being about 30 members present, a fewer number than usual. This was accounted for by there being only six of the young gardeners present. Mr. WATSON presided. The annual Report

lowing members of the committee have decided to resign: Messrs. W. DALLIMORE, H. SPOONER, W. HALES, W. N. WINN (secretary), and H. H. THOMAS (treasurer)." This part of the Report formed the principal subject of discussion, and it was eventually decided to ask those members of the committee who desired to resign to reconsider their decision, but in the event of any or all declining, Messrs. RAFFILL, HUTCHINSON, MAYHEW, and COLE were nominated to fill the vacancies.



THE TEMPLE SHOW.

FIG. 151.—VIBURNUM UTILE EXHIBITED BY MESSRS. JAS. VEITCH AND SONS: FLOWERS WHITE.

best thanks are due to Dr. RADLKOFER for an opportunity of deciding the point. In his measurements of the flower ZUCCARINI appears to have included the ovary."

KEW GUILD DINNER.—The annual gathering of past and present members of the Kew Garden

staff stated that: "The resolution adopted at the last annual meeting with regard to the *Journal*, &c., was submitted to the whole of the members and the result is recorded in the *Journal* for 1908, p. 410, 'The Forward Movement.' It will be seen that a large majority voted for the resolution. In consequence of this decision, the fol-

A NATIONAL VEGETABLE SOCIETY.—A meeting was held at Essex Hall, London, on Tuesday last to consider the formation of a National Vegetable Society. Mr. A. Dean, V.M.H., presided, and amongst others present were Messrs. Owen Thomas, G. Wythes, J. Harrison, J. Lyne, S. Mortimer, E. Hobday, E. Massey, C. Foster, S. Cole, W. F. Giles (Sutton & Sons), W. Poupert, R. J. Steel, J. Cheal, J. Gibson, D. B. Crane, E. Beckett, V.M.H., E. Molyneux, W. A. Cook, W. H. Young, E. T. Cook, J. C. Newsham, and Walter P. Wright. Letters approving the scheme were read from Messrs. P. C. M. Veitch, J. Bowerman, T. Coomber, R. Sydenham, W. G. Lobjoit, W. P. Wood, W. Barnes, Sutton & Sons, J. Veitch & Sons and J. Basham. After a considerable amount of discussion Mr. E. Beckett proposed that a society be formed. Mr. C. Foster seconded, and the motion was carried. A committee consisting of Messrs. E. Beckett, A. Dean, C. Foster, E. Hobday, O. Thomas, S. Mortimer, W. Poupert, G. Wythes, R. J. Steel, and J. Lyne was formed to draw up the rules.

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.—The Exeter exhibition of this old-established society was opened on Wednesday last and will continue until Monday next. The horticultural exhibits are accommodated in a pavilion specially constructed for the purpose. There are exhibits illustrating Nature Study, and a section devoted to forestry. Near the forestry gallery demonstrations of tree-pruning will be given.

MR. J. R. JACKSON, who has for 25 years served upon the staff of *Amateur Gardening*, has resigned his position for an appointment with Messrs. CLAY & SON, of Stratford. Mr. JACKSON has received a souvenir from Messrs. COLLINGRIDGE in the form of a gold watch, bearing this inscription upon the dome: "Presented to JOHN RISHTON JACKSON by W. H. and L. COLLINGRIDGE, in appreciation of 25 years of loyal service, 1884—1909."

MR. NORMAN GILL, a former member of the garden staff at Kew and son of Mr. GILL, Tremough Gardens, Cornwall, has been selected by the Government of India to fill the newly-created post of Superintendent, Kumaon Government Gardens, Jeolikote, District Naini Tal, United Provinces, India. Since leaving Kew in 1900, Mr. GILL has had varied experiences in gardening matters in different parts of India.

INTERNATIONAL HORTICULTURAL EXHIBITION AT KASAN, RUSSIA.—An horticultural exhibition will be held at this city from June 1 to August 30 of the present year, to which foreign firms are invited. It is stated that the exhibits, or many of them, can be disposed of readily after the exhibition, more particularly Palms, Araucarias, Azaleas, Camellias and Orchids. Information may be obtained from the Horticultural Company at Kasan, which undertakes to convey the plants from the railway station and to look after their requirements during the time of the exhibition.

PRINCIPLES OF HEREDITY.—The Aldred Lecture of the Royal Society of Arts was given before the members of the Society on May 12. The lecturer, Professor DENDY, chose for his subject "The Principles of Heredity as Applied to the Production of New Forms of Plants and Animals." After a brief account of MENDEL'S work and reference to that of BATESON, HURST and BIFFEN, the lecturer gave an account, based on that in DE VRIES' little book on Plant Breeding, of Mr. BURBANK'S "productions." It is unfortunate that this account was of an uncritical kind and consisted of the usual enumeration of Mr. BURBANK'S creations. Whilst a careful investigation of these productions would be of no inconsiderable value, a mere repetition of the statements of which all practical men have heard so much cannot, in the present state of opinion with respect to certain of those statements, be considered as a useful contribution to knowledge.

MASSACHUSETTS HORTICULTURAL SOCIETY.—Part II. of this Society's *Transactions* contains, among other reports, that of the Librarian, from which we make a few extracts. The Society's library is now in receipt of 150 different periodical publications relating to horticulture published in various countries. Other classes of horticultural literature have not been neglected, and a list of additions to the library is appended. It is worthy of note that, on the occasion of last year's count, the library, one of the finest, if not actually the finest, in the world, amounted to 17,440 volumes. There is also a fine collection of trade catalogues. The report expresses the need for a new and complete catalogue. Such a work would be of great interest to students of horticultural literature the world over, especially as the last printed catalogue issued by the Society was published more than 30 years ago, and, in the meantime, the additions have been enormous. We recommend as a model the admirable catalogue of the National Horticultural Society of France, whose capable and learned librarian, M. GEORGES GIBault, has produced a classified list, such as no other horticultural library possesses. With occasional supplements, such a catalogue would be invaluable.

PUBLICATIONS RECEIVED.—*Adaptations Culturelles et Variations des Solanées Tubérifères.* Extrait du Bulletin des Séances de la Société Nationale d'Agriculture de France, Nos. de Février et Décembre, 1908. (Paris: Librairie Agricole de la Maison Rustique, 26, Rue Jacob.) Price 1 franc.—*The Philippine Agricultural Review.* (January and February.) (Philippine Islands: Bureau of Agriculture.)—*The Journal of Botany.* (May.) (London: West, Newman & Co., 54, Hatton Garden, E.C.) Price 1s. 8d.—*Kew Bulletin.* (No. 4) Containing Diagnoses Africanæ: XXVIII, Peglera and Nectaropetalum, &c.—*Birds Useful and Harmful,* by Otto Herman and J. A. Owen. (London: Sherratt & Hughes.) Price 6s. net.—*Darwin and Modern Science,* Edited by A. C. Seward. (Cambridge: University Press.) Price 18s. net.—*The Small Holders' Guide.* (London: Farm and Garden Office, 148 and 149, Aldersgate Street, E.C.) Price 1s. net.—*London and South Western Railway, 1909.* The Company's Official Illustrated Guide and List of Hotels, Boarding Houses and Apartments.—*Outdoor Carpentry,* by S. Walter Newcomb. Second Edition. (London: Dawbarn & Ward, Ltd.) Price 6d. net.—*Hints on Vegetable Culture,* by Geo. L. Macfarlan. (London: The Agricultural Offices of the Potash Syndicate, 117, Victoria Street, Westminster.)—*The Country Gentlemen's Estate Book, 1909.* Edited and compiled by Wm. Brookhall. (London: Year Book of the Country Gentlemen's Association, Ltd., 24-25, St. James's Street, S.W.)—*Thirtieth Annual Report of the Ontario Agricultural and Experimental Union, 1908.* (Toronto: Ontario Department of Agriculture.)—*Thirty-Fourth Annual Report of the Ontario Agricultural College and Experimental Farm, 1908.* (Toronto: Ontario Department of Agriculture.)

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

SCHIZANTHUSES.—During the past few years these useful and decorative greenhouse plants have been much developed and improved. I have been particularly pleased with the qualities of some of the new hybrid varieties under my care, and, being in the neighbourhood of Bristol recently, I paid a short visit to Messrs. Garaway & Co.'s nurseries at Keynsham. There I found a display of plants, which, for profusion of bloom, variety of colour, and symmetry of habit, would be very difficult to surpass. Most of the plants were in 6 and 7-inch pots; the specimens were about 4 feet high and 3 feet in diameter. So sturdy were the growths, that stakes were not needed to support them. Many of these plants were exhibited at the Temple Show, so visitors had the opportunity of seeing the wonderful specimens for which this firm has become noted. I believe that in many gardens several successional sowings are made, with very good results, but here, at Westonbirt, I only have one batch, which is raised from seed sown early in October. The plants are kept in cool quarters during the winter months, and are at their best by Easter time. They continue to flower until June is well advanced. A little feeding in the shape of a chemical fertiliser, when the pots are full of roots, is given, but great care is exercised in the watering. *S. Grahamii*, one of the older kinds, is very useful for house and table decoration. *Arthur Chapman, Westonbirt Gardens, Gloucestershire.*

SCHIZANTHUS AT WISLEY.—On p. 330 there was a notice of the *Schizanthus* now in cultivation at Wisley. May I say that this is a special strain sent to Wisley by myself? *Robert Sydenham.*

A LATE-FLOWERING NARCISSUS.—I saw in Messrs. Pearson's collection on May 17 a bed of *Narcissus* in full flower. The variety proved to be one of Mr. Engleheart's raising, and known as "Steadfast." It has a medium-sized trumpet, which is pale yellow, and broad, white corolla segments, which overlap each other, forming a very firm flower of good shape, and quite as large as the well-known *Sir Watkin*. Its constitution is vigorous, and the flowers stand up well above the foliage. *W. H. Divers.*

ACETYLENE GAS REFUSE.—I have seen refuse lime from the acetylene gas generator used on a garden for two years. I cannot recall a single bad result from its use. As an agricultural student, I feel that the pot cultures (see p. 264) were hardly fair to the lime, as in most cases the dressings were much too high for ordinary applications. The smallest of them would be next to impossible unless the garden was very small and the gas consumption high. I have calculated the following figures for three classes of soil, taking a depth of 6 inches, whereas when possible for all analytical purposes 8 inches is the usual:—

Arable Soil.		Tons required
Per cent. of Lime	Refuse applied.	per Acre.
1 per cent.	...	8.215
10 per cent.	...	82.15
20 per cent.	...	164.3
30 per cent.	...	246.45
50 per cent.	...	410.75
Clay Loam.		
1 per cent.	...	8.605
10 per cent.	...	86.05
20 per cent.	...	172.1
30 per cent.	...	258.15
50 per cent.	...	430.25
Garden Mould.		
1 per cent.	...	6.87
10 per cent.	...	68.7
20 per cent.	...	137.4
30 per cent.	...	206.1
50 per cent.	...	343.5

From these dressings, you will see that 6½ tons per acre is the smallest application—surely a very heavy dressing! I notice a large quantity of leaf-mould was used which would reduce the percentage of lime in the soil, but I think some account of it should have been taken; perhaps

the soil was already rich in lime compounds. Any artificial manures applied at this rate, slaked lime included, would, I am sure, have yielded similar results. Altogether I am afraid it will do much to discourage the use of a cheap source of lime to those who are fortunate enough to have an acetylene gas plant in a garden deficient in lime. I don't wish to say that it is as good as ground lime, because I don't think it is, the ground lime, being finer, mixes more readily with the soil; but I do think that if left on the surface like gas lime for a few weeks before use, it will do no harm. *Frank C. Atkinson.*

A NEW SAXIFRAGE.—In regard to the *Saxifraga decipiens hybrida grandiflora*, which received an Award of Merit at the R.H.S. meeting on April 20th, may I be permitted to say that I had decided to call it *Bathoniensis*, but upon application to the Floral Committee at the instance of some of the largest trade buyers, they decided that *S. decipiens hybrida grandiflora* was the better name. So I must abide by that ruling. *Thos. Kitley, Bath.*

WILDERNESSE PARK, SEVENOAKS.

(See Supplementary Illustration.)

THE county of Kent is called the Garden of England, and, assuredly, the traveller in that county who admires tree life, either of the park, garden, orchard, or hillside, will not long have passed beyond the confines of wide-spreading London before he sees ample to confirm the justness of the phrase. No matter which road is taken, the charm of the varied scenery is soon apparent, and by the time Sevenoaks is reached the conviction is established that it would be difficult to find elsewhere such delightful prospects as have met the eye within the limited compass of about a score of miles. Of the surroundings of the town of Sevenoaks itself it would be impossible to speak too highly. Here are hill and valley, superb woodland and fertile field, and, although I have traversed Kent from end to end many hundreds of times within the past 15 years, I have never seen any more beautiful region. But my present task is not so much to sing the praises of the county as to speak of some features of the garden attached to the residence of Lord Hillingdon at Wildernesse Park.

The mansion of Wildernesse is in every respect worthy of high rank among the stately homes of England, since it conveys the impression of solidity and stability, which are generally accepted as characteristics of our nation. One wing of the mansion is shown in the Supplementary Illustration to the present issue. Immediately around it are the flower gardens and pleasure grounds, and though these are not quite as extensive as might be anticipated, there is ample and suitable space for further extension.

The photographs illustrating Wildernesse Park were taken in the late summer, whereas the visit now described was made in the spring, but the features of to-day and the representations of those of other seasons of the year show that the plan of bedding is bold and striking, and in complete harmony with the mansion itself. Here are no small beds containing a dozen or more kinds of plants, but masses of colour, which make at once for conspicuous effect. Upon the occasion of the latest visit, brilliant red and yellow Wallflowers shone in the sun and diffused a delicious fragrance over the lawns, whilst, in the large border-like beds, May-flowering Tulips in clumps of one variety reared their handsome blooms 2 feet and more in height and swung to the breeze. At the south end of the mansion lies the Rose garden. Though not extensive, it is laid out intelligently, in that there is ample grass walk for comfortable locomotion. Moreover, the beauty of the different varieties is well displayed, the beds containing each but one variety. The walls of the house are freely planted with many distinct kinds of climbers, and at the time of my visit a *Wistaria* was blooming magnificently. *W.*

(To be continued.)

Royal Horticultural Society.

THE TEMPLE SHOW.

MAY 25, 26 and 27.

THIS, the greatest floral event of the year, was held on the above dates, and was another brilliant success, save only in the matter of weather.

As usual, the attendance of visitors was very large, and the tents each day soon became uncomfortably crowded. Everything, however, passed off without a hitch, and for the admirable management the thanks of all are due to the Superintendent, Mr. Wright, and the London officials, including the Secretary, Rev. W. Wilks, M.A., and his assistant, also Mr. Frank Reader and the other members of the office staff.

Orchid Committee.

Present: Harry J. Veitch, Esq. (in the Chair), and Messrs. Jas. O'Brien (hon. sec.), de B. Crawshay, R. Brooman-White, Sir Jeremiah Colman, E. Ashworth, G. F. Moore, J. Cypher, W. Boxall, H. J. Chapman, W. H. White, H. G. Alexander, H. Little, A. Dye, Stuart Low, W. Cobb, R. G. Thwaites, F. M. Ogilvie, W. Bolton, H. A. Tracy, J. Wilson Potter, Gurney Wilson, H. Ballantine, W. H. Hatcher, and C. J. Lucas.

Entering the great tent, principally devoted to Orchids, the first section of the central staging on the right hand side was taken up by a very fine group staged by Mr. Collier (gr. to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate). As is customary in groups from Gatton Park, rare species and curious hybrids of Orchids formed a feature. Several of the species secured Botanical Certificates. Of the rare species noted were *Gongora quinquenervis*, *Lissochilus parviflorus*, *Bulbophyllum Lobbi Colossus*, and other *Bulbophyllums*; *Cirrhopetalum pulchrum*, and various *Masdevallias*. Among the showy species were a good selection of varieties of *Odontoglossum crispum*, including the blotched *O. c. Surprise*, *O. c. Duchess of Connaught*, *O. c. Cooksonii*, *O. c. Mrs. F. Peeters*, *O. c. Colmaniae*, and *O. c. Margery Tyrell Giles*. Of *Cattleyas* there was a good selection, the forms of *C. Mossiae* being well furnished with good flowers. *Epidendrum Boundii*, with its orange and scarlet flowers, was very effective in the back of the group; the primrose-coloured form of *Dendrobium Dalhousieanum*, the ivory-white *Cymbidium Colmaniae*, *Spathoglottis* hybrids raised at Gatton Park, *Cattleya Pittiae*, *C. intermedia cœrulea*, good *Miltonia vexillaria*, and other finely-flowered varieties.

Messrs. SANDER & SONS, St. Albans and Bruges, came next with one of the finest and most interesting groups, in which the central figure was a noble plant of the unique *Odontoglossum crispum Solum*, with its milk-white flowers having deep claret-red labellums and an occasional blotch of the same colour on the sepals. The exhibit included several, elevated, smaller groups, with corresponding valley-like arrangements, the whole forming a pretty picture. At the central highest point was a grand plant of *Cyrtopodium Saintlegerianum*, with several strong spikes, around it being the graceful sprays of red *Odontioda Devossiana*, the bright yellow *Oncidium Marshallianum*, and other elegant species, fronted by handsome *Brasso-Cattleyas*. Other lobes were of *Cattleyas* and *Lælio-Cattleyas*, the most beautiful being the pure white *C. Dusseldorfei Undine*, *C. Niobe Sander's* variety, raised at Bruges, with large fleshy-rose and white flowers; *Lælio-Cattleya Aumonier Menley* (*L. purpurata* × *C. Vulcan*), a charming rose, white, and purple flower; and *Sophrolælia Danae superba*, a very handsome dwarf hybrid with large rose and white flowers. *Odontoglossums*, both species and hybrids, were finely represented, some of the home-raised, blotched forms of *O. crispum* running the imported varieties very close in point of beauty. Among the hybrids were several new forms, *O. tigrinum* being a remarkable, yellowish flower evenly spotted with red, and different from any other, though not so handsome as

some. *Miltonia Bleuana Mrs. F. Sander* had fine white flowers, with light rose lines on the lip. *Maxillaria Van Houtteana*, *Vanda Parishii Mariottiana*, the white *Brasso-Cattleya Queen Alexandra*, pretty *Odontoglossums* of Messrs. Sander's *O. Dreadnought* type, and some good forms of *O. Lambeauianum* were also noted.

F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), staged a splendid group, in which were many remarkable varieties; all well grown and quite worthy of the show-stand. The setting of the group was of fine *Odontoglossums*, and in the elevated parts were beautiful arrangements of *Odontoglossum crispum* and hybrid *Odontoglossums*, among which were arranged scarlet *Odontioda Bradshawie*, *O. Charlesworthii*, and other *Odontiodas*, the yellow sprays of *Odontoglossum*



THE TEMPLE SHOW.

FIG. 152.—SANSEVIERIA LAURENTII EXHIBITED BY MESSRS. SANDER AND SONS.

(See p. 351.)

luteo-purpureum Vuylstekei appearing among them. On each side were large batches of the green and white *Cyrtopodium Lawrenceanum Hyeannum*, *C. L. Marjorie*, *C. Maudie*, and *C. callosum Sanderæ*. Prominent features were made in the group by fine specimens of *Cattleya Dusseldorfei Undine*, which is one of the best white *Cattleyas*, *Trichopilia Backhousiana*, a white, fragrant flower which also told well in other groups; *Odontoglossum eximium* and *O. percultum*, of very rich colour; a clear scarlet form of *Odontioda Vuylstekeæ*, *Odontioda Devossiana*, and some specially fine forms of *Lælia purpurata*. Among species *Cattleya citrina*, with its clear yellow, fragrant flowers, and *Epidendrum falcatum* were noted.

Messrs. ARMSTRONG & BROWN, Tunbridge Wells, followed with an effective group, in which was a batch of well-flowered *Cyrtopodium glaucophyllum*, together with *Bulbophyllum barberum*, a very fine scarlet *Eophronitis grandiflora*, and the new *Odontoglossum Armstrongie*, a showy hybrid of unrecorded parentage with white flowers evenly blotched with violet. In a batch of *Brasso-Cattleyas* were

B.-C. Mrs. Francis Wellesley Leyswood variety, with blush-white flowers. Among hybrids, several plants of *Lælio-Cattleya Aphrodite alba* had fine white flowers with ruby-crimson front to the lip; *Cyrtopodium callo-Rothschildianum* had a fine spike of four flowers; *Cattleya Skinneri Temple's* variety showed it to be the finest coloured variety of the best old form of *C. Skinneri*; the pure white specimen shown being also of the same type; *Dendrobium nobile virginale* was shown in several fine specimens; *Odontoglossum crispum roseum giganteum* was a noble flower. A pretty effect was made in the group by the arrangement of scarlet and crimson *Masdevallias* in the grotto-like recesses between the elevated portions.

Messrs. HUGH LOW & Co., Enfield, staged a group in which the forms of *Cattleya Mendelii* and *C. Mossiae* were specially good. With them were *Cattleya Skinneri alba* and other *Cattleyas*, a good selection of *Cyrtopodiums*, the handsomest of which were *C. chrysotoxum Victor* and *C. Lawrenceanum Hackbridge* variety. Others noted were *Oncidium macranthum*, *O. unicolorne*, *O. pulchellum*, *O. phymatocilium*, *Gongora nigrita*, *Spathoglottis aureo-Veillardii*, &c.

Messrs. WILLIAM BULL & SONS, King's Road, Chelsea, finished the side of the central staging with a group of good *Odontoglossum crispum*, the best forms of which were *O. c. Minoru*, white, blotched with purple; *O. c. Empress*, *O. c. Florence*, and *O. c. Diadem*; a good selection of *Cattleyas*, including *C. Mendelii*, *Countess*, *Empress*, and *Diadem*; *C. Mossiae Edward VII.*, a good, bold flower, and *C. M. Coronet*. Messrs. BULL also showed good *Odontoglossum* hybrids, and three plants of their *Odontioda chelseiensis*, with cream-white flowers tinged and blotched with rosy-lilac (see fig. 153).

On the other side of the central staging Messrs. CHARLESWORTH & Co., Haywards Heath, occupied the chief position with a magnificent group, in which the only two plants entered to go before the Committee, viz., *Oncidium Charlesworthii* and *Lælio-Cattleya Eurylochus*, secured First-class Certificates (see Awards). The group contained fine representatives of all the showy species procurable at this season, and a remarkable selection of hybrids and home-raised seedlings, among which the spotted forms of *Odontoglossum crispum* were remarkable. The typical white and rose-tinted forms of *O. crispum* also were fine; *O. Othello*, remarkably rich in colour; *O. percultum* and *O. Lambeauianum* varieties, perfect in form and handsomely marked; and *O. Pescatorei Charlesworthii*, pretty form and very distinct. *Odontioda Charlesworthii*, *O. Bradshawie*, and several varieties gave a scarlet colour; *Cattleya Mendelii* and *C. Mossiae* were shown in many fine forms, including the best white *C. Mossiae Wageneri*; *Lælio-Cattleya Golden Glory*, a very fine set of *L.-C. Fascinator*, *L.-C. Feronia*, and other *Lælio-Cattleyas* were well displayed, and among the numerous good things noted were the pure white and fragrant *Trichopilia Backhousiana*, a floriferous plant and a free grower; *Cymbidium Huttonii*, *C. Devonianum*, *Aërides Houletianum*, *Vanda suavis pallida*, a very rare albino; *Ansellia africana*, *Oncidium O'Brieniana*, and a large number of other plants of interest.

The EXORS. of the late NORMAN C. COOKSON, Esq., Oakwood, Wylam (gr. Mr. H. J. Chapman), showed *Odontioda Cooksoniae* (*C. Noezliana* × *O. ardentissimum*), a pretty flower with the inner parts of the segments orange colour bordered with white, and with rosy margins; *O. Bradshawie Oakwood* variety, prettily tinged and blotched with scarlet; *Odontoglossum percultum Clive*, white blotched with violet; *O. Solon Cookson's* variety and *O. Cooksonianum* (*mirificum* × *crispum*), a large, well-formed, and heavily-blotched flower.

Messrs. JAS. CYPHER & SONS, Cheltenham, staged a good group of *Odontoglossums*, *Miltonia vexillaria*, *Cattleyas*, &c., among which were noted a fine lot of *Odontoglossum crispum*,

O. percultum, a nicely spotted hybrid between *O. cirrhosum* and *O. ardentissimum*, *Ceogyne Dayana*, *Maxillaria Sanderiana*, *Cattleya Dusseldorfei* Undine, *Oncidium Lanceanum*, *Dendrobium clavatum*, *Odontoglossum Wilckeanum rubrum*, of a pretty red-tinted form; *Vanda teres gigantea*, and other uncommon varieties, specially well grown.

Messrs. MOORE, LTD., Rawdon, Leeds, staged one of the best arranged groups in the show and one which contained many good and attractive Orchids. In the centre, high up, at the back were fine plants of the large white Moth Orchid known in gardens as *Phalænopsis amabilis Rimestadtiana*. The sunk effect on either side was very skilfully arranged with *Odontoglossums* of fine quality, a very handsomely-marked *O. Ossulstonii* named Rawdon variety, *O. percultum*, *O. crispo-Harryanum* with two spikes, some spotted *O. crispum* being among them; also brightly coloured *Odontodas*, a fine selection of large-flowered *Cattleyas*, a very handsome form of *C. Mendelii*, with purple feathered lines on the petals, being specially attractive. Others noted in this effective group were scarlet *Renanthera Imschootiana*, the pretty rose and white *Disa Luna*, *Odontioda*

Ghent, staged a selection of hybrid *Odontoglossums*, three of the best of which secured First-class Certificates (see Awards).

Mr. JOHN ROBSON, Altrincham, showed a selection of seedling Orchids, among which were four handsomely blotched *O. crispum*, raised between the varieties *Marie* and *Luciani*; also a bright scarlet *Odontioda* between *Cochlioda Noezliana* and *O. ardentissimum*. Among the other hybrids was a superb form of *O. Lambeauianum*, with very large and finely marked flowers.

RICHARD ASHWORTH, Esq., Ashlands, Newchurch, Manchester (gr. Mr. Fletcher), staged a group in which was a good selection of blotched *Odontoglossum crispum*; that named *Black Prince* having a specially clear white flower with distinct chocolate-purple blotches. *O. crispum* *Rebus*, *O. c. rubrum*, and *O. c. heliotropium* were also well shown, together with some *Cattleyas*, and a very fine plant of the blue *Dendrobium Victoria Regina* with many flowers, for which a Cultural Commendation was awarded.

Mr. Reynolds (gr. to LEOPOLD DE ROTHSCHILD, Gunnersbury Park) arranged most effectively on one side of the large tent a large number of splendidly-grown plants of *Vanda teres*, literally

yellow, the front blotched with brown and suggesting *O. Marshallianum*.

Laelio-Cattleya Eurylochus (*Schofieldiana* × *Lady Miller*), from Messrs. CHARLESWORTH & Co. A pretty novelty, with flowers of good shape and of a glowing orange tint shaded with bronze. The lip is light ruby-crimson and the tube yellow. The spike bore four flowers.

Odontoglossum mirum Emperor of India (*Wilckeanum* × *crispum*).—A large flower of fine shape and substance, white, heavily blotched with purple.

Odontoglossum Aglaon (*Vuyksteke* × *cximum*).—In form and colour nearest to the pretty *O. Vuyksteke*, and with the well-formed, shield-shaped lip of the latter species. The ground colour of the flower is white, but the surface is almost covered with reddish-orange brown blotches, with a crimson glow in places. Lip white, with chestnut-red blotches.

Odontoglossum Princess Victoria Alexandra (parentage unknown).—A handsome variety with flowers of an intense claret-red, with silver-white margins.

The above three *Odontoglossums* were shown by Mons. CHAS. VUYLSTEKE, Loochristy, Ghent.

AWARD OF MERIT.

Cattleya Mossiae Gatton Park variety, from Sir JEREMIAH COLMAN, Bart., V.M.H. A very pretty form of a soft shade of rose-pink, with broad segments, the slightly decurved petals showing remarkable development. Lip broad, marbled with violet-purple, the crimped margin, silver-white.

BOTANICAL CERTIFICATE.

Bulbophyllum lemniscatoides, from Sir JEREMIAH COLMAN, Bart. A singular species from Java, figured in the *Gardeners' Chronicle*, January 30, 1909, p. 68. The flowers are in a nodding raceme, nearly black with silvery, hair-like appendages, which in the plant shown had not had time to develop fully.

Gongora quinquenervis, from Sir JEREMIAH COLMAN, Bart. The flowers are produced in elegant sprays, insect-like in form and of a deep red brown colour.

Sigmatostalix Eliae (Rolfe), from Mr. J. BIRCHENALL, Alderley Edge. A charming new species of small growth, with a slender raceme of yellow flowers spotted with red, the stalked lip with a broad blade being very peculiar.

Oncidium Retemeyerianum.—A dwarf, thick-leaved species, with a straggling spike of fleshy flowers spotted with brown, the curious labellum being claret-coloured. From Mr. J. BIRCHENALL.

BEGONIAS.

Messrs. BLACKMORE & LANGDON, Twerton Hill Nursery, Bath, showed tuberous-rooted Begonias of remarkably fine quality; the plants were not arranged too thickly, and hence their full beauty was displayed. The exquisite shades of colour seen in the varieties are probably unsurpassed in any flowers, tones of pink, salmon and crimson being especially pleasing. The blooms were very large and remarkably fresh in appearance. A selection of the best kinds in the exhibit includes *Marie Nicholas* (salmon), *Duchess of Portland* (orange-red), *Mrs. P. Clowes* (rosy-salmon), *Avalanche* (white), *Pink Pearl*, *Mrs. W. L. Ainslie* (yellow), *Mrs. D. Paterson* (very pale yellow with rose edge), and *Millicent* (salmon). Overhanging baskets contained drooping varieties, the pendant growths terminating with dense bunches of flowers. These included *Gladys* (red), *Mrs. Bilkey* (orange-salmon), and *Carminea* (carmine-rose).

Messrs. JOHN LAING & SONS, Forest Hill, London, also showed a batch of tuberous-rooted Begonias, having many choice kinds in small-flowered but well-coloured examples.

Messrs. T. S. WARE, Feltham, exhibited nearly 300 plants of tuberous-rooted Begonias of their well-known strain. The group, as a whole, was very effective, and although these flowers are somewhat stiff in appearance, their colouring is exquisite, and, viewed in a mass, remarkably effective. There were considerable numbers of seedlings, the majority of excellent quality, and certainly admirable as bedding subjects. Amongst the named kinds we noticed *Miss Fairlie Harmer* (reddish-scarlet), *Mrs. A. P. Brandt* (almost white, with a pale rose suffusion), *Patrick Ainslie* (crimson, and with pretty crimped petals), *Mrs. Whitelaw Reid* (salmony-pink and a white edge),



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FIG. 753.—ODONTIODA CHELSEIENSIS EXHIBITED BY MESSRS. BULL AND SONS.

(See p. 347.)

Bradshawiae, with its parent the scarlet *Cochlioda Noezliana*, *Trichopilia Backhousiana*, *Oncidium Kramerii*, *O. Batemannianum*, *Epidendrum Wallisii*, *Cypripedium caudatum*, *Vanda pumila*, and *Dendrobium atro-violeaceum*.

His Grace the Duke of MARLBOROUGH, Blenheim Palace, Woodstock (gr. Mr. Hunter), showed a group in which were a good selection of *Laelia purpurata*, *Cattleyas*, finely-flowered *Dendrobium thyrsoiflorum*, a splendid specimen of the pure white *Chysis bractescens* with two spikes, *Miltonia vexillaria*, *Odontoglossums*, &c.

Mrs. WOOD, Moorfield, Glossop (gr. Mr. W. T. Gould), showed a group of well-grown Orchids, the central plant in which was a fine specimen of *Cymbidium Lowianum* with ten spikes. With it were a selection of *Odontoglossums*, *Cattleya Mossiae*, *Laelio-Cattleya highburiensis*, *Laelia Latona*, *L. tenebrosa*, and *Phalænopsis Schilleriana*.

Messrs. STANLEY & Co., Southgate, showed a small group of *Cattleya Mossiae*, which included a fine plant of *C. M. vestalis*, white with coloured lip, and *C. M. Thompsonii*, a pretty, bluish-tinted form; also the white *Laelia purpurata* *The Queen*.

Monsieur CHARLES VUYLSTEKE, Loochristy,

covered with their large, deep rose-coloured flowers. Probably such a fine lot, so well arranged, has not been seen before, and it is highly creditable to Mr. Reynolds that he should for so many years continuously and successfully grow this fine old species.

Messrs. JAS. VEITCH & SONS, King's Road, Chelsea, staged a neat group of *Cattleyas*, including the white *C. Mrs. Myra Peeters*, *Disa Luna* with five spikes, good *Odontoglossum crispum*, *Oncidium Marshallianum*, &c. The Orchids were arranged in the centre of a large group of foliage plants, with handsome-leaved *Bertolonias* interspersed between them.

R. E. CHALMERS, Esq., Aveling, Bromley, sent *Dendrobium lituiflorum*.

AWARDS.

FIRST-CLASS CERTIFICATE.

Oncidium Charlesworthii, from Messrs. CHARLESWORTH & Co., Haywards Heath. A very handsome, large-flowered *Oncidium* of the *O. crispum* section, and probably a natural hybrid of that species. Its broad sepals and petals are of a deep chestnut-brown, with slight, wavy transverse lines, the base of the lip being bright

Mrs. John Brinsmead (cream colour), Mrs. Arthur Hill (crimson-scarlet), and Countess of Dartmouth. All those mentioned were big plants, with large, bold flowers.

Decorative plants of Begonia hybrids were shown by FRANK LLOYD, Esq., Coombe House, Croydon. They were labelled *Begonia Lloydii*. Some were in baskets, for which mode of display they are especially adapted.

CARNATIONS.

In the large Orchid tent a bright corner exhibit was made by Messrs. WM. CUTBUSH & SON, Highgate, London, N., with Carnations in conjunction with Roses (see fig. 154). These highly decorative plants were both finely shown, the Carnations being especially pleasing. These latter flowers were admirably arranged, some in large mounds. Notable varieties were Lady Coventry, Robert Craig, Enchantress, White Perfection, and Lord Rosebery.

Another excellent exhibit of Carnations was made by Mr. W. H. PAGE, Tangley Nurseries, Hampton. He showed them in his usual superb

Mr. C. ENGLEMAN, Saffron Walden, showed popular varieties in excellent condition, trails of Asparagus being freely utilised in the display.

Messrs. HUOH Low & Co., Bush Hill Park, Enfield, exhibited a remarkably fine and varied group, having such beautiful kinds as Winsor, Britannia, Afterglow, Enchantress, and Black Chief in splendid condition.

A fine assortment of well-grown flowers was staged by Mr. A. F. DUTTON, Bexley Heath.

Other exhibitors of Carnations as cut blooms were Messrs. T. S. WARE, LTD., Feltham; Mr. JAMES GREEN, March; Mr. C. F. WATERS, Balcombe, Sussex; Mr. C. H. HERBERT, Birmingham; and Mr. W. H. LANCASHIRE, Guernsey.

CALADIUMS.

Although these plants are not so extensively exhibited at this show as in former years, there were some well-grown plants shown, notably a very fine exhibit by Messrs. JOHN PEED & SON, Norwood. The plants were large and their colouring splendidly developed. Among the more noticeable varieties were Diamantina, green

Viticella type or the smaller-flowered rubella of the Jackmanii class appealed most to us. The double-flowered Venus Victrix was especially effective shown as a climber.

A group of these showy flowering plants was also staged by Messrs. GEO. JACKMAN & SON, Woking Nursery, Surrey. The plants were trained in a pyramidal or globular manner, the growths being entwined, so that the flowers appeared as though on dwarf bushes. The assortment of colours was varied; perhaps the most pleasing was the comparatively small-flowered *G. Jackmanii rubra*; the petals of this variety are of a wine shade. Others of merit were *Ville de Lyons*, carmine-red; *Fairy Queen*, white with rose suffusion; *Nelly Moser*, one of the best of the large-flowered type; *Lord Neville*, heliotrope; and *Marie Boisselot*, the best of the white-flowered kinds.

RHODODENDRONS.

A charming display of Rhododendrons was made by Messrs. JOHN WATERER & SONS, LTD., Bagshot, Surrey. The beautiful *Pink Pearl* was



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FIG. 154.—MESSRS. CUTBUSH'S GROUP OF CARNATIONS AND ROSES.

style, with tall epergnes of Lilliums and banks of Roses intermixed. The group also contained Pelargoniums and pink-flowered Astilbes.

Messrs. BELL & SHELDON, Guernsey, showed superb examples of the perpetual-flowering Carnation, the colours being exceptionally fine. The arrangement was excellent.

THE AMERICAN CARNATION NURSERY, Sawbridgeworth, staged a bright exhibit of popular varieties, tall stands being requisitioned for their display.

Mr. H. BURNETT, St. Margaret's, Guernsey, made a very bright group, having a selection of the best kinds, all effectively displayed.

An attractive group of Carnations was seen in Messrs. R. H. BATH & Co.'s exhibit of these flowers adjoining their display of Tulips.

Mr. C. W. BREADMORE, High Street, Winchester, showed Carnations in conjunction with their group of Sweet Peas.

Mr. H. MORTIMER, Farnham, had a pleasing group in which the flowers were arranged in tall receptacles.

with rose maculations and silvery blotches; Sir Oswald Moseley, a fine shade of red with green margins; John Peed, one of the largest and most elegant, the colour being rich velvet-green merging to red in the centre and with red veins; Candidum, pure white with green tips; Henry Lovatt, with paler maculations and rose-coloured ribs and centre; a very large plant of Marquis of Camden; Silver Queen, of palest colour, faintly tinted with green; W. E. Gladstone, Mrs. Tilton, Oriflamme, and Triomphe de Comte, the last-named being bright red.

CLEMATIS.

Messrs. RICHARD SMITH & Co., LTD., St. John's Nurseries, Worcester, showed large flowering Clematis, some as balloon-trained and others more naturally growing as climbers on Bamboo supports. A few Rambler Roses at the back of the group showed how pleasingly the Rose and Clematis may be combined for decorative purposes. The showiest variety was the heliotrope-coloured Sensation, but those of the

feature of the group, there being numerous large plants of this peerless variety, all magnificently bloomed. In addition, were other smaller but equally beautiful varieties, such as Marquis of Waterford, shown as a standard plant; and Lady Clementina Walshe, a pale flower of large size, suffused with rose and dotted with yellowish-green.

Messrs. R. & C. CUTBERT, Southgate Nurseries, Southgate, exhibited a large group of hardy Azaleas. Prominent among the group were standards of *R. occidentalis exquisita*, the colour being pale, with lemon-spotted upper petals; Florodora, a large-flowered variety with salmon-red flowers; the single Ghent Azalea Fanny, also Comte de Kerchove; the double Ghent Azalea Raphael de Smet, of blush tone, and Nancy Waterer, yellow.

Mr. CHAS. TURNER, Slough, showed pyramidal-trained plants of Rhododendron (*Azalea*) indicum. The plants were not so well flowered as those seen earlier in the year; still they were very decorative subjects.

MISCELLANEOUS GREENHOUSE PLANTS.

Messrs. H. CANNELL & SONS, Swanley, Kent, staged varieties of Phyllocacti, a row of the pretty, pink-flowered German Empress variety occupying the front. Among the larger kinds were Schlimmii, Henry Cannell, Teutonia (yellow), Dr. Herum (pink), Leopold, and Croisali. Adjoining these plants was a batch of Fuchsia splendens in variety; Begonia nitida alba forming a suitable background to the Fuchsias. Plants of the new American Pillar Rose, with their large bunches of single flowers of a rose-pink shade, were prominent (see fig. 156). Messrs. CANNELL & SONS also showed a magnificent group of Cannas, in all 160 plants, in 50 varieties. Among the more elegant varieties were noticed Ch. E. Hodel (crimson), Frau G. Borsig (deep rose), Goethe (yellow and

(Amaryllis), the plants being in especially good form for so late in the season. A feature of the exhibit was the sturdy, dwarf character of the specimens, all of which showed excellence of culture. Many of the flower-stalks bore four and sometimes five individual blooms. There were over 100 plants in almost as many varieties. Those of the Nestor type—that is, crimson, with white tips—were especially good; others of note were Admiral Togo (rose-cerise), Picotee (the ground of this variety is white, the edge being reddish), Hercules, Empress (crimson), and Chiron (crimson).

Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea, showed an extensive group of greenhouse flowering plants, in which Cinerarias were the more important subjects, including the variety Feltham Beauty. Hybrid Gerberas

Messrs. JAMES CARTER & Co., High Holborn, London, staged a very pretty exhibit in the long, narrow tent. They furnished the corners on either side of the entrance with bold masses of Calceolarias and Cinerarias. At the back of the Calceolarias were some floriferous plants of Schizanthus, whilst a few of the new coloured Spiraes were utilised at one of the corners. A considerable portion of tabling was utilised by this firm to display greenhouse flowering plants that are usually raised from seeds. They had some remarkably fine Cinerarias, showy Schizanthus, some as basket plants suspended from iron supports, which were entwined with greenery, a pretty feature; also good strains of Petunias and Gloxinias, the latter plants being remarkably well cultivated. The pretty Delphinium "Blue Butterfly" was conspicuous, also a selection of popular varieties of perpetual-flowering Carnations. The whole group demonstrated what a wealth of beautiful flowering plants can be easily raised from seeds.

Messrs. SUTTON & SONS, Reading, had an excellent group in the largest tent, where it occupied the whole of one of the ends. The various subjects were magnificently in flower, and the general design was pleasing, consisting of a large central bay with two smaller ones on either side. Pyramidal-trained plants of Clarkia pulchella were remarkably effective, and we have never before seen this pretty annual better shown. Herbaceous Calceolarias were remarkably fine, as were Schizanthus in variety and Nemesia strumosa. The largest central bay was comprised almost entirely of beautiful Cinerarias, and prominent in the front was an unnamed variety which may prove to be a new species. Two of the bays were devoted to Calceolarias of the large-flowering variety, intermixed with Begonias, and choice Gloxinias. Ferns, Palms, and other foliage plants were freely employed to embellish the group and as relief to an almost unbroken sheet of brilliant flowers.

Several exhibits of herbaceous Calceolarias were shown in the longest tent. VIVIAN PHILLIPS, Esq., Crofton, Orpington, Kent (gr. Mr. T. Hobbs), displayed a group of these plants, and another fine exhibit of these was made by WILLIAM NOAKES, Esq., Selsdon Park, Croydon (gr. Mr. Howarth).

The Hon. VICARY GIBBS, Aldenham House, Elstree (gr. Mr. E. Beckett), displayed a batch of Streptocarpus. The plants were exhibited in batches of mauve, white, pink, heliotrope, blush, &c.

Gloxinias were shown by Messrs. TOOGOOD & SONS, Southampton, and LOUIS VAN HOUTTE PERE, Ghent, Belgium.

Messrs. JAMES GARAWAY & Co., Durdham Down, Clifton, Bristol, displayed plants of their noted strain of Schizanthus, having magnificent specimens, literally smothered with flowers in beautiful shades of orange, rose, purple, &c.

Messrs. HUGH LOW & Co., Enfield, displayed miscellaneous greenhouse plants, making as usual a feature of Metrosideros floribunda.

Messrs. W. & J. BROWN, Stamford, showed the new double-flowered Marguerite "Perfection," also Verbenas, Heliotropes, Spiraes, Pelargoniums, and other flowering plants.

Mr. WM. ICETON, Putney, exhibited two pyramidal groups of Lily of the Valley, set in Adiantum Fern and bordered with the pleasing Caladium argyrites.

Mr. W. J. GODFREY, Exmouth, Devon, displayed varieties of Show and Fancy Pelargoniums. They were a very fine collection, notable varieties being Ruby, Black Prince, Godfrey's Success, rose-pink with dark blotches; H. S. Davy, reddish flowers with darker blotches; and Lady Decis, a very pale rose-coloured variety.

Messrs. WAYERIN & KRUYFF, Sassenheim, Holland, showed plants of the pink-flowered Astilbes (Spiraes), Queen Alexandra and Peach Blossom.

A batch of a Pelargonium named James T. Hamilton and stated to be raised from an ivy-leaved variety ("Charles Turner") crossed with "Ethel Lewis," of the Zonal section, was shown by Messrs. W. H. ROGERS & SON, LTD., Red Lodge Nursery, Southampton.

SOME CUT FLOWERS.

GERBERAS.

It will be remembered that when commenting on the late Berlin Exhibition we referred especially to a magnificent collection of hybrid Gerberas, shown by Mons. R. ADNET, Cap d'Antibes.



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FIG. 155.—M. ADNET'S EXHIBIT OF GERBERA FLOWERS.

orange), Furst Wied (deep crimson), Niagara (reddish, bordered with yellow), Meteor, Gaikwar of Baroda (a yellow ground, speckled with bright red), Dr. Marcus (reddish, with darker spotting), and Frau E. Kracht (pale salmon).

THE KING'S ACRE NURSERY Co., Hereford, showed Heliotropes in variety. The variety Mme. Marie Andre was displayed as a standard plant. Others of especial merit were Mme. Fillary (a very fragrant variety) and Lord Roberts.

Messrs. P. KER & SONS, Aigburth Nursery, Liverpool, showed their strain of Hippeastrum

showed considerable advance upon those exhibited last season. Kalanchoe flammula was conspicuous with its dense heads of reddish flowers. Another interesting subject was Amphilome Emodi; the flowers of this plant are not unlike those of Streptocarpus; they are coloured a shade of rose, with orange in the throat. A new silver-leaved Pelargonium, with pure white flowers, was labelled "Snow Queen." It should be a serviceable bedding variety. There were also many other plants, including Cannas, Streptocarpus, Lobelia tenuior, Blandfordia nobilis, and Richardia Elliottiana, with Ferns and Palms as greenery.

This gentleman showed a few of his hybrids as cut flowers (see fig. 155), arranging them at the end of the Orchid table in the large tent. The flowers were of many shades of colour, ranging from the deep red of the type through shades of pink, to quite pale forms. (See article by Mr. Lynch on p. 339.)

GROUPS OF PLANTS.

A magnificent group of exotic plants was shown by Messrs. JAS. VEITCH & SONS, LTD., King's Road, Chelsea. The exhibit embraced the finest of ornamental-leaved plants, with a batch of showy Orchids as a centrepiece. The colouring in the leaves of the Caladiums, Codiaëums (Crotons), Cyanophyllum magnificum, Anthuriums, Heliconia illustris rubricaulis, and similar plants was magnificently developed. The arrangement and blending of the various subjects were skilfully carried out, and the exhibit was freely decorated with Palms and Ferns. Among the more notable of the plants may be instanced *Alocasia argyrea*, with a sagittate leaf suffused with a metallic sheen; *A. montefontaineensis*, of dark green colour; *Dieffenbachia Jenmanii*, with zebra-like markings of pale yellow; *Aralia elegantissima* as tall plants; *Caladium Rose Laing*; *C. Louis A. van Houtte*; *Cyanophyllum magnificum*; and *Medinella magnifica*. As foils were tall *Crotons*, *Dracena Sanderiana*, and a branched inflorescence of *Oncidium Marshallianum*.

In the same tent, but on the opposite side to this exhibit, Messrs. VEITCH displayed a group of large dimensions, consisting of showy-flowered plants of a hardier nature. Plants of *Clematis*, *Roses*, *Rhododendrons*, *Wistarias*, and other floriferous subjects formed a blaze of colour, and were interspersed with rarer subjects, such as the pleasing *Clematis montana rubens*, *Andromeda speciosa*, the branches of which were crowded with white, bell-shaped flowers; *Rosa hugonis*, with pale yellow blooms; *Styrax japonica*, a very elegant shrub, shown as a standard; *Vitis flexuosa Wilsonii*, a useful and graceful climber; and *V. Henryana*, *V. armata* and *V. heterophylla variegata*. Huge bunches of blossoms were borne by plants of *Hydrangea paniculata grandiflora*, and there were others of the hortensis type with blue flowers. *Philadelphus Banniere*, as a dwarf shrub, attracted notice with its pure white blooms. We have no room to mention the large number of varieties of *Rhododendrons* and *Clematis*, which embraced some of the choicest in cultivation.

Messrs. SANDERS & SONS, St. Albans, staged a group of new and noteworthy plants, having most of the fine species which were shown by this firm at the last Ghent Exhibition and illustrated at that time in the *Gardeners' Chronicle*. We noticed the unique *Anthurium Laucheum*, *Ptychoraphis Siebertiana*, an elegant *Kentia*-like Palm; *Bilbergia Forgetiana*, the stiff leaves being ribbed with green and yellow, the latter colour predominating; *Anthurium Warocqueum*, having green, velvety leaves, 2 feet or more in length; several Cycads, notably *Bowenia spectabilis serrulata* and *Cycas Micholitzii*; *Furcroya Watsoniana*, like an American Agave, with yellow and green foliage; *Clerodendron Campbellii*, freely in flower; *Ficus australis variegata*; *Anthurium Sanderi*; *Dionea muscipula*; *Dracena Broomfieldii superba*, with elegant silver veining; *Calamus ciliaris*; *Bromelia tricolor*; and *Sansevieria Laurentii* (see fig. 152).

Messrs. WM. BULL & SONS, King's Road, Chelsea, staged a batch of ornamental-leaved plants of exotic species, including *Caladiums*, *Dracena Victoria*, *Aralia Chabrieri*, *Codiaëums* (Crotons), *Bertolonia maculata* in variety, *Filicium decipiens*, a plant with elegant, pinnate leaves, Tree Ferns, &c. In the centre of the group was a batch of *Hippeastrums*, principally scarlet-flowered varieties which attracted much notice.

A showy group of stove and greenhouse plants, all with richly-tinted foliage, was displayed by Mr. L. R. RUSSELL, Richmond. The plants included *Caladiums*, *Crotons*, *Aralia elegantissima*, *Maranta Veitchii*, *M. Van den Heckeii*, *Heliconia illustris* (beautifully barred with rose lines), *Anthurium Scherzerianum*, whose scarlet spathes added additional brightness to the group; *Alocasia argentea*, and *Cyanophyllum magnificum*, quite the handsomest in the collection, with its broad leaf of velvety green, ribbed in the most elegant manner. The assortment of *Caladiums* was varied, especially fine being the pale Silver

Cloud variety. Others shown well were John R. Box, Mrs. L. R. Russell, *L'Automne* and *Marquis of Camden*. At the back of the exhibit were tall specimens of *Dracena Sanderiana*, *Codiaëum Mrs. Luther*, and graceful *Arun-dinarias*. Mr. RUSSELL also showed a number of the handsome-leaved *Bertolonia*s, and *Sonerila argentea*, *Maranta Makoyana*, *Leea amabilis* and *Eranthemum Lindenii*, all similar-habited plants.

FERNS.

Messrs. H. B. MAY & Sons, Edmonton, had a grand exhibit. Larger specimens were employed than usual. In the centre of the group was a fine specimen of *Cibotium Schiedeii*, elevated to a height of fully 20 feet, and another of *Acrostichum aureum* was placed nearly as high. In the foreground was a grand specimen of *Polypodium Knightiae*. *Davallias* included fine specimens of *D. Fijiensis robusta*, *D. braziliense*, *D. epiphylla* and the pretty little *D. alpina gracillima*. Other choice plants noticed included *Polypodium Mayi*, *Nephrolepis Fosteri*, *N. Amerpohlii*, *N. Whitmanii*, *N. superba*, *N. todeoides*; *Platynerium Veitchii*, *P. grande*, *P. alcorni* and *P. Cordreyi* (a garden variety); also *Pteris tricolor*, *P. cretica Summersii*, and *P. Childsii*. Of *Adiantums* were shown *A. Veitchii*, *A. macrophyllum*, and *A. Farleyense*. *Gymnogrammas* included the best silver and golden coloured varieties. Messrs. MAY exhibited as a separate group in the open a number of hardy Ferns; many were elegantly crested. Plants of *Polystichum angulare* included some beautiful varieties, those of the *diversilobum* type being specially good. There were also *Osmundas* in variety, *Ceterach officinarum*, *Pteris Nicholsonii*, a remarkable variety of *P. Aquilina*, and the finest varieties of *Asplenium Filix-femina*. *Scelopendrum vulgare muricato-fimbriatum* should prove a useful garden Fern.

Messrs. J. HILL & Sons, Lower Edmonton, staged a fine group of Ferns. The plants in the background were elevated, and a tall specimen of *Cibotium (Dicksonia) Schiedeii* was one of the finest in the exhibit. A large *Osmunda gracilis*, also *Platynerium grande*, *P. Willneckii*, *P. Hillii*, and *Gleichenias* were well shown. Others of exceptional merit were *Polypodium lepidopteris sepultum*, various *Davallias*, *Onychium auratum*, *Polypodium plesiosorum*, and *Anemia tomentosa*.

Mr. H. N. ELLISON, West Bromwich, showed a number of choice little plants of *Nephrolepis Amerpohlii*, *Pteris scaberula*, *Pteris internata*, *Adiantopsis radiata*, *Lastrea lepida*, *Davilla immersa*, *Osmunda palustris Mayi*, *Davallia ornata*, *Doodia aspera multifida*, *Acrostichum crinitum*, *Goniophlebium glaucophyllum*, and many others. The group exhibited a neat arrangement, which appeared more effective even than the larger groups.

SWEET PEAS.

Several Sweet Pea specialists showed these flowers in considerable numbers. The more conspicuous groups were as follow:—Messrs. ROBERT SYDENHAM, LTD., Birmingham, had good vases of standard sorts and novelties. These included excellent blooms of the white *Spencer* and *George Herbert* varieties. Mr. SYDENHAM also showed some delightful sprays of *Lily of the Valley* from plants grown in fibre.

Another excellent exhibit of Sweet Peas was displayed by Messrs. H. J. JONES, LTD., Lewisham. The varieties represented a large assortment, and they were presented in the best manner.

Very beautiful, too, were Sweet Peas shown by Messrs. E. W. KING & Co., Coggeshall, Essex, who utilised Bamboo stands and vases to elevate the flowers. In this collection we noted *Evelyn Hemus*, *Lord Charles Beresford*, *Mrs. Wm. King*, and *Princess Victoria*, these being the more conspicuous of a very fine display.

Mr. W. BREADMORE, Winchester, had a charming group. *Etta Dyke*, *Audrey Crier*, *Princess Juliana* (pale primrose), *Dazzler*, and *Elsie Herbert* were among the best varieties.

Another fine group of Sweet Peas was made by Messrs. DOBBIE & Co., Rothesay. The flowers were particularly fine and the vases well disposed and arranged. *Dobbie's Mid-Blue*, *Earl Spencer*, *Betty Cantley*, and *Mrs. Ireland* were all conspicuous and good.

Mr. ROBERT CHAPLIN, Waltham Cross, showed a collection of the best kinds in commerce, *White Spencer*, *E. J. Castle*, *George Herbert*, and *Mrs. Collier* being a few of the more notable sorts.

Both Messrs. J. & A. CLARK, Dover, and Messrs. G. STARK & SON, Great Ryburgh, also staged these popular flowers in variety.

ROSES.

The Show was remarkable for the extra large plants of Rambler varieties, which must have been trained for several years. Rarely have finer cut blooms been observed so early in the summer, a fact for which the abundance of sunshine during the present month is mainly responsible. The sunshine has permitted the grower to afford ample ventilation, thereby increasing the substance and enhancing the tints of the petals.

Mr. GEO. PRINCE, Longworth, Oxford, showed a group of thickly-disposed Rambler Roses in pots, of which *Dorothy Perkins*, *Hiawatha*, *Lady Violet Henderson* (a white, semi-double flower), and *Lady Gay* were the more conspicuous plants.

Messrs. W. PAUL & SON, Waltham Cross, Herts., showed a great group of climbing Roses, grown as pillars, columns, weepers, &c. (see fig. 157). We noticed *Fairy* (white), *Coquette* (pink), both single-flowered; *Tausendschön*, *Stella*, *Crimson Rambler*, *Goldfisch*, and many more of the Rambler class beautifully flowered, and grand decorative subjects. The plants stood 5 to 10 feet high, and were profusely bloomed. Among these were placed H.P., H.T., and T. Roses as dwarf plants. We remarked *Lyon Rose*, *Marquis de Sinety*, a globular, canary-yellow variety that opens well, has great substance, and is not too weighty for the stalk; *Margaret*, a fine, flesh-coloured flower of nice shape, when half open it is a grand thing! *Coquina*, a pink, single Rambler, very free; *Elaine* is a prettily-formed, white T.H., and at its best when half open; *Le Progrès*, a good coat flower in colour of an orange shade with a pink suffusion; *David Williamson*, a large crimson flower, and *White Maman Cochet*.

Messrs. H. CANNELL & Sons, Swanley, made a neat display with Rambler Roses as small plants, the brilliant *Baby Rambler M^{me}. N. de Levassieur* making a fine feature as plants of 1 to 2 feet high. The new hardy "American Pillar," the flowers of which are single and of a crimson colour and white in the centre, are 4 inches in diameter. It is very free in flowering (see fig. 156). All the different Rambler varieties were profusely bloomed in this exhibit.

Messrs. W. CUTBUSH & SON, of Highgate and Barnet, employed around and as a group carpet between the plants and cut blooms of *Carnations* shown by them in a large corner group in the great marquee, a large number of Rambler Roses in crimson, white and pink varieties, and numbers of very large *Polyantha*, and *Wichuraiana* hybrids were arranged in a line at the back of the group with pleasing effect. The variety *Veilchenblau* was shown well.

Messrs. PAUL & SON, The Old Nurseries, Chess-hunt, made a great show with *Roses* of the Rambler and *Polyantha* classes, of large-sized plants, and of varied forms. The rest of their group consisted of *Roses* of varying heights and sizes. There were noted well-flowered plants of H.T. J. B. Clark (a flower of a dark crimson tint), H.T. Richmond, H.T. Friedrichsruh, H.T. Marquis de Sinety; H.T. M^{me}. de Luze, H.T. Chateau de Clos Vougeot, H.T. David Harum, H.T. Joseph Lowe, H.T. Queen of Spain (in fine form), H.T. W. Shean, the new Tea Rose *Paula* (a white bloom with a suspicion of green), *Rhea Reid*, *T. Lady Roberts*, the grand H.T. *Mrs. Aaron Ward* (an enormous bloom, very full of creamy-white, with an orange tint in the centre), and H.P. *Frau Karl Druschki* (a grand plant of this variety).

Messrs. R. SMITH & Co., St. John's Nursery, Worcester, had put a fine backing of *Crimson Rambler Roses* to their *Clematis* group.

Mr. CHARLES TURNER, The Royal Nurseries, Slough, arranged an extensive group of *Roses*—H.T.s, T.s, H.P.s and *Ramblers* in variety. We noted fine examples of *Hugh Dickson*, *M^{me}. Jean Dupuy*, *Frau K. Druschki*, *Souvenir de Pierre Notting*, *Mrs. J. Laing*, *J. B. Clark*, *M^{me}. V. Verdier*, *M^{me}. Jules Gravereaux*, and other favourite *Roses*. The display was made with standard plants of varying heights in the case of *Ramblers* and other varieties.

Messrs. FRANK CANT & Co., Braiswick, Colchester, staged many finely-bloomed Rambler *Roses*, as, for example, *Minnchaha*, *Hiawatha*, *Philadelphia*, *Austrian*, and *Copper Briars*, *Tausendschön*, *Dorothy Perkins*, &c.

The cut blooms of H.T.s, H.P.s, and T.s were of fine proportions, and in the best condition.

Mr. G. MOUNT, Canterbury, made a magnificent display of cut blooms, having bold masses of the most effective varieties. Especially good were flowers of the white Frau Karl Druschki variety.

Messrs. HOBBIES, LTD., Dereham, Norfolk, staged a group consisting principally of climbing varieties.

Messrs. BENJAMIN R. CANT & SONS, Colchester, arranged a stand of climbing and Rambler Roses, fronting which were show boxes filled with cut blooms of many of the finer varieties of H.T., H.P., &c. A

character, nor has the quality ever been so high. It is to be noted with satisfaction that the small, meaningless—and, therefore, unnatural—exhibits of rockwork of past years have given place to a more pleasing form of exhibit. The disposal of the rocks and the grouping of the plants, if not of an ideal character in all cases, were decidedly good in the main.

Among the most interesting and suggestive of Alpine and rock-garden exhibits was that from the CRAVEN NURSERY, Clapham, Lancaster. Most prominent among the best things were such species as *Daphne rupestris*, the tufts crowded with rosy blossoms, *Edraianthus serpyllifolius* major, *Haberlea rhodopensis virginalis*, Saxi-

and others. Other plants of note included *Eremuri*, hybrid Irises of several sections, *Calochorti*, *Incarvillea grandiflora*, *Ixias*, and hardy *Cypripediums*.

Mr. HOWARD H. CRANE, Highgate, had a pretty group of the *Violas* and their diminutive sisters the *Violettas*. The plants, arranged in pans, were particularly pleasing and effective.

Messrs. BAKER'S, Wolverhampton, in an extensive exhibit, displayed a large collection of *Violas*, together with a well-arranged Alpine and rock-garden exhibit, including *Dodecatheon*, *Saracenias*, *Cypripediums* in variety, *Irises* and *Saxifragas* were freely and effectively set out.

THE KING'S ACRE NURSERY Co., Hereford,



THE TEMPLE SHOW.

FIG. 156.—MESSRS. CANNELL'S EXHIBITION OF ROSES, INCLUDING THE NEW VARIETY "AMERICAN PILLAR."
(See p. 354.)

neat crimson Rose is King Cole; Prince de Bulgarie is good in tint, but the form is flat; and Mme. A. Chatenay is another flat Rose, but the colour redeems it. The bloom of J. B. Clark was likewise good in this collection.

HERBACEOUS AND ALPINE PLANTS.

Herbaceous and Alpine plants and flowers have for years past constituted one of the leading features of the Temple Show, but probably never before have there been so many exhibits of this

fraga *Aizoon rosca*, *S. a. lutea*, *S. a. flavescens*. perfect carpets of *Iris cristata*, the lovely *Aquilegia glandulosa*, *Eritrichium nanum*, *Myosotis rupicola*, *Androsace villosa*, and sheets of blossoms of *Primula farinosa*.

Of quite another pattern was the sumptuous and extensive group of hardy plants from Messrs. WALLACE & Co., Colchester. Here Lilies were in great force, splendid groups of such species and varieties as *Brownii*, *japonicum colchesteri*, *Hansonii*, *Thunbergianum* Orange Queen,

sent a capital display of hardy plants, including *Ramondias*, *Haberlea rhodopensis*, Alpine *Phloxes*, *Primula Sieboldii* in variety, *Edelweiss*, and other interesting species.

Messrs. LILLEY'S, Guernsey, had a very showy lot of the early-flowering *Gladioli*, *Ixias*, and the so-called Peacock Iris, *I. pavonia*.

Messrs. JACKMAN & SONS, Woking, exhibited an excellent display of many of the best herbaceous plants, a centre being formed of *Cypripediums*, including *C. spectabile*, *C. acaule*, *C.*

Calceolus, and *C. pubescens*. A mass of *Daphne Cneorum* in this group was particularly fine, whilst Irises, Eremuri, Globe Flowers and Lupins were freely displayed.

From Messrs. G. & A. CLARK, LTD., Dover, came a very good exhibit, *Iris tectorum album*, *I. Susiana*, and the single *Pyrethrum John Malcolm*, a fine pink flower, being prominent.

Mr. W. J. GODFREY, Exmouth, had many of his varieties of the Oriental Poppy in shades of crimson, salmon and pink.

The display of Tulips from Messrs. HOGG & ROBERTSON, Dublin, was very fine, the Darwins and May-flowering types being alike represented.

Mr. B. LADHAMS, from Southampton, brought many good hardy plants, a conspicuous feature being made of a brilliantly-coloured *Heuchera* named "Shirley." *Ostrowskia magnifica* and *Aquilegia Stuartii* were excellent.

Mr. WM. ARTINDALE, Nether Green, Sheffield, brought an excellent arrangement of Violas, with *Cypripedium macranthum*, *Mertensia primuloides*, a most distinct plant, also *Primulas* of many kinds and a large number of Alpines.

Messrs. GEO. BUNYARD & Co., Maidstone, had a most effective group of the best perennials, including *Pæonies*, Irises, Poppies, Eremuri, *Pyrethrums*, Darwin and other Tulips and *Saxifraga pyramidalis*. Many Alpine and dwarf-growing plants were staged effectively by this firm.

Messrs. GUNN & SONS, Olton, near Birmingham, had a fine bank of *Viola cornuta atropurpurea*, the mass of blossoms making quite a display. *V. cornuta* type and *V. c. alba* were staged in smaller patches to show their distinctive features.

Some very good hardy plants came from Messrs. J. CHEAL & SONS, Crawley, who had also set up a pleasing and naturally-disposed rock-garden, which was greatly admired. The planting of this left little to be desired, and large numbers of Alpines were arranged with skill.

Messrs. STORRIE & STORRIE, Glencarse, Perthshire, exhibited a capital collection of named *Polyanthuses*, some of them being very fine.

An excellent variety of Perpetual Pink, named Progress, was shown by Mr. C. H. HERBERT, Acock's Green, Birmingham, the variety possessing very long stems and well-formed flowers.

An extensive and interesting exhibit of hardy plants came from Mr. AMOS PERRY'S Hardy Plant Farm, Enfield, the group being particularly rich in Irises, *Daphne Cneorum*, Gerberas, *Phlox canadensis* Perry's variety, and Tree *Pæonies* of many showy kinds. The Cushion Irises and their hybrid allies, the *Regelio-cyclus* varieties, were here in plenty. *Iris pallida* Wm. Marshall is said to attain to a height of 5 feet. There was a remarkable wealth of material in this group and many choice and interesting plants.

Mr. H. HEMSLEY, Crawley, arranged a somewhat extensive rockwork exhibit, usefully employing a number of choice Alpines and flowering and coniferous shrubs, the *Ramondias*, *Saxifraga longifolia*, Alpine *Phloxes*, *Aubrietias*, and a delightful lot of *Iris cristata* being noted among many kinds.

Mr. M. PRICHARD, Christchurch, Hants, brought a particularly showy lot of hardy perennials, the Oriental Poppies, of which *Fringed Beauty*, *Crimson* and *Queen Alexandra* were the best, being very striking in large masses. *Iris filifolia*, a bulbous species like a large Spanish kind, was also good.

From Messrs. BARR & SONS, Covent Garden, came a very striking exhibit of Irises, *Ixias*, Tulips, Early *Gladioli*, hardy *Cypripediums*, *Pæonies*, *Pyrethrums* and Alpines, the very showy Orange Daisy, *Dimorphotheca aurantiaca*, from Namaqua, being of especial merit.

Messrs. DOBBIE & Co., Rothesay, staged in admirable fashion one of their extensive collections of tufted, exhibition and fancy Pansies, among which were many Violas cut from two-year-old plants in Essex, to show their hardness and perennial character. The *Columbines* from this firm were excellent.

Alpines and rock shrubs were nicely displayed on a small rockery contributed by the HARDY PLANT NURSERY, Guildford, the *Edraianthi*, *Anthyllus montana*, *Androsaces*, and Alpine *Phloxes* being particularly good.

Messrs. REAMSBOTTOM & Co., Geashill, King's Co., Ireland, had fine strains of *Anemones* and *Mimulus*.

Mr. G. REUTHE, Hardy Plant Specialist, Keston, surpassed himself on this occasion with a

particularly good, interesting and choice lot of Alpines and *Rhododendrons*, the latter including such species as *R. Dalhousiana*, *R. Keysii*, *R. Falconeri*, *R. Roylei* and others. The Alpines were very numerous, and among novelties we noted *Haberlea Ferdinandi Coburgii*, a pale blue and white form of merit and evidently of good growth; *Anemone sulphurea*, *Tricuspidaria lanceolata*, *Cypripedium macranthum*, *Daphne alpina* (white), *D. caucasica* (white), *Ourisia coccinea*, *Daphne Cneorum*, *Fritallaria camtschatica*, and *Tanakea radicans* were also noted in a very large collection.

Messrs. GEO. MALLET & Co., Cheddar, had a somewhat extensive display, in which Gerberas, Irises, Tulips, *Lithospermum*, and the rather distinct *Aquilegia flabellata alba* were seen.

Mr. R. C. NOTCUTT, Woodbridge, brought a showy collection, such as Globe Flowers, Lupins, Poppies, *Pyrethrums*, and the pretty *Iris Tolmieana*, which is very distinct at this season.

A rocky bank well planted with Alpine and other plants from Messrs. T. S. WARE, LTD., Feltham, contained many good things, the chief of which were *Trilliums*, *Dodecatheons*, *Cypripedium macranthum*, very fine, *Androsace Chumbyi*, *Silene virginica*, *Saxifragas* in many kinds, and *Gentians*.

Messrs. R. H. BATH, LTD., had a very showy lot of Darwin and May-flowering Tulips, each group being well represented.

Messrs. HARKNESS & SONS, Bedale, Yorkshire, had a splendid display of Globe Flowers, which showed superior cultivation, the handsome blossoms and rich colouring being very striking.

BEES LIMITED, Liverpool, had a capital lot of *Primula Forrestii*, *P. Bulleyana*, *P. cortusoides* var. *lichangensis*, and *Incarvillea Bouvalotii*.

Iris pallida dalmatica alba, from Mr. WALTER R. PRICE, Canterbury, appears to be a novelty of merit—it is said to be a sport—but it lacked size through having been brought in too early. We hope to see the plant again.

Mr. N. LOWIS, Bridgewater, showed a capital group of *Anemones*, Poppies, and other plants; Messrs. GILBERT & SON, Bourne, displayed *Anemones* in variety; Messrs. W. BULL & SONS, Tulips; and Mr. J. FORBES, Hawick, Pansies, *Phloxes*, *Pentstemons*, *Delphiniums*, and other species.

EXHIBITS DISPLAYED OUT-OF-DOORS.

Many exhibits were placed on the turf for lack of space under canvas or because of their character. Heavy designs and models of rockeries, garden pools, &c., were features more common than on previous occasions, and these, perforce, could only find a place in the open air.

Messrs. J. CARTER & Co., High Holborn, had thrown up a mound 4 feet high, inserting an imitation of a massive piece of rock at one side, and in front of this a small lake had been made and planted with water Iris, water Lilies, &c. The mound, made a week before the show, was planted over with Conifers, Japanese Maples, and the flat turf plot with Iris in bloom, *Saxifragas*, and various Alpine plants in bloom (see fig. 149).

Messrs. JAS. VEITCH & SONS, LTD., Chelsea, were perhaps the largest exhibitors of hardy flowering plants on this occasion. A large corner group was admirably filled with *Rhododendrons*, with Bay trees in the background, among which were well-flowered Pink Pearl, *R. Memoir*, and other varieties. In front of these there were placed little groups of plants in bloom, among which were *Canna J. D. Isele*, a grand flowering plant with bright crimson flowers. It is of dwarf growth, and the flowers are of great size for those of a *Canna*. As noteworthy among the tribes of dwarf plants, we observed *Eremurus*, *Laburnum Vassi*, *Actinidia chinensis*, *Wistaria sinensis*, *Weigelas*, Japanese *Acers*, *Cytisus*, *Viburnum utile* (see fig. 151), &c. The low-growing plants in the front consisted of new introductions from eastern Asia, Tibet, and Japan. There was a scarlet-flowered *Primula*, a cross between *P. Cockburniana* and *P. × Unique*; *P. sibirica*, with rosy-purple flowers borne high above the leaves; and *P. Veitchii*.

The Misses HOPKINS, Mere Gardens, Shepperton-on-Thames, constructed a rockery of Kentish ragstone, and planted many species of Alpine and other dwarf plants.

Messrs. GUNN & SONS, Olton, Warwickshire, showed the new *Viola cornuta purpurea*, the best purple variety of this plant.

Mr. AMOS PERRY, The Hardy Plant Farm, Enfield, showed boxfuls of *Lithospermum prostratum* "Heavenly Blue," a plant undoubtedly useful for its colour and dwarf habit of growth. The same exhibitor showed *Phormium tenax* in variety, *Bambusas*, *Aralia*, &c.

Messrs. HUGH LOW & Co., Bush Hill Park, Middlesex, showed *Souvenir de la Malmaison* and perpetual-flowering *Carnations* in quantity, arranged in flat hampers, with a surrounding margin of Rambler and other climbing *Roses* in much variety. These plants consisted chiefly of abundantly-flowered standards and dwarfs.

Mr. L. R. RUSSELL, Richmond Nurseries, Surrey, showed a big group of hardy shrubs and half-trees. There were *Azalea rustica*, *Rhododendrons*, green-leaved and variegated *Ivies*, Chinese *Vitis*, *Aralia Mandschurica*, *Acer polymorphum purpureum*, and others, *Clematis*, *Wistaria sinensis*, and variegated trees of many species.

Messrs. W. FROMOW & SONS, Sutton Court Nurseries, Chiswick, exhibited *Acers*, of Japanese and other species, in abundance.

Mr. R. C. NOTCUTT, The Nursery, Woodbridge, was an exhibitor on a rather large scale of flowering and ornamental-foliaged shrubs and trees such as *Azalea mollis*, *Kalmia latifolia*, *Philadelphus Lemoinei Couquete* (a largish white flower and of slender habit), *Weigela Mont Blanc* (white-flowered), *Erica australis*, *Fabiana imbricata*, *Deutzias*, and *Sambucus racemosa serratifolia aurea*, a pretty form of golden Elder.

Messrs. JOHN WATERER & SONS, LTD., Bagshot, exhibited hardy *Rhododendrons* in large numbers, of which mention should be made of the varieties *Duchess of Connaught*, *Lady Hillingdon*, *Baroness Henry Schröder*, *Pink Pearl*, *Lady Clementina Walsh*, *Doncaster*, *Cynthia*, and *Viscount Powerscourt*. Some of the plants were of large size, and every one of them carried fine heads of flowers. This floral display was well set off by the addition of Japanese *Acers*, *Birches*, and a few *Conifers*. Some nice examples of *Viburnum plicatum* in full flower were remarked in the collection. Plants of *Kalmia latifolia* were shown in capital flowering examples.

Messrs. THOMAS CRIPPS & SON, LTD., The Nurseries, Tunbridge Wells, showed a large collection of *Acers*. Good examples of *Rhododendron Pink Pearl* came also from this firm.

Messrs. PULHAM & SON, 71, Newman Street, Oxford Street, W., showed a method of constructing a rockery out of Kentish ragstone, the bold effect of the large masses of this stone and its admirable adaptability for making artificial rockeries were apparent.

Topiary work in Bay trees was exhibited in numerous examples by Messrs. W. CUTBUSH & SON.

Messrs. J. PIPER & SON, Bishops Road, Bayswater, were smaller exhibitors of this sort of garden decoration.

Messrs. PAUL & SON, The Old Nurseries, Chess-hunt, exhibited *Catalpa pulverulenta*, the leaves of which are spotted densely with white; *Magnolia parviflora*, having an expanded flower; *Lilacs Belle of Nancy*, *Marie Legray*, and *Souvenir de Louis Späth*.

Messrs. WALLACE & Co., Colchester, had constructed an Alpine pool with some ponderous masses of sandstone, very realistic and valuable as an example of good workmanship. The sides were planted with quite a number of suitable plants.

Messrs. BARR & SONS, King Street, Covent Garden, showed pigmy trees. Some of these were new in form and treatment.

Messrs. H. B. MAY & SONS, The Nurseries, Upper Edmonton, showed some standard-trained *Cape Pelargonium Clorinda*, also *Heliotropes* and *Fuchsias*, and *Verbenas*, *Heliotropes*, *Lobelias*, *Pelargoniums*, *Salvia Zurich*, full of flower; and *Ferns* in pots.

Messrs. J. CHEAL & SONS, Crawley, Sussex, made a large show with variegated-leaved shrubs and trees; *Azalea mollis*, *Rhododendrons*, *Clematis*, *Spiræa*, *Aralia mandschurica variegata*, *Acer palmatum*, and others, various *Lilacs*, *Vitis* from China, &c.

Messrs. H. LANE & SON, The Nurseries, Great Berkhamsted, made an exhibit of *Azalea mollis* *Rhododendrons*, including *Doncaster*, Mrs. Hunnewell, Mrs. W. Bovill, *George Peabody*, *Sefton*, and *Pink Pearl*.

Messrs. W. CUTBUSH & SON, Highgate, had made a large rockery and a pool of irregular shape—all very naturally designed.

Messrs. J. BACKHOUSE & SON, LTD., York, exhibited a specimen on a large scale of their art of rockery construction. The design was pleasing, and the plants employed were such as the artistic gardener would select for this purpose.

Messrs. CARTER, PAGE & Co., London Wall, E.C., showed Violas, Saxifragas, Spargania, Arenaria, Iberis, Erigeron aurantiacus, Sedum, &c. The whole was surrounded on three sides with tall plants of *Clorinda* Pelargonium.

Mr. CLARENCE ELLIOTT, Six Hills Nursery, Stevenage, exhibited rock plants in much variety on a bench covered with pieces of rock.

Mr. MAURICE PRICHARD, Nurseries, Christchurch, had constructed a small table rockery

AWARDS.

AWARDS OF MERIT.

Rose Coquina.—A Wichuraiana variety having large trusses of single flowers with prettily cupped petals. The plant is of vigorous habit, sending forth numerous long pendent shoots from the ends of which the trusses of flowers are borne. The colour is a shade of pink tipped with rose. Shown by Messrs. WM. PAUL & SONS and Messrs. HOBBIES, LTD.

Rose Margaret.—A hybrid Tea variety of large size. The colour is a delicate pink, the tone being deepest in the centre. Shown by Messrs. WM. PAUL & SONS.

Rose Mrs. Taft.—A Polyantha variety, as exhibited, about 2 feet high. The stiff shoots are crowned with bunches of double flowers that are

size and of the type known as rose-centred. Shown by Messrs. BLACKMORE & LANGDON, Twerton Hill Nursery, Bath.

Carnation Carola.—A large, clove-coloured variety, possessing considerable fragrance, the perfume resembling the Clove Carnation. The habit is vigorous and the flower-stems very long. Shown by Mr. C. ENGLEMAN, Saffron Walden.

Ficus australis variegata.—A number of plants, each about 8 inches in height, were displayed in a basket. The foliage is smaller, but shaped similarly to that of *F. elastica*, and it is densely variegated with gold. Shown by Messrs. SANDER & SONS, St. Albans.

Ptychographis Siebertiana.—A Palm resembling an elegant plant of *Kentia Fosteriana*. It



THE TEMPLE SHOW.

FIG. 157.—GROUP OF ROSES SHOWN BY MESSRS. W. PAUL AND SON. (See p. 351.)

about 20 feet long and 6 feet wide, in which there were small rocky pools and "pockets" for holding Alpines. We remarked *Calceolaria plantaginea hybrida*, *Aster alpinus ruber*, *Anthemis Aizoon*, *Thalictrum adiantifolium*, *Scutellaria indica japonica*, *Trillium stylosum* and *T. ternatum*, and *Primula Bulleyanum*.

Floral Committee

Present: W. Marshall, Esq. (Chairman), and Messrs. E. H. Jenkins, Chas. Dixon, Wm. Howe, J. F. McLeod, C. R. Fielder, N. F. Barnes, W. G. Baker, John Green, C. Blick, C. E. Shea, G. Reuthe, R. Hooper Pearson, H. J. Jones, T. W. Turner, W. J. James, Wm. Cuthbertson, F. Page Roberts, J. W. Barr, Herbert J. Cutbush, W. P. Thomson, Chas. T. Drnery, W. Bain, George Gordon, and A. Kingsmill.

a deep shade of rose. Exhibited by Messrs. HUGH LOW & Co.

Rose American Pillar.—A charming pillar variety with relatively large, single blossoms borne in big clusters. The colour is rose-pink, the base of the petals being white. A variety that is sure to become popular. Exhibited by Messrs. H. CANNELL & SONS.

Rose Jessie.—A dwarf Polyantha Rose, somewhat similar to the well-known Mme. N. Levassour variety. The petals are a beautiful crimson tint. The plant is very suitable for pot-culture. Shown by Messrs. HENRY MERRYWEATHER & SONS, LTD., Southwell, Notts.

Begonia Pink Pearl.—An exquisite variety, the petals being soft rose-salmon. The plant was especially vigorous and had no fewer than eight fully-expanded blooms. These are of the largest

is described and illustrated in the issue for April 25, 1908, p. 257. Shown by Messrs. SANDER & SONS.

Marquerite White Perfection.—A double-flowered variety of the common Marguerite. The disc florets are white and elongated slightly, but they retain their tubular form, and give the flower the appearance of an "Anemone" centred flower such as is seen in some Pyrethrums and Chrysanthemums. Shown by Messrs. G. & A. CLARK, LTD., Dover.

Iris hybrida "Sir Trevor Lawrence" (*I. iberica* × *I. pallida dalmatica*).—The standards and falls of this fine plant are of a deep mauve colour, the former segments having very fine-pencilled white markings towards the outer edges. The falls, which are more heavily reticulated, are white near their bases.

Iris hybrida "Sir Dighton Probyn" (I. iberica x I. pallida dalmatica).—A plant of fine stature and distinction. The standards are of a rose-mauve tone, faintly yet freely lined with white. The falls are of purplish crimson with dark signal blotch. The style branches are of a brownish-crimson shade. This, and the preceding variety are hybrids raised by the late Professor Michael Foster. Both were shown by Mr. AMOS PERRY, Enfield.

FRUIT.

Fruit cultivation was represented less extensively than usual. This is unfortunate, since the vast number of persons who visit the Temple shows are too apt to assume that fruit culture is either at a low ebb in this country or that the culture of flowers dominates all other.

Messrs. RIVERS & SON, Sawbridgeworth, had a group of fruit trees in pots, the kinds including Peaches, Nectarines, Cherries, and Grapes. There were 40 trees in all, showing that fine form and abundant fruiting which invariably characterise the products of this firm. The Peaches were Duke of York, practically the best early forcing variety, and Peregrine. The fruits on both were of good size and rich in colour. The Nectarines were Cardinal and Early Rivers, both well-known varieties, and there were six trees of a new variety not yet named, but here numbered Seedling 101. This has large, smooth, and glossy fruits of a rich vermilion hue, and very handsome. The trees fruit freely. The seed parent was Early Rivers, the pollen parent being a white-flowered seedling raised by this firm, but not put into commerce. More will no doubt be seen of this new variety. The Cherries were Early Rivers and Frogmore Bigarreau.

Messrs. G. BUNYARD & Co., Maidstone, staged a large collection of remarkably well-preserved Apples, in all some 60 dishes, a central dish of 12 very fine, richly-coloured Uvedale's St. Germain Pears, and, with these, two trees in pots of the black Cherry, Guigne d'Annonay. Amongst kitchen Apples very fresh were Annie Elizabeth, Tibbett's Pearmain, Belle du Bois, Calville des Femmes, Newton Wonder, Dumelow's Seedling, Smart's Prince Arthur, Lane's Prince Albert, Belle Pontoise, and Bess Pool. Of dessert varieties, specially good were Lord Hindlip, Carmen Seedling, Baldwin, Allen's Everlasting, Ben Davies, Calville Maligre, McDindoe's Russet, Profusion, Fallawater, King of Tompkins County, Wagener, Calville Rouge, and others.

Messrs. LAXTON BROS., Bedford, set up a very attractive collection of forced Strawberries, both plants in fruit and gathered fruit. They had seven large baskets of Royal Sovereign and Bedford Champion exceptionally good; Cropper, a long, narrow fruit, having unripened points; Epicure, much resembling British Queen; and Rival. The pot plants were Bedford Champion and Reward. There were also dishes of Peaches Duke of York and Hale's Early, capital fruits; and Nectarine Cardinal.

Messrs. J. & F. CHATFIELD, Southwick, Sussex, had two baskets, each containing 60 very fine fruits of Royal Sovereign Strawberry, also several fruiting plants.

VEGETABLES.

In this important section the honours of the show rested with Messrs. SUTTON & SONS, Reading, who set up a collection that not only commanded the fullest attention, but came as a welcome change to visitors, whose eyes had been filled with such repeated masses of flowers. The firm, as usual, set up a collection of forced Potatoes, in 40 dishes, pleasingly arranged, each dish being garnished with purple Beech foliage, thus presenting a striking contrast to the white skins of the tubers. The white varieties included Epicure, Centenary, Early Regent, Harbinger, White City, Ninetyfold, Midlothian Early, Abundance, Sharpe's Victor, and Duke of York. Among the coloured varieties were Early Rose, Beauty of Hebron, Lord Tennyson, King Edward VII., The Dean, Flourball, Reading Russet, and Mr. Bresee. The general vegetables, also effectively grouped, included Cabbages Flower of Spring (very fine) and April. Cauliflower Magnum Bonum, Broccoli Late Queen (a centre pyramid), Lettuce Golden Ball (in several baskets), fine Peas Duchess of York, Duke of Albany, Early Giant, and Sutton's Ideal (a blunt-ended pea). The French Beans were of the climbing Princess of Wales; Carrots Champion Scarlet and Favourite; Cucumbers Matchless and Sutton's Market; Tomatos Best of All, Winter Beauty,

and the yellow Sunbeam; Potato May Queen; there were dishes of excellent Twentieth Century Mushrooms; numerous Radishes; and bundles of outdoor stems of the Sutton Rhubarb, very massive and of deep colour.

Mr. S. MORTIMER, Rowledge, Farnham, showed in shallow boxes some superb Cucumbers of the varieties Lord Roberts (from 16 to 18 inches long), Improved Telegraph, Tender and True, Express, and Bountiful (new), fruits very dark green, smooth and handsome, averaging 14 inches in length. Also six dishes of Tomato Sunrise, showing its great productiveness, as well as the beauty of its fruits.

Six large bundles of Giant Asparagus set up on a carpet of Parsley, came from Mr. STEPHENSON, Burwell, Cambridge. The stems were 10 inches long and very fine.

From THE THATCHAM FLOWER FARM, Newbury, Berks., came a collection rather too closely packed to make an effective group. It included long white Turnips, Paris White Cabbage, and green Cos Lettuces; French Breakfast and other Radishes, Early Gem Carrots, Cauliflowers, and Cabbages.

Mr. THEO. F. DAWES, Syderstone, Norfolk, set up a single root—some 2 feet through—of his Giant Rhubarb Dawes's Challenge, carrying a large, solid body of stems 4 feet in length, the whole weighing 168 lbs.; also stems from outdoors of several varieties.

Awards made by the Council.

Gold Medals.

J. Charlesworth & Co., Haywar's Heath; W. Cuthbush & Son, Highgate; Jas. Veitch & Sons, Chelsea; R. Wallace & Co., Colchester; Wm. Paul & Son, Waltham Cross; Paul & Son, Chestnut; H. B. May & Sons, Edmonton; H. Burnett, St. Margaret's, Guernsey; J. Waterer & Sons, Ltd., Bagshot.

Silver Cups.

Sir J. Colman, Bart., Gutton Park, Surrey (gr. Mr. J. Collier); Leopold de Rothschild, Esq., Gunnersbury Park, W. (gr. Mr. G. Reynolds); Mrs. Kershaw Wood, Glossop, Derbyshire (gr. Mr. J. Gould); Armstrong & Brown, Tunbridge Wells; Sander & Sons, St. Albans; J. Veitch & Sons, Chelsea; L. R. Russell, Richmond, S.W.; J. Carter & Co., Holborn, W.C.; Barr & Sons, Covent Garden, W.C.; G. Jackman & Son, Woking; A. Perry, Enfield; G. Reuthe, Keston; H. Cannell & Son, Swanley; J. Cheal & Sons, Crawley; Bell & Sheldon, Guernsey; F. Cant & Co., Colchester; the Craven Nursery, Clapham, Lancaster; G. Mount, Canterbury; American Carnation Nursery, Sawbridgeworth; T. Cripps & Son, Tunbridge Wells; Alex. Dickson & Sons, Newtownards; Hobbies Ltd., Dereham; J. Backhouse & Son, York; R. & G. Cuthbert, Southgate, N.; R. P. Ker & Son, Liverpool; W. Cuthbush & Son, Highgate; Sutton & Sons, Reading; T. Rivers & Son, Sawbridgeworth.

Silver-gilt Flora Medals.

F. Lloyd, Esq., Coombe House, Croydon (gr. Mr. M. Mills); R. Adnet, Esq., Cap d'Antibes, France; J. W. Moore, Ltd., Rawdon, Leeds; M. Prichard, Christchurch, Hants.; Bakers, Wolverhampton; T. S. Ware, Feltham; Blackmore & Langdon, Bath; R. H. Bath, Wisbech; H. Low & Co., Enfield, N.; C. Turner, Slough; B. R. Cant & Son, Colchester; A. F. Dutton, Iver, Bucks; J. Peed & Son, W. Norwood; Mr. C. F. Walters, Balcombe; J. Hill & Son, Lower Edmonton; W. Fromow & Son, Chiswick.

Silver-gilt Knightian Medals.

G. Bunyard & Co., Maidstone; S. Mortimer, Farnham, Surrey.

Silver-gilt Banksian Medals.

Mr. W. H. Page, Hampton; Mr. R. C. Notcutt, Woodbridge; W. Bull & Son, Chelsea; R. Smith & Co., Worcester.

Silver Flora Medals.

The Hon. Vicary Gibbs, Elstree, Herts. (gr. Mr. E. Beckett, V.M.H.); Wickham Noakes, Esq., Selsdon Park, Croydon (gr. Mr. W. Howarth); H. Mathias, Esq., Stubbington, Hants.; Mr. A. R. Upton, Millmead, Guildford; Mr. Piper, Bayswater, W.; the Misses Hopkins, Shepperton; Mr. C. Engelman, Saffron Walden; Messrs. Cypher, Cheltenham; G. & A. Clark, Ltd., Dover; C. W. Breadmore, Winchester; Dobbie & Co., Rothsay; Hogg & Robertson, Dublin; Mr. H. Helmsley, Crawley; H. J. Jones & Co., Lewisham; W. R. Chaplin, Waltham Cross; J. Green, March; E. W. King & Co., Coggeshall; Ladham, Ltd., Shirley; W. H. Lancashire, Guernsey; Geo. Prince, Longworth.

Silver Knightian Medals.

Hughes, Jones & Peers, Thatcham Fruit Farm, Newbury; R. Stephenson, Burwell, Cambridge; J. & F. Chatfield, Southwick, Sussex; Laxton Bros., Bedford.

Silver Banksian Medals.

Stanley & Co.; W. Artindale & Son, Sheffield; G. Mallett & Co., Cheddar; W. H. Page, Hampton; King's Acre Nurseries, Ltd., Hereford; C. Elliott, Stevenage; H. N. Ellison, W. Bromwich; Gunn & Sons, Olton; Frank Lilly, St. Peters, Guernsey; Storrie & Storrie, Perth; Vivian Phillips, Esq., Orpington (gr. Mr. T. Hobbs).

Class 1 B (for Group of Orchids).

1st (Sherwood Cup, value £21), F. Mentieth Ogilvie, Esq., Oxford; 2nd (Silver Cup), Sir Jeremiah Colman, Reigate.

Class 1 C (Group of Orchids not exceeding 75 square feet).

1st (Veitch Memorial Medal and £5), Duke of Marlborough; 2nd (small Silver Cup), Mrs. Kershaw Wood, Glossop.

Class 1 D (for Orchids not exceeding 35 square feet).

1st (Silver Cup), not awarded; 2nd (Silver Flora Medal), R. Ashworth, Manchester.

MARKETS.

COVENT GARDEN, May 26.

[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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

Table with 3 columns: Flower name, s.d. s.d., and s.d. s.d. s.d. Includes items like Anemone fulgens, Mignonette, Myosotis, Azatea, Carnations, etc.

Cut Foliage, &c.: Average Wholesale Prices.

Table with 3 columns: Foliage name, s.d. s.d., and s.d. s.d. Includes items like Galax leaves, Hardy foliage, Agrostis, etc.

Plants in Pots, &c.: Average Wholesale Prices.

Table with 3 columns: Plant name, s.d. s.d., and s.d. s.d. Includes items like Acacias, Crassulas, Crotons, etc.

Plants in Pots, &c.: Average Wholesale Prices (Contd.).	
s.d. s.d.	s.d. s.d.
Kentia Belmoreana, per dozen	15 0-24 0
— Fosteriana, per dozen	18 0-30 0
— Zonals ...	5 0-7 0
Latania borbonica, per dozen	12 0-18 0
Lilium longiflorum, per dz.	12 0-18 0
— lancifolium, p. dozen ...	12 0-24 0
Lily of the Valley, per dozen	18 0-30 0
Marguerites, white, per dozen	6 0-8 0
Mignonette, per dozen	5 0-7 0
Musk, per dozen	3 0-4 0
Pansies, per box of 24 plants, each	2 0-3 0
Pelargonium s, show varieties, per dozen	12 0-18 0

Fruit: Average Wholesale Prices.	
s.d. s.d.	s.d. s.d.
Apples (Tasmanian), per case:	
— Ribston Pippin	9 6-10 6
— Scarlet Pearmain	9 0-10 6
— Cox's Orange Pippin	13 0-14 0
— Alexander	8 6-10 0
— Prince Alfred	9 0-10 0
— French Crab	10 0-10 6
— Sturmers	9 0-9 6
— (Australian), per case:	
— Dunn's Seedling	10 6-12 6
— Cleopatra	10 0-12 0
— Jonathan	11 0-13 0
— Ribston Pippin	9 6-11 0
— Romo Beauty	10 6-12 6
— (American), per barrel:	
— Nonpareils	18 0-20 0
Bananas, bunch:	
— Doubles	9 0-10 0
— No. 1	6 6-8 0
— Extra	8 0-9 0
— Giant	10 0-12 0
— (Claret)	5 0-7 6
— Jamaica	5 0-5 6
— Loose, per dz.	0 6-1 0
Cranberries, per case	13 0-14 6
Cherries (French), per box	0 9-1 9
— ½ bushel	5 6-6 6
Custard Apples	3 0-12 0
Gooseberries (English), per peck	2 0-2 6
— ½ sieve	4 0-5 0
Grape Fruit, case	9 0-13 0
Grapes (new)	1 6-3 0

Vegetables: Average Wholesale Prices.	
s.d. s.d.	s.d. s.d.
Artichokes (Globe), per dozen	2 0-3 0
— white, p. bushel	2 0-2 6
— per cwt.	3 6 —
Asparagus, per bundle:	
— Dijon	0 8-1 0
— Giant	3 0-4 6
— Spanish	0 7-0 10
— Sprue	0 6-0 8
— Paris Green	1 6-2 0
— Toulouse	1 0-1 3
— Montauban	1 3-1 6
Beans, per lb.:	
— (English)	0 6-0 8
— (French)	0 7-0 8
— (Guernsey)	0 7-0 8
Beetroot, per bushel	2 6-3 0
Cabbages, per mat	4 0-4 6
— per crate	7 6-8 0
— per box (24)	3 0-3 6
— Greens, per bushel	1 0-1 6
Cardoon (French), per dozen	8 0-10 0
Carrots (English), dozen bunches	4 0 —
— washed, bag	5 6-6 0
— unwashed	4 0-5 0
— (French), bunch	0 5-0 6
Cauliflowers, doz.	1 6-2 0
Celeriac, per doz.	1 6-2 6
Chicory, per lb.	0 3 ½-0 4
Cucumbers, per dz.	2 0-3 0
Endive, per dozen	1 3-1 9
Horse-radish, foreign, per doz. bundles	17 0-21 0
Leeks, 12 bundles	2 0-2 6
Lettuce (French), per crate	2 0-2 3
— Cos, per dozen	2 3-2 9
Mint, doz. bunches	6 0 —
Mushrooms, per lb.	0 8 —
— broilers	0 6 —
— buttons, per lb.	0 8-0 10

REMARKS.—The demand for Australian and Tasmanian Apples remains good. French Cherries are arriving in increased quantities, but they have not met with a brisk sale. Oranges of best quality are slightly cheaper. English Gooseberries are received in small quantities only. Nectarines are plentiful and fairly cheap. Peaches are a good trade and realising fair prices. Strawberries, both English and French grown, are exceedingly plentiful and very cheap. The vegetable trade is quiet. Green vegetables found a fair

market last Tuesday. English Beans are plentiful. Trade generally is fair. E. H. R., Covent Garden, Wednesday, May 26, 1909.

Potatoes.	
s.d. s.d.	s.d. s.d.
Kents—	
Up-to-Date	3 8-3 9
Lincolns—	
Royal Kidney	2 6-3 0
Up-to-Date	3 0-3 6
Maincrop	2 9-3 9
Evergood	2 6-3 0
King Edward	3 0-3 3
Blacklands	2 6-2 9
Dunbars—	
Langworthy, red soil	4 6-5 0
Up-to-Date, red soil	3 3-3 9
— grey soil	2 6-3 0
Yorks—	
Up-to-Date	3 6-4 0
Jerseys (new), cwt.	11 0-14 6
St. Malo's	14 0 —

REMARKS.—The trade for old Potatoes is not very good, owing to the larger quantities of new tubers now arriving. E. J. Newborn, Covent Garden and St. Pauls, May 26, 1909.

COVENT GARDEN FLOWER MARKET.

During the past week the trade in bedding plants has been brisk. A few subjects are difficult to procure, but generally supplies are excessive. Bedding Pelargoniums (Geraniums) have sold well, also most other well-grown plants in small pots, suitable for summer bedding. Plants in store boxes are much cheaper than they were a few years ago.

CUT FLOWERS.

Roses are arriving in large quantities, and although their value advanced a short time ago, prices have fallen again. Carnations also are plentiful, and generally of good quality. The number of persons who cultivate this plant has largely increased, and although the demand for Carnations has also increased it has not been in the same proportion. Lilium longiflorum is good and rather over-plentiful. This morning many of these flowers were unsold. Sweet Peas vary in quality; only the best make more than 3s. to 4s. per dozen bunches; some are sold as cheaply as 1s. 6d. per dozen bunches. Of Callas only those of the best quality are in demand. There is an increased demand for Spanish Irises now that the Daffodils are over. Iris germanica does not sell so readily as the Spanish Irises. Gladiolus Colvillei in its several varieties is good. Iceland Poppies and other hardy flowers are plentiful. English growers now do an extensive trade in Gypsophila elegans.

POT PLANTS.

Fuchsias in various sizes are well flowered. Since these have been used largely for bedding purposes, several growers market them in 3-inch pots. Marguerites are very plentiful. Of Mignonette the greatest demand is for the spring-sown plants, which are backward this season. The single yellow Chrysanthemum is sent by several growers; in most instances the plants are dwarfed than those seen a few years ago. Crassulas are well in flower, but it is only the dwarf hybrid varieties that are seen yet. Saxifraga (Cotyledon) pyramidalis is very pretty. Pelargoniums of all types are well supplied. Ferns and Palms vary but little. Aspidistras are cheaper. A. H., Covent Garden, Wednesday, May 26, 1909.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending May 26.

A most welcome rain.—During the past week there were five very warm days and four moderately warm nights. On the three warmest days the temperature in the thermometer screen rose respectively to 79°, 78°, and 75°. These are all high temperatures for the time of year. In fact, in only four of the last 23 years has such a high reading as 79° been recorded here in May. On the other hand, on the first night of the week the exposed thermometer registered 6° of frost. The ground, which during the last few days has been warm for the time of year, is now, owing to the colder weather of the last few days, only at about an average temperature. Rain fell on two days to the total depth of ½ inch, nearly the whole of which quantity was deposited between 4 and 10 a.m. on the 25th. This rainfall restarted the bare soil percolation gauge, but it had no effect on the gauge on which short grass is growing. The sun shone on an average for 9 ½ hours a day, or for 3 ½ hours a day longer than is usual at this period in May. Light airs as a rule prevailed, and their direction was mostly some point between south and west. The mean amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by 3 per cent. A selected tree of the Horse Chestnut first showed an open flower on the 8th, which is five days earlier than its average date for the previous 13 years, and 11 days earlier than last year. E. M., Berkhamstead, May 26, 1909.

SCHEDULES RECEIVED.

Cardiff and District Chrysanthemum Society's exhibition of Chrysanthemums and other flowers, also fruit, to be held in the Park Hall, Cardiff, on Wednesday and Thursday, November 3 and 4. Secretary, Mr. J. Mountney, 42, Royal Arcade, Cardiff.

Bath Gardeners' Debating Society's Chrysanthemum show, to be held on November 3 and 4, in the Assembly Rooms, Bath. Hon. secretary, Mr. F. L. Ashman, 17, Prospect Place, Upper Weston, Bath.

Doncaster and District Chrysanthemum Society's 17th annual exhibition, to be held on Wednesday and Thursday, November 3 and 4, 1909, in the Corn Exchange, Doncaster. Hon. secretary, Mr. J. G. Mitchell, 11, High Street, Doncaster.

Great Yarmouth Flower Show, to be held on Thursday, July 15, 1909, in the Winter Gardens, Great Yarmouth. Secretary, Mr. Arthur A. Cash, Winter Gardens, Great Yarmouth.

Abbey Park (Leicester) Flower Show, to be held on Tuesday and Wednesday, August 3 and 4. Superintendent, Mr. J. Burton, Abbey Park, Leicester.

Women's Agricultural and Horticultural International Union's show and sale of garden produce, at the Royal Botanic Gardens, Regent's Park, London, on Wednesday, July 21, 1909. Show secretary, Miss Bull, 64, Lower Sloane Street, S.W.

ANSWERS TO CORRESPONDENTS.

CHRYSANTHEMUMS: H. J. G. For your purpose it will be advisable to pinch the points of Niveum and Queen of the Exe at once, treating the other varieties in a similar manner in a fortnight's time. But do not stop the plants and transplant them at the same time.

COS LETTUCE: W. P. To obtain Cos Lettuces of the variety mentioned by August 11, allow from 10 to 11 weeks from the time the seed is sown. Model Turnip will require from 11 to 12 weeks. To ensure that some will be at their best at that date, make two small sowings of each, one week apart, as so much depends on the weather.

GARDENING BOOKS: A. P. The works you mention are of little value; both are out-of-date, and, being plentiful, have little worth bibliographically.

GRAPES DISEASED: A. B. The spotted berries are affected by the fungus Gloeosporium amplexophagum. Those that have a rusty appearance have suffered some mechanical injury, such as rubbing by the scissors or the operator's hair during the process of thinning. In the case of the spot disease, cut out all the affected berries and burn them. Afterwards spray the bunches with liver of sulphur, using half an ounce in two gallons of water. Be careful not to let the liquid fall on the woodwork, as it turns white paint black.

MARKET-GARDEN BUSINESS: W. J. D. You cannot embark on the business of a market-gardener with the capital you mention with any reasonable prospect of succeeding. To begin with, you would probably be required to pay a quarter's rent in advance, and this would leave you without sufficient working capital. Moreover, you appear to have had no previous experience in market-gardening work, which is very different, even in the methods of production, from that practised in the best private gardens. We would therefore advise you to procure employment for a year or two in a market-garden establishment, in which high-class produce in the way of fruits and flowers is cultivated, making the best possible use in the meantime of the opportunities thus offered you to acquire a practical knowledge of the work, in which you yourself intend to engage. Those who contemplate entering into the business of market-gardener, and who calculate upon the prices which good examples of Grapes, Peaches, Cucumbers, and Tomatoes are likely to realise in certain months of the year, should also try to realise what the probable cost of production would be.

NAMES OF FRUITS: H. P. M. Norfolk Beefing.—Bungay. Newton Wonder.

NAMES OF PLANTS: T. B. Prunus Padus, the Bird Cherry.—Lucas. Populus balsamifera.—Holly Bush. Polygonum alpinum.—G. H. B. 1, Geum coccineum; 2, Phlox subulata; 3, Ornithogalum umbellatum; 4, double flowered variety of Prunus japonica; 5, Viola cornuta; 6, Sedum (Rhodiola) rosam.—H. C. 1, Saxifraga Geum var. crenata; 2, S. G. var. elegans; 3, S. cuneifolia; 4, S. c. var. subintegra; 5, S. crustata; 6, Achillea umbellata.—J. L. W. Hyoscyamus niger (Henbane). The Daisy presents a remarkable example of fasciation, or fusion of growth.—G. A. C. The yellow flower is Odontoglossum triumphans; the smaller specimen is O. blandum.—F. H. 1, Odontoglossum Lambeauianum; 2, O. ardentissimum; 3, probably a form of O. Hallio-crispum (Hallii x crispum).—H. A. 1, Sigmatostalix radicans; 2, Oncidium candidum; 3, Masdevallia tridactylites; 4, M. O'Brieniana; 5, Stelis ophioglossoides; 6, Ada aurantiaca.—A. J. Viburnum cotinifolium.—Novice. 1, Lithospermum prostratum; 2, Anthyllis montana; 3, Orobanchia aurantiaca; 4, Silene maritima fl. pl.; 5, Primula japonica; 6, Verbascum phoeniceum.—G. Cooper. 1, Pyrus Sorbus; 2, P. Aria var.

Communications Received.—R. Hale (thanks for contribution of 1s. 6d. to the R.G.O.F. box)—C. F. B.—W. C. & Sons—P. A.—W. J. D.—B. L.—Marsh Mallow—H. P. H.—P. A.—W. J. D.—F. M.—W. P.—L. P.—H. N., Singapore—E. B.—E. M.—R. A. R.—A. Rix—J. Heblen—C. S. & Co.—W. L.—A. R.—B. L.—Peaches—E. S.—A. S.—A. W. G. & Co.

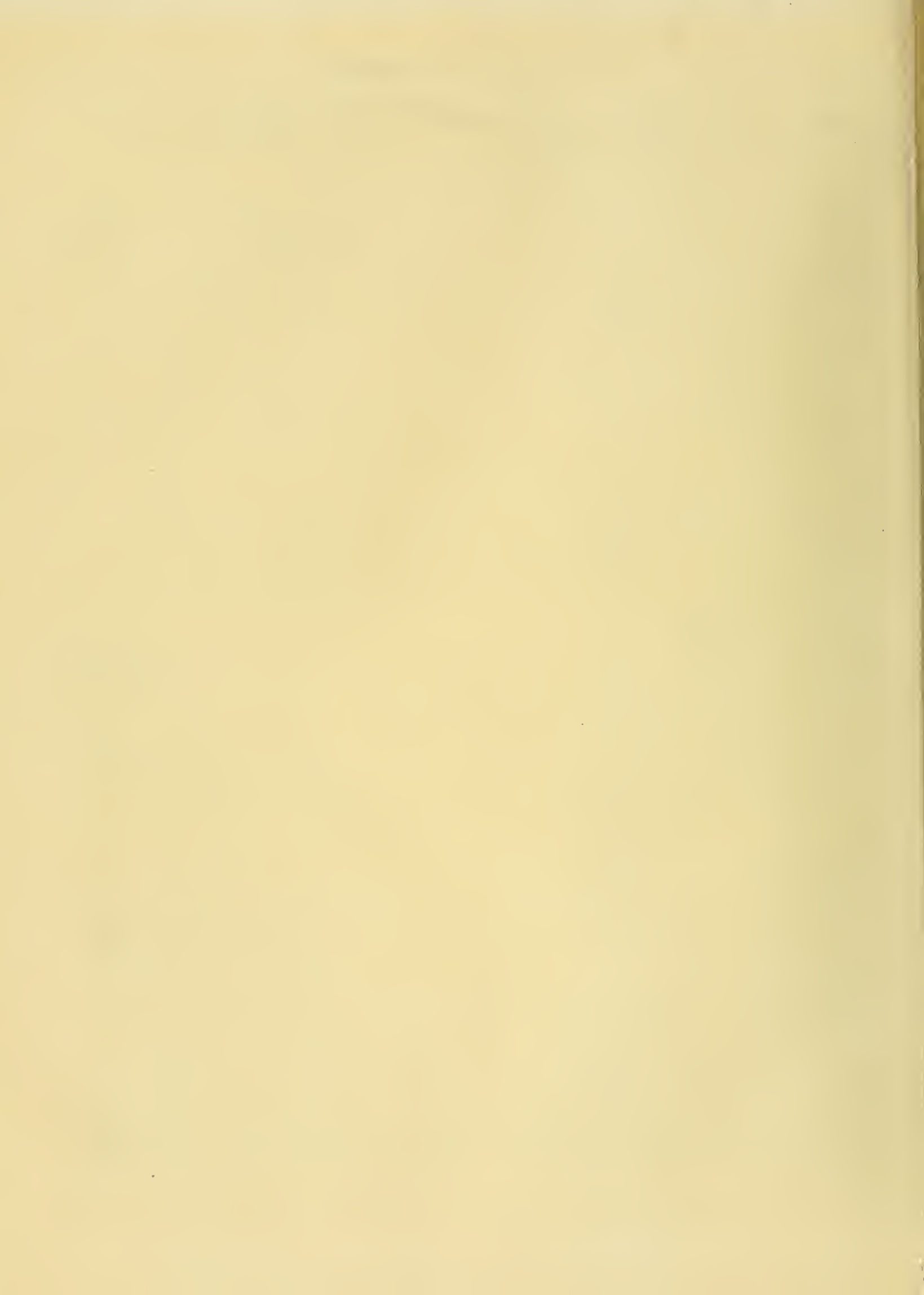


WELCH 39

GARDCHRON.

VIEWS IN THE GARDENS AT WILDERNESSE PARK, KENT.

Photographs by H. N. King.



THE
Gardeners' Chronicle

No. 1,171.—SATURDAY, June 5, 1909.

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* INSECT PESTS ON FRUITS.

THE publication of an extensive work on an important section of economic entomology by such an experienced observer as Mr. F. V. Theobald calls for something more than passing congratulation. Mr. Theobald receives some 3,000 appeals for assistance from anxious growers every year, and the material which thus passes through his hands places him in an excellent position for obtaining a varied, accurate, and detailed acquaintance with that branch of zoology which he has made his own. In Scotland a somewhat similar position is occupied by Dr. R. S. MacDougall, and in Ireland by Professor Carpenter, but neither of these countries can be said to present the same intensive field as England, nor have their pests been so systematically and continuously investigated.

It is safe to say that the complete work on economic entomology has yet to be written, and it is difficult to see how it can ever be done by one man. There are two sides to the life of an insect, and the investigation of these embraces points of view so essentially diverse as to be too severe a tax on the versatility of any one individual. The practical man, on the one hand, spending every day amongst

his plants, observes many curious and obscure phases of insect life, and observes them all the more surely and readily because his imagination is unfettered by scientific tradition. The man of science, on the other hand, working mostly in his laboratory, and only at intervals sallying forth into the field, is well equipped, in virtue of his training, to work out complicated life histories, and to determine the physical conditions of insect existence. He has to his credit, for example, our knowledge of the amazing life history of the Grape vine Phylloxera, but none the less he has his limitations. He can work out the development of the mole-cricket from the egg to the adult in every detail, but he fails to observe that the mole-cricket has a fatal weakness for meandering over smooth objects. In this particular instance the small fact to the credit of the practical man is, from the point of view of getting rid of the offender, worth all the remedies based on purely scientific knowledge. In another case, to quote only that of the winter moth, the scientific evidence may be sufficient in itself to suggest a satisfactory remedy.

The point we wish to emphasise is that success in the destruction of insect pests is not the prerogative either of the scientific experimenter or of the practitioner, and that only when the two consent to co-operate may complete knowledge be obtained. Both aspects are essential, but neither complete. At the present time it is to be deplored that the one is apt to discredit explanations based on observations difficult to understand (and often badly presented), and the other to reject evidence simply because he has not, and could not have, collected it himself, or because it is occasionally at variance with his professional tradition. The education of both sides is however, proceeding, and there are signs that the entomological millennium, at any rate, may yet be realised. In this connection we may sympathise with a regret stated by Mr. Theobald that the recent work of Gillanders should not have been less scientific and more a record of his own peculiar and interesting experience, and we can certainly echo the desire, expressed in the introduction to Mr. Theobald's book, for more advice and sympathy from the practical man.

Against Mr. Theobald's book two criticisms will probably be levelled. He states in his preface that "the volume is by no means complete, but it has reached such proportions that it is impossible to give all the information it was hoped to give." The book extends to 550 pages, and, therefore, apart from any question of expense, is too extensive a work to place in the hands of a student, especially as it covers only a portion of the field. But for practical purposes it should be even more detailed, and in certain cases we have found his definitions too condensed for the satisfactory diagnosis of the insect. We should have preferred to see the book twice its size and encyclopaedic in character. Mr. Theobald would have found ample support in the publication of such a monograph. We may, therefore, express the hope that he will consider the expediency of publishing an extended description of his material and results at some future date.

The other point relates to the illustrations. Those drawn by Mr. Horace Knight are admirable, and, to select only a few, we now have

for the first time, in an accessible volume, excellent illustrations of the Apple blossom weevil, the bark beetle, the Raspberry shoot moth, the shot borer and Raspberry beetles, by which these insects may be readily identified. As we take this to be the sole function of the pictures, we differ from the author as to the advisability of using photography so largely for this purpose. It too often illustrates only the perils of the short cut (compare on p. 134 the careful drawing of Aphis sorbi with the photograph of the same species). In spite of some successes, such as the lappet moth (p. 21), the photographic reproductions fail either in the correct rendering of colour value (compare the vapourer moth, p. 39, and the codling moth, p. 71), or on account of the well-known difference between the sensitive plate and the retina of the eye as regards light and shade (compare the buff-tip moth, p. 295, the Pear fruitlets attacked by Pear midge larvæ, p. 344, and the male mealy bugs, p. 486), or because of reflection from the object photographed (compare the goat moth larva, p. 42, the Black Currant mite, p. 233, the slug worm, p. 336, and the cockchafer larva, p. 433). On p. 48 the characteristic feature of the male wood leopard moth does not appear at all. Further, we should have liked to have seen a calendar on the lines of the admirable exhibits one sees in some Continental museums illustrating the entomological year, from the economical standpoint, such a calendar would be of great value to the grower in assisting him to identify his pests. Finally, we hardly think the practical man can be expected to sympathise with the purely academic amusement of juggling with scientific terms which forms so large a part of the labours of the systematic zoologist. It is questionable how long this will be tolerated even in systematic zoology, but it is certain that the man of affairs, failing to see the humour of the game, will brush it aside as the baronet did the tiresome and frivolous accuracy of the antiquary. Therefore, we prefer to think of the mussel scale still as Mytilaspis pomorum.

However, these matters are by the way. Mr. Theobald has produced a great work, and one which will rank with John Curtis's *Farm Insects* as one of the classics of economic entomology. It is a work based essentially on the sound practical experience of many years, and no fruit-grower can afford to disregard so important and helpful a record. The scope of the work may be gathered from the lengthy list of plants dealt with. It includes the Apple, Apricot, Cherry, Currants, Damson, Fig, Gooseberry, Loganberry, Nuts, Peach, Pear, Plum, Pineapple, Quince, Raspberry, Strawberry, and Vine. About 380 species of insect and other pests are mentioned, and many of these are described and figured. They are given, as they should be, under the name of the plant attacked, and not in zoological sequence. Appendices have been introduced on such subjects as the possible spreading of imported pests, beneficial insects, and the composition, manufacture, and makers of insecticides and spraying apparatus. We are glad to find Mr. Theobald taking up a very cautious and judicial attitude on the value of remedial measures. Much harm has been done, and scepticism encouraged, by imperfect observation and worse remedies. For example, to mention only three subjects

* *The Insect and other Allied Pests of Orchard, Bush, and Hothouse Fruits*, by F. V. Theobald. Published by the author, Wye Court, Wye, 1909.

which have come under our notice within recent years, we are told one year that millipedes are very noxious forms, and the next that they do no harm; or that it is vitally necessary to restore the balance of nature by introducing predaceous insects, and again, the futility of that proceeding is dwelt upon; or that mussel scale is destroyed by lime wash and afterwards that that remedy is worthless. On this question Mr. Theobald maintains the thoroughly sound attitude that our present knowledge is wholly insufficient to deal satisfactorily with more than a very few pests, and he urges further research in this important direction. Research in economic biology must be undertaken by thoroughly competent, trained observers, and should, above all things, be refined and accurate. It is imperative that conclusions should be well tested before they are published, or the interests of the class intended to benefit may be sacrificed. The necessity to recant means not only that growers have spent their money on ill-advised remedies, but that their confidence in the trustworthiness of their advisers is destroyed.

We noticed several misprints in reading the work, of which the most important were that *Clisiocampa* and *Orgyia* were wrongly spelt throughout.

Once more we warmly congratulate Mr. Theobald on the publication of this important volume, which brings English work into line with the best achievements of the United States.

HERBACEOUS CALCEOLARIAS.

THE requirements of these plants are simple, and anyone possessing a greenhouse from which frost can be excluded, can cultivate them with success.

We sow the seeds about the middle or end of June, in pans, in a compost of equal parts loam and leaf-mould, with coarse silver sand, the mixture being sifted through a fine sieve.

The soil in the pans should be well watered before sowing the seed. The seeds should be sown thinly, covering them very lightly with soil, and placing the seed-pans in a cold frame. A good plan is to place them on inverted flower-pots standing in saucers of water. The water in the saucers will keep the surroundings moist, which is congenial to the germination of the seeds. In addition it keeps slugs from the plants. If the frame is placed on the north side of a wall, so that direct sunshine cannot reach the seedlings, no shading will be necessary, and the plants will, in consequence, be much stronger. In the course of a few weeks the seedlings will be large enough to be transplanted into pans, which should be filled with the same kind of compost as before. As soon as they are large enough they should be potted singly into small pots and returned to a cold frame having a floor of ashes. Soot should be sprinkled about to keep away slugs. Abundant ventilation should be afforded at all times; indeed, the lights should only be used to protect the plants from rain. As autumn advances the plants make rapid growth and require larger pots. They should be grown in the cold frames until frosts appear, when they should be accommodated in a frost-proof structure. They must be kept cool and placed as close to the glass as possible. Some time in January the final shifting into pots having a diameter of 8½ or 9½ inches should be effected. The compost we use at this stage consists of two parts loam and one part leaf-mould, with dried cow dung and sand added. Grown in this manner, we have never failed to have a fine show of Calceolarias each spring for several years. Some of our plants measure 3 feet through. Aphis sometimes attacks the plants, also a small yellow thrip. These pests can be kept in check by an occasional fumigating with a nicotine compound. *Wilmot H Yates, Rotherfield Park Gardens.*

NEW OR NOTEWORTHY PLANTS.

TILLANDSIA BLOKII.

THIS giant Tillandsia flowered at Glasnevin during the year 1907, and was a conspicuous object for several months.

When in flower the plant measured 6 feet high, the stout, branching inflorescence being 2 feet 3 inches in diameter, and clothed with crimson, sheathing bracts which retained their colouring long after the flowers had faded. The flowers are borne on short stalks in two rows upon the lateral branches. The sepals are crimson, thick and leathery; the three yellow petals, 4 inches long, give quite a contrast in colour.

In the *Gardeners' Chronicle*, vol. xxiii., p. 254, where *T. Blokii* was mentioned among other Bromeliads for exemplary culture at the Ghent Quinquennial Exhibition of 1898, it was said to be in flower and as tall as a man. Mr. F. W. Moore purchased the Glasnevin plant from L'Horticulture Colonial, Parc Leopold, Brussels, in April, 1903, under the name of *Vriesia Blokii*, and was told that it was a seedling of the original shown at the Ghent Quinquennial. At that time it was about 1 foot high; since then it has been growing among other Bromeliads in a minimum temperature of 60° Fahr. After flowering, the whole tuft of leaves dies away. Suckers are produced by some of the Bromeliads at the base stem, but in this case they are very tardy in developing, although a small one has appeared.



FIG. 158.—TILLANDSIA BLOKII IN GLASNEVIN BOTANIC GARDENS. HEIGHT 6 FEET.

The leaves are 6 inches across at the base, gradually tapering upwards until they terminate in an abrupt point. Oblong reddish blotches mark the leaves of this new species, a character not found in the closely-allied *Tillandsia regina*. The illustration (fig. 158) shows the plant in fruit several months after flowering. The capsules are woody, 2 inches in length, tapering to a sharp point; when ripe they split up into three valves containing numerous seeds.

The seeds are curious; they are ¼ to ⅓ of an inch long, brown and slender, with a fawn-coloured tuft of hairs at both ends. The hairs of the lower end are like an inverted pappus of Composite, those at the other end being like a twisted tail, eventually dividing into a pappus-like arrangement.

The larger-growing Tillandsias like a fairly strong soil; a mixture of peat and loam with some manure and sand suits them very well, while the smaller kinds thrive in peat, leaf-mould and Sphagnum-moss.

Under natural conditions most of the smaller plants of this genus are epiphytic on trees. Roots are sparingly developed, but the channelled leaves conduct the moisture downwards to their sheathing bases, which form a number of small reservoirs. The object of this arrangement is seen when one places the epidermis from the base of the leaf under the microscope, for it is covered with numbers of thin-walled, gland-like structures which serve for the absorption of the collected water. *C. F. Ball, Botanic Gardens, Glasnevin.*

ORCHID NOTES AND GLEANINGS.

AN AMATEUR'S EXPERIENCE.

FINDING that certain Orchids not only lived but flowered among my mixed amateur collection of plants, I procured one or two books on Orchids, and then purchased a few plants of *Oncidium varicosum* Rogersii, which flowered freely. I followed the general instructions as to potting material, &c., being careful to have ample drainage, and potting with Sphagnum-moss (of which quantities can be got in this neighbourhood), English Orchid peat and a little charcoal, with sometimes a little Jadoo fibre added. I cannot say I followed any strict rule as to watering, but was careful to see that the potting material did not become sour. *Dendrobiums* were fully exposed to the sun to ripen their growth. *Cypripediums*, in a considerable number of varieties, grew and flowered very freely. *Vanda gigantea*, *Dendrobium speciosum*, and several other Orchids were sent me years ago by a friend in the East. The plants were some years before getting perfectly established, but since that time they have flowered regularly, and I have several young plants, offshoots from *Vanda gigantea*.

So long as they are not allowed to get a chill, my experience seems to indicate that they can live for some time in a fairly low temperature, though no doubt they would not flower if they were permitted to remain in such conditions. In my little house the temperature varies from 55° to 70° in winter, rising to 80° or 90° in summer, and my Orchids are crowded in among Palms, Ferns, Marantas, Caladiums, Hoya, Allamanda, and, in summer-time, Gloxinias, Achimenes and other plants. I append a list of the varieties of Orchids which are crowded into my little place. They seem to thrive, and most of them flower pretty freely. I still have a few which were sent from abroad which have not flowered, although they are quite strong and healthy.

The larger and cooler portion of the house has been very bright with a crowd of *Primula sinensis*, *Cinerarias*, *Chivias*, and some 10 *Hippeastrums*. Most of the *Hippeastrums* we have raised from seed. When these plants ceased to flower their place was taken by Show, Regal, Zonal and Ivy-leaved *Pelargoniums*, *Streptocarpus* (from seed), *Streptosolen Jameonii*, Tuberous *Begonias* (from seed), and later by *Gloxinias*. I get excellent results in August, September and October from *Gloxinias* raised in February.

I have often been struck by letters which I see in gardening papers with regard to growing Orchids. According to these letters, it would be useless for anybody to go in for Orchid growing unless he had some half-a-dozen houses. My experience has been very much the other way. I think there are few plants that stand neglect as they do. Take, for instance, *Pelargoniums*, *Begonias*, *Gloxinias*, &c. Were one to neglect watering these for two or three days the results would be serious; but with Orchids one might neglect watering them for a week or a month without killing the plants. I do not, of course, advocate neglect, but what I do say is that, with any reasonable treatment, a great variety of Orchids may be grown by amateurs with very good results. In summer-time my *Cypripedium* plants are put on the floor, so as to make room for *Gloxinias*, Marantas, Ferns, Caladiums, &c., and I find that they all thrive together in a very friendly manner. My house being a business or official residence, and having no ground attached, seemed to present difficulties in the way of a greenhouse, but I was unwilling to give up the pleasure which I had for years in my previous house, and I therefore managed to get a conservatory erected on the top of a wing of the building opening through what had been a staircase window. It is quite a small house, about 20 feet by 15 feet, with a division cutting off a portion where most of the Orchids are kept, which is about 15 feet by 5 feet.

I think that many writers on Orchids do a great deal to shut out many amateurs from the pleasure of growing these plants, and also do harm to the trade, since, were an amateur to accept all the statements, that this Orchid has to be grown in the *Cattleya* house, and another in the *Odontoglossum* house, &c., &c., he would never undertake Orchid growing.

List of Orchids which thrive with me:—

Cypripedium Spicerianum, *superbiens*, *barbatum nigrum*, *Orphanum*, *Germianum*, *giganteum*, *Leeanum*, *hirsutissimum*, *Charlesworthii*, *polystigmaticum*, *insigne*, *insigne Sanderae*, *Leonidas*, *callosum*, *Lawrenceanum*, *Chamberlainianum*.

Dendrobium aggregatum, *Findlayanum*, *Phalænopsis nobile*, *thyrsiflorum*, *Wardianum*, *June*, *Pierardii*, *crassinode*, *chrysotoxum*, *formosum giganteum*, *melanodiscus*, *Leechianum*, *suavissimum*, *nobile Cooksonii*, *speciosum*, *Apollo grandiflorum*, *Ainsworthii*, *primulinum*, *teretifolium*.

Oncidium varicosum Rogersii, *incurvum*, *unguiculatum*, *ornithorhynchum*, *sarcodes*, *Harrisonianum*, *phymatochilum*.

Aërides odoratum.

Vandas (flowered) *cœrulea*, *gigantea* (unflowered), *Amesiana*.

Odontoglossum crispum, *Schlieperianum*, *Pescatorei*, *grande*, *Rossii majus*.

Oncidium leucochilum.

Cattleyas Trianae, *aurea* and *citrina*.

Cymbidium eburneum, *Lowianum*, *pendulum*.

Laelias superbiens, *cinnabarina* and *pumila*.

Cœlogyne cristata, *Epidendrum O'Brienianum*.

Ansellia gigantea, *Trichopilia suavis*, *Miltonia cuneata*, *Lycaste* (various). *D. Campbell Brown*, *Bank of Scotland House, Oban, N.B.*

AMERICAN NOTES.

SEED CROPS IN CALIFORNIA.

THE past winter was very severe, and there was more rain than has been experienced for 50 years past. On low-lying lands many seed crops have suffered, and in some cases all have been destroyed. This is specially true of the Onion crops in the Sacramento and San Joaquin river district. One seed grower lost 150 acres, and another, 25 acres. These losses were due to the breaking of a level, which flooded the land. In the Santa Clara Valley district the Onions have suffered on the average from the excessive rain, fully 25 per cent., some crops of Onions being wholly destroyed, whilst others are not in the least degree damaged. In the opinion of the writer of the report appearing in *Horticulture*, April 24, there still remain in good condition sufficient bulbs going to seed to supply a reasonable demand of the seed trade for the season of 1910, except in the cases of Red Wethersfield and White Portugal, which will be deficient. Seeds of Lettuces at the present date are being re-sown, and at the best the prospects of any large crops are not promising. Of Carrots there is a very limited area growing in California this season. These crops are looking well, and there is no reason why good crops of seed should not be harvested. Sweet Peas are flourishing; Radishes are promising; Celery, Coleworts, Beetroots, Kohl-rabi, Leeks, Spinach, Parsley, Parsnips, Mustard and Endive all promise good crops.

HORTICULTURE AT THE ILLINOIS STATE FAIR, SPRINGFIELD.

THE horticultural department has secured for the purpose of the next autumn exhibition the whole of the rotunda of the Dome Building, a circular space containing about 13,000 square feet of flooring, exclusive of the main aisle. The walls will be well decorated, and every facility provided for making the finest display ever shown

in the State, outside of the Coliseum in Chicago. There are prizes of more than 2,700 dollars offered in this department.

THE DREER ARBORETUM.

UNDER this name a new experimental garden has been made at Riverton, New Jersey, and its formation will be justified when the large number of new and rare shrubs and hardy plants from all parts of the world are considered. The garden is intended for the testing of plants not generally known or grown in the United States. An experimental section for out-of-door testing of new hybrid Tea Roses was established last year and proved so interesting that it has been largely extended this year. Two hundred varieties, most of them unknown there, are now under observation. An important issue of last year's work was the discovery of *La Detroit*, said to be one of the best bedding Roses extant, having more numerous blooms and being a stronger grower than any other.

MANURES.

THE coming of the motorcar has had many economic issues besides those involved in its manufacture, the most important, from the gardener's point of view, being the shortage of stable manure caused by the general use of motor, in place of horse traction. More particularly does this apply to market gardens and nurseries within easy distance of London, which depend largely on the Metropolis for supplies of manure. A few years ago there was no difficulty in procuring a hundred tons or so of fairly good stable manure from London in the course of a few days, while now one is lucky to get a couple of 10-ton truck loads after giving a week's notice, and the quality is exceedingly bad. Stale fish, decayed vegetables from fruiterers' shops, ashes, and such-like matter mixed with a little of the genuine dung are nowadays contained in a truck of manure. This scarcity of good stable manure is becoming a serious matter to market gardeners and nurserymen generally, and it is hard to say what substitute as good and as cheap can be found to take its place. To firms that have been in the habit of using a thousand tons or more each year this is a grave question that will have to be faced in the near future. There are always various chemical manures that can be used, but it has to be remembered that the cost is an important item where manure is used on a large scale, and that also all manures have two effects on land, viz., chemical and physical. It is easy enough to be mathematically precise as to the actual amount of phosphates, &c., required by the growing crop, but the continued use of inorganic manures on many lands has the effect of leaving the soil very close and stiff, and in some cases almost unworkable. Good stable manure, on the contrary, besides containing plant food, forms after decomposition the rich, black mould so common in old kitchen and market gardens. The mechanical effect, therefore, is important, and on heavy or stiff soils stable manure, with plenty of long straw in it, is a valuable means of keeping the ground open and porous.

Chemical manures may be profitably used in conjunction with stable manure, and on land that has been heavily dressed with natural manures for some years in succession applications of an appropriate artificial manure will be found beneficial. Some of the elements in the chemical manure are capable of combining with constituents in the stable manure that are still present in the soil. In the case of such soil which is sometimes said to contain an excess of organic matter, a dressing of lime does much good. Soot is also beneficial, but it is seldom used.

The amount of plant food in soot, as shown by a chemical analysis, is low in comparison with many artificial manures, but its effect on growing crops is stimulating and persistent. A mixture

of soot, slaked lime and wood-ashes in about equal proportions forms a capital plant food for many crops, more especially Potatoes and other crops in the kitchen garden.

Cow manure is useful on light, dry lands, especially for Rhododendrons and other peat-loving subjects, but it is not obtainable in sufficient quantities to meet the requirements of big firms. Pig manure is hardly worth cartage, as its chemical value is low, it is cold and heavy, and pigs are usually littered down with any rubbish that may be handy, while weeds of all descriptions are thrown to them. In consequence of this a prolific crop of weeds follows its use.

Probably everyone who has had to deal with the growing of various crops has noticed that although a piece of ground has been properly prepared by trenching and manuring in good time, and has seemed an ideal spot on which to grow a certain crop, yet the results have been far below expectations. Everything beforehand has been properly done, the crop has been planted at the right time, no late frosts have occurred to cause any injury, and yet the return has not been anything like what was anticipated. I have to deal exclusively with trees and shrubs, and have noticed this partial failure on several occasions with very different kinds of plants. On the contrary, when necessities of time or space have demanded it and certain subjects have been planted in what has seemed hardly the place for them, they have thriven splendidly. These items of where and what to plant require careful consideration in dealing with anything commercially, and especially with trees and shrubs, as besides the loss incurred through the growth being poor and stunted, there is also the time and labour wasted in planting in the first instance, and afterwards of removal to a fresh piece of ground.

It is an axiom of outdoor gardening nowadays that crops should be planted in rotation, or, in other words, that the same class of plant should not be grown on the same piece of ground twice in succession. This is a good rule, and one that it pays to follow as closely as possible, though limitations of time and space often prevent its strict observance. Then it is that manure has to be used more freely to supply the stimulus necessary for the crop. The recommending of certain manures for certain soils is an invidious task. Variations of climate and soil, a limited area of ground to work on, and the necessity for hurrying matters forward due to a late season: these and similar items call for care and thought, and it is these things that "the man who walks about with his hands in his pockets" has to determine satisfactorily. *J. Clark, Bagshot, Surrey.*

WILDERNESSE PARK, SEVENOAKS.

(Concluded from page 346.)

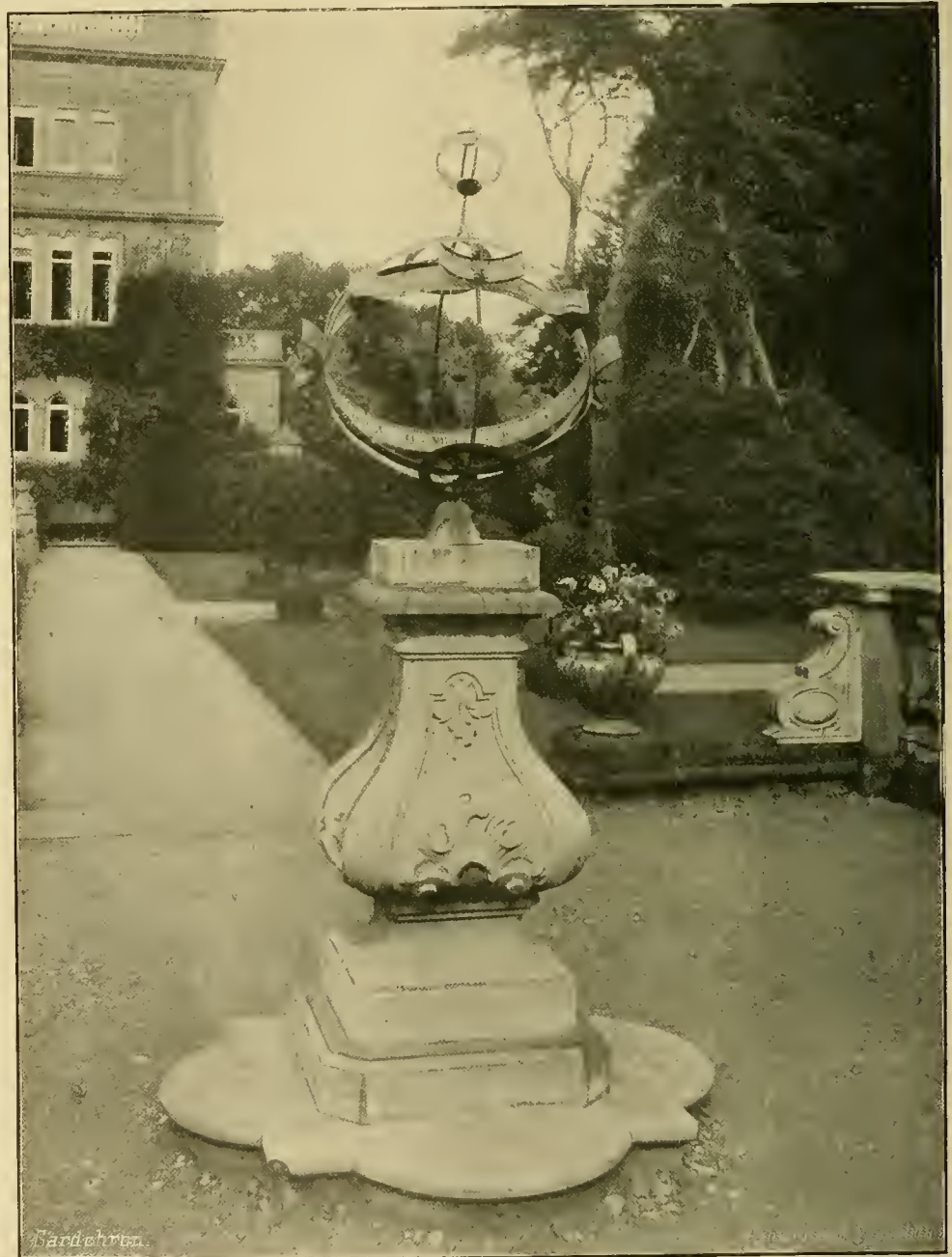
On the lawns, in addition to a grand Cedar of Lebanon, there are considerable numbers of Conifers, many of which have been so closely planted that they are now crowded, and thinning is needed to allow for further progress and the maintenance of perfect form. The sundial shown in fig. 159 stands on one corner of the terrace near the mansion, and has lawns, trees, and flower-beds near to it. The pleasure grounds are conspicuous for splendid trees. Of the three avenues one, shown at fig. 160, consists of magnificent Lime trees. In the other and smaller avenues the trees are varied, there being Limes, Elms, Chestnuts, and others planted promiscuously. Flowering trees and shrubs may be seen in considerable numbers, thus adding materially to the charm of the grounds in the spring, and, indeed, at all seasons of the year.

Separated from the pleasure grounds by a substantial wall are the vegetable and fruit gardens and houses. The wall area is extensive, since the place is divided into gardens of compara-

tively limited extent, and the walls are utilised to the full for supporting the excellently-trained fruit trees with which they are clothed. All the usual kinds of fruits are trained in greater or lesser numbers, and no one need wish to see finer examples of culture or a superior set of fruits than may be found in the Wildernesse gardens this season. With the exception of Apricots, the trees are clean and healthy. Apricots, however, do not succeed, and Mr. Shelton, the courteous and capable head gardener, explained that he had had some difficulty in getting Cherries established; now, however, there are several trees

tines, as well as Melons, Cucumbers, and Tomatos. The most conspicuous feature throughout the utilitarian department indoors is the scrupulous cleanliness, but it is equally pleasing to see the regular crops that each tree carries.

In addition to the fruit houses, there are several houses devoted to plants and flowers, of which the prime favourites are clearly Carnations, chiefly Souvenir de la Malmaison and Perpetual-flowering varieties. There are many hundreds of grand plants, some of which have given their blooms, others are doing so now, whilst there are yet others that will flower



[Photograph by H. N. King.]

FIG. 159.—SUNDIAL IN WILDERNESSE PARK GARDENS.

which will yield a good account of themselves. Just as satisfactory as the trees on the walls are those in the open quarters, and it will have to be something exceptional that robs these gardens of a bountiful harvest this year.

The culture of fruit under glass is equally extensive and the results are more than gratifying to the grower. Two houses are wholly devoted to Figs and a third is to be planted in due course, as these fruits are in constant demand. Several other large and handsome structures are given up to Grapes, Peaches, and Nec-

later. It is well worth a visit to Wildernesse to see only the Carnations, they are so clean, healthy, and vigorous. Good batches of a variety are the rule, and all the finest of the different sections are represented. It is noticeable as one proceeds round the houses that practically all the plants are such as will provide blooms suitable for decorative purposes, or plants that will adorn the rooms. Among Orchids, for example, *Odontoglossums* are favourites at the moment, while in the autumn and winter a good collection of *Cypripedium insigne* will furnish

blossoms for cutting; there are also small collections of *Cattleyas*, *Thunias*, *Cœlogynes*, and other genera.

All the plant structures are supplied from the numerous pits and frames, which are filled with excellent plants. In these, as in the houses, there is, on the one hand, no waste of space, whilst, on the other, there is no excessive crowding. The vegetable department is conducted with similar skill. *H. J. W.*

TREES AND SHRUBS.

VIBURNUM CARLESII.

THIS species, which was illustrated in fig. 148 in last week's issue, is one of the best of the many *Viburnums* that have been introduced to gardens during the last few years. It was first brought to notice by means of herbarium material collected by Mr. W. R. Carles in Western China. In 1901 Messrs. L. Boehmer & Co., nurserymen at Yokohama, sent specimens, which had been raised from seeds collected in Corea in 1885, to Kew for name, and a year later a living plant was received. Doubts being entertained as to its hardiness, the plant was kept in a cold frame for three winters, but in 1905 it was planted in a bed of hardy Heaths. The protection afforded in this manner proved sufficient to keep it safe through the winter, and the first flowers were produced in the spring of 1906. Each year since it has blossomed well, and last year it developed upwards of 30 inflorescences. This particular plant is now about 2½ feet high and 2½ feet through, whilst another example which originated from a cutting is almost as large. *V. Carlesii* is recognised by means of its oval, serrated leaves, which are hairy on both surfaces and have a greyish tint, and by its rounded heads of *Rondeletia*-like flowers. The flowers are borne in dense heads 2 to 3 inches across and open during early May. They are white in colour, slightly flushed with pink, and are deliciously fragrant. The species appears to thrive best in light, loamy soil with which a little peat has been mixed. Propagation is effected by means of cuttings which root readily in summer. *W. D.*

FORMS OF CYTISUS SCOPARIUS ANDREANUS.

THIS variety of the common Broom was discovered in Normandy by M. Edouard André, the celebrated landscape gardener, and soon became common in gardens.

Not only is it grown as a hardy shrub, but it is cultivated in considerable numbers for flowering under glass early in the year. There are now several forms of *Cytisus scoparius Andreanus* which have been raised by Mr. T. Smith, of Newry, in whose nursery many beautiful and interesting plants are always to be found. As long since as the Temple Show of 1907 one of these forms, *Firefly*, was given an Award of Merit by the Floral Committee of the Royal Horticultural Society, and at the meeting held on April 20 of this year this variety was particularly noticeable in one of the exhibits of flowering shrubs. Its flowers are very richly coloured; indeed, it is described by Mr. Smith as an improved *Andreanus*, the colour of both keel and wings being much intensified.

Other forms distributed at the same time, with the raiser's descriptions, are *Daisy Hill*, an *Andreanus* with white wings; *Butterfly*, bright golden-yellow wings and pale orange keel; *Dragonfly*, the darkest of all, rich, almost black keel, the crimson of which is suffused over the wings; and *Mayfly*, rich orange-yellow wings, and deep bronze or old gold-coloured keel. Up to the present none of the other varieties seem to have attained the same amount of popularity as the variety *Firefly*, which may come in time to supersede to a considerable extent the original form.

When *Cytisus Andreanus* was first introduced it was increased largely by grafting on to the *Laburnum* or common Broom, but the union in many instances was not a lasting one. For this reason plants on their own roots are to be preferred, and the Newry-raised forms can be obtained in this way. *W.*

RIBES SANGUINEUM.

THE typical *Ribes sanguineum* is a native of Western North America, and for its introduction we are indebted to David Douglas, who sent it home in 1826.

R. sanguineum, but it is quite distinct therefrom. It is of hybrid origin, the parents being *R. aureum* and *R. sanguineum*. *R. × Gordonianum* is about midway between its parents in habit and form of foliage, as well as flowers, which are a shade of yellowish red, an uncommon yet pleasing tone. *Ribes × Gordonianum* was raised by Mr. Donald Beaton (of Zonal *Pelargonium* fame) at Shrubland Park, somewhere about 50 years ago, but whether it was the result of a definite, or an accidental cross, I cannot say. The plant is entitled to a place among the most select of the flowering Currants.



[Photograph by H. N. King.]

FIG. 160.—LIME AVENUE IN WILDERNESSE PARK.

(See page 360.)

Among the most marked varieties may be mentioned *albidum*, with flowers blush white, *atrorubens* and *atrosanguineum*, both characterised by deep-coloured blossoms, which are somewhat smaller than those of the type; *carneum*, a pink form, with large blossoms; *flore plena*, with richly-coloured double flowers that are later in expanding than any of the others; and *malvaceum*, a curious lilac-pink form not particularly showy.

Ribes × Gordonianum, also known as *Ribes hybridum*, is sometimes classed as a variety of

Ribes aureum, above referred to as one of the parents of *R. × Gordonianum*, is also a desirable garden shrub, but it is not nearly so sturdy a plant as *R. sanguineum*, and its flowers are yellow. *R. aureum* is also represented by several varieties. The variety *aurantiacum* has flowers of an orange tint, while the blossoms of the one known as *præcox* expand before those of the type.

Apart from their value as outdoor shrubs, these different forms of *Ribes* can be forced into flower very readily. *W.*

The Week's Work.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. Ford, Pencarrow, Cornwall.

Salvia.—Pot plants of such species as *S. splendens*, *S. rutilans*, and *S. Bethellii*, which are in cultivation for flowering in autumn and early winter, may be placed in a cool pit or frame for the summer months. They must not be allowed to become root-bound, as the result would be that the lower leaves would fall. Pinch the shoots from time to time, in order to obtain bush-habited plants. Frequent syringings will serve to protect the plants against red spider. Cuttings of *S. splendens* and its varieties, also of *S. rutilans*, may still be inserted. They will furnish useful flowering plants in small pots.

Caladium.—If large specimens are desired some of the best plants should be potted into larger receptacles, using a similar compost to that employed at the last potting. The utmost care must be taken to avoid damaging the leaves. Any plants which are required for decorating dwelling-rooms should be removed from the hot, moist atmosphere in which they are growing, to a drier and cooler structure, in which they may remain for a few days before they are subjected to the ungenial conditions in the dwelling-house.

Richardia africana.—Plants of the common Calla may now be placed in a warm position out-of-doors, where the crowns will ripen. The practice of planting this *Richardia* in trenches similar to those for Celery still obtains in many gardens, but plants thus cultivated are not generally so early or so floriferous as those which are allowed a period of rest during the early summer.

Poinsettia.—The cuttings which were recently potted singly will need to be shifted into 5-inch pots as soon as they have filled the smaller ones with roots. A suitable compost consists of turfy loam two parts, leaf-mould one part, and decomposed cow manure one part, adding to the whole a good sprinkling of silver sand. Pot firmly, and about 10 days afterwards remove the plants into a cool pit for the summer months. Care must be taken in ventilating the pit, as *Poinsettia* is very easily damaged by sudden fluctuations of temperatures. Two common causes of failure in these plants are (1) cold draughts, (2) overwatering. During the middle of sunny days, a slight shading will be beneficial. In the afternoon, when the shading material is removed, the plants should be lightly sprayed with clear water. In the warmer parts of the country it is usual to remove the lights entirely on warm evenings when it is not expected there will be any heavy rain.

PUBLIC PARKS AND GARDENS.

By W. W. PETTIGREW, Superintendent of City Parks, Cardiff.

Spring bedding.—For some years past spring bedding has been regarded as quite an institution in municipal gardens, and, for many reasons, it is a form of park decoration highly appreciated by the general public. Owing to the lateness of the present season, which is probably the cause of so many different species and varieties of plants flowering simultaneously, instead of dissipating their blooming period over several months, the spring bedding has been more effective and attractive than usual. In the days when the success of spring bedding displays depended largely, if not entirely, upon the use of so-called Dutch bulbs, this form of garden embellishment was not carried out so extensively, nor with such pleasing effects as are now witnessed. With more numerous and varied plants at command, this phase of gardening has become not only superior in many ways to summer bedding, but much less expensive.

Preparations for next year.—As many of the preparations for next spring's show have to be made just as soon as the current season's display is over, it is necessary to decide the design and arrangement of this work a whole year in advance. The necessity for this forethought has its advantages, for, while the new schemes are being drawn up, the failure and successes of the old are still fresh in the memory, and it is, therefore, the easier to avoid past mistakes. It often happens that plants which are admirably adapted for the mixed spring border, or for beds which can be approached and examined at near range, are

absolutely useless in a design where the object is for each bed to show up at a distance and take a part in giving colour to the whole arrangement. On more than one occasion we have spoiled what have been otherwise pleasing arrangements by using a plant incapable of producing a definite colour effect. Three plants which have disappointed us in this manner are the double red Daisy, *Aubrietia deltoidea* var. *Leichtlinii*, and the Heavenly Blue variety of Grape Hyacinth. While each of these is a delightfully pleasing object when viewed at short range, they one and all failed to show up for any considerable distance, and so spoilt the whole scheme. Again, the slightest difference in the time of the flowering of one kind of plant from another may also tend to weaken the general effect of such an arrangement, for it is almost essential that all the different plants used in it should be at their best at about the same time. For this reason it seems questionable if that remarkably fine variety of *Aubrietia* known as *Dr. Mules*, with all its advantages of habit and colour, will ever take the place of the older forms, *Campbellii* and *Hendersonii*, for bedding purposes. This season it has proved in this district to be almost a fortnight later than those varieties, and it is thus at its best when most beds are required for their summer occupants. For a similar reason *Myosotis alpestris* var. *Victoria* seems better adapted for the spring border than a position in a geometrical design, although even for such work it is a great acquisition.

Isolated beds.—In planting isolated beds or even designs it is not at all necessary to confine oneself to the use of one variety or even species of plant for each bed. Striking effects may be obtained by the use of yellow *Polyanthus* Primroses mixed with a mauve-flowering *Viola*; scarlet Tulips, with yellow *Polyanthus* Primroses; double white *Arabis*, with scarlet Tulips; or *Aubrietia* "*Campbellii*," with double *Arabis*. Where it is intended that each bed shall produce a single tone of colour, there are very few plants to beat double *Arabis* for white, *Viola* "*Bullion*" for yellow, and *Aubrietia* "*Campbellii*" or "*Hendersonii*" for mauve. In combination, these plants are very difficult to beat, and they can always be depended upon to flower at about the same time. Of course, it is as well to remember that all positions in the flower garden are not equally suitable for the successful development of the plants just enumerated. We find, for instance, that the very best results are only obtained from *Aubrietias* when they are growing on a gentle slope, preferably facing south. Where such a position is not at one's command, an equally good effect may be had by the use of *Viola cornuta* var. *Papilio*, which has a colour very similar to the two *Aubrietias* previously named, and is one of the most floriferous varieties of *Viola* known to me.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. Vicary Gibbs, Aldenham House, Elstree, Hertfordshire.

The weather.—The welcome change in the weather has done much to improve the crops. Slight applications of artificial manures may now be frequently made with advantage, and the surface soil should be kept frequently moved with the hoe.

Onions.—The general crop which was sown in the open should now be moderately thinned. It is a mistake to do this too severely, as the Onion fly is apt to do serious damage to the outdoor sowings. Provided a good number has been raised in heat and planted out for supplying large bulbs, there will be no necessity to grow the outdoor crop very thinly. Frequent dustings of soot during the evening or very early in the morning act both as a stimulant to the plants and a deterrent to fly. Keep the planted beds well supplied with water and apply plenty of stimulants, damping the growths well every afternoon on fine days. Sow small quantities for salads frequently. The silver-skinned variety may still be sown for pickling purposes.

Vegetable Marrows.—The lights and frames may now be removed from those plants which have been yielding crops during the past six weeks or two months. Thin out the shoots and give a thorough good surface dressing of loam and half-decayed manure. Peg out the growths and keep them well supplied with water, giving occasional doses of properly diluted farmyard

liquid. Under this treatment the plants should continue to bear profusely until the autumn. Later-raised plants may safely be planted in any fairly open part of the garden. They are very useful for covering large rubbish heaps or any unsightly places, but it is advisable to give them a good start by placing a reasonable quantity of good half-decayed manure under the roots when planting.

Gourds and Pumpkins.—These require much the same treatment as Vegetable Marrows, except that in many places the majority are grown for their ornamental fruits, and are trained over pergolas, tripods, and similar supports. They should be liberally fed during the growing season.

Globe Artichokes.—Artichokes require a liberal mulch with some good litter from the stables. If they are well supplied with waterings of properly-diluted farmyard liquid, both the size and quality of the heads will be much improved.

Leeks.—Endeavour to obtain as soon as possible the desired height of blanching in the early Leeks, by gradually raising the collars and working fine soil about the bottoms. Plenty of water must be given at the roots and the tops should be sprayed every fine afternoon. Continue to put out the later sowings as the plants become ready. For late plantings, deep holes may be bored, dropping the young plants in to the depth of about 10 inches and gradually filling up as growth advances.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Peaches and Nectarines.—These having been disbudded as recommended in previous "Calendars"; the young growths should now be tied or nailed in. In most cases, the shoots may be trained to the wood they start from, as this will be removed after the fruit is gathered, but do not train in too many. Pinch out all lateral growths as they appear. Syringe the trees thoroughly on fine afternoons, wetting all parts of the trees, otherwise red spider and other insect pests will make their appearance. Remove any shoots that are growing unduly strong, for they would never be likely to bear well. The first thinning of the fruits may be commenced, for they are developing fast. Remove first those which are badly placed and others that are growing too thickly together. The final thinning must not be done until after the critical stoning period is past. Keep the trees well supplied with water. Young trees that were lifted last autumn should be watched closely and watered occasionally as required. If a good mulch has not been given such trees, let it be applied without delay. Trees in full bearing may be given a mulch of rotten farmyard manure, but for young trees growing strongly, a lighter and less forceful material will be more suitable, being required merely to keep the ground moist and cool.

Apricots.—Continue to pinch back any shoots not required for extension, and secure longer growths to the wires. Give the fruits their final thinning where this is necessary; but in cases under the writer's notice Apricots are only a very moderate crop, and, therefore, the fruits will be unusually valuable. When growing freely, the trees should be assisted by applications of manure water. Fruit trees on walls rarely get the full benefit from the rains at this season, and means should therefore be taken to make good the deficiency.

Plums.—Plum trees need similar attention to Apricots in the matter of the leading shoots and pinching out those not required for extension. Stop all foreright growths at the fourth or fifth leaf, leaving the weaker shoots, which should be stopped later in the season. Examine the trees carefully for aphides, and if these insects are discovered, give the trees a thorough wash first with a good insecticide, and afterwards with clear water from the garden engine. As young trees are apt to grow very strong, do not apply rich manurial stimulants in the watering or mulching, but apply a mulch of some light material. At present Plums are looking well, and the fruits are swelling rapidly.

General work.—Keep the hoe constantly at work, breaking up the ground sufficiently to ensure a fairly fine surface. Where watering has been done, the soil is apt to become caked and hard, and finally to crack, but this can be prevented by frequently stirring.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir Trevor Lawrence, Bart., Burford, Surrey.

Cœlogyne.—In addition to the *Cœlogyne*s mentioned last week, there are other species which thrive well in an intermediate temperature, such as *C. elata*, *C. burbata*, *C. speciosa*, *C. odoratissima*, *C. Micholitzii*, *C. conferta*, *C. Rossiana*, *C. ocellata*, *C. Lawrenceana*, *C. Sanderiana*, and the rare *C. Sanderæ*. These are now making their growth and may be repotted. Employ a similar mixture to that advised for *C. cristata*, but containing rather less loam, and more of the two fibres. As *C. Dayana* and *C. flaccida* produce pendulous racemes, they should be grown in baskets or shallow pans, which may be suspended. The warmth-loving *C. Massangeana* and *C. tomentosa* should also be cultivated in baskets. Whilst growth is being made, suspend them in a shady position in the East Indian house, and, during the resting period, in a similar position in the *Cattleya* house. *C. asperata* Lowii also requires stove treatment, and should be repotted, if necessary, directly after flowering. Shallow pans are preferable for the small, dwarf-growing varieties as *C. odoratissima* and *C. Thuiana*. After root disturbance, these *Cœlogyne*s need to be well shaded, and water must be afforded them very carefully around the edge of the pot rather than in the centre. As each plant becomes re-established, it will require an abundance of moisture until the pseudo-bulbs are fully made up. During warm summer weather spray them lightly overhead with clear tepid rain-water several times each day. It will be observed that sometimes the tips of the young growths of several of these plants are covered with a sticky exudation, which, if not carefully washed off, will prevent the young leaves from expanding.

Odontoglossum grande, *O. Schlieperianum* and *O. Inseayi* will now be commencing to grow, and should be repotted into similar compost as advised in a former "Calendar" for *Cattleyas*. The compost should be made extra porous, for although these plants delight in plenty of water when growing, it should pass quickly away, otherwise the least stagnation in the soil will cause the fleshy roots to decay. A critical time is during the early stages of growth, as the young breaks soon damp off if the soil is kept in a wet condition. They are also apt to decay should water be allowed to remain in their centres for any length of time. At Burford, we find that they do best on a high, dry shelf in the cool house. This kind of treatment is also suitable for the rare *O. Williamsianum* now coming into bloom.

Oncidium ampliatum, &c.—Plants that have passed out of flower should be placed in a cool intermediate house. While at rest very little moisture is required to keep the leaves fresh and the bulbs plump. As soon as growth recommences remove the plants to the warmer atmosphere of the East Indian house. Those plants of *O. leucochilum* which have been flowering in the intermediate house should, immediately their spikes are cut, be placed in the cool house. Owing to the great strain of carrying strong-branching flower-spikes, the pseudo-bulbs become more or less shrivelled, but with proper care and attention they return to their normal condition soon after growth recommences. While at rest, keep the plants cool, and do not afford heavy waterings, but merely keep the surface of the compost just moist. At this season there are other *Oncidium*s, such as *O. Marshallianum*, *O. crispum*, *O. concolor*, and *O. pratextum* which are liable to become exhausted after flowering. Therefore, both owner and grower should take the future into consideration and remove the spikes after the flowers have been open a reasonable time. Any of these plants, or others which have not wholly recovered from the effects of last season's flowering, should not be allowed to bloom this year. With a season's rest, and all other conditions being favourable, they will regain their strength. Small, weakly plants should not be allowed to bloom at all. These remarks are also applicable to *Odontoglossum crispum* and its allies. There are many who possess newly-imported plants of these species and who are anxious to see them flower; others, too, who are flowering young seedlings for the first time, and are equally anxious as to the result. It is advisable to leave only one or two flowers to open so as to determine the variety, and then

to grow the plant on for several years without flowering, by which time it will be so thoroughly established as to bring to perfection a strong inflorescence without causing distress to the pseudo-bulbs.

Cattleya gigas.—Strong plants of *Cattleya gigas*, whether showing flower-sheaths in the young growths or not, should at once be elevated close to the roof glass of the house. Afford them plenty of water at the roots. Defer the potting of the plants until after they have flowered and the new pseudo-bulbs have fully developed.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Late vines.—As soon as the flowers are set upon late vines, it will be time to regulate the growths, the laterals must be stopped and shoots tied down to the wires. Much care must be exercised in this latter matter, especially with such varieties as Black Alicante, Appley Towers, and Lady Hutt, for at this stage the shoots are easily broken off. In any case, they must be trained in the right direction and gradually pulled down at intervals of a few days, until ultimately they can be tied to their proper position on the trellis. Remove all surplus bunches as soon as it can be seen which are needed for furnishing the crop. Late vines must not be overcropped, this being one of the chief causes of shanking, and a hindrance to perfect ripening. The thinning of the berries must not be delayed when once they are large enough for the operation to be properly carried out. The free-setting kinds especially swell very quickly at this time of the year, and the berries are therefore liable to get damaged through overcrowding. Late Grapes should be more severely thinned than earlier ones, for they need more room for the berries to mature without unduly pressing each other, a condition which is against their good keeping. At the same time they must not be over-thinned, especially at the top of the bunch. In the case of varieties of compact habit such as Gros Maroc and Gros Colmar, the bunches may be increased in size if the shoulders are carefully looped up. The final thinning must be deferred for a week or two until it can be better determined which berries are going to swell best. If the borders are properly drained and the vines thoroughly well-rooted they must be given copious supplies of liquid manures and occasional sprinklings with some fertiliser. When the final thinning has been done, apply a good mulching of farmyard manure over the roots. Do not employ fire heat when temperatures can be maintained in its absence, and at no time must the water pipes be overheated, as this condition encourages the spread of red spider. If this pest is present, sponge the affected leaves with soft soapy water. Late vines should receive plenty of ventilation; the rods should be trained sufficiently far from the glass to allow a free circulation of air about the foliage. The ventilators at the top of the house should be allowed to remain open just a little all through the night. At the same time draughts of cold air must not be permitted.

The orchard house.—Complete the final thinning of Peaches and Nectarines and other stone fruits as soon as the stoning stage is past. In determining the number of fruits upon each tree, the operator should consider carefully the size and strength of the individual trees. Again, it must be said that overcropping should be avoided, as in all cases prejudicial to good gardening. Apply plenty of water to the roots and give liquid manure water at frequent intervals, increasing the strength of the manure water after the stoning stage is past. Mulch the trees with decomposed horse manure and loam in equal proportions, adding small quantities of some approved fertiliser. Syringe the trees freely on bright days, and damp the surfaces in the house three or four times every day. Pinch the young growths, especially the strong ones.

Tomatos.—Pot plants should be stopped when they have set four or five trusses of fruit, as they are not able to perfect such a large crop as plants which are growing in beds. Remove the side shoots and, where the foliage is obscuring the light and air from the fruits, the leaves must be partly cut away, but not too severely, for the fruits ripen better when partially shaded. Give the plants a top-dressing of some rich material

such as loam and well-decayed horse manure in equal proportions. The roots should be watered and fed more frequently than hitherto. A batch of plants should be raised about the second week in June for supplying fruits in late autumn. When established, these plants should be placed in a sheltered position out-of-doors, and not be brought in again until the autumn frosts are apparent. By that time each plant should have set several trusses of fruits, and these will carry the supply till the end of the year.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir Edmund G. Loder, Bart., Leonardslee, Sussex.

Roses.—Endeavour to keep all the Roses clean of insect pests. Maggots require to be sought often, or they will disfigure the foliage. They are apt to hide themselves in the tip of the leaf, and commence to draw the flower-buds inside. Green fly can be kept under by spraying the plants with extract of quassia or petroleum emulsion. This latter remedy, however, must be applied with caution or the leaves may receive damage. Apply water to any that need it during dry weather. Tie in strong growths in order that they may not be damaged by winds, and remove all decayed flowers from early-blooming varieties. Employ the hoe frequently on the ground amongst the young Rose plants in the nursery. Examine the ties upon standard plants and make any good that require it. *Rosa sinica* Anemone and fulgida flowered grandly during the last fortnight. These are two excellent Roses for early-flowering, the colours being so exquisite.

Summer bedding.—Complete the summer bedding as soon as possible, remembering the season at its best is only a short one. Give every plant all the facilities possible for making a good start. Keep the beds and borders free from weeds, and the edges neatly clipped.

Annuals.—Those which have been planted out should be sprayed every evening with water. *Dimorphotheca aurantiaca* is now flowering splendidly, but it looks as if it will be short-lived.

Seed sowing.—Anemone seed may now be sown on finely-prepared soil. Seed beds should be shaded by placing moss or some similar material upon them. The present time is suitable for sowing seeds of *Aquilegia*, *Dianthus*, *Hollyhocks*, *Polyanthus*, and other species required for spring gardening, if this work has not already been done.

Bog plants and aquatics.—Remove all the old soil and decayed matter from around the plants growing at the edges of lakes and ponds and apply a top-dressing in cases where this is necessary. *Spiræas* and similar plants are much improved by a dressing of soot occasionally, especially *S. palmata*, a variety which succeeds so well in these positions. If any waterside plants have to be planted the work may now be done, as the temperature of the water is now increased. *Richardia africana*, if it has been hardened off, may now be planted in 2 feet deep of water. Some excellent plants for the water-edge include *Lythrum roseum superbum*, *Calla palustris* and *Little Gem*, *Aponogeton distachyon*, *Acorus calamus*, *Hottonia palustris*, *Menyanthes trifoliata*, *Rumex Hydrolopathum*, *Zizania*, the Water Rice, which grows 8 to 10 feet in height, *Gunnera manicata*, and *G. scabra* should now be freed from all protective material which should be spread about over the roots. Give manure as recommended in a former Calendar. If the flower-heads are removed as soon as they are seen the leaves will grow to a larger size. *Kniphofias* are fine plants for the waterside. They should receive heavy top-dressings of manure. *Acanthus latifolius* is a very stately plant with fine large leaves of glossy green and tall spikes of blue and white flowers. This plant should be planted out from pots. *Petasites gigantea* is a fine foliage plant for the margin of a lake or swamp. It is an excellent plant for heavy soils. The plant flowers in spring before the leaves appear. Other good species include *Rodgersia podophylla*, *Saxifraga peltata*, and *Rheum palmatum*.

General work.—Mow and clip the lawns frequently. Attend to watering, weeding, staking, and tying. First in importance is the proper care of the plants themselves.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JUNE 8—

Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by the Rev. Prof. G. Henslow, on "Old Superstitions about Plants"). British Gard. Assoc. Ex. Council meet.

WEDNESDAY, JUNE 9—

Roy. Cornwall Sh. at St. Columb (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—58.2°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, June 2 (6 P.M.): Max. 58°; Min. 50°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, June 3 (10 A.M.): Bar. 30.0; Temp. 60°; Weather—Overcast.

PROVINCES.—Wednesday, June 2 (6 P.M.): Max. 63° Ireland N.W.; Min. 51° Scotland East Coast.

SALES FOR THE ENSUING WEEK.

MONDAY—

The valuable Freehold Horticultural Property, "Vale Nursery," Haywards Heath, Sussex, area 5a. 2r. 14p., with Bungalow, Cottages, Orchard Houses, &c., at The Mart, E.C.; by Protheroe & Morris, at 2.

WEDNESDAY—

Bulbs and Roots in variety, at 1; Palms and Plants, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

Choice imported and established Orchids, and a "Reichenbachia" complete in four vols., at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

Soil Fertility and Soil Exhaustion.

Two theories as to the cause of soil fertility are in general vogue. According to one, which may be called the chemical theory, a soil is fertile which possesses the chemical compounds such as nitrates, phosphates, and salts of potash, necessary for the growth of plants, in sufficient quantity and proper condition of solubility. The second, or physical theory, holds that the essential factor in soil fertility is its relation to water. Roots of plants require air as well as water. The root has to supply the leaves with large quantities of water. Only when the physical condition of the soil admits of the root of a plant obtaining adequate supplies of water and also of air, can the plant grow properly. On the physical theory alone such soils are fertile in which these conditions obtain.

These two theories are not necessarily mutually exclusive. We may combine them into a chemico-physical theory, and attribute fertility, in part, to the presence in the soil of the essential mineral substances, and, in part, to the proper relations of soil to water.

The extreme adherents of the physical theory go further than this, and are apt to maintain that a soil does not become exhausted by plants in consequence of the removal by the latter of the available, chemical food materials. They urge that as such materials held in solution in the soil-water are

taken up by the roots of plants, corresponding quantities of similar substances pass into solution and thus replace in the water of the soil those absorbed by the plant.

On this view it is not easy to understand how the addition of definite chemical fertilisers produce their well-marked effects on soil fertility. If a soil lacks phosphates, for example, it is easy to understand the beneficial result following on the addition of phosphatic fertilisers. But if a soil does not lack phosphates, how can the addition of these substances produce, as in certain soils, and on some crops it indubitably does produce, an improvement in fertility? The workers in the Bureau of Soils of the United States Department of Agriculture propose to explain such facts as these on a new hypothesis of soil fertility and soil exhaustion. According to this hypothesis, soil fertility is not reduced because of the removal by the crop of mineral food materials, but because the crop forms a definite, chemical poison, which is liberated in the soil and acts adversely on the following crop. The rôle of artificial, chemical manures is to neutralise the poisonous effects of the toxic root excretions. The supporters of the toxic theory, as it may be called, have brought forward a considerable body of evidence in support of the suggestion that plants excrete definite poisonous substances, and they urge that the common practice of rotation of crops lends support to their view. It is too early yet to pronounce definitely either for or against the toxic theory, though that it will replace altogether the chemical theory would seem improbable. It is not unlikely that the toxic substances produced in the soil represent not the excretion of plants but the by-products of the activity of certain races of soil bacteria. A vast and almost untitled field of investigation is presented by the bacteria of the soil, and it is probable that soil fertility will be found to depend on chemical, physical and biological factors, not solely on one of these, and to be the consequence of complex, diverse conditions rather than of one condition only.

Self-Boiled Lime-Sulphur Mixture.

Lime-sulphur washes, made by boiling together suitable amounts of lime, sulphur and water (see our issue May 15, 1909, p. 313), though useful substitutes for the Bordeaux mixture for spraying dormant trees, and often recommended for general spraying purposes, are apt to damage such tender foliage as that of the Peach. Hence the Bureau of Plant Industry of the U.S. Department of Agriculture has instituted experiments to investigate the use of a milder form of lime-sulphur wash, termed "self-boiled." In Circular No. 27 of the Bureau the method of preparation of this spray-material is thus described. The mixture can best be prepared in rather large quantities so as to get enough heat to produce a violent boiling for a few minutes. The quicklime (20 lbs.) is placed in a barrel, and about 3 gallons of water is added in order to start slaking, and to keep the sulphur off the bottom.

As much sulphur as quicklime is sifted in, and then, the mixture being vigorously stirred, enough water is poured in to slake the lime into a paste. When the violent

boiling which accompanies the slaking is over more water is added, in order to stop the cooking. For use, the mixture must be diluted with water in the proportion of 100 gallons for 20 lbs. of lime and 20 lbs. of sulphur.

It is claimed that, when prepared in this way, less sulphur goes into solution, and that, during the slaking, the sulphur is broken up into extremely fine particles, and thus makes with the lime a good mechanical mixture. The self-boiled wash thus obtained should be strained through a sieve of 20 meshes to the inch. The spraying outfit should be provided with a good agitator. Experiments made with the wash on Peach trees affected with scab (*Cladosporium carpophilum* Thüm) and with brown rot (*Monilia fructigena*, Pers.) reduced the amount of diseased fruit from 36.9 to 12.2 per cent. in the case of the former disease and from 93 to 16 per cent. in the case of the latter. The trees, 20 in number, were sprayed three times—once in April and twice in May, the first spraying being about a month after the petals had fallen, the last, three weeks before the fruit was picked. No scorching of the leaves resulted from the use of the self-boiled material. Unfortunately, the wash produces a whitewashing effect on the fruit, but, if the spray is applied about a month before picking time, the stain, in large measure, passes away by the time the fruit is ripe. Experiments were also made on Cherry-leaf spot (*Cylindrosporium padi* Karst), and showed that the defoliation, which is a consequence of the attacks of this fungus, is prevented by the use of self-boiled lime-sulphur wash, as it is also by Bordeaux mixture. In trials on Apple-scab the lime-sulphur wash appeared to give results inferior to those obtained by the use of either Bordeaux mixture or lime-sulphur wash made in the usual manner.

OUR SUPPLEMENTARY ILLUSTRATION affords a view of Syon House, Brentford, the residence of the Duke of NORTHUMBERLAND, K.G., as seen from the banks of the Thames skirting Kew Gardens. The gardens at Syon are almost as famed as the residence, and in the glasshouses and grounds many species of plants have flowered for the first time in this country. The Daffodils on the Kew side, shown in the foreground, are now past, but this portion of the pleasure ground is still charming with the numerous shrubs in flower, the magnificent display of Rhododendrons, and the scene on the river itself. The Grass about the Daffodils is not mown until the leaves of the bulbous plants show signs of withering, generally about the end of June. Some varieties of Narcissi thrive even better in the "wild" garden than when grown in prepared beds or borders. The common double Daffodil *N. Telamonius plenus* is a particularly pleasing variety for effect at a distance; this, with pallidus præcox and the Tenby Daffodil *N. obvallaris* are the earliest to flower. They are followed by Sir Watkin, Emperor, Empress, Stella, Frank Miles, Autocrat, and *N. poeticus præcox*, all valuable varieties for naturalising in Grass land. *N. Johnstonii* Queen of Spain is delightful when thriving in the Grass, but only in some places does this variety succeed. The illustration is further interesting, for whilst the Daffodils are in Surrey, Syon House is in the county of Middlesex, the two counties being divided by the river.

NATIONAL ROSE SOCIETY.—The summer show will be held in the Royal Botanic Gardens, Regent's Park, N.W., on Friday, July 2. The prizes include two champion challenge trophies, also numerous other cups and pieces of plate, and money prizes to the value of £400. Luncheon, tea, and light refreshments will be obtainable in the gardens. Further particulars can be obtained from the hon. secretary, Mr. EDWARD MAWLEY, Rosebank, Berkhamsted.

FORTUNE'S YELLOW ROSE.—We have received a few flowers of this delightful Rose from Mr. G. H. HEAD, Kingston Manor Gardens, Taunton, Somersetshire, who states that a plant is at present flowering very finely on the southern aspect of the Manor House. The distinct colouring of this fragrant Rose makes it a desirable plant in any locality where it can be cultivated with success.

EXHIBITION OF RHODODENDRONS.—Messrs. JOHN WATERER & SONS, LTD., opened their annual exhibition of Rhododendrons at the Royal Botanical Gardens, Regent's Park, on Thursday, June 3. The show, which is beautifully arranged under canvas, consists of upwards of 2,000 plants, varying in height from 2 to 10 feet. About 200 varieties are represented. The exhibition will remain open until the end of the present month.

A NOVEL MOUSE TRAP.—Among the many interesting subjects dealt with in the February number of the *Queensland Agricultural Journal*, we may draw attention to the following ingenious method, quoted from "Popular Mechanics," of catching mice. The materials required for the trap are a piece of an old bicycle tyre and a glass fruit bottle. One end of the tyre is placed in the mouse-hole and the other in the mouth of

quite well in the dilute solution which he recommends. Those who are plagued in summer-time with flies would do well to try this method; for, apart from the nuisance, flies are, by reason of their powers of distributing germs of disease, to be reckoned among the enemies of mankind.

THE DESTRUCTION OF WEEDS BY SPRAYING.—The value of copper sulphate as a means of destroying Charlock is well known, and it is unfortunate that other specifics for other kinds of weeds among growing crops have not as yet been discovered. Extensive experiments have recently been carried out, apparently with success, in the Malay Straits in cleaning land not occupied by a crop by means of spraying with a solution of arsenate of soda. It is claimed that the cost of thus cleaning land about to be brought into cultivation is only 2s. per acre. Up to the present there is no reason, however, for believing



[Photograph by A. E. Smith.]

FIG. 161.—GROUP OF VANDA TERES EXHIBITED BY MR. LEOPOLD DE ROTHSCHILD AT THE TEMPLE SHOW.

(See Report in last issue.)

ROYAL BOTANIC SOCIETY.—At a meeting of the Fellows held last week, it was decided that each Fellow should make a contribution of five guineas towards the fund of the Society. It was explained by the chairman that unless such help was forthcoming within a month, the Society would have to go into liquidation, in which case the Gardens would revert to the Crown.

THE PERPETUAL-FLOWERING CARNATION SOCIETY has decided to hold a trial of perpetual-flowering Carnations in the open ground at the Royal Botanic Gardens, Regent's Park, N.W., in order to test the suitability of varieties for open-air culture. Members of the society are requested to forward plants to Mr. E. F. HAWES, at the above address, who has undertaken to conduct the trials. Plants should be forwarded carriage-paid as early as possible, and a list of varieties sent by each member should be included. The trials will be inspected by the Floral Committee, marks given according to merit, and the results published in due course.

the bottle. The mice run up the tunnel thus formed and so are imprisoned in the bottle without chance of escape. No bait is necessary.

TO KILL FLIES.—Dr. ALEXANDER HILL, writing in a recent issue of *Nature*, states that a dilute solution of formaline (two teaspoonfuls of the commercial 40 per cent. formaline added to a soup plate filled with water) makes an efficient fly-destroyer. Flies go to it to drink, and die, some in the water, others in the neighbourhood of the plate. So dilute a solution as that which suffices to keep down the flies is not enough to produce, by the vapour liberated from it, any harmful effect on people living in the room. Dr. HILL points out that the formaline method is free from the gruesome associations of fly-papers and other traps which hold their struggling victims, and that it may even be turned to ornamental uses, for the dish may be provided with a central wire cage and filled with flowers. Though formaline is poisonous to plants as well as to animals, yet, according to Dr. HILL, cut flowers keep

that the use of arsenate of soda would be possible in the case of land bearing crops.

CUPRESSUS MACNABIANA.—We are asked to state that the Curator of the Botanic Garden, Cambridge, would be grateful to any reader of the *Gardeners' Chronicle* who would be so kind as to send him a plant of *Cupressus Macnabiana*. He would also be much obliged for a branch with cones if possible.

THE CULTIVATION OF THE BANANA IN THE SOUTH OF FRANCE.—Some five years ago young Bananas, introduced from Algeria, were planted in the open in the South of France (Department of Var). The only protection given to the plants was a wrapping of straw during the winter months. This year, according to *Der Handlungsgärtner*, the plants have borne fruit. Hence, it seems not improbable that French-grown Bananas may be put, in course of time, on the market, though it is more likely that, if Banana-growing in France is developed successfully, the market for them will be found in France and Germany rather than in this country.

THE ROYAL INSTITUTION.—Dr. F. F. BLACKMAN will deliver two lectures at the Royal Institution on "The Vitality of Seeds and Plants": 1 (June 5). "A Vindication of the Vitality of Plants"; 2 (June 12), "The Life and Death of Seeds."

THE ARTIFICIAL RETARDING OF PLANTS.—An interesting experiment in retarding the development of plants is published by M. P. NOËL in *Le Naturaliste*. For the following account of the experiment we are indebted to *Der Handlungsgärtner* (May 8):—The owner of a fine exotic species of *Prunus* observed that, though the plant flowered freely every year, it failed, owing to the frosts of early May, to form fruits. He determined therefore to try the effect of ether. To this end he made, in the neighbourhood of the roots, a hole in the ground about 16 inches deep, poured in ether, and closed the hole. As a consequence of this root-etherisation, the *Prunus* flowered two weeks later than usual, escaped the late frosts, and set its fruits. It is curious that etherisation should, when applied to the shoots of plants, as in JOHANNEN'S well-known method of forcing, produce precocity of flowering, and, when applied to the roots, give rise to an opposite effect. More experiments are needed before this retarding effect of ether can be regarded as being of general application.

CLIMATE AND THE CHEMICAL COMPOSITION OF WHEAT.—The influence of environment on the composition of Wheat, both as to nitrogen and ash content, is a question which is receiving much attention from agricultural chemists. Climate appears to be far more potent than soil fertility in influencing the composition of the grain. The researches of LAWES and GILBERT have shown that manuring has but little influence on the composition. The shorter the period which elapses from the formation of the grain until it is ripe, the higher the nitrogen content. High temperatures, long days, and absence of moisture during the ripening process hasten the maturation of the grain and increase its percentage of gluten. Recent researches of Mr. F. T. SHUTT, carried out at the Canadian Experiment Station, Southern Alberta, have been devoted to the study of the influence of the moisture-content of the soil on the Wheat crop. A larger amount of moisture in the soil prolongs the vegetative processes and delays the maturation of the grain. Early ripening tends to the production of a hard, glutinous Wheat. Prolonged vegetative growth induced by excessive moisture defers ripening and allows of the further deposition of starch. Whilst, however, the amount of gluten is a product of the season, the character of the gluten depends on the variety of the Wheat.

PLANT POISONS.—Among the most remarkable of the occasional constituents of plants are those substances known to chemists as cyanogenetic glucosides. These glucosides are complex substances, which split up readily into a sugar (glucose) and other compounds, among which is the highly-poisonous prussic acid. Inasmuch as such glucosides occur in various fodder plants, it is not surprising that instances of poisoning occur occasionally among cattle which have fed upon these plants, e.g., Sorghum, Millet, &c. Within the past few years three new cyanogenetic glucosides have been isolated from plant tissues, viz., sambunigrin from the leaves of the Common Elder *Sambucus nigra*; prulaurasin, from the leaves of the Cherry-Laurel *Prunus Laurocerasus*, and amygdonitrile glucoside from the young twigs of *Prunus Padus*, and more recently from the bark of the Wild Cherry *Prunus serotina*. The last-mentioned glucoside is peculiarly interesting, inasmuch as it is a constituent of amygdalin, the active principle of bitter almonds, and was, indeed, prepared from amygdalin in the

laboratory in 1895, 12 years before its discovery as a natural product of plants. The work of the chemists in isolating and examining the constituents of plants must lead ultimately to the goal so much desired of botanists, the discovery of the chemical course of events whereby the inorganic nitrogen taken in by the plant in the form of nitrates is built up into organic nitrogen.

A NEW PARAFFIN EMULSION.—Paraffin, made into an emulsion with soft soap, has long been used as an insecticide, but one drawback to its use is the tendency of the paraffin to separate out from the emulsion. Mr. MACCOUN, horticulturist to the Canadian Department of Agriculture, finds that when flour is substituted for soft soap the emulsion obtained is finer and more permanent. By mixing 1 gallon of paraffin, 2½ lbs. of flour (the poorest quality serves), and 9 gallons of water, and whipping the mixture vigorously for five minutes, an emulsion is obtained which remains good for 14 hours. If it is not required to keep the emulsion so long, half the quantity of flour suffices. It is best to add the flour to the paraffin, and then to pour in about four gallons of water, to beat the mixture vigorously till the emulsion is obtained, and then to make up with the rest of the water (five gallons).

PUBLICATIONS RECEIVED.—*Home-Bottled Fruits and How to do Them*, by G. W. S. Brewer, F.G.S. (Cheltenham: Harvey & Healing, Manchester Street.) Price 6d. net.—*Purdue University Agricultural Experiment Station. Bulletin No. 132: Vol. XIV. Results of Co-operative Tests of Varieties of Corn, Wheat, Oats, Soy Beans, and Cow Peas.* (1908.) Bulletin No. 133: Vol. XIV. Commercial Fertilisers. (Indiana, U.S.A.: Published by the Station, Lafayette.)—*Studies in Fossil Botany.* (Part II.) By Dukinfield Henry Scott. (London: Adam and Charles Black, Soho Square, W.) Price 5s. net.—*Observing and Forecasting the Weather: Meteorology without Instruments*, by D. W. Horner, F.R. Met. Soc. (second edition). (London: Witherby & Co., 326, High Holborn.) Price 6d. net.—*Circulars from Agricultural Journal of the Royal Botanic Gardens, Ceylon.* (1.) Animals associated with the Hevea Rubber, by E. Ernest Green. (2.) Tapioca, Manioca, or Cassava, by M. K. Bamber. (3.) Oil-yielding Grasses grown at Bandarawela, by J. F. Jowitt, B.A. (4.) A revised list of the plots on the Experimental Station, Peradeniya, by R. H. Lock, M.A. (5.) The Cultivation of *Passiflora foetida* and *Mikania scandens* to keep down other weeds, by M. Kelway Bamber. (6 and 7.) Abnormalities in *Hevea brasiliensis*, by T. Petch. (8.) Cotton Cultivation: Its extension in Ceylon, by J. Stewart J. McCall.—*Board of Agriculture and Fisheries. Leaflet No. 97: Farmers' Co-operative Societies.* No. 203: The Larch Shoot Moths. No. 214: Agricultural Banks. No. 219: Glanders and Farcy. No. 220: Agricultural Holdings Act, 1903.—*Notes from the Botanical School of Trinity College, Dublin.* No. 1, Vol. II. (May.) (Dublin: University Press.)—*Straits Settlements Annual Report on the Botanic Gardens, Singapore and Penang for the year 1908*, by H. N. Ridley. (Singapore: Government Printing Office.)—*Beautiful Flowers and How to Grow Them*, by Horace J. Wright and Walter P. Wright. (Part XIV.) (London: T. C. & E. C. Jack.) Price 1s. net.—*Liste Sommaire et Préliminaire de quelques-unes des Plantes du Jardin "Les Tropiques" à Nice, cultivées à l'air libre.* (Toulon: Romain Liantaud, 56, Boulevard de Strasbourg, 56.)—*Agricultural Bulletin of the Straits and Federated Malay States.* (May.) (Singapore: The Methodist Publishing House.)—*Charles Darwin: Three Appreciations by J. M. Macfarlane.* Lecture delivered before the Faculty and Students of Pennsylvania College, Gettysburg, when Delegate from the University of Pennsylvania, February 12, 1909.—*Annalen des K.K. Naturhistorischen Hofmuseums.* Nr. 2-3. (Wien: Alfred Holder.)—*The Journal of the Board of Agriculture of British Guiana.* (Demerara: The Argosy Co., Ltd., Georgetown.) Price 1d.

NOTES FROM A "FRENCH" GARDEN.

ONE of the most important items in hot weather is that of watering, and this should be done in a thorough manner. For crops growing in the open, the hose is usually employed, but for the young seedlings, as well as for plants under the lights, cans will be found most suitable. Although it is preferable to water early and late in the day, yet on some occasions the grower is obliged to apply water all through the day. Cauliflowers and Carrots will not suffer any injury if watered in the middle of the day, but in the case of salads, especially Lettuces and Endives, water should not be given to these plants when the sun is not powerful.

The beds will soon be cleared of Carrots, and the ground must then be hoed and thoroughly cleansed before the Cauliflowers spread their leaves over the beds. Cauliflowers will be showing their inflorescences in a few days, and must not be allowed to become dry, otherwise the heads will not develop well. The young seedlings of this plant require light waterings daily. Thin them out if they are too numerous.

Endives planted at the end of April are now ready for blanching. As the hearts of these plants decay if tied up too long, it is advisable only to tie sufficient batches to meet requirements.

The first batch of Melons is now fruiting. Great care and knowledge are required in selecting the fruit to ripen; as a rule, it should be selected as far as possible from the main stem, on a strong and healthy shoot. The shape of the young fruit must be perfect. The plants make but little growth during the time the fruits are swelling. They require plenty of water (three gallons per light daily) when the weather is fine, and the lights should be opened wide whenever possible, closing them again towards evening. The main batch is now growing freely, and the side shoots are stopped to the second leaf. Occasionally small shoots break away from the main stem at the base of the side shoots, but these must be removed. Although these plants will not require much water, they must be allowed ample ventilation so as to ripen the shoots. At the present time it is necessary to grow Melon plants hardy, for this will facilitate the setting of the flowers later on. All Melons must be watered early in the morning. The grower should examine the plants in the course of the day and shade any which flag.

We are now cutting the "Passion" Lettuces which were planted early in the spring. They do well in our garden, which is of a clayey nature. Cos Lettuces, planted late in March and early in April, are hearting. These plants require heavy waterings, at least three times a week. Examine them from time to time, as the heart is liable to decay when the watering is done late in the morning. *P. Aquatias, May 20.*

THE ALPINE GARDEN.

ANEMONE PATENS LUTEA.

THERE are few yellow-flowered Windflowers; they include the yellow varieties of *Anemone patens*, the Spreading Windflower, which is a near ally of *Anemone pulsatilla*, the native Pasque Flower. The type flowers of *A. patens* are purple, but there is a North American form (by some authorities regarded as a species) which has also purple flowers, and of which there is a cream-coloured variety. The European plant gives, however, a form with pale yellow flowers, and this is called *A. patens lutea*.

Anemone patens prefers a rather calcareous soil; it thrives in that which suits *A. pulsatilla*, and delights in a similar situation. Pot plants should be purchased if possible, as these tap-rooted Anemones are difficult to establish, and it is not advisable to disturb the roots more than is necessary. *S. Arnott.*

THE CARRIAGE OF VEGETABLE AND FRUIT PRODUCE BY RAILWAY.

THE article in last week's issue of the *Gardeners' Chronicle* by Mr. G. B. Lissenden on the subject of combination among growers for the purpose of the carriage of goods by rail raises once again a question which is well worthy of serious consideration. Undoubtedly lower rates can be obtained for the carriage of large lots than can reasonably be demanded in the case of smaller lots, and it might be well worth while for growers to consider how far the principle of co-operation might in certain instances be extended in this direction.

At the same time it has to be borne in mind that the conditions in France and Germany are not quite identical with those which obtain in England. In Germany, for instance, rates are,

to urge that if he were to send his goods in the first instance to some forwarding agent, possibly some miles away, for the purpose of having the goods bulked with those of other growers, considerable time would be lost owing to the extra handling involved. Furthermore, the English grower usually prefers to place on the market high-class goods which will tend to enhance his trade reputation, and he objects to have his consignments mixed up with those of other growers who may choose to adopt a somewhat lower standard of quality. As Mr. Lissenden rightly points out, the railway companies will not make a reduction on consignments of various growers "lumped together" unless one only of the growers is, by arrangement, selected as the nominal sender on behalf of all. The name of the selected grower has to appear on the consignment note, and he has to be authorised by

home trader are (a) that a Departmental Committee has already reported against the contention that foreign traders are granted better terms than home traders, and (b) that most, if not all, of the trader's present complaints would be disposed of if he would consent to co-operate. These are, in fact, the two herrings which railway companies always seek to draw across the trail of enquiry into the peculiar difficulties with which home traders are faced, and it may, therefore, be worth while to examine them a little more closely.

FOREIGN PREFERENCE

Dealing with the first point, it is perfectly true that in 1906 a Departmental Committee appointed by the Board of Agriculture sat to enquire into the question of whether preferential treatment is in fact given by home railways to foreign pro-



FIG. 162.—GROUP OF ORCHIDS EXHIBITED BY MESSRS. SANDER AND SONS AT THE TEMPLE SHOW.

(See Report in last issue.)

generally speaking, far more favourable to the trader than those which are granted by the various English companies. In Germany also the work performed by the railway companies usually consists of haulage from station to station, the work of collection and delivery (for which an extra fee is charged in England) being done by separate companies which act as forwarding agents. In Germany, goods consigned for export to England meet with specially favoured treatment at the hands of a paternal Government and are rushed through to the coast in special trains at specially low charges. The English grower, on the other hand, who (under existing conditions) caters mainly for the home market, finds it necessary to send small daily consignments to London and elsewhere. For him the question of time is often of vital importance, and he is wont

his fellow growers to receive on their behalf the special allowances made. It is therefore not altogether difficult to understand the reluctance of the high-class grower to have his goods bulked in this way, whereas a large number of lower-grade growers, who combine in Germany for the purpose of carriage of their goods by rail, are not affected by similar considerations. These, it is understood, are the contentions usually put forward by English growers which the writer does not profess to criticise from the practical point of view, but upon which it would be highly interesting to have the comments of growers themselves.

In discussing this question it must, however, be borne in mind that the two stock arguments with which the English railway companies always attempt to meet complaints from the

duce. It is also the fact that the majority of this Committee eventually reported that the complaints had not been substantiated. Traders, however, have always contended that for many reasons the enquiry thus held was most unsatisfactory. In the first place Sir C. J. Owens and one or two other railway magnates were members of the Committee, and, while they doubtless endeavoured to bring an open and unbiassed mind to bear upon the questions on which they were asked to adjudicate in a semi-judicial capacity, it may well be imagined that they must have found considerable difficulty in forming an impartial decision upon matters in respect of which they had entertained a lifelong conviction that the railway companies with which they were associated were necessarily in the right; and it may well be that the great force of their expert

[Photograph by A. E. Smith.]

knowledge and experience exercised an unperceived influence over the minds of other members of the Committee who were less well acquainted with the practical side of the questions involved. Then again the railway companies, recognising the danger with which they were threatened, brought into play all the heavy artillery of which they were possessed in the shape of the special figures which were necessarily at their disposal and to which traders had, of course, not the same means of access, either for purposes of comparison or investigation. Naturally it was well worth the railway companies' while to spare no expense in getting up their case at a cost with which the comparatively less rich and less organised traders could not hope to compete.

On this Committee, however, there was one member who possessed a special knowledge of the difficulties with which the agriculturists and horticulturists in this country have to contend, namely, Mr. Haygarth Brown, a superintending inspector of the Board of Agriculture and Fisheries; this gentleman found himself under the necessity of making a separate report to which, curiously enough, the railway companies always omit to refer when urging that the report of the Departmental Committee was in their favour. Having regard to the special position occupied by Mr. Haygarth Brown, his views are well worthy of serious consideration. Some of the conclusions to which he was driven were as follow:—

(1) That the report of the Committee dealt principally with the question whether certain differences in rates favourable to the foreign producer amounted to *undue or illegal* preference, so that this question was merely of a legal nature, and in his opinion was outside the terms of the reference.

(2) That the term "preferential treatment" ought to be taken to include not only the question of rates, but also the question of whether more or better facilities for the carriage of foreign produce were not offered to the detriment of home produce.

(3) That the evidence was directed more particularly to "rates" rather than "facilities."

(4) That in some instances the railway companies admitted that the rates granted to foreign produce were lower than those granted to home produce, but alleged that this was due to differences in the services rendered in each case.

(5) That in no case did the railway witnesses succeed in demonstrating that the difference in the rates complained of was proportionate to the difference in the cost of the services rendered.

(6) That in one or two cases the railway witnesses admitted the growers' contention that certain competitive rates charged for foreign produce were lower even in proportion to the cost of the services rendered than the corresponding non-competitive rates for home produce.

(7) That in his opinion the evidence showed that "preferential treatment" is in some cases accorded to foreign produce, in the sense that rates are charged for such produce lower even in proportion to the cost of the services rendered than the corresponding rates for home produce.

(8) That no practical and effective means exist at present by which agriculturists can check the correctness of the decisions of the officials of the railway company on the question whether a rate for foreign agricultural produce is lower in proportion than a rate for home produce.

(9) That where through rates from a foreign port to an English urban centre are charged by a railway company owning steamships, it is necessary, in order to check the justice of the rates, to know what proportion of the total rates is charged for the sea journey and what proportion is charged for the land journey in England; but it appeared from the evidence that different companies adopt different systems of allocation, and it was stated by the witnesses that the allocations are not based on any statistics, but is a matter of their own judgment, and that the allocation can be altered at any time. (This simply means that where the rate charged for the land portion of the journey is challenged as unfair, the railway companies can, it is true, be compelled to say how much of a through rate is charged for overland transit and how much for the sea journey, but there is nothing to prevent their juggling these figures in any manner they think fit, as they can state the proportion in any manner that suits their purpose for the moment without the justice of the proportion being challenged.)

(10) That in tackling the railway companies on questions of this kind, although the interests involved to agriculturists collectively are probably very large, the interests involved to the individual agriculturist are not sufficiently large to justify him or his association in undertaking the expensive proceedings involved.

(11) That work of this nature ought, therefore, to be undertaken by the Board of Agriculture and Fisheries on behalf of agriculture generally.

Before leaving this subject it may perhaps be instructive to note that this question was made the subject of legal proceedings in an action

which the Mansion House Association brought against the London and South Western Railway a few years ago. In that action the Court decided that the allegation that preference was being shown to the foreign producer was not justified in certain instances, but that, on the other hand, in some cases the home traders' complaint was well founded, and the railway company was accordingly ordered to stop granting unfair preference to foreign produce, such as Hops, Hay and fresh Meat. This, therefore, shows that in certain instances railway companies do grant illegal preference to the foreign producer, and that it actually requires an order of Court to stop them doing so! H. M. V.

(To be continued.)

VEGETABLES.

BROCCOLI MODEL.

WE have to-day (May 18) dug up and heeled in under a north wall the remaining plants of a splendid crop of this fine Broccoli.

On inspecting the bed on April 22, which was before we began to cut, I found no harm had accrued to the plants from the severe winter, although a few of the plants at the end of one row had their leaves torn, I believe, by pheasants.

The Broccoli were planted, as is our usual practice, in August, on the site of an old Strawberry bed.

From now till the end of May is the best time to sow this Broccoli. *Edwin Platt, Borden Wood Gardens, Liphook, Hants.*

BUTTER BEANS.

THE Golden Waxpod or Butter Bean is by no means common in gardens. It forms an excellent summer vegetable, and is especially valuable where good vegetables in variety are in demand; on the Continent the Butter Bean is a common dish. There are numerous varieties, both dwarf and runner kinds, and the climbing varieties are plentifully cultivated in the United States of America. The older Mont d'Or is one of the best-known varieties in this country; but there is a newer or improved form that is stringless, and a good Bean on account of its earliness in cropping and its large productive quality. The Waxpod or Butter Bean should be cooked whole, as the pods in a young state are very fleshy, and most of them stringless and very tender. The Golden Waxpod, a dwarf grower, is an abundant cropper, and worthy of cultivation in all gardens. It is quite distinct from the ordinary green Beans, and, when sent to table as a second course, or as a dressed vegetable, it is much appreciated. The Centenary Golden-Podded is a fine dwarf variety, largely cultivated on the Continent for its good flavour. This is earlier than the older Golden Scimitar. The earliest Butter Bean I have grown is the Flageolet Wax. In addition to its earliness, this variety is exceedingly productive, bearing numerous pods of great length. The Golden-Eyed Wax variety, an American introduction, is an excellent Bean, bearing early and freely; the habit is dwarf. There is a distinct, round-podded variety of the Golden Scimitar type, called Henderson Wax. This also is a fine addition. It bears a round, fleshy, remarkably solid pod, and is one of the best as regards cropping qualities and freedom from rust or mildew. Improved Golden Wax is a form of the older Golden variety, but of more vigorous growth. The pods are large, and are borne early in the season. They are broad, very thick, with a solid flesh, stringless, and of a dark golden colour. This variety ranks as one of the best of all the wax-podded Beans. The old Mont d'Or variety I have alluded to is a good variety for general culture. The pods are stringless, and the plant is a good cropper. Perfection Wax, a variety much grown in the Erfurt district, and also for the Paris markets, is a most useful, summer Bean. The pods are yellow when

cooked, and the plant is a free bearer. There are many other kinds in commerce, but those I have noted are the best. The plants should be afforded ample room; if crowded, the pods are less fleshy. They require similar culture to other Beans, and enjoy a rich soil and ample manure. The Butter Bean does best sown in drills so that moisture can be given in hot weather. For a succession, seed should be sown in May, June and July, and the pods will be available from July to September. For the latest summer crops in the southern part of the country a cool border should be chosen. *G. Wythes.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

TULIPS.—A variety, named Jenny, imported from the Continent, is similar in style to Isabella, but the colour is brighter and more regularly defined. The flowers are very large, and the habit dwarf and sturdy. A large collection of the older varieties was growing near this and other new sorts in Messrs. Pearson's nursery at Lowdham on the occasion of a recent visit. A bright scarlet variety called Flame was noticed for its large, finely-shaped flower. Many of the varieties are grown in enormous quantities. Inglescombe Scarlet occupied several very large beds, and I was informed there were 20,000 bulbs of this variety which had been raised in about 15 years from three dozen bulbs—a wonderful rate of increase. The colour of Inglescombe Scarlet was only just showing on May 17, while King Harold, Gipsy Queen, Glow, Donders, Pride of Haarlem, Clara Butt, and many others were in full bloom. *W. H. Divers, Belvoir Castle Gardens, Grantham.*

DAMAGE BY THUNDERSTORM.—Considerable damage was done here on Wednesday, May 26, by hail and torrential rain which accompanied a thunderstorm. On the day after the storm the tiny Apples, Pears and Cherries covered the ground thickly. Irish Peach and Keswick Codlin Apples promised a magnificent crop, which will now be a complete failure; later varieties of Apples have not fared so badly. A promising crop of Gooseberries was also spoiled; the fruits were torn from the branches, and in many cases the shoots were broken off also. The young top-growths of Wallflowers were all cut off. Bedding plants, which were in their summer quarters, have been torn to pieces and many of them washed out of the ground. Nasturtiums were completely riddled as if with shot. Between one and two o'clock in the day vivid flashes of forked lightning, accompanied by a deluge of rain, washed up many of the paths. A flock of sheep belonging to a neighbouring farmer was struck by lightning; five ewes and five lambs were killed and many others injured. *Thos. Francis, Gardener and Instructor, The Walsall and West Bromwich District Schools, Wigmore, Staffs.*

ONIONS FOR MARKET (see pp. 217, 234).—If *A. D.* cultivated Onions year by year for market I do not think he would find it quite so easy to realise an average profit of £40 per acre per annum as he does to estimate it on paper. Beginners may be led to think that they can see their way to make a fortune in a few years. On the contrary, they will find it difficult to make even a small profit. If we could be certain that the prices would continue somewhere near the figures—viz., 4s. to 6s. per bushel—obtained during the past season, then there is no doubt that a crop of Onions would pay well. But we need go no farther back than the previous season to find that 1s. 9d. or 2s. was as much as could be obtained: whence then would come the £40 profit? There is, moreover, the question of size. If your correspondents, who advocate growing market Onions of 2 lbs. each, would enquire of the salesmen at Covent Garden or of the London greengrocers, they would find, I think, that Onions weighing three or four to the pound are far more saleable. I scarcely think that we are likely to oust the Spanish bulb by growing large Onions in England. As to the method of growing, I agree with *S. J. Martin* (see p. 234), assuming that the soil is of the right kind, but

1 foot from row to row is as well for convenience of hoeing, and 5 or 6 inches is then quite sufficient space from plant to plant. In this way I get quantities of Onions from 4 to 5 inches in diameter, which I think are sufficiently large for general purposes. As to varieties, I have discarded nearly all others in favour of the "Improved Reading." With this variety I obtain abundant crops by sowing late in February or early in March. *E. Webber, Cumberland Lodge, Windsor.*

SEAKALE AS A GREEN VEGETABLE.—A few days ago I was induced to try a few heads of Seakale as a green vegetable. Although not possessing epicurean tastes, I must say it was one of the most delicious green vegetables I ever tasted. In a season such as the past, when green vegetables were very scarce, anything fresh is valuable. I might say it was cooked in precisely the same manner as Kale or Cabbage. It is possible to have Seakale for at least five months of the year, and, by utilising the top, another month can be added; what other vegetable can compare with it? I enclose a few heads for you to judge its merits. *S. G. Smallridge, Holfield Grange Gardens, Coggeshall, Essex.* [The shoots were cooked according to Mr. Smallridge's direction, but when served they were found to be not sufficiently boiled; otherwise they promised well.—ED.]

SEEDING OF THE TRUE ENGLISH ELM.—As Elms are seeding profusely in most parts of England this year, it is possible that some fertile seeds may be found in the warmer parts of England (though I have never seen any) on the true English Elm. I should therefore be obliged if any of your readers will look out for such and send me a few. I do not want seed of the smooth-leaved Elm *U. glabra*, of which the Cornish or Jersey Elm and the Hertfordshire Elms are probably varieties, or of the Dutch or corky-barked Elm, commonly known as English Elm in many parts of England, especially in the north; but only from old hedgerow Elms, *certainly grown from suckers*, and of which the foliage turns to a bright golden colour in November, when the other Elms have lost their leaves. And I don't want seeds from any foreign seedling or nurserymen's Elms, which for a century or more have been grafted or budded on the stock of Wych Elms, and usually have a very inferior habit, colour, and timber to the true English Elm of the Thames and Severn valleys. *H. J. Elwes, Colesborne, Cheltenham.*

LAW NOTES.

BREACH OF CONTRACT.

AT West Bromwich County Court on May 18, a market gardener of Biggleswade, Bedfordshire, was sued by a Potato salesman, of Oldbury, who claimed £13 15s. damages for breach of contract.

Mr. Wylie, for the plaintiff, said defendant contracted to supply plaintiff with 10 tons of Parsnips at £2 5s. a ton. Half of the quantity of Parsnips was delivered, and defendant then wrote that he could not supply the remainder. In the meantime Parsnips had risen in price, and plaintiff was compelled to buy five tons at £5 a ton. He now sued to recover the extra amount he had to pay in consequence of defendant's breach of contract.

Defendant pleaded that he only bargained to send five tons at a time, payment to be made as soon as they were placed on rail. Owing to the plaintiff's delay in forwarding the money for the first five tons, and in sending the bags back, he (defendant) was unable to buy the Parsnips he had agreed to deliver.

Judgment was given for the plaintiff for the amount claimed with costs.

DEBATING SOCIETY.

BRISTOL AND DISTRICT GARDENERS'.—The first meeting of the new session was held on May 27, at St. John's Parish Rooms, Mr. W. E. Budgett presiding over a large attendance of the members. Mr. Brooks gave a lecture upon "Fads and Fancies of Gardeners and Gardening." The lecturer gave reminiscences of his visits to gardens, and mentioned some peculiarities of the gardeners. An interesting part of the proceedings was the presentation of silver medals to three young members who had made the maximum number of attendances during the past session. Three new members were elected.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MAY 18.—*Present*: E. A. Bowles, Esq., M.A., F.E.S. (in the Chair); Prof. A. H. Church, F.R.S., Dr. A. B. Rendle, F.R.S., Dr. A. Voelcker, F.L.S., Messrs. R. H. Curtis, H. J. Veitch, W. Cuthbertson, A. W. Sutton, W. Hales, A. Worsley, G. Gordon, J. T. Bennett-Poe, H. T. Güssow, F. J. Baker, L. H. de Barri Crawshaw, W. Fawcett, F. J. Chittenden (hon. secretary), and E. H. Wilson (visitor). The committee heartily welcomed Mr. E. H. Wilson on his return from his journey of botanical exploration in Western China.

Rose with foliar sepals.—Lt.-Col. J. W. CURRIE, Norwich, sent a specimen of the Rose *Niphetos* having one of the sepals developed into a perfect leaf with five leaflets and stipules well developed. While the peculiarity is not rare, so perfectly developed a specimen as this is seldom met with.

Ranunculus auricomus.—Dr. RENDLE showed specimens of the depanperate form of *R. auricomus* with one or two petals only in some flowers, and in others the petals scarcely developed. This species often has very imperfect flowers.

Salix pentandra.—Mr. J. FRASER showed specimens of the flowers of *Salix pentandra* in which the posterior gland had proliferated and given rise to two or three small pistils in addition to the normal one. He pointed out that in the genus *Populus* belonging to the same family as *Salix* there is a perianth, and that Bentham had regarded the gland in *Salix* as homologous with the perianth of *Populus*. He found on examination of the frequent cases of abnormal development of this gland or disc in *Salix pentandra*, considerable grounds for believing Bentham's view to be the correct one. Frequently the gland became so much developed that it grew almost three parts round the pedicel of the ovary.

Viola lutea and V. lutea amana.—Mr. FRASER also showed specimens of these two *Violas* collected in meadows at considerable elevations in Scotland. He said that the Scotch raisers of the garden *Violas* had used this species in their formation, and from it had been derived the perennial habit of these varieties. Mr. CUTHBERTSON corroborated the statement, saying that this had been the case in 1859 and 1860, but he thought that little good would be likely to arise by recrossing the species with the *Violas* of the present day since they were so generally hardy and perennial. He had planted over 100 varieties in an Essex garden in October, 1907, and had found that a very large proportion of them had survived even the severity of the past winter, the varieties Royal Sovereign and Bullion being particularly noticeable in this respect.

Frost injury.—Mr. F. J. BAKER showed leaves of Peas having white patches upon them from Cambridgeshire. They seemed to show signs of albinism, but were also injured by frost. It is possible that the latter was connected with former phenomenon, since, as Prof. CHURCH pointed out, the albino spots upon a leaf always contain a larger percentage of water than the green parts, and thus are probably more liable to injury by frost than the green parts. There is also always less lime and potash in the white parts of a variegated leaf than in the green.

Primula hybrids.—Mr. H. J. VEITCH showed a series of crosses between *Primula pulverulenta* and *P. Cockburniana*. These are both native of Western China, the former being of a rich purple colour and perennial and the latter orange. The series was as follows:—

P. pulverulenta ♀ × *P. Cockburniana* ♂ gave *P. × "Unique"* (cerise), while the reciprocal cross gave *P. × "Unique Improved,"* differing somewhat in colour from "Unique," being somewhat darker, but of similar habit. These hybrids are perennial.

P. Cockburniana ♀ × *P. × "Unique"* ♂ gave a plant bearing terra-cotta flowers nearly the colour of *P. Cockburniana*, but with the habit of *P. pulverulenta*, to which the foliage

bore a great resemblance. This would appear to be perennial, since the plant which flowered last year is again in bud.

P. pulverulenta ♀ × *P. × "Unique Improved"* ♂ and *P. × "Unique"* ♀ × *P. pulverulenta* ♂ were almost identical in colour of flowers, just a little brighter than *P. pulverulenta*, while when the plant raised by crossing *P. Cockburniana* and *P. × "Unique"* was fertilised from that raised by crossing *P. × "Unique"* and *P. pulverulenta*, the colour of the flower showed a greater variation from *P. pulverulenta*, and was of a warm cerise.

Abnormal Tulip (new seedling variety).—A correspondent sent specimens of abnormal Tulips, which were in all respects normal florists' breeders, except that the three inner petals of each possessed a couple of small spurs near the base pointing inwards. The malformation is constant, and recurs each year; it is found in all the offsets that have arisen from the original seedling, and is evidently characteristic of the variety. Both plants were normal, as were all the other seedlings raised from the same parents. No similar structures in a Tulip bloom have fallen under the raiser's observation either among Tulip species or some 1,500 other seedlings of florists' Tulips. Somewhat similar formations to these are sometimes met with among Tulips, but no member of the committee had before seen specimens where the abnormality was so regularly and symmetrically developed.

Orchid hybrids.—Mr. G. WILSON sent flowers of seedlings of the cross *Dendrobium nobile album* × *D. Findleyanum* (= *D. × "Cybele"*). All the seedlings which had flowered (about sixty) had borne coloured flowers approaching *D. nobile*, with one exception, where the flowers were white with a faint pink tinge.

Pisum sp., &c.—Mr. A. W. SUTTON showed plants in flower of the wild Pea collected in Palestine, which he had before exhibited, and of *P. quadratum*, to demonstrate the fact that the two were not identical. The seeds of the two are very similar to one another, but the mature plants differ particularly in the amount of serration of the leaves.

Mr. SUTTON also showed the plant of *Asparagus* which had been collected in the Himalaya, but the committee desired to see it again when it was in flower.

Impatiens × comoricoma.—Mr. H. J. VEITCH showed on behalf of Messrs. CAYEUX & LE CLERC, of Paris, plants of the hybrid *Impatiens × comoricoma* raised from *I. comorensis* and *I. auricoma*, the former with rose-coloured flowers, the latter with yellow, those of the hybrid being "rouge chandron éclairé de jaune sombre, stries de carmin sur les bords intérieurs des pétales latéraux." The anterior sepal of *I. comorensis* is white, and of *I. auricoma* yellow, while in the hybrid it is yellow striped in the lower part with carmine. A table comparing the hybrid with its parent is given along with an account of the raising of the hybrid in the *Revue Horticole*, September, 1908, pp. 427-428.

Uncommon Conifers.—From Sir EDMUND LODER, Bart., Leonardsllee, came branches with cones of *Larix Griffithii* and *L. americana*.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MAY 13.—*Committee present*: Messrs. E. Ashworth (Chairman), and R. Ashworth, Ashton, Cowan, Cypher, Holmes, Keeling, Leemann, Parker, Smith, Thorp, Ward, Warburton, Rolfe (by invitation), and Weathers (hon. sec.).

J. T. CLIFTON, Esq., Lytham Hall, Lytham (gr. Mr. Float), staged a group of well-grown plants, including *Odontoglossum* in variety. *Dendrobium Bronckhardtii* was exhibited for the first time at these meetings, and received an Award of Merit, as also did *Angraecum infundibulare*. Botanical Certificates were awarded to *Bulbophyllum Lobbii* var. *claptonense*, *B. tremulum*, *Masdevallia triaristata*, and *Cirrhopetalum picturatum*. (Silver Medal.)

E. ROGERSON, Esq., Didsbury, exhibited *Odontoglossum eximium* var. *Rogersonii*; for this plant and for *O. × Stanley* Awards of Merit were granted.

R. ASHWORTH, Esq., Newchurch (gr. Mr. Fletcher), was awarded a Silver Medal for a

group of Odontoglossums. Awards of Merit were given to Odontoglossum X Agasilau, O. crispum xanthotes var. Queen of the Snow, and O. crispum var. "Sweetness."

H. J. BROMLOW, Esq., Rainhill (gr. Mr. Morgan), had a large exhibit of Cypripediums, although so late in the season. (Silver-gilt Medal.)

Mr. A. J. KEELING, Westgate Hill, Bradford, was awarded a Bronze Medal for a group which contained Brasso-Cattleya X Digbyano X Mossia and Cattleya X Dusseldorf var. Undine.

A. WARBURTON, Esq., Haslingden (gr. Mr. Dalgleish), obtained a Silver-gilt Medal for Cattleyas and Laelias and for a miscellaneous display. Cattleya Schrödera var. "White Lady" received an Award of Merit. Odontoglossum crispum var. "Queen of the Earth" received a First-class Certificate. Odontoglossum X Triumph, parentage unknown, and O. Pescatorei Warburton's var. also received First-class Certificates.

H. ARTHUR, Esq., Blackburn, was awarded a Silver Medal for a group which contained many Cymbidiums.

Mrs. ARMITAGE, Waterside, Windermere, staged for the first time at these shows a charming group, the central feature of which was a magnificent collection of Cypripedium bellatum, for which a Cultural Commendation was awarded. A First-class Certificate was voted to Cypripedium X Alabaster var. Godfrey, and Awards of Merit to Brasso-Cattleya X Schrödera X Digbyano and Odontoglossum X Adriaue Waterside var. (Silver Medal.)

Z. A. WARD, Esq., Northenden (gr. Mr. Weatherley), was awarded a Silver Medal for a display of Odontoglossums in variety. Odontoglossum X Brightness and O. X amabile var. Harris were voted Awards of Merit.

J. McCARTNEY, Esq., Bolton (gr. Mr. Holmes), was awarded a Silver Medal for Cattleyas and Laelias. Cattleya Mossia var. aureum, C. Mendelii var. Princess Alexandra, and C. Mendelii var. Excelsior were given Awards of Merit.

J. E. WILLIAMSON, Esq., Stretford, made a pleasing display of Dendrobiums. (Bronze Medal.)

Mr. J. ROBSON, Altrincham, exhibited a group which contained a number of choice hybrid Odontoglossums. (Silver Medal.)

Other exhibitors included Mr. J. BIRCHENALL, Alderley Edge; Messrs. OWEN & Co., Hartford, Northwich; Mr. W. SHACKLETON, Great Horton, Bradford; and O. O. WRIGLEY, Esq., Bury. P. W.

BRITISH GARDENERS' ASSOCIATION.

MAY 26.—The annual meeting of this association was held on the above date at the Essex Hall, Essex Street, Strand. Mr. E. F. Hawes presided. The Report of the Executive Committee was adopted. The vacancies on the Executive Council were filled by the election of Messrs. A. E. Cresswell, C. Taylor, J. Wood, W. H. Aggett, A. J. Hartless, C. Blake, W. Newberry, R. J. Frogbrook, and F. J. Cole.

Mr. C. P. Raffill was elected treasurer, Mr. Jno. Weathers secretary, and Messrs. J. Harrison Dick and G. F. Tingley auditors. Several alterations of rules were considered and adopted.

CATALOGUES RECEIVED.

- JAMES STRENDWICK & SON, Silverhill Park, St. Leonards-on-Sea—Dahlia.
MOORE, LTD., Rawdon, via Leeds—Orchids and Burmese Lilies.
YOUNG & Co., Hatherley, Cheltenham—Perpetual-flowering Carnations.
DORRIS & Co., Rotherham—"Ideal" flower-vase.
CLIBRANS, Altrincham and Manchester—Bedding plants; plants for walls, pergolas, &c.; shrubs; border plants; Violas, &c.
H. N. ELLISON, 5 & 7, Beall Street, West Bromwich—Bulbs; Cacti; Ferns.
GEORGE BUNYARD & Co., LTD., Maidstone, Kent—Hardy climbing plants, with cultural and pruning notes.

COLONIAL.

DUPUY & FERGUSON, 38, Place Jacques-Cartier, Montreal —Hardy perennial and climbing plants, Roses, fruit trees, &c.; also poultry requisites.

FOREIGN.

- CARL TCHLISSMANN, Kastel-Mainz, Germany—Arches, pergolas, screens, arbors, &c.
G. J. ALBERTS & Co., Boskoop, Holland—Nursery stock (wholesale).
YOKOHAMA NURSERY CO., LTD., 21-35, Nakamura, Yokohama, Japan—Bulbs, plants, seeds.
J. CHANTRIER FRERES, Mortefontaine, par Plailly (Oise), France—Plants, &c.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending May 29, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The weather was much less bright over the Kingdom generally than during the preceding weeks of the month, and showers or periods of steady rain were experienced in all districts. Thunderstorms occurred in various parts of the country some time during the week, but they were not, as a rule, severe.

The temperature exceeded the average in all districts, the divergence being greatest (4.3°) in England N.E. The highest of the maxima were experienced on the 23rd or 24th at nearly all stations, and ranged from 80° in England E. and the Midland Counties, and 79° in England S.E. to 65° in Ireland N., and to 63° in Scotland N. The lowest of the minima, which occurred on rather irregular dates, varied from 33° in Ireland S. and 36° in England S.W. to 42° in England N.E. and N.W., and to 43° in the English Channel. The lowest grass readings reported were 22° at Llangamarch Wells, 23° at Burnley, 23° at Birmingham, 30° at Cambridge, and 31° at Greenwich.

The mean temperature of the sea.—On most parts of the coast except the south-west of England the water was rather colder than during the corresponding week of last year. The actual means for the week ranged from 55.5° at Margate, 55° at Newquay, and about 54° at Salcombe, Teelin, and Seaford, to about 47° at Scarborough, and to about 46.1° at Lerwick and Burnmouth.

The rainfall was considerably more than the average in all districts excepting the English Channel, where the excess was slight.

The bright sunshine slightly exceeded the normal in the east and south-east of England, but was below it elsewhere. The percentage of the possible duration ranged from 50 in England S.E., 49 in the English Channel, and 46 in England E., to 29 in Ireland N., and to 22 in Scotland N.

THE WEATHER IN WEST HERTS.

Week ending June 2.

A remarkably heavy rainfall.—It was cold at first, but as the week advanced the weather during the daytime gradually became warmer, whereas the night temperatures remained, as a rule, about average. On the warmest day the temperature in the thermometer screen rose to 73°, and on the coldest night the exposed thermometer fell to 37°. The ground is now 2° warmer at 2 feet deep, and, on the other hand, 1° colder at 1 foot deep, than is seasonable. Rain fell on five days to the aggregate depth of over 2 1/2 inches, which is more than the average rainfall for the whole of either May or June. On May 26, during a thunderstorm in the middle of the day, the rain was falling for 20 minutes at the average rate of 1 1/2 inch an hour. On the 1st inst. there was another heavy downpour, which was more remarkable for its duration than for any exceptional heavy fall at any one time. This rain began at 9 a.m. and lasted without intermission until 10 p.m., during which period over 1 1/2 inch was deposited. Only twice before in the last 24 years has there been here such a heavy fall of rain as this in any one day or night, or in any 24 hours. Of the rainfall of the last nine days 7 1/2 gallons have come through the bare soil percolation gauge, and 2 1/2 gallons through that on which short grass is growing. The sun shone on an average for seven hours a day, which is three-quarters of an hour a day longer than the average duration at this period of the year. During the week light airs and calms as a rule prevailed. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by 5 per cent. Rosa pimpinellifolia, the Scotch Burnet Rose, came first into flower on May 23, or five days in advance of its average date in the previous eleven years, and eight days earlier than last year. E. M., Berkhamsted, June 2, 1909.

SCHEDULES RECEIVED.

Horticultural Exhibition in conjunction with the Southport Agricultural Show, to be held on July 29, 30, 31, and August 2. Manager of the Horticultural Section, Mr. Peter Blair, Trentham Gardens, Stoke-on-Trent.
Horticultural Exhibition in conjunction with the Royal Agricultural Show at Gloucester, to be held from Wednesday to Saturday, June 23 to 26. Horticultural manager, Mr. Peter Blair, Trentham, Stoke-on-Trent.

Floral Competitions in connection with King's College Hospital Carnival, to be held at the Crystal Palace on July 1, in aid of the removal of King's College Hospital to South London. Particulars may be obtained from Miss Stacey, Crystal Palace, Sydenham.

Newmarket Horticultural Society's annual show, to be held on Thursday, July 8. Secretary, Mr. Geo. A. Sarvent, 62, St. Philip's Road, Newmarket.

County Borough of Hanley Horticultural Fete (13th annual show), to be held on July 7 and 8. Secretary Horticultural Fete, Mr. Wm. Poulson, Town Hall, Hanley, Staffs.

GARDENING APPOINTMENTS.

- Mr. JAMES HEBDEN, for nearly 20 years Gardener at Welham Hall, Retford, as Gardener to E. E. HARCOURT VERNON, Esq., Grove Hall, Retford.
Mr. C. L. BRANSON, for the last 12 years Gardener to Mrs. J. D. WINGFIELD-DIGBY, Coleshill Park, Coleshill, Birmingham, as Gardener to G. HANBURY, Esq., Blythewood Hitcham, near Burnham, Bucks.
Mr. W. R. FREEDY, late Foreman at Paxhill Park Gardens, Lindfield, Sussex, as Gardener to C. FEARN, Esq., Holmsted Place, Cuckfield, Sussex.
Mr. EDWARD GRIFFIN, until recently Gardener to the Hon. Mrs. CECIL HOWARD, Eastcote Lodge, Pinner, Middlesex, as Gardener to E. HUNTLEY HOOPER, Esq., Shelly Hill, Christchurch, Hants.

MARKETS.

COVENT GARDEN, June 2.

[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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

Table with columns for flower names, quantities, and prices. Includes items like Anemone fulgens, Carnations, Freesias, Gardenias, Gladiolus, Gypsophila, Iris, Lilac, Lilies, and Tulips.

Cut Foliage, &c.: Average Wholesale Prices.

Table with columns for foliage names, quantities, and prices. Includes items like Adiantum, Agrostis, Asparagus, Berberis, Croton, Cycas, Ferns, and Smilax.

Plants in Pots, &c.: Average Wholesale Prices.

Table with columns for plant names, quantities, and prices. Includes items like Ampelopsis, Aralia, Erica, Fuchsia, Geranium, and Hydrangea.

Plants in Pots, &c.: Average Wholesale Prices (Contd.).

	s.d.	s.d.		s.d.	s.d.
Lantana borbonica, per dozen ...	12	0-13 0	Pelargoniums, — Bedding varieties ...	12	0 25 0
Lilium longiflorum, per dz.	12	0-18 0	Rhodanthe, per dz.	5	0-6 0
— lancifolium, p. dozen ...	12	0-24 0	Rhododendrons, each ...	2	0-5 0
Lily of the Valley, per dozen ...	13	0-30 0	Roses, H.P.'s, per dozen ...	12	0-18 0
Marguerites, white, per dozen ...	5	0-8 0	— Polyantha varieties ...	12	0-18 0
Mignonette, per dozen ...	5	0-7 0	— Ramblers, each ...	5	0-10 6
Musk, per dozen ...	3	0-4 0	Saxifraga pyramidalis, per dozen ...	12	0-13 0
Pansies, per box of 24 plants, each ...	2	0-3 0	Selaginella, per dz.	4	0-6 0
Pelargoniums, show varieties, per dozen ...	12	0-13 0	Spiraea japonica, p. dozen ...	6	0-9 0
— Ivy leaved ...	6	0-8 0	Stocks (intermediate), white, ...		
— Oak leaved ...	4	0-6 0	— crimson, and pink, per doz.	6	0-7 0
— Zonals ...	5	0-7 0	Verbenas, per doz.	6	0-9 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Apples (Tasmanian), per case:			Lemons, box:		
— Ribston Pippin ...	9	6-10 6	— Messina, 300 ...	8	6-12 6
— Scarlet PEARMAIN ...	9	0-10 6	— Do, 360 ...	9	0-14 0
— Cox's Orange Pippin ...	13	0-14 0	— (Naples), per case ...	17	0-23 0
— Alexander ...	3	6-10 0	Limes, per case ...	5	0 —
— Prince Alfred ...	8	6-9 6	Lychées, per box ...	1	0-1 3
— French Crab ...	9	0-10 0	Melons (English), each ...	1	6-1 9
— Sturmers ...	9	0-9 6	— (Guernsey) ...	1	0-2 6
— (Austrian), per case:			— Canteloupe ...	1	9-2 6
— Dunn's Seedling ...	10	6-12 6	Nectarines (English) ...	3	0-10 0
— Cleopatra ...	10	0-12 0	Nuts, Almonds, per bag ...	38	0-40 0
— Jonathan ...	10	0-12 0	— Brazils, new, per cwt. ...	33	0-35 0
— Ribston Pippin ...	9	6-11 0	— Barcelona, bag ...	30	0-32 0
— Romo Beauty ...	10	0-12 0	— Cocoa nuts, 100 ...	10	0-14 0
— (American), per barrel:			Oranges (Denia) ...	10	0-21 0
— Nonpareils ...	13	0-20 0	— Californian seedless, per case ...	10	0-12 0
Bananas, bunch:			— (Valencia) per case (420) ...	9	0-18 0
— Doubles ...	9	0-10 0	— per case (714) ...	10	0-18 0
— No. 1 ...	6	6-8 0	— Jaffas ...	7	0-10 0
— Extra ...	8	0-9 0	— Palermo Blood ...	7	0-10 0
— Giant ...	10	0-12 0	— Murcia Blood, per case (200) ...	7	6-9 6
— (Claret) ...	5	0-7 6	Peaches (English) ...	3	0-16 0
— Jamaica ...	5	0-5 6	Pears (Austrian), Winter Nelis, per tray ...	3	6-4 0
— Loose, per dz. ...	0	6-1 0	— Calabash, per tray ...	4	0-5 6
Cranberries, per case ...	13	0-14 6	Pineapples, each ...	1	9-3 6
Cherries (French), per box ...	0	8-1 6	— (Natal), per dz. ...	4	0-6 0
— ½ bushel ...	3	6-5 0	Strawberries, lb. ...	1	0-2 0
Custard Apples ...	3	0-12 0	— second quality ...	0	9-1 0
Gooseberries (English), per peck ...	1	9-2 0	— (French), crate of 4 baskets ...	10	0-12 0
— ½ sieve ...	3	0-3 6			
Grape Fruit, case ...	9	0-13 0			
Grapes (new) ...	1	6-3 0			
Guernsey Figs, dz. ...	4	0-12 0			

Vegetables: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Artichokes (Globe), per dozen ...	2	0-2 6	Onions, per bag ...	9	0-10 0
— white, p. bushel ...	2	0-2 6	— Egyptian, bag ...	8	0-9 0
— per cwt. ...	3	6 —	— pickling, per bushel ...	6	0 —
Asparagus, per bundle:			Parsley, 12 bunches, ½ sieve ...	2	0 —
— Sprue ...	0	6-0 8	Peas (French), per packet ...	0	3-0 4
— Paris Green ...	1	6-2 0	— (French), p. pad ...	3	0-4 0
— Toulouse ...	0	9-1 0	— (English), dried, per dz. packets ...	2	6 —
— Montanban ...	0	9-1 2	— (Guernsey) ...	0	4-0 6
Beans, per lb.:			— (English) ...	0	10-1 3
— (English) ...	0	6-0 8	Potatoes (Guernsey), per lb. ...	0	3 —
— (French) ...	0	7-0 9	— (Algerian), cwt. ...	10	0-11 0
— (Guernsey) ...	0	6-0 7	— (French), p. lb. ...	0	2-0 2 ½
Beetroot, per bushel ...	2	6-3 0	— Teneriffe, cwt. ...	12	0-12 6
Cabbages, per mat ...	4	0-4 6	Radishes (French), per doz. bunches ...	1	3-1 6
— per crate ...	7	6-8 0	Rhubarb (English), forced per dz. ...	0	6-0 9
— per box (24) ...	3	0-3 6	— Natural, p. tally ...	4	0-4 6
— Greens, per bushel ...	1	0-1 6	Salsafy, per dozen bundles ...	4	0-4 6
Cardoon (French), per dozen ...	8	0-10 0	Seakale, per dozen punnets ...	12	0 —
Carrots (English), dozen bunches ...	4	0 —	Spinach, p. bushel ...	1	0-1 6
— washed, bag ...	5	6-6 0	Stachys tuberosa, per lb. ...	0	5 —
— unwashed ...	4	0-5 0	Turnips, per dozen bunches ...	4	0 —
— (French), bunch ...	0	5-0 6	— washed, p. bag ...	4	0-4 6
Cauliflowers, doz. ...	1	6-2 0	— (French), bunch ...	0	3-0 6
Celeriac, per doz. ...	1	6-2 6	Turnip Tops, bag ...	2	0-2 6
Chicory, per lb. ...	0	3 ½-0 4	Tomatoes (Teneriffe), per bundle of 4 boxes ...	10	0-18 0
Cucumbers, per dz. ...	1	6-2 6	— (English), per 12 lbs. ...	5	0-5 6
Endive, per dozen ...	1	3-1 9	— (English), s.s. ...	5	0 —
Horseradish, foreign, per doz. bundles ...	17	0-21 0	— second quality ...	3	0 —
Leeks, 12 bundles ...	2	0-2 6	Watercress, per dozen ...	0	4-0 6
Lettuce (French), per crate ...	1	9-2 0			
— Cos, per dozen ...	2	3-3 0			
Mint, doz. bunches ...	6	0 —			
Mushrooms, per lb. ...	0	8 —			
— broilers ...	0	6 —			
— buttons, per lb. ...	0	8-0 10			
Mustard and Cress, per dozen pun. ...	1	0 —			

REMARKS.—The prices of Australian and Tasmanian Apples remain about the same as last week; there is a good demand for these Apples. French Cherries are arriving in a rather damaged condition, and are sold very cheaply. English Gooseberries are received in large quantities. Strawberries are very plentiful: the berries are not in the best condition. Nectarines are plentiful and much cheaper. Both English and Guernsey grown Beans and Peas are plentiful. English Tomatoes, also Cucumbers, are being marketed in larger quantities. Trade generally is quiet. E. H. K., Covent Garden, Wednesday, June 2, 1909.

Potatos.

	s.d.	s.d.		s.d.	s.d.
Kents— Up-to-Date ...	3	0-3 6	Dunbars— Langworthy, red soil ...	4	0-4 6
Lincolns— Royal Kidney ...	2	3-2 9	Up-to-Date, red soil ...	3	3-3 6
Up-to-Date ...	2	9-3 3	Up-to-Date, grey soil ...	2	6-2 9
Maincrop ...	2	9-3 9	Yorks— Up-to-Date ...	3	3-3 9
Evergood ...	2	6-2 9	Jerseys (new), cwt. ...	11	6-12 0
King Edward ...	3	0 —	St. Malo's ...	11	0-11 6
Blacklands ...	2	3-2 6			

REMARKS.—Trade in old Potatos is very slow, and each day sees larger arrivals of new tubers from St. Malo and Jersey. E. J. Newborn, Covent Garden and St. Pancras, June 2, 1909.

COVENT GARDEN FLOWER MARKET.

The first week in June is usually a busy one with growers of bedding plants, and this morning (Wednesday) there were large stocks of such plants in the market, but the weather being wet and cold little business was done. Earlier in the season it seemed that Pelargoniums, such as are used for summer bedding, might be scarce, but they are plentiful and cheaper than they were earlier in the season. It is difficult to estimate what may occur during the next week. The nurserymen endeavour to dispose of their stocks early, and they will not be safe to depend on obtaining any special subjects later unless ordered in advance.

CUT FLOWERS.

After the market was closed this morning I visited the stores outside the ordinary Flower Market. Some of these remain open until late in the day. This is an advantage to the florists who may require flowers at short notice. Roses are still plentiful, but many of the blooms are small. Carnations also are abundant, and large quantities of splendid blooms were unsold. I never saw so many good cut flowers unsold as there were this morning.

POT PLANTS.

The trade in pot plants is not brisk. At closing time I noticed many Rambler Roses which had failed to find purchasers. These Roses are remarkably good this season. Supplies of Lilliums are excessive and their prices vary. The pink-flowered Astilbes (Spiraeas) are of much better quality than they were earlier in the year. The white kind is also good. Of Hydrangeas I have rarely noticed so many of poor quality as are seen this season; some, however, are well grown. Some market growers endeavour to get the blue shade in the flowers, but in most instances they fail to do so. In ordinary seasonable flowering plants there is not much that is new to record, except that supplies are more than equal to all demands. Foliage plants vary but little; imported Bay trees are cheaper. Aspidistras have depreciated in value, but Palms are dearer. I learn from reliable sources that Palm seeds have advanced in price, and are likely to be very scarce, particularly Kentias. Asparagus of various sorts are good. A. Sprengeri is now much appreciated. The best type of A. plumosus nanus sells well, but there are many intermediate varieties which growers should avoid. A. tenuissimus is propagated from cuttings, consequently the plants vary little. A. H., Covent Garden, Wednesday, June 2, 1909.

Obituary.

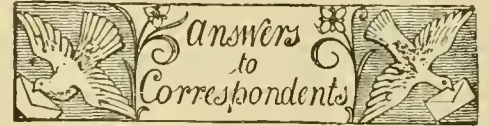
FREDERICK BOXALL.—The death of this gardener occurred on the 22nd ult. The deceased had been employed in the nursery of Mr. Robert Neal, Wandsworth, London, for fifty years, and during the greater part of that time filled the position of foreman.

WILLIAM BAKEWELL.—We regret to announce the death, on May 23, of Mr. William Bakewell, for 40 years head gardener and sub-agent to the Earl of Denbigh, Downing, Holywell. Mr. Bakewell was a native of Warwick, and was engaged for several years in the gardens at Newnham Paddox, the Warwickshire seat of the Denbigh family. He went to Downing in the year 1866, as head gardener, thus serving three generations of the Earls of Denbigh. For over twenty years he discharged the duties of estate bailiff and sub-agent of the Downing estate. In addition to estate duties, Mr. Bakewell took an active interest in local affairs. From the establishment of Parish Councils he had been a member of the Whitford Council, and had for several years occupied the chair. To the Whitford-Mostyn Cottage Garden and Agricultural Society his death will be a great loss. For a number of years he acted as the general secretary, and until latterly as joint secretary of the agricultural section. The funeral took place on Wednesday, the 26th ult., at Whitford Churchyard.

FREDERICK WILLIAM CRUMP.—We regret to learn that the eldest son of Mr. and Mrs. Wm. Crump died on the 31st ult. at Madresfield Court Gardens, Malvern. Deceased was 25 years of age, and a marine engineer. The cause of death was cancer of the liver.

ENQUIRY.

LILIUms RUBELLUM and WASHINGTONIANUM.—Has anyone succeeded in England in thoroughly establishing LiliuMs rubellum and Washingtonianum (the Oregon form), sometimes, I think, called L. purpureum? And do they ever increase? Here (Burton-on-Trent) they begin poorly and seem to increase in vigour every year, planted deep in good sandy loam in a wood. B. L.



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.

* * * The Editors will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for reproduction as Supplementary Illustrations in this Journal.

ASTERS DISEASED: H. & Co. The plants are affected with Aster disease—Erysiphe cichoracearum. Destroy by burning all the affected plants; spray the remaining ones with a weak solution of permanganate of potash.

AUSTRALIAN TREE FERNS: K. & S., New York. You had better insert a small advertisement for these.

AZALEA WITH GALL: W. H. A. The galls are caused by a fungus—Exobasidium rhododendri. Pluck off the affected leaves and burn them before the spore-bearing organs develop.

CARNATION MRS. TRELAWNEY: G. H. The malformed flower exhibits proliferation, a condition in which the central axis continues to develop after the flower has formed. It is common in many other flowers, and especially Roses. It is the result probably of excessive feeding.

CATERPILLARS INJURING FRUIT TREES: G. W. W. & Co. The caterpillars are those of the winter moth (Cheimatobia brumata). The males of this moth are winged, but the females are wingless. Spraying with arsenate of lead (Swift's) is all that you can do at this date. But you should apply grease bands to all the trees in the autumn. These are made of strong grease-proof paper tied round the trunk of the tree securely with string. The grease is applied to this. We would recommend that the best proprietary grease be used; poor kinds dry quickly, and the wingless female moths can then pass over them.

CUCUMBERS FAILING: H. P. The root has been completely hollowed out by some maggot, which was not present in the specimen.

DARWIN TULIPS: D. C. The flower-stalks are long, but not abnormally so for this species. The vigour is due, no doubt, to a satisfactory rooting medium.

DWARF JAPANESE CUPRESSUS: G. O. P. Turn the plant out of the pot or tub in which it has been during the last eight years, prick the ball of earth and roots round with a pointed stick, removing as much of the exhausted soil as possible without subjecting the plant to any appreciable check, and repot it into a pot or tub 2 inches larger in diameter than that which it previously occupied. Place 2 or 3 inches deep of potsherds at the bottom, the smallest being put above the larger fragments, and then cover with pieces of thin turf, in order to secure perfect drainage. As a rooting medium use a compost consisting of about four parts good sandy loam, one part of leaf-mould, a double handful of bonemeal and a like quantity of fine potsherds which have been passed through a sieve with a quarter-inch mesh, the

whole being mixed well together before being used. In potting, ram the soil firmly in the space between the ball of roots and the sides of the pot or tub with a flat rammer, using a blunt rammer for firming the soil on the top. This done, afford sufficient water to moisten the ball of roots and the new soil, and then stand the plant in a shady place for a fortnight or three weeks, to allow of the roots taking hold of the new soil and of the plant re-establishing itself. Syringe the plant overhead with clean water three times a day during bright weather, morning, mid-day, and late in the afternoon. When the plant has become thoroughly re-established at the roots it can be exposed again to sunshine.

FIGS WITH BROWN MARKINGS ON FOLIAGE: *G. C.* Our mycologist reports that no disease is present, and that the trouble is due to some external trouble, which only those on the spot can determine.

GERMAN FLOWER-BED: *A. Rix.* We know of no flower-bed specially so called. In German gardens raised beds are sometimes made of tiers of earthen beds one above the other, and each some 2 feet smaller than the one below it. Stout, thick turf is used for forming the retaining sides, and these slope towards the top slightly. Sometimes rockwork takes the place of turf. The methods of planting are as varied as other kinds of beds, but subjects having a long duration of flowering are the best for such beds. Foliage plants are effective if chosen with care. Sometimes a simple mound is raised and given an erect or a sloping wall of turf. This kind of bed answers well for lowly plants such as Violas, Pansies, Pelargoniums, &c.

GLOXINIAS KILLED: *J. P.* As you suspect the manure to be contaminated with petrol, your best plan will be to avoid using it. If you wish to have it analysed, send to Dr. Voelcker, M.A., 22, Tudor Street, London, E.C., who will require a fee, which will be small if you are a Fellow of the Royal Horticultural Society.

GOOSEBERRIES: *B. L.* The damage has been caused by the Gooseberry midge—*Cecidomyia grossulariæ*. It is now too late to do anything this season. The damaged berries should be collected and burned, otherwise the injury will be repeated next season.

GRAPES: *B. H.* We find no disease present in the examples you send. The damage has been caused by some wrong treatment such as allowing a cold draught to enter the vinery. Unless we know more of the treatment the vines have been given we cannot assist you further.—*Galtee.* The damage is not caused by disease, and must be attributed to some cultural defect, which only those in charge of the vinery will be able to determine.

LABURNUM WITH THREE FORMS OF INFLORESCENCES: *F. N.* *Cytisus purpureus*—the small purple form—has been grafted on the common Laburnum. The influence of the stock has so acted on the graft that some of the flowers are intermediate in form, size, and colouring between those of the parents. It is the classical example of what is termed a graft hybrid. You will find it described and illustrated in the *Gardeners' Chronicle* for September 24, 1904, p. 217.

MELONS DISEASED: *A. A.* The plants are affected with a bacterial rot. Clear out the old soil and start afresh. Before planting again sprinkle lime freely on the staging where they were grown, or, better still, select a fresh house for the new crop.—*E. H.* The plants are affected with the Melon-leaf blotch. Spray them with dilute Bordeaux mixture, or, if mature fruit is present, with sulphide of potassium, using one ounce of the chemical in three gallons of water. The soil is infected, and should not be used for Melon culture again.

NAMES OF PLANTS: *W. S. O. P.* *Prunus japonica*, double-flowered variety.—*S. K.* *Coronilla emerus*.—*A. E. C.* 1, *Acer platanoides*; 2, *Pyrus floribunda*.—*R. H. P.* *Cratægus orientalis*.—*W. B. & Son.* 1, *Cerastium Biebersteinii*,

2, *Tragopogon porrifolius*.—*W. F.* 1, *Saxifraga peltata*; 2, *Asphodeline liburnica*; 3, *Mimulus cupreus*; 4, *Cytisus purpureus*; 5, *Spiræa arguta*.—*H. S.* 1, *Escallonia punctata*; 2, *Omphalodes linifolia*; 3, *Berberis Darwinii*; 4, *Atriplex halimus*; 5, *Justicia* sp. (?), specimen too withered; *Diervilla rosea*.—*F. N. H.* *Rhododendron Falconeri*.—*C. B.* 1, *Prunella vulgaris* (Selfheal); 2, *Nepeta Glechoma* (Ground Ivy); 3, *Capsella Bursa-pastoris* (Shepherds' Purse).—*F. T.* 1, *Hæmaria discolor*; 2, *Epidendrum lanipes*; 3, *Oncidium spillopterum*; 4, *Eria stricta*; 5, *Aerides odoratum*.—*W. B.* 1, *Zebrina pendula*, generally known as *Tradescantia Zebrina* in gardens; 2, *Tradescantia repens variegata*; 3, *Pilea microphylla* (muscosa); 4, *Selaginella viticulosa*; 5, *Selaginella Mertensii*; 6, *Fraxinus Ornus*.—*L. P.* 1, *Euphorbia Peplis*; 2, *Geranium Robertianum*; 3, *Stellaria holostea*; 4, *Veronica Chamædryd*; 5, *Nepeta Glechoma*; 6, *Geum urbanum*.—*A. N.* *Eccremocarpus scaber*.—*J. S. S.* *Brunfelsia macrantha*.—*A. A.* *Magnolia acuminata*.

NECTARINES WITH MARKINGS: *Peaches.* There is no disease present in the fruits, the damage is connected with some fault in culture. Your suspicion as to over-feeding may be the correct one. In any case, add some lime or old mortar rubble to the soil. This will neutralise any acidity and be of use in other respects.

PEACH AND NECTARINE LEAVES: *A. B. C.* The trouble is caused by the "Shot-hole" fungus. See reply to *G. S.* in the issue for May 8, p. 304.

PEACHES AND NECTARINES: *W. G.* The Peaches are attacked with mildew *Oidium leucoconium*. Spray the plants with some fungicide such as liver of sulphur. The cracking in the Nectarines is caused by an excess of moisture either in the atmosphere or the soil. In these circumstances the leaves are unable to transpire as rapidly as water is carried to them. The cells thus become gorged with water, and, swelling, burst the skin, as is seen in your specimens.

PEACH LEAF BLISTER: *Wales.* (1) This disease is due to the fungus *Exoascus deformans*. It is a well-known fact that trees growing in much exposed positions suffer most from "blister," and that the fungus shows itself extremely active after a period of cold weather in spring and a visitation of east or north-east winds. As the best preventive measure, Peach trees should be planted against walls facing to the south and in the most sheltered part of the garden available. Any diseased leaves should be removed to the fire as soon as detected, and branches bearing diseased leaves be pruned back beyond the point of infection. Spraying with dilute ammoniacal solution of copper carbonate when the leaf-buds are beginning to expand, and again after an interval of three weeks, would be beneficial as a safeguard against inoculation from wind-borne spores. (2) *The Book of Garden Pests*, by R. Hooper Pearson, price 2s. 9d. post free of our publishing department.

PEACH TREES: *Perplexed.* It is impossible for us to offer a definite opinion as to what has caused the shedding of the leaves each year. This could only be done after a thorough examination of the trees in the border, unless there is something in the leaves themselves which indicates the presence of disease. If you will send some leaves, we will examine them. It is obvious, however, that there are two conditions which might cause the leaves to fall, namely, (1) an exceedingly low temperature with frost, (2) drought at the roots. You will best know whether either of these probable causes explain your trouble.

PEACHES GUMMING: *W. V.* Three pounds of common salt, scattered over the soil as far as the roots extend, at intervals during a year, has proved beneficial in similar cases.

PEAS DISEASED AT THE "COLLAR": *C. S.* *Spondylocladium atrovirens*, a fungus, is causing the injury. Watering with a solution of sulphate of potash may check the complaint, but the soil is infected, and should be well limed as soon as practicable.

PLANT FROM BABENO: *D. C. B.* We cannot trace such a name as you mention. If you will

send a specimen of the plant we will endeavour to assist you.

PROFESSIONAL AND AMATEUR EXHIBITORS: *H. C.* The term amateur at a flower show bears more than one interpretation. It is often used to designate a person other than a trader, whilst in another case it may mean one who is not a nurseryman or florist, and who employs no professional gardener. It is the duty of those responsible for the compilation of the schedule to see that the term is properly defined in the rules of the show. According to the *Code of Rules for Judging* issued by the Royal Horticultural Society, "no person shall be allowed to compete as an amateur who sells plants (except when giving up possession of the place where they grow, or in the case of new seedlings or sports), grafts, cuttings, or buds for budding, nor any person in the employ of a nurseryman. Any objection raised as to the qualification of an exhibitor shall be referred to the committee or other authority for arbitration, and their decision shall be final and binding on both parties. The term 'Amateur' is here employed in its broadest sense, that is, in contradistinction to 'nurseryman.' In some schedules the word is used more strictly, denoting an amateur gardener, i.e., one who employs no professional help whatever in the cultivation of his garden, in contradistinction to an amateur owner, who cultivates by means of professional gardeners in his employment." A person who employs professional help in his garden cannot be regarded as a cottager in an exhibition sense.

STOCKS DISEASED: *A. G.* The young plants are killed by *Thielavia basicola*, a fungus which infests the soil. The ground should be dressed with quicklime.

STRAWBERRY: *G. V. P., Teneriffe.* The fruits were quite decayed when received.

STRAWBERRY BLOSSOMS INJURED: *A. H. L.* There was no trace of injury in the examples forwarded to us; but they had dried up during transit. Send us a fresh supply packed in a tin box.—*Straus.* No disease is present: the flowers have not been fertilised. The cold, windy weather when they expanded prevented insects from visiting them.

TOMATOS: *H. L., Chortsey.* If you will send specimens, we will examine them for evidence of disease.—*J. H.* Disease is not responsible for the trouble. No doubt the burying of the stems has been done too deeply. Tomatos should be planted in their fruiting pots with a small quantity of soil only at first, adding more as it is needed. In this way the first bunches of fruits are had low down the stem.—*W. L.* The disease is "Black Stripe." Spray the foliage at intervals of four days until the complaint is checked with a solution of sulphide of potassium, using it at the strength of one ounce in three gallons of water.

TULIP: *Birmingham.* No disease is present in the plants. The leaves of certain varieties of Tulips suffer from the effects of the slightest frost or scorching.

VINE MILDEW: *G. W.* Spray the vines thoroughly with liver of sulphur, using 1 ounce in three gallons of water every fourth day, or oftener if necessary, until the fungus is checked.

WILD PARSLEY: *F. W.* The best remedy is to cut down the Parsley before it seeds, and continue to cut it down as often as may be necessary. We do not know of any preparation that can be used for exterminating Parsley that would not injure Primroses and Violets.

YEW HEDGE: *H. H.* Loosen the ground with a fork for a distance of about 3 feet on both sides of the hedge, and apply a good watering, then give a top-dressing of old leaf-mould, turfy loam, or manure. The top growth should be kept moist by frequent sprayings, especially in sunny or windy weather.

Communications Received.—*A. O.*—*A. G.*—*W. G. L.*—*A. E. S.*—*G. G.*—*J. U.*—*Gard. Roy. Ben. Inst.*—*W. M. W.*—*Exmouthian*—*R. A. R.*—*T. A. S.*—*Anxious*—*C. H. M.*—*J. R.*—*C. F.*—*Cox*—*Grand Yorkshire Gala*—*J. H.*—*W. W.*—*K. & S.*—*H. M. V.*—*W. A. C.*—*Rev. D. R. W.*—*W. E. B.*—*S. A.*—*S. W. F.*



SYON HOUSE, AS SEEN FROM THE BANKS OF THE THAMES, ROYAL GARDENS, NEW.

Photograph by E. J. Wallis.

THE
Gardeners' Chronicle

No. 1,172.—SATURDAY, June 12, 1909.

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A MARKET FRUIT-GROWER'S YEAR.

WITH May begins the rush of work on a fruit farm, to last without intermission until the completion of Apple-picking. At least, this is the case where spraying is carried on systematically, for this operation takes up an immense amount of time, and interferes with the important work of hoeing, unless additional hands are employed. Before the end of the month, moreover, Gooseberry picking begins on a small scale, and in young plantations extra work is required.

In my last article (May 15) the blossoming of certain varieties of fruit trees was noticed, and Apple blossom came out in the course of the first fortnight of May, though that of the latest Royal Jubilee—was not full before the 24th of the month. During nearly the whole period of blossoming the wind was from a cold quarter, and very strong at times. This appears to have interfered with the setting of fruit on certain delicate varieties, including Cox's Orange Pippin and Allington Pippin, particularly on the sides of trees exposed to the north, north-east, or east. As a rule, however, the setting of fruit is fairly good with Apples, and decidedly so with Plums and Pears. No damage was done by frost on my farm, as the temperature, registered 4 feet from the ground, did not fall below freezing point while any fruit was in blossom. Monarch is the only Plum which is not at least fairly set in my plantations, and that is because it did not blossom freely. Until the stoning period has been passed, however, no certainty as to the yield of Plums can be entertained.

Insect pests have proved exceedingly damaging this season. On Plums, particularly Rivers's Early Prolific and Czar, there is one of the worst attacks of aphid that I have known. Spraying with nicotine wash was, apparently, a serious waste of money, although it was carried out immediately after the attack began. Three days after the operation I searched in vain for a dead aphid. None was to be found, even in the partially-curved leaves. That this wash will kill the aphid when it is made to run all over the inside of curled leaves by opening them and pouring it on was proved on two or three occasions; but a mere spraying has not the same effect. Still, it is very remarkable that not a single dead aphid could be found. Nicotine is a very expensive wash, and it seems, in practice, to be no more efficacious than the good old mixture—soft soap and quassia. But my experience is that no spraying of Plum trees after the leaves have curled is of any considerable use. Though a small proportion of aphid is killed, there are plenty left to bring the pest up to its original strength in the course of a day or two. This season a search was made at frequent intervals for the mother queens, the intention being to spray as soon as any of them were found. None could be found up to about three days before a bad attack was shown by multitudes of curled leaves. Truly the Plum aphid is a difficult foe to encounter. It is more difficult to reach by spraying than the Apple aphid, because Plum leaves curl more suddenly and completely than Apple leaves, and the insect itself appears to be less susceptible to insecticides. A young plantation of home-raised Plums has escaped the attack of aphid, and this fact seems to indicate that the older trees, which were purchased, and have been attacked badly from the first, were infested with eggs when they were received.

There was also an attack of winter moth caterpillars on some varieties of Plums; but this has been rendered comparatively harmless by adding arsenate of lead to the nicotine wash for these varieties.

When last month's Notes were written no attack of the Apple sucker had appeared. A few weeks later, however, a slight infestation, after two years' immunity, was detected. This has been met effectually by drenching the trees with a strong solution of soft soap and quassia, 12lb. of each to 100 gallons. Numbers of dead suckers, and hardly any live ones, were found a couple of days after the spraying. In the same plantation winter moth and other leaf-eating caterpillars were doing damage to a few varieties; and, for these, arsenate of lead was added to the wash, while the Woburn-Bordeaux paste was also added for a few varieties particularly liable to scab. No aphid worth notice has appeared at present in this plantation.

In a young plantation of Apple trees there has been the worst attack of leaf-eating caterpillars, especially those of the winter and the bud moth, that I have ever had; aphid also has been troublesome on some varieties, particularly Allington Pippin and Beauty of Bath. When the trees were first sprayed the caterpillars were inside the folded leaves, and there they fed on unpoisoned food until they had reduced many clusters of leaves to ribbons. The extreme slowness with which the bunches of leaves unfolded, in consequence of the coldness of the weather in the first three weeks of May, caused the damage to be greater than usual. A second spraying in the last week of May proved more effi-

cient than the earlier one, soft soap, quassia, and arsenate of lead being used in the later spraying. But perhaps the best result was attained by squeezing the terminal unopened clusters of leaves when the trees were gone over for the removal of blooms where wood growth was desired, and for trimming some of them. Some varieties had a caterpillar in nearly every terminal cluster of leaves. At the same time curled leaves infested with aphid were stripped off and crushed. These operations are practicable only on quite young trees.

It remains to notice an insect pest which is not recognised in any text-book in my possession, and I have Mr. Theobald's admirable work, as well as the late Miss Ormerod's publications. This is a dark purple aphid, apparently black to the naked eye, infesting Currants. It is a curious fact that this aphid has not been noticed by entomologists in this country, although it is probably common enough. Specimens sent to one high authority have elicited a reply to this effect. It has troubled me ever since I grew Black Currants, and two distant growers are also troubled by it. The presence of this pest is made obvious by the curling of the terminal leaves of branches or of young sucker shoots. But the aphides are not on these leaves; they are on the stems just below, and in some cases in the bunches of Currants below curled leaves. As only about one in a hundred bushes was affected, or fewer still, in the hope of eradicating the pest from a young plantation of Boskoop Giant, the affected ends of branches have been taken off and destroyed. This is a remedy applied with reluctance, as it checks extensive growth; but a sacrifice may be faced with the prospect of ultimate advantage. Spraying is of comparatively little use in this case.

FUNGAL PESTS.

Brown rot has appeared to a troublesome extent on Monarch, Czar, and Pond's Seedling Plums. The dead fruits and terminals have been taken off one variety and burned; but time has not yet been found to treat the other two varieties likewise. The same disease is showing on some fruits of Cox's Orange Pippin, and to a less extent on two or three other varieties, as shown by the withering of branches of blossom or embryo fruit. The attack is chiefly on the spurs on the top portions of branches. Powdery mildew is also in evidence on a few varieties, particularly Bismarck and Allington Pippin. Scab has not yet been found on the leaves of any variety, but is expected on sorts which have been affected in previous years. A second spraying against it will be carried out a fortnight after the first operation.

THE EXTENSION SYSTEM.

Of all the fads which fruit-growers have been induced to entertain, perhaps that known as the extension system has done the greatest amount of mischief when practised on young trees. Reference has been made on previous occasions to premature blossoming, to the prevention of wood growth, caused by leaving long shoots uncut on young trees. At my last pruning time some well-furnished young Worcester Pearmain trees were left almost or entirely uncut. The result is that blossoms appeared nearly or quite up to the tips of the shoots, from which many emerged feebly without any leaves around them. Cutting back severely has been necessary. It is not my intention to defend the continuous cutting-back of trees; but in the first four seasons after planting, at any rate on land that is not in high condition, my experience is that pruning can hardly be too severe. *Southern Grower.*

NEW OR NOTEWORTHY PLANTS.

*DENDROBIUM SANDERÆ, ROLFE, N. SP.

THIS is a handsome *Dendrobium*, introduced by Messrs. Sander & Sons, St. Albans, of which photographs, dried flowers, and a living plant have been sent to Kew. It is an ally of *D. Dearei*, Reichb. f., and has tall, striate, copiously-leafy stems, from a foot and a half to 3 feet long, somewhat thickened below the middle, and narrowed upwards. The leaves are oblong, slightly bilobed at the apex, and under 2 inches long. The short racemes are borne on the upper part of the stems, and produce 3 or 4 large and beautiful flowers, whose general aspect can be seen in fig. 163, which is reproduced from one of the photographs. The collector describes the flowers as large and very effective, the sepals and petals as pure white and of good substance, and the lip, white lined with green, the side lobes lined with blackish purple, and the throat and inside of the spur blackish violet. Traces of these colours are retained in the dried flowers. The plant is said to be free-growing and flowering, and is certainly very beautiful. The petals are large and well displayed. In the dried flowers they are an inch and a half long by an inch broad, while the expanded lip measures over an inch across. The spur tapers to a fine point, and measures over an inch and a quarter long from its junction with the pedicel. The second photograph sent shows the plant much reduced, including a stem bearing about 40 leaves. The plant bears a considerable general resemblance to *D. Dearei*, Reichb. f., and *D. parthenium*, Reichb. f., the latter a handsome Bornean species, which has been lost sight of. It is, however, quite distinct from either. *R. A. Rolfe.*

THE ROSARY.

CULTURAL NOTES FOR JUNE.

THE frosts of May and the cold easterly winds have brought in their train many insect pests, which have wrought considerable damage to the young shoots. Remedial measures, in the form of a syringing with a strong solution of soft soap, quassia extract, and nicotine, should be resorted to at once. The liquid should be warmed to about 90°, and applied preferably in the evening. The spray should be rinsed off with clear water early on the following morning. It is advisable before spraying the plants to pick out any grubs which have hidden themselves in curled leaves, or which have eaten into the flower-buds. In some cases the growths have been injured by cold since the April pruning; these should be cut back to sound wood at a spot where there is a prominent bud. A watch must be kept for the beetle that infests and eats the young shoots of Standard Briars. The pest commits its depredations in the evening, at which time it should be sought.

Budding operations will be late this season. Under ordinary conditions, this work should be well in hand by the end of June. It is not advisable to commence budding before the shoots have obtained some degree of hardness, and the branches from which the buds are to be taken are well ripened. Above all, the bark should run freely in both stock and scion.

* *Dendrobium Sanderæ*, Rolfe.—Caulis elongati, infra medium paulo incrassati, 40-80 cm. alti., foliosi, striati, internodi 2-2.5 cm. distantes. Folia oblonga vel elliptico-oblonga, apice minute biloba, 4-5 cm. longa, circa 1.1-1.5 cm. lata. Racemi laterales, prope apicem ramorum producti, 1.5-2.5 cm. longi, 3-4-flori, basi vaginis ocreatis brevibus obtecti. Bracteæ late ovato-oblongi, subacuti, membranacei, 2-3 mm. longi. Pedicelli circa 4 cm. longi, teretes. Flores magni, albi, labelli disco et lobis lateralibus striatis. Sepalum posticum lanceolatum, acutum vel acuminatum, carinatum, circa 3-5 cm. longum, sepala lateralia oblongo-lanceolata, acuta vel acuminata, carinata, circa 4 cm. longa, basi obliqua, in mentum conicum acuminatum 2 cm. longum producta. Labellum trilobum, 4 cm. longum, lobi laterales rotundati vel subtruncati, 1 cm. lati; lobus intermedius obovatus, truncatus vel obtuse bilobus, creolatus, 2-2.5 cm. latus. Columna lata. *R. A. Rolfe.*

As soon as last year's buds commence to push into growth they must be secured to sticks fastened to the main stem. If it is desired, the points of the shoots may be pinched when they have made about 5 or 6 inches of growth; but if the plants are intended to furnish blooms for exhibition purposes, it is best to leave the shoots unstopped. The best exhibition blooms are often produced from maiden-buds. The quality of the flowers will be much improved if liquid manure is applied to the plants, and this feeding should be alternated with the application of some phosphatic manure, at intervals of a few days. Any manurial stimulant should be applied first in a very diluted form; the strength can be increased until the bud is developing its colour, when feeding should be discontinued; at

Manetti and De la Grifferae stocks prefer a sandy loam. Roses of the Hybrid Perpetual type do best on the Briar and Manetti stocks. Strong-growing varieties, and especially climbers of the Hybrid Tea and Noisette types do best on the De la Grifferae stocks, whilst, in the case of varieties of moderately vigorous growth, and also the weaker-growing kinds of the Hybrid Perpetual and Tea sections, the seedling Briar stock is best.

Cuttings inserted in the open last October have made very few roots. They need protection from hot sunshine during the middle of the day until they are better rooted. Apply mulchings and in dry weather copious waterings.

Grafted plants that are plunged in the open



FIG. 163.—DENDROBIUM SANDERÆ, A NEW SPECIES ALLIED TO *D. DEAREI*.

that stage soft water only should be applied to the roots. All growths from the stock itself, other than one shoot beyond the bud, which will cause the sap to circulate past the bud, should be removed. This applies to buds on the standard and half-standard Briars. Those on the Manetti and De la Grifferae stocks are generally later in developing, so that the stock can be denuded of its shoots gradually. When the bud is growing freely the stock above the graft may be removed.

STOCKS FOR ROSES.

Standard, seedling, and dwarf Briar stocks succeed best in a stiff, loamy soil, but the

are now growing freely. Any that need re-planting should be attended to without delay. It is advisable to stop the longest shoots about twice during the season. Their further requirements throughout the summer will consist of stopping, tying and staking the shoots, and in watering.

Plants on their own roots in pots will require similar attention, but instead of plunging them in the ground it is better to plunge them on an old hot-bed.

Indoor Roses should be syringed occasionally. Prick up the surface of the borders lightly with a fork and dust some lime over it. After this apply a layer of well-rotted manure as a

mulch. Remove all weak and useless shoots and endeavour to keep the plants as vigorous and healthy as possible, so that they may flower well next autumn and winter. *J. D. G.*

FORTUNE'S YELLOW ROSE.

THE proper pruning of this plant, apart from the necessary vigour of growth, is the crux of the whole question of success in flowering. Like Marechal Niel, Lamarque, and others of this type of growth and flower, close cutting back of the old flowering wood after blossoming is over, with a view to inducing further vigorous shoots to form and grow luxuriantly during the summer, is an absolute necessity. From the nodes of these strong growths an abundant crop of flowers may reasonably be expected. The great charm of the variety is the gorgeous and unique tint of colour which shows so effectively in artificial light, when the colour is a beautiful yellow, flaked with carmine and tinted with bronze. *E. M.*

NOTICES OF BOOKS.

* TREES AND THEIR LIFE-HISTORIES.

THE practice of issuing scientific books in serial parts may be convenient for the publisher and popular with the public, but it is certainly embarrassing to the reviewer, for either he must wait till all the parts have appeared before offering an opinion on the work—in which case his comments are belated—or else he must endeavour to judge of the bulk by the sample. In the book under review, the risk run by adopting the latter course would appear to be but small. Dr. Groom has devoted many years to the study of trees, and no one in this country is better qualified to write upon their life-histories. The plan which the author adopts is set forth in the opening words of the preface, "to consider the tree, not as a mere object to be identified, but as a living being whose struggling life is to be watched, whose wants are to be studied, and whose changing lineaments are to be observed."

Part I. consists of an introduction dealing with the activity of the tree, its nourishment, the root and shoot systems, the leaves, stem, and flowers. Though the author states that the introduction is superfluous to those acquainted with botany, it will prove, by reason of the broad manner in which these subjects are treated, well worth the attention of those who have already some knowledge of botanical science. The author adopts a wise, middle course in the use of technical terms. Where such terms are necessary, he does not hesitate to employ them, but where they may be dispensed with he leaves them alone. Thus he avoids the common alternative errors of, on the one hand, giving an appearance of easiness at the expense of precision, and, on the other hand, of rendering his text repellent by the introduction of an unduly large number of ugly and obscure words to describe beautiful and evident things.

The work, which is to be completed in 13 parts, is illustrated in the most admirable manner by photographs by Mr. Henry Irving. Part I. contains nearly 50 figures depicting trees, their leaves, buds, and other parts. The completed work will contain upwards of 500 illustrations. As evidence of the fascination of the pictures, it may be mentioned that already the review copy has been claimed several times by a youthful student of Nature, who has only consented under very definite pressure to yield it up, and then subject to the explicit condition that it should be returned immediately.

* *Trees and their Life-Histories*, by Percy Groom, D.Sc. Illustrated from photographs by Henry Irving. (Cassell & Co., Ltd., 1903. In 13 fortnightly parts. Part I., 1s. net).

NURSERY NOTES.

MESSRS. CHARLESWORTH & CO.

THIS firm's new establishment at Haywards Heath, Sussex, embodies the best appointments which experience could suggest, and will worthily supersede the extensive Orchid establishment which has been given up at Heaton, near Bradford. First, as to the selection of a site. This was not determined upon until it had been proved that the part of Sussex in which the new nursery has been established was one of the best possible for Orchid culture. An estate of considerable extent was purchased, and Mr. Harris, of Ealing, was given a commission to erect the houses on Mr. J. Charlesworth's own plan in regard to the more important details. The work was commenced in February, 1908, and the houses were used for the accommodation of the stock brought from Heaton, Bradford, by the end of November of the same year. The houses are in two blocks. No. 1 block, called the commercial department, consists of 12 houses, each 100 feet in length, four sets of three being 12 feet, 13 feet, 20 feet, and 21 feet 6 inches wide respectively. These houses

lath blinds are used, for in this locality the unusual amount of sunlight which is so beneficial in winter, early spring and autumn, has to be toned down in summer.

The houses have span roofs, they are not lofty, and the arrangements of the interior are very simple. The whole of the floor area is allowed to remain as the natural earth, the surface being turned over occasionally. The paths are of stout woodwork trellis, except in the corridors, where they are of ornamental tiles. A carefully-restricted system of top-ventilation has been adopted. The ventilators beneath the staging on the outer walls are furnished with iron levers, which extend beneath the staging to the edge of the central path, where they may be used to regulate the ventilation from inside the house. The staging is of the usual kind, a close staging with an open woodwork above it. Here the close staging is of York stone slabs, with broken coke for holding and giving off moisture. The whole establishment is lighted by electricity, an installation for the purpose having been set up.

The heating is done from two centres, and is so arranged that any of the houses can be shut off or controlled, and that, when additions are made, the new structures can be heated without inter-

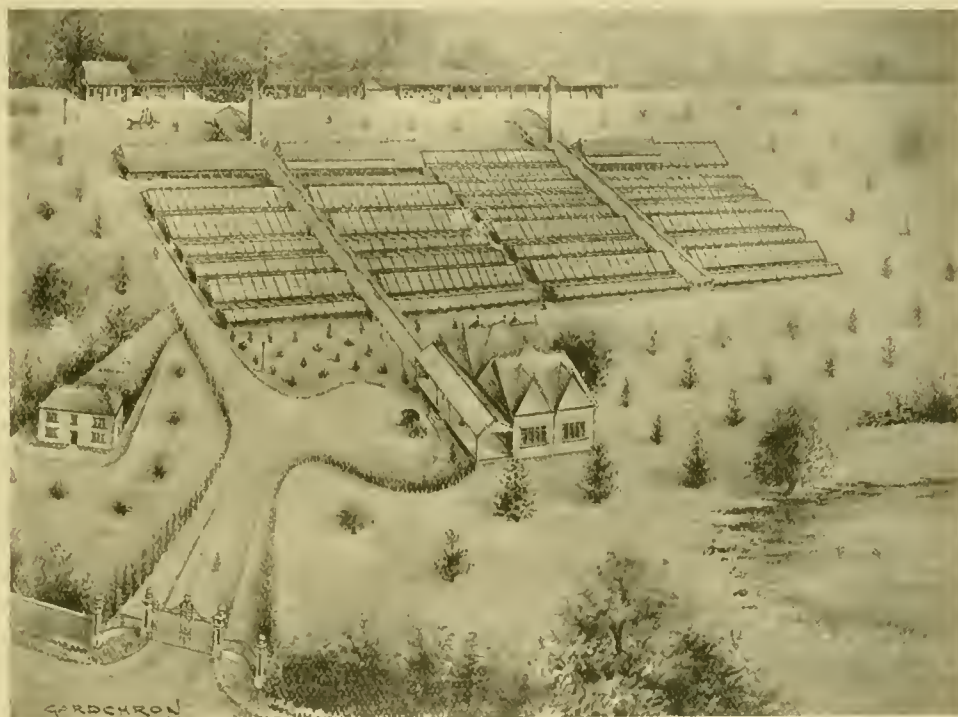


FIG. 164.—PERSPECTIVE VIEW OF MESSRS. CHARLESWORTH'S NEW NURSERY AT HAYWARDS HEATH.

extend right and left of a broad corridor 250 feet long, leading from the offices to the packing and potting sheds at the other end. The packing shed is 75 feet by 20 feet, the potting shed 80 feet by 20 feet, and the photographic studio 20 feet by 20 feet. The "seedling" block, which also has its corridor connecting the ends of the houses, consists at present of eight houses 100 feet long by 10 to 11 feet in width; one house 100 feet by 18 feet; two houses at the end of the potting shed 35 feet by 18 feet; the potting shed itself, which is used solely for the earlier stages of the hybrid Orchids and things on trial, being 50 feet by 18 feet, with a small room in which Mr. Charlesworth carries out some of the more delicate operations in testing and sowing seeds.

At the entrance is an important block, consisting of private and general offices, artists' room, &c.

The houses are shaded to suit the requirements of the plants grown in them by lath roller-blinds made on the place; in some cases a stippling of white is placed on the glass in addition to the lath blind. In other houses two sets of

fering with the existing sets of houses. Each set of three houses has its own flow and return to the boiler.

Three large Senior Robin Hood boilers, supplied by Messrs. Foster and Pearson, are working on one block, and two on another, with spaces left for two more in each stoke-hold.

Anthracite coal is used, and it is found that economy is effected and the life of the fire-bars prolonged by keeping water in the ash-way beneath the fires.

THE PLANTS.

In the commercial block it is pleasant to find that, although hybrid Orchids are the speciality, the imported species receive due attention, for each of the showy species, such as the large-flowered Cattleyas, is well represented, and pretty things of botanical interest are plentiful. We can only name a few which attracted our attention during our inspection of the houses.

Trichopilia Backhousiana, with its large, pure white fragrant flowers, made a good display; *Odontoglossum hastilabium*, *Miltonia vexillaria*,

Brassia brachiata, *Oncidium crispum*, including one magnificent dark form; *Epidendrum vitellinum*; a very interesting and showy lot of *Masdevallias*, the favourite *Cochlioda Noezliana*, a lot of brilliant scarlet *Sophranitis*, *Vanda cœrulea*, and *V. tricolor*, including the albino *V. tricolor pallida*; *Cymbidium Huttonii*, *Renanthera Imshooiana*, and a fine selection of *Cattleya Mendelii*, *C. Schröderæ*, *C. Skinneri*, *Lælia purpurata*, and other handsome species. Of *Phalænopsis* there is a large houseful, *P. Schilleriana* being specially good.

Odontoglossums fill several houses, and make a good show of flowers of fine quality. *O. crispum* is the favourite both for growing and for

hybrid, bears a fine spike of large, dark chestnut-red flowers with yellow base to the lip.

THE "SEEDLING" HOUSES

contain a collection of crosses of all kinds, including secondary crosses which are expected to give grand results; and wide crosses, which are "facts accomplished," although only a few years ago such combinations would have been considered impossible. These might be enumerated by the score, but it must suffice to mention a few of which we saw healthy little batches. *Cochlioda Noezliana* is found to be most receptive in crossing with other genera, and it has been used freely. Strong plants have been obtained between it and

are *Odontioda Charlesworthii*, *O. Bradshawæ*, *O. Lutetia*, and other scarlet-tinted *Odontiodas*, and crosses of *Odontoglossum Edwardii*, scarlet and crimson *Sophræ-Lælias* and *Sophræ-Cattleyas*, and *Odontoglossums*. House after house of small plants of these and other fine crosses are to be seen, and the readiness with which the seeds germinate in some cases is exemplified by one healthy little batch of which the seeds were only sown in February this year. Mr. Charlesworth is an enthusiast who is never content to "let well alone," so long as better may be accomplished. He is constantly experimenting in order to secure even better results than have yet been obtained. *J. O'B.*



[Photograph by A. E. Smith.]

FIG. 165.—A GROUP OF ORCHIDS FROM MESSRS. CHARLESWORTH'S NURSERY EXHIBITED AT THE TEMPLE SHOW.

hybridising, but only the best varieties are retained, and of these the large, round-flowered, white varieties are preferred. Blotched varieties of *O. crispum* raised from seeds are flowering well, and display the coveted features of size, shape and good colour in the highest degree.

Several houses contain *Lælio-Cattleyas*, hybrid *Cattleyas*, and *Brasso-Cattleyas*. *Cypripediums*, both species and hybrids, have each a good show of flowers. A batch of hybrid *Odontoglossums* has in flower *O. Watsonianum* (*loochristense* × *crispum*), some very fine *O. amabile*, *O. Fascinator*, *O. crispo-Harryanum*, *O. Lambeauanum*, *O. Wilckeanum*, home-raised, some of them far surpassing the best imported forms; *O. Othello*, *O. Ossulstonii*, and others, including several of the pure white *O. ardentissimum xanthotes* (*crispum xanthotes Charlesworthii* × *Pescatorei album*), which is one of the most beautiful *Odontoglossums* yet raised, and remarkable in that the whole batch are true to the albino character. Among new plants the handsome *Oncidium Charlesworthii* (fig. 166), probably a natural

various *Oncidium*s, including *O. concolor*, *O. Forbesii*, and *O. incurvum*; *Odontoglossum cirrhosum* × *Oncidium incurvum*, and again with *O. Forbesii*; and *Oncidium tigrinum* with *O. lamelligerum*. Various crosses have been made with *Odontoglossum Uro-Skinneri*, that with *Cochlioda Noezliana* resulting in perfectly healthy progeny. Most other crosses of *O. Uro-Skinneri* exhibit spotted, unsightly leaves on otherwise perfectly healthy plants, probably due to the difference in the cellular tissues and substance in the leaves of the species used, or in some other structural peculiarity in *O. Uro-Skinneri*, which clashes with that of the other parent, and which may disappear when the resultant hybrids are crossed again. *Odontoglossums* of the finest type have been intercrossed in every way, and an advance on the standard of excellence now common is not improbable. *Miltonia* seedlings are specially interesting, and a little batch of *Odontoglossum Rossii rubescens* × *O. ardentissimum* should be good.

In flower, and intended for further crossing,

* FIXATION OF NITROGEN BY BACTERIA.

THE fixation of nitrogen by bacteria, though a somewhat well-worn subject, is one of the most fundamental problems of agriculture and one which is constantly receiving new light from one source or another. Nitrogen is not only an essential element in the nutrition of the plant, but the fertilising substance most costly to purchase, although in its free, gaseous state it constitutes four-fifths of the atmosphere. Our ordinary plants, however, are incapable of drawing upon this stock of free nitrogen, and hence they must obtain combined nitrogen from the soil. This fact—the subject of long controversy—may be said to have received its crowning demonstration by the experiments of Lawes, Gilbert, and Pugh at Rothamsted in 1857-8. Despite these and other experiments, it became evident that some factor in the situation had been overlooked, because from many sources—the Rothamsted field experiments among others—it was shown that leguminous crops not only took away

* Lecture delivered on March 11, 1909, by Mr. A. D. Hall, Director of the Rothamsted Experimental Station.

an exceptional amount of nitrogen but left the ground richer in nitrogen compounds than it was before their growth. These difficulties were cleared up by Hellriegel and Wilfarth in 1886-7, when they showed that leguminous plants were susceptible to the infection of an organism which produced nodules upon their roots, whereupon they became able to draw upon the atmospheric nitrogen.

The nodules contain in vast numbers a bacterium which effects the fixation of nitrogen; the combined nitrogen is passed on to the host plant, which in its turn supplies the bacteria with the carbohydrates they require. The nodule bacteria, which have only latterly been isolated in a pure state directly from the soil, exist in the soil in what is called the neutral condition, because they are ready to infect many different species of leguminous plants indifferently. They are very small, about 0.8 μ long by 0.2 μ broad, and are in active motion, each possessing a single cilium. Because of this activity they are sometimes said to be in the "swarm" stage, and in this form they infect the host plant by entering through the root-hairs.

it would not grow as well (in the absence of soil nitrogen) as if it were inoculated with bacilli from a nodule obtained from another French Bean plant. However, when the organisms from the Clover nodule had been for one generation in a French Bean, they then became as effective on the latter as the original French Bean organisms which had had no known connection with Clover. Thus we may consider as established the existence of distinct races of the nodule organism, capable, however, of acclimatisation.

Very soon after Hellriegel and Wilfarth's discovery, attempts were made to utilise it by artificially introducing the organisms into soil on which leguminous plants grew badly. Salfeld, in Hanover, engaged in reclaiming waste heath land by ploughing in successive crops of Lupins, &c., found it of advantage to bring soil from fields where such crops had grown previously and to sow 6 to 8 cwt. per acre before the first leguminous crop was taken. Between 1888 and 1892 he had achieved many successes in this way on the barren heath land manured only with basic slag and potash salts; the crop nodulated and gathered carbon and

gress, but their development has been remarkably rapid during the last fortnight. The great Lily of Mount Caucasus and Northern Persia, *Lilium monadelphum* var. *Szovitzianum*, has been especially conspicuous in the rapidity of its development, and in my own garden will probably attain, as in many former seasons, to a height of 8 feet. I can well believe that many prefer this majestic Lily to the great Himalayan *L. giganteum*, for, in the first place, it does not take nearly the same length of time to build up adequately its flowering bulb, and, in the second place, it grows to an almost equally commanding size, and is even more beautiful, from a floral point of view. Another grand Lily of rapid and massive growth is *Lilium Henryi*. *Lilium Henryi* has some of the vigorous and floriferous characteristics of *Szovitzianum*, while in aspect it resembles the *speciosum* family. As much cannot be said of such delicate introductions as *Kramerii* and *rubellum*, which may flower exquisitely for one, or even two, successive seasons, and then

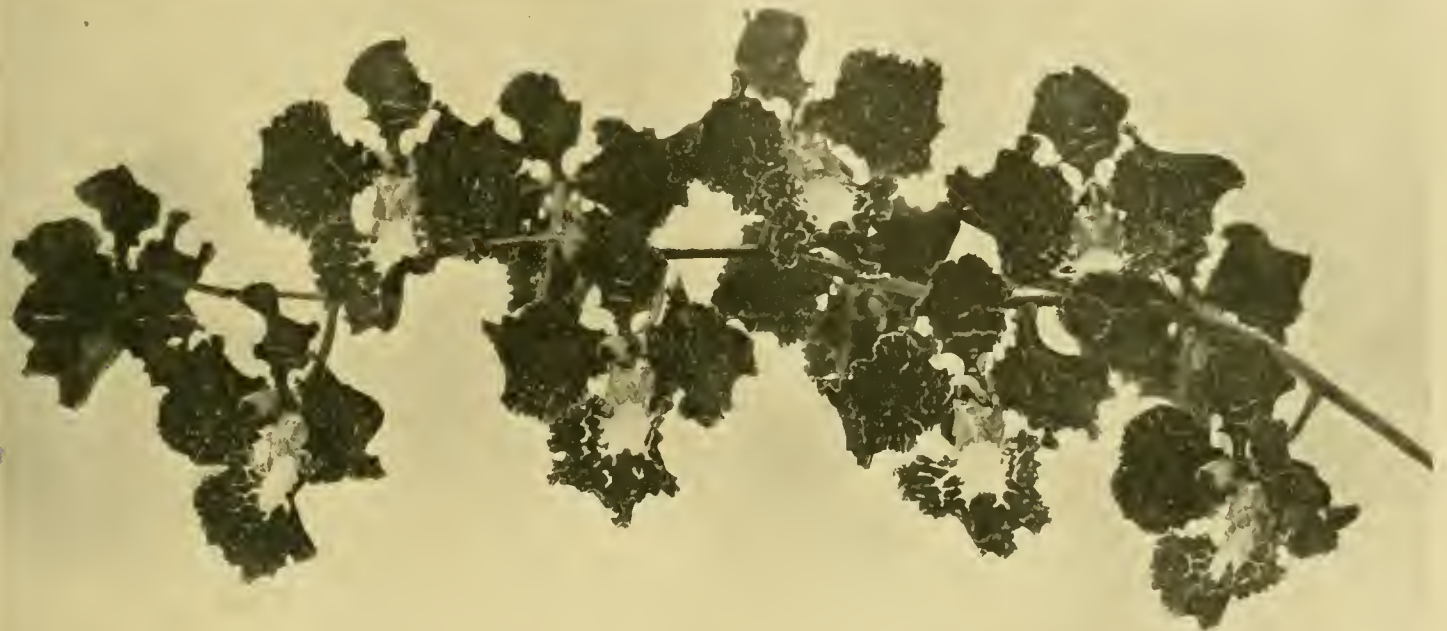


FIG. 166.—ONCIDIUM CHARLESWORTHII, FOR WHICH MESSRS. CHARLESWORTH RECENTLY RECEIVED A FIRST-CLASS CERTIFICATE FROM THE ROYAL HORTICULTURAL SOCIETY. (See p. 376.)

Once they have entered the root-hairs, they begin to secrete slime and extend into the cells of the root, near the nuclei of which they begin to multiply rapidly as bacilli, rods about four times the size of the bacteria free in the soil.

Finally, after two or three weeks, the bacilli begin to form still larger entities, termed bacteroids, protoplasmic bodies, which after the fourth week show a granular structure and later still disintegrate to allow the bacilli to fall out. The bacteroids show typical Y shapes in the nodules of Clover, Peas, Beans, and Vetches; in some Clovers they are also club or dumb-bell shaped, but only of late has it been possible to get bacteroids to develop in artificial cultures. With the formation of bacteroids begins the growth of the nodules and the fixation of nitrogen; when in certain cases abnormal nodules have been found containing only bacilli no fixation has taken place.

The important question then arises as to whether there is only a single species of the nodule-forming bacterium, or whether each leguminous plant does not possess, if not a corresponding species, at least a race specialised to co-operate with it. It was early shown that certain leguminous plants—notably *Seradella*, *Lupins*, and *Lucerne*—could not always be infected by soil which would inoculate Clover. It was also shown that, if a particular species like the French Bean were inoculated with bacilli from a Clover nodule,

nitrogen from the air, out of which a fertile soil was eventually built up. In order to save the trouble attached to sowing such quantities of soil, Nobbe and Hiltner in 1896 introduced artificial cultures of the nodule organisms, growing on a jelly made from an extract of the plant stiffened by gelatine. But in such a medium, rich in nitrogen, the nodule organism grows very slowly and becomes inert, so that for practical purposes this "nitragin" proved a failure.

Little by little, however, the methods of growing the bacteria artificially were improved, chiefly by the introduction of media containing little or no nitrogen, and in 1903-4 Hiltner put on the market a very effective series of cultures grown on agar-agar containing a little plant extract.

(To be continued.)

SCOTLAND.

THE PROSPECTS OF THE LILY SEASON.

THE growth of Oriental and American Lilies in northern gardens has of late been stimulated greatly by heavy rains after a somewhat protracted drought. For a long period they seemed, notwithstanding the brilliant sunshine, greatly modified by cold winds, to be making little pro-

gress, but their development has been remarkably rapid during the last fortnight. The great Lily of Mount Caucasus and Northern Persia, *Lilium monadelphum* var. *Szovitzianum*, has been especially conspicuous in the rapidity of its development, and in my own garden will probably attain, as in many former seasons, to a height of 8 feet. I can well believe that many prefer this majestic Lily to the great Himalayan *L. giganteum*, for, in the first place, it does not take nearly the same length of time to build up adequately its flowering bulb, and, in the second place, it grows to an almost equally commanding size, and is even more beautiful, from a floral point of view. Another grand Lily of rapid and massive growth is *Lilium Henryi*. *Lilium Henryi* has some of the vigorous and floriferous characteristics of *Szovitzianum*, while in aspect it resembles the *speciosum* family. As much cannot be said of such delicate introductions as *Kramerii* and *rubellum*, which may flower exquisitely for one, or even two, successive seasons, and then

wholly disappear. Such extremely unreliable varieties as these would almost require to be treated like annuals, and planted every year. Not much more enduring are the various and exceedingly beautiful forms of *Lilium longiflorum*, of which the most vigorous has been named *giganteum*. The members of this species are caused frequently to fail to flower well by too much being attempted in the way of bulb division. *L. auratum* (whose finest and strongest representatives in Scottish gardens this year are the great *platyphyllum* and *rubro-vittatum*) is a Lily of much greater reliability. Such varieties as those to which I have just alluded have flowered in my own garden in the same position for ten successive seasons, without exhibiting any signs of deterioration. Hardly less worthy of confidence are the *speciosums*.

Of American Lilies my supreme favourites are *Humboldtii*, a richly-spotted variety of the widely-distributed *Martagon* family, and the delicately beautiful *Washingtonianum*, with its charming, woodbine fragrance. These Californian Lilies, when once firmly established in congenial soil, will flower for many years. *David R. Williamson*, *Manse of Kirkmaiden, Wigtownshire*.

THE CARRIAGE OF VEGETABLE AND FRUIT PRODUCE BY RAILWAY.

(Concluded from page 368.)

THE REMEDY OF COMBINATION.

DEALING with the second contention which is so often put forward on behalf of railway companies, namely, that, if the trader would combine, most, if not all, of his grievances would disappear, growers will no doubt support the writer's contention that this statement is absurd on the face of it. Want of space forbids any detailed examination of the argument, but it may be useful to remind growers of the report of another Departmental Committee to which railway companies never refer, viz., that issued in 1905 on "The Fruit Industry in Great Britain." This report unanimously recommended the following reforms, none of which has yet been adopted by legislation:—

(a) That it is highly desirable that a more simple and uniform system of rates for fruit be introduced by the railway companies. This can be done without a statutory re-classification, with assistance of the Board of Trade.

(b) That railway companies should make greater efforts for ensuring the prompt delivery of perishable fruit.

(c) That it is most desirable that all fruit be consigned at company's risk, and that the so-called owner's risk rates be abolished: the rates at company's risk being reduced to a figure approximating to those now in force at owner's risk, but providing the companies with just a sufficient margin for the extra liability incurred. *That 5 per cent. would be a fair margin.*

(d) That, in the event of owner's risk rates being retained, the liability of the railway companies should not be confined to cases of wilful misconduct only, but to those where *culpable* negligence can be proved.

(e) That, in view of the recent tendency to combine among the railways, it would be an advantage if the Government were to appoint an official or a Department to watch over the companies' actions, and to report to Parliament.

(f) That in years of glut, railway companies should be urged to temporarily lower their rates for fruit, just as excursion passenger fares are lowered on special occasions, and that, if this cannot be done by agreement, it is desirable that the Railway and Canal Traffic Act of 1894 should be amended for that purpose.

(g) That jam made wholly or in part from foreign fruit be so labelled.

(h) That the Government should undertake the inspection of imported fruit and fruit pulp at the ports of entry.

(i) That it would be an advantage to fruit growers and to the public generally if the Local Government Board collected statistics of the fruit seized and condemned as unfit for food.

It will be obvious that for none of these grievances would "co-operation among growers" provide a remedy. The Joint Railway and Parliamentary Committee forwarded to the Board of Trade a year ago a short Bill dealing with some of these reforms, but discussion of the matter has been blocked by the leisurely sittings of the Railway Conference, whose report is still patiently awaited.

The writer has endeavoured to show that although co-operation amongst growers and the grievances of growers are both subjects which are well worthy of serious consideration, yet the two questions should not be allowed to confuse each other, and it only remains to be hoped that discussion may eventually be followed by decisive action. Signs are not wanting that in the near future traders will have to fight for their rights with even greater pertinacity than hitherto. The history of railway legislation shows that, every decade or so, Parliament has had to come to the assistance of the trader in the unequal fight, with the result that although for the time being his troubles are ameliorated, yet the effect of each successive Act of Parliament is slowly worn away by the persistent ingenuity of the wealthy and well-organised railway companies. The fact that another Act of Parliament is now overdue in the ordinary course of events will serve to account for a good deal of the discontent which is at present being made manifest. *H. M. V.*

The Week's Work.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

Early Peaches.—After gathering all the fruit from the trees, the borders must be thoroughly watered with clear water. Examine the foliage carefully, and if red spider or thrip is present, syringe the trees with an insecticide several times at intervals of two or three days. It is necessary to thoroughly cleanse the trees of these pests to keep the foliage in a healthy condition as long as possible. The surface of the borders must be kept moist and the trees sprayed late in the afternoon with clear water. Remove all the old fruiting wood from the trees with the exception of that which is needed for extension or to replace old worn-out branches. Young shoots may be loosened from the trellis to enable the sun and air to ripen the wood. Keep the ventilators wide open.

Mid-season trees.—Fruits approaching maturity should be exposed to light and air, but during the ripening process some varieties need a little protection from direct sunshine to prevent the fruits from being scalded. Trees on which fruits are nearing the ripening stage should be well watered, as it is important that water should be withheld whilst actual ripening is in progress, otherwise the flavour of the fruits will be impaired. At this stage the house must be kept quite dry and a free circulation of air encouraged.

Late trees.—The fruits may now be safely thinned to the number necessary for furnishing the crop. No hard and fast lines can be laid down as to the exact number a tree should be allowed to carry, but young trees which are inclined to be too strong will mature a much larger crop than old-established ones, and this without suffering any harm. Old trees should be given liberal waterings with stimulants, and the borders should be mulched with decomposed manure. Keep the laterals pinched, and cut out any extra strong growths. Thoroughly syringe the trees morning and afternoon with rain-water and create a moist atmosphere in the house by frequently damping the walls and paths. Admit plenty of air to the trees, and, unless it is desired to hasten the ripening of the fruits, the house should never be closed.

Early Muscat vines.—Now that these are colouring, the leaves should be drawn aside so that the bunches will be only partially shaded from the sun. This is necessary to assist them to colour and finish perfectly. Pinch all laterals as they appear. In some districts it is necessary to shade the foliage of Muscat of Alexandria, and should there be the least sign of scorching this must be done immediately. This can be effected by syringing a little weak lime-wash over the glass. The borders will still require attention in the matter of watering, and, if not already mulched, see that this is done before the Grapes are ripe so that a dry atmosphere can be maintained without injury to the roots.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Pears.—The side growths on cordon trees should now be pinched back to the fourth or fifth leaf, leaving the leader its full length for the present. In stopping the shoots of fruit trees, it is always well to do it in two or three separate operations so as not to give the trees a serious check. Commence on the upper part of the tree and work downwards at intervals of a week or so. Thin out the fruits where the trees are too heavily laden, and bear in mind that, in the first place, heavy crops rarely finish well, and, secondly, they cause the trees to be impoverished for a year or two afterwards. The grower should be guided in his thinning by the state of the individual tree. Strong, healthy, young trees in full vigour may be cropped fairly heavily, as this tends to keep them from making a too rank and unfruitful growth. The earlier varieties, such as Citron des Carmes, Clapp's Favourite, Doyenné d'Été, Jargonelle, and Williams's Bon Chrétien, should be dealt with first. Take care to leave the fruit evenly disposed all over the tree, and exposed to the sun as much as possible. In dealing with young fan, or horizontally-trained trees, the shoots required for

extension should be fastened in their places and not stopped; the remaining shoots should be stopped at the fourth or fifth leaf. On light, porous soil Pears require much water in hot weather, and in the case of trees carrying good crops, it is advisable to apply an occasional dressing of artificial manure. Before applying this manure the mulch from around the trees should be removed. Apply only light dressings, according to the directions issued with the particular manure, water it well in, and replace the mulch around the tree in order to prevent too rapid evaporation after watering.

Figs.—Figs are now growing freely. In cases, however, where the ends of the shoots were damaged by the severe frosts of last winter, the injured shoots should be cut back to a healthy growth, tying the latter in to fill up vacant spaces. Where Figs are growing with their roots restricted to a limited space, the growth will not be so strong, and in this case the shoots should not be stopped, but the trees can be kept moderately thin by entirely taking out any shoots which are not required to furnish the wall space. In this way the shoots left will ripen well in the autumn and will rarely fail to give a good crop. If Figs are grown in rich vegetable borders, they are seldom successful, for they make rampant growth, and pruning merely aggravates the evil. In such instances steps should be taken next autumn to restrict the roots. This operation will also check the growth, causing it to ripen better.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardlee, Sussex.

Climbing plants.—Climbers require considerable attention at this season. The growths should be carefully supported by ties, especially if they are covering fences or buildings. If the roots need water let it be given them, and in many cases a liberal mulching will help the plants during the summer weather. Some of the plants on south aspects may require to be sprayed with clear water occasionally. I may mention that *Ahutilon megapotamicum* (*vexillarium*) has withstood the frosts of the past winter at Leonardlee and is thriving well on a south aspect. The plant flowers very freely, and the pretty blooms of crimson sepals, yellow petals, and brown stamens are exceedingly attractive, lasting until October or even November. Other good climbing plants include the new *Actinidia chinensis*, *A. Kolomikta*, *Akebia quinata*, *Aristolochia Siphio*, *Berberis stenophylla*, *Berberidopsis corallina*, *Cantua dependens*, *Carpenteria californica*, *Cassia corymbosa*, and *Ceanothus* are other species which may be recommended. *Bignonia grandiflora* is a fine sight when in flower and will grow very well on a wall. It produces inflorescences 2 feet long in a hot season. Then there are such species as *Magnolia grandiflora*, *Solanum crispum*, *S. jasminoides*, *Pistacia atlantica*, *Mitrasia coccinea*, *Mandevilla suaveolens*, *Lonicera tragaphylla*, *Leptospermum bullatum* and *L. grandiflorum*, *Ephedra altissima*, *Edwardsia species* and *Choisya ternata*. Most of these species may be planted at the present season if the plants in pots are procurable.

Clematis.—*C. montana* has been very good this season. The new variety *rubens* should be so planted that the growths may intertwine with those of *montana* itself, when the two together will produce a very fine effect. *Ville de Lyon* is a beautiful, free-flowering variety, and the flowers last a considerable time. It produces a succession of flowers in August and September. Remove the seed vessels from all the early-flowering varieties of *Clematis* for the purpose of inducing them to bloom again.

Flowering shrubs.—Continue to prune these as they pass out of flower. Gather the seed vessels at an early stage, except in cases where the seed is required for stock purposes. This is particularly necessary in the case of *Rhododendrons* and *Azaleas*.

Iris.—Apply a top-dressing to Japanese *Iris* and to *Liliums* of the type of *Lilium auratum*. Stout stakes will be necessary for these *Lilies*.

Sweet Peas.—Pick all the old flowers from the plants or the development of seeds will cause the flowering season to be a short one. If properly treated, Sweet Peas will continue to bloom for two months.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Fuchsias.—Transfer into larger pots plants which have become well rooted. They should be allowed plenty of space on the staging of a greenhouse, and syringed freely twice daily. Pinch frequently the shoots of plants required for training as large standards or pyramids. Large-trained *Fuchsias* required for exhibition purposes in August may be placed out-of-doors in a sheltered and partially shaded position on a cinder-bed. The pinching of the shoots should cease about six or seven weeks before the plants are required for exhibiting.

Perpetual-flowering Carnations.—Plants in small pots will be sufficiently rooted for shifting into their flowering pots. As a rule, receptacles 7 to 8 inches in diameter are large enough, but the cultivator must be guided in this matter by the vigour of the plant. It is unwise to over-pot these plants; they can be fed with concentrated manures later on should they need it. The various ingredients of the potting soil should be the best obtainable, and should consist of rich loam, with a little leaf-mould, bonemeal, a sprinkling of sharp sand, and a little soot dusted over the heap. The whole should be thoroughly mixed together, and the potting should be done firmly. After the potting is finished, return the plants to their old quarters. For some time to come their principal requirements will be care in watering, ventilating, and staking. Keep the plants and their surroundings tidy.

Medinilla magnifica.—Large examples of this stove plant make a striking display whilst in flower. As the flowers commence to expand, all stimulants should be withheld for a time. If during the flowering period the plants can be accommodated in an intermediate house their period of attractiveness will be greatly prolonged; under these conditions, water must be given with even more care than when the plants are in a stove temperature. Side growths, having short internodes, usually root freely when firmly inserted in sandy soil and plunged in a hot-bed. After they have rooted the plants should be afforded a moist, hot atmosphere, and, if potted on, as often as increased root room is required, they will quickly become fine specimens.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Peas.—In order to obtain a constant supply of Peas until late into the autumn, it is now necessary to select varieties that are known to succeed well during hot weather. Among the many varieties I have tried for summer sowing, Autocrat and Masterpiece have proved the best. Each of these has a strong constitution, very free-bearing, and produces Peas of first-class quality. Fresh sowings should be made every 10 days until the end of June. For this purpose make deep trenches, break up the soil in the base of the trenches, and fill them partly with half-rotted manure. Sow the seeds thinly and apply a thorough watering directly afterwards. Afford protection against birds and mice. Attend to the staking of the earlier Peas, putting stakes to them when they have attained the height of 3 inches. Apply a liberal mulch of short litter at the same time. The Pea crop in this locality is very late this season, and, therefore, plants which were forwarded under glass before planting out are of exceptional value. It is necessary to pinch out the points of the leading growths to cause the earlier pods to mature quickly. At the same time remove all the side growths and keep the roots well supplied with water.

Broad Beans.—It is time to make the final sowing of this vegetable in trenches which have been liberally manured. Select only the Windsor varieties. Earlier plants will need supporting, therefore stretch some stout tar cord to stakes placed at intervals along the rows. Pinch out the points of the growths immediately a satisfactory number of flower-buds have formed. Apply a mulch if this has not been done already. If black aphid appear on the points of the shoots, syringe them thoroughly with soft soap and water.

Mushrooms.—Continue to make up beds in the coolest places available. A thatched shed on the

north side of a wall is to be preferred, but, failing this, beds may be made up in any cool, shady position out-of-doors. After the beds have been spawned and soiled over, they should be covered with long litter from 4 to 6 inches deep. Beds now in bearing in the Mushroom house should be kept as cool as possible. The interior of the structure should be syringed two or three times each day. Any beds which, having been in bearing for some time, show signs of exhaustion, should be watered with liquid manure from the farmyard. They may then crop profitably for some time longer.

Aubergines.—Continue to grow these in heat, and feed them liberally immediately a sufficient number of fruits has set. Syringe the plants twice each day at least, and maintain a moist atmosphere.

Winter Greens.—Many of these should now be planted into their permanent quarters. Every bit of ground available should be utilised at this season, and in places where space is limited it may even be necessary to plant between other crops, such as Peas, Beans and Potatoes. In all cases, however, sufficient space must be allowed for the plants to develop perfectly.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Thunias.—Among Orchids now in bloom there are none more attractive than the *Thunias*, some of which were enumerated in the Calendar for March 20. When the plants have opened a few flowers, they should be removed from the East Indian house to a cool, shady position in the Cattleya house, where the flowers will last for a longer time. As the plants pass out of bloom, remove them to a cool, well-ventilated house, where the stems and leaves may be gradually inured to full sunlight, so that they may mature before the resting season commences. The plants should be watered occasionally till the leaves begin to change colour, but not after they assume a yellowish hue; at that stage they should be placed in a light, dry position, where the temperature does not fall below 50°. It frequently happens that when the plants are exposed to full sunlight they become infested with red spider, but this may easily be prevented by laying the plants down on their sides once a week and syringing them with some weak insecticide, or with warm rain water and soft soap in strong solution. Any *Thunias* that fail to flower should, in a few weeks time, have the terminal leaf pulled out from each growth, or the stem will continue to grow to a great length. The plants may afterwards be treated in the same way as those that bloomed. *Thunias* are among the very few Orchids that may be propagated easily. This is effected by taking off the back stems nearly to their base, and cutting them at the joints into lengths of about 4 to 6 inches. The pieces are then inserted firmly as cuttings into small, well-drained pots, filled with a mixture of chopped Sphagnum-moss, small crocks, and coarse silver sand. When the young shoots are seen pushing up, grow them along quickly in a stove-like temperature, and on the completion of growth treat them just as the older examples.

Odontoglossum citrosimum.—Plants of this Mexican species, when well grown, look very beautiful with their long racemes of wax-like blossoms, and when in full flower few plants have a more distinct appearance. The flowering season being over, the plants may be repotted if this is necessary. Owing to the flower-spikes being pendulous, shallow teak-wood baskets or pans are preferable to pots; the plants make but few roots, therefore the receptacles should be of the smallest size. Plenty of drainage, however, must be afforded, and over this a layer of rough Sphagnum-moss should be placed, which will keep the lower roots moist during the growing season. The plants thrive well in a mixture of *Osmunda* and *Polypodium* fibres in equal parts, to which some small crocks are added. Each plant should be potted firmly, as by so doing the pseudo-bulbs retain their plumpness longer without water during their season of rest than they would if the materials were loose. For a week or two after repotting keep the compost rather on the dry side, then for another similar period merely afford water around the edge of the pot or

basket, by which time growth will have recommenced, when water must be afforded more copiously until the new growths are matured. Suspend the plants in a light position in the Cattleya or Mexican house, and where as much ventilation as possible is admitted at all times. *O. citrosimum* enjoys a cool position at night-time, but requires a fair amount of warmth during the day, especially during the growing season.

PUBLIC PARKS AND GARDENS.

By W. W. PETTIGREW, Superintendent of City Parks, Cardiff.

Summer bedding.—By this period of the year the planting-out of the summer bedding plants has been completed in the majority of public parks, and only the necessary rain and heat are required to bring them quickly to perfection. As "bedding-out" is, in the nature of things, rather apt year after year to become stereotyped in character, most of those who have to deal with such work are usually only too pleased for an opportunity of introducing some novelties into it, whether in the form of new kinds of plants suitable for the purpose or merely by different methods of grouping and arranging old-time subjects. Taking it as a general rule, one finds more variety and greater boldness of treatment in the bedding arrangements as practised in public parks, and the number of different kinds of plants used invariably greater than in private gardens. On the contrary, the public gardener is very often indebted to his confrères in private service for many useful ideas in modes of arrangement and design, and so in this, as in many other ways, the members of the two different branches of the profession are mutually helpful the one to the other.

Novelties.—So far as novelties in the way of plants suitable for bedding purposes are concerned, two of the best that have come under my notice for the past two years are the dwarf bedding *Asters* and *Salvia splendens* var. *Star of Zurich*, or *Fireball*. The latter plant has a bright-scarlet inflorescence, which is quite equal in colour to some of the best scarlet *Pelargoniums*. Last season it was used with considerable success as a bedding plant, and will no doubt be in still greater evidence during the current year. Most gardeners who had an opportunity of seeing the dwarf bedding *Asters* growing in the ornamental grounds at the Franco-British Exhibition last autumn could hardly fail being impressed by their value as showy bedding plants.

The "dot" system.—It is now customary to use two or three different kinds of plants mixed together or as "dot" plants and groundwork in beds, where at one time only a single distinct variety would have been used. Where brilliancy and spectacular effect are not the objects in view, these mixtures are good in their way, but they undoubtedly give a sombreness to some present-day bedding arrangements which was altogether unknown under the old style.

Two important points in connection with summer bedding to which park officials usually endeavour to give attention are, first, to have the plants as large and well developed as possible, and secondly, to allow them, when once put into the beds, to remain intact until the end of the season. The possibility of giving these matters the necessary consideration largely depends upon the question of room. Where there is plenty of glass available, and the plants used are amenable to such treatment, it is well to grow them on from time to time into large-sized pots. *Fuchsias*, *Pelargoniums*, *Heliotropes*, and the various plants used for sub-tropical planting all repay any extra attention expended upon them in this way by giving more immediate effects. With regard to the second point, it is the general experience in the case of *Pelargoniums* that, just as they are at their best, it becomes necessary to take cuttings from them for the following year's plants, and, as a rule, beds filled with this class of plant look very shabby before the season closes. Where there is plenty of space to grow on surplus plants during the winter, and ample nursery ground in which to develop them into stock plants during the summer, no necessity exists for disturbing those used in beds or borders, and the result is that much better cuttings are obtained from which to raise new plants.

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 EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editor does not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editor does not hold himself responsible for any opinions expressed by his correspondents.

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

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, JUNE 14—

United Hort. Ben. and Prov. Soc. Com. meet.

WEDNESDAY, JUNE 16—York Gala (3 days).

THURSDAY, JUNE 17—Linnean Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—58.9°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, June 9 (6 P.M.): Max. 64°; Min. 51°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, June 10 (10 A.M.): Bar. 30.0; Temp. 54°; Weather—Raining.

PROVINCES.—Wednesday, June 9 (6 P.M.): Max. 59° Oxford; Min. 51° Scotland North West.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Bulbs and Roots at 1; Palms, Bays, Ferns, &c., at 1.30, at 67 & 68, Cheapside, by Protheroe & Morris.

FRIDAY—

Imported and Established Orchids, at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

The Utilisation of Atmospheric Nitrogen.

The problem of bringing the inert nitrogen of the air into combination, and thereby increasing the supplies of nitrogen-containing fertilisers, has been solved during the past few years. Nitrate of lime, which will take rank as a fertiliser with nitrate of soda and sulphate of ammonia, is now prepared on a commercial scale by the Birkeland-Eyde process, the essential of which consists in the oxidation of atmospheric nitrogen by means of the energy of the electric arc. The details of the process were described in a lecture given by Herr Eyde before the members of the Royal Society of Arts on May 26. The possibility of oxidising atmospheric nitrogen was demonstrated more than 100 years ago by the English chemists Priestley and Cavendish, and more recently Sir William Crookes and Lord Rayleigh have extended our knowledge of the subject. The fundamental novelty claimed for the new process consists in the utilisation of large quantities of energy in the electric arc employed to effect the initial combination between the nitrogen and oxygen of the air. The first product formed in the electric furnace, in which a temperature of over 3,000° C. is developed, consists of oxide of nitrogen, which is further oxidised in oxidation tanks to form dioxide of nitrogen. This gas is driven by centrifugal fans into absorption towers, which are filled with broken quartz to increase the surface, and

down which streams of water run. The water, absorbing the nitrogen dioxide, gives rise to weak nitric acid. The acid is led over limestone, and, liberating the carbon dioxide, combines with the lime to form nitrate of lime. On evaporation the nitrate of lime yields a brittle, crystalline mass, which crushing mills reduce to a granular state. The now finished product is put up in paper-lined barrels. Herr Eyde quoted, in the course of his lecture, the results of large numbers of trials of nitrate of lime in many different countries. All the trials indicate that nitrate of lime is, for manurial purposes, at least the equal of nitrate of soda and sulphate of ammonia. In the course of the discussion which took place after the lecture, Mr. Hall, the Director of Rothamsted Experimental Station, confirmed this conclusion, and pointed out that on certain soils, for example, those of a clayey nature, nitrate of lime might well prove the superior of nitrate of soda. In the hope that this new rival to the older nitrogenous fertilisers may reduce the price of combined nitrogen, and thus cheapen to the agriculturist and horticulturist the cost of cultivation, the advent of nitrate of lime is to be welcomed.

Botanical Teaching.

Like the first two volumes, which have been reviewed already in these pages, Volume III. of *The Book of Nature Study** is admirably printed and illustrated. Of the numerous full-page figures, not a few are in colour, and all represent pleasingly and faithfully the plants which they portray. The volume is divided into two parts. Part I., by Miss Charlotte L. Laurie, takes as its subject "Plant Life," and Part II., by Dr. Lang, deals with "Some Common Flowering Plants." With respect to Part I. we would suggest that the title is somewhat too comprehensive and that, perhaps, its scope would be better designated by "Some Aspects of Plant Life." The subjects dealt with are the life and growth of seedlings, the growth of the shoot from the bud, the growth of plants independently of seeds, and the importance of hairs in plant life. The general reader will find in these chapters much that is both interesting and instructive, and the teacher, who is not a specialist, will gain from them considerable help in planning Nature Study courses. Miss Laurie insists very properly that information gained first-hand has far greater value than that which is taken slavishly from books. She shows no ordinary resource in the choice of material which she selects to illustrate the various plant processes. Another excellent feature of the part of the work for which she is responsible is the continuous attempt which she makes to link on scientific facts with gardening practice; but at the same time it cannot be said that the attempts, of which we praise the intention, are always successful. Maxims (on p. 53) on watering, though they may be individually sound enough when grouped together, scarcely provide a helpful or satisfactory philosophy of the use of the watering-can. A similar criticism applies to the remarks on pruning on p. 27, where there is no indication in the context as to what

plants the directions refer. On the contrary, the descriptions of modes of germination, of buds, and of bulbs, tubers, corms, and like organs are excellent, and will serve teacher and scholar alike as trustworthy guides to the study of the forms of plants. The difficult task of introducing physiological experiments into a work of this kind has been attempted by Miss Laurie, though we think that in this respect she has not been so successful as in those other parts of her subject to which already reference has been made. The descriptions of apparatus and of method of experiment require, to be adequate and serviceable, more space than they receive; and a perusal of the experiments of Part I. leaves us with the impression that it would have been better either to omit the experiments altogether or to give fuller explanations as to the details to be observed in performing them.

If Part I. is, as we have indicated, very good, Part II. is excellent. Dr. Lang, in dealing with common flowering plants, has treated his subject with admirable judgment. In clear, simple style he gives an account of the life-histories of the commoner British plants, and we do not know of any book in which this subject is better dealt with. If we had the opportunity of using Volume III. of *The Book of Nature Study* we should certainly try the experiment of making our pupils work through Part II. before Part I. The subject is simpler and more uniform. When the pupils had learned to know their common plants they would be in a better position to profit by the more varied exercises provided by Part I.

In conclusion, we congratulate Professor Farmer on the judgment which he has shown in the choice of authors, both in this and in preceding volumes. Those interested in Nature Study are under a deep debt of gratitude to him and to his collaborators for providing such a valuable series of volumes as that which makes up *The Book of Nature Study*.

* *RHOODENDRON SOULIEI* (Supplementary Illustration and fig. 167) has been introduced to Europe by Messrs. JAS. VEITCH & SONS, through their late collector, Mr. WILSON, who sent seeds from China in the late autumn of 1905. Plants raised from these seeds flowered for the first time, in Coombe Wood Nursery, in May last. These plants have stood out in the open ground unharmed by the severe winter, and the young growths have withstood the late spring frosts, so there is every promise of this species proving hardy in this country. The specimen, which received a First-class Certificate when exhibited before the R.H.S. Floral Committee on May 18 last, was only about a foot high, and bore two trusses of rather flattish, rose-pink coloured flowers, some 3 to 4 inches across. *R. Souliei* is a native of the neighbourhood of Tchien-lu, Western China, at altitudes of from 9,000 to 11,500 feet. Like all the Chinese Rhododendrons, it is local in its distribution, and within its altitudinal limit forms dense thickets, often an acre or more in extent. In height, the bushes vary from 3 to 12 feet, and the flowers, which are borne in great profusion, vary from pale to deep rose. The leaves are medium-sized, ovate, with cordate base, and when young have a very pronounced glaucous-metallic lustre.

* *The Book of Nature Study*, edited by Prof. J. Bretland Farmer, D.Sc. Vol. III. (London: The Caxton Publishing Co.) Pp. 228, with seven coloured and nine black and white plates. Price 7s. 6d.

* *R. Souliei*. Franch. in Morot, *Journ. de Bot.* ix. (1895), p. 333.

THE JUBILEE OF THE FRUIT AND VEGETABLE AND FLORAL COMMITTEES.—It will be remembered that the approaching jubilee of these two Committees of the Royal Horticultural Society formed the subject of a leading article in our issue for November 21, 1908. We understand that the double event will be celebrated by a dinner which will take place shortly.

R.H.S. GARDENS CLUB.—The second annual meeting of this club will be held at the R.H.S. Gardens, Wisley, on Saturday, July 10. Members will travel by the train which leaves Waterloo at 2.28 p.m. and arrives at Weybridge at 3.9 p.m. Conveyances will take them to the gardens, and tea will be arranged for at the Hut Hotel. Members who can attend are asked to communicate as early as possible with the secretary to the club, R.H.S. Gardens, Wisley, Ripley, Surrey, in order that the arrangements may be completed.

BURNHAM PARK.—Mr. and Mrs. HARRY J. VEITCH have again this season extended an invitation to the members of the Royal Horticultural Society's Committees to visit their interesting garden at Burnham Park, Burnham Beeches. The visit will most likely take place on Thursday, July 1, and a friendly cricket match will be arranged between members of the Committees. Those able to make this visit may confidently look forward to spending a very enjoyable day.

ROYAL APPOINTMENT.—Messrs. JOSEPH BENTLEY, LTD., of Barrow-on-Humber, Hull, inform us that they have been granted the Royal Warrant of Appointment as horticultural chemical manufacturers to the KING.

HUGH LOW & CO., CLAPTON.—The firm of Messrs. HUGH LOW & Co., of Bush Hill Park and Enfield Nurseries, has been dissolved, and in future Mr. STUART LOW will carry on the business as heretofore under the name of STUART LOW & Co. Mr. STUART LOW is a son of the late STUART H. LOW and nephew of the late Sir HUGH LOW. All the members of the staff, including Mr. HARRY BARNARD and Mr. MAYES, will continue in their present positions.

FLOWERS IN SEASON.—Several uncommon shrubs have been sent us by Messrs. PENNICK & Co., Delgany, Co. Cork. Amongst several Deutzias sent the finest is *D. Lemoini* Avalanche, the shoots being densely covered with white blossoms. A large spray of *Sophora grandiflora* was covered with its yellow, pendent blooms, the tiny leaves being just about to unfold. *Chamaecerasus mundensis* is a shrubby species, bearing small, violet-coloured flowers. Amongst Rhododendrons, the variety *Cynthia*, with deep rose flowers, and *R. Keysii*, bearing small, reddish tubular flowers not larger than those of *Eccremocarpus scaber*, were noteworthy. *Genista alba* is represented by a rose-coloured variety. *Berberis Knightii* has relatively large leaves and equally large spines. *Drimys Winteri*, with its pale yellow flowers, and *Pittosporum viridiflorum* were also included.

THE NOMENCLATURE OF ORCHID HYBRIDS.—The Joint Committee appointed by the Scientific and Orchid Committees to consider a scheme for the naming of Orchid hybrids between genera sat for the last time on Tuesday last. A report will be presented to the Committees in due course. It will be found that the Joint Committee recommend the employment of specially-made names for the multi-generic hybrids, with the constant termination of *ara*, which will serve to distinguish such names from those of botanical genera and species.

"THE BOTANICAL MAGAZINE."—The issue of this magazine for June contains illustrations and descriptions of the following plants:—

PINUS JEFFREYI, tab. 8257.—This Californian species was mentioned by Sir JOSEPH HOOKER in the *Gardeners' Chronicle* for 1884, vol. xxii., page 813, with a sketch of the Californian plant also by Sir J. HOOKER. A figure of a cone, with details and a note by the late Dr. MAXWELL T. MASTERS, was published in the *Gardeners' Chronicle*, 1889, vol. v., pages 360 and 369, figs. 65, 68. *P. Jeffreyi* is nearly allied to *P. ponderosa*, and by some it has been considered to be merely a variety of that species.

BEGONIA MODICA, tab. 8258.—This West African species is described by Dr. STAFF in the *Kew Bulletin* for 1908, page 259. It is a

that the species was first introduced into European collections in 1820. Dr. STAFF states that the species is somewhat uncertain in its behaviour under cultivation. After growing quite well for a number of years it will, without any ostensible cause, and sometimes in the middle of the active growing season, suddenly droop and soon afterwards die. As a garden decorative tree, it is in some respects the finest of all the Whitebeams in cultivation, especially in regard to the size of its foliage and flowers. The flowers are white and the fruit reddish-green.

PRUNUS JAPONICA, tab. 8260.—This species is distinguished from *P. humilis* by the glabrous branches, larger leaves, and entire petals. The double-flowered form has been for a very long

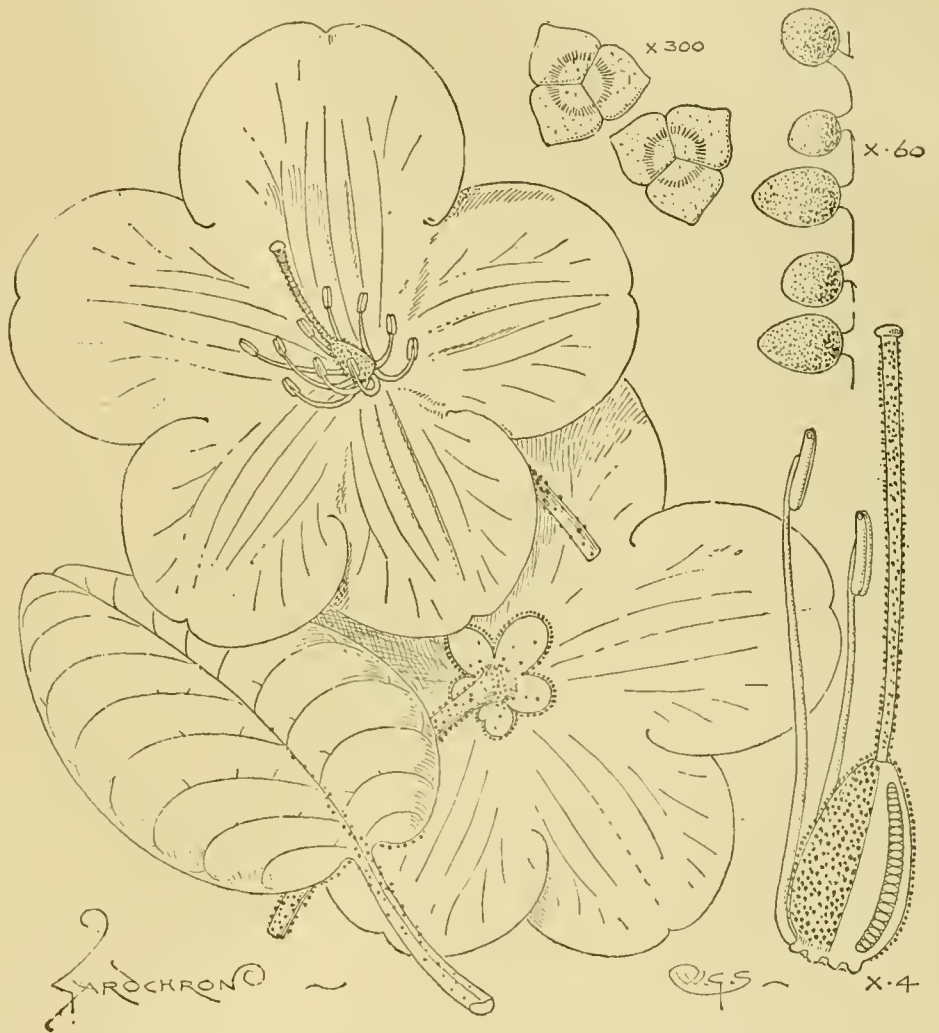


FIG. 167.—RHODODENDRON SOULIEI, A NEW CHINESE SPECIES: COLOUR, A SHADE OF ROSE.

(See p. 380.)

member of the section *Scutobegonia*, the members of which are small herbs, mostly with peltate leaves and yellow flowers. Tubers were received at Kew in 1907 from Mr. J. ANDERSON, Curator of the Botanic Station, Kumasi, who found them growing in the Gold Coast Colony on rocky ground at an altitude of 600 feet above sea level. The plant is almost stemless, with somewhat fleshy, bright green leaves, slightly crenate and undulate, and faintly reddish margins. The flowers are bright yellow and produced in umbels.

SORBUS CUSPIDATA, tab. 8259.—This is the Nepalese Whitebeam, and is sometimes known as *Sorbus nepalensis* or *Pyrus nepalensis*. It is found throughout the temperate Himalaya at elevations from 8,000 to 10,000 feet above sea level, from Garhwal to Sikkim. LOUDON states

time past the favourite flowering shrub and one employed for forcing for greenhouse decoration. At first it was imagined that this double-flowered Cherry was a form of *P. humilis*. This impression was dispelled when the typical variety now figured in the magazine was introduced to Europe in 1835. Kew, however, did not succeed in getting a plant until 1902, and this plant, although growing in a sunny border, in loamy soil, is only 3 feet in height. The fruits are brilliant red Cherries, which are very attractive.

CORNUS MACROPHYLLA, tab. 8261.—Of all the Cornels that are hardy in Great Britain this species is the largest. It is represented in the Kew Arboretum by several young trees, the largest of which, however, is not more than 19 feet high. Mr. W. BOTTING HEMSLEY states that on the Continent and in America

C. brachypoda has been adopted for a species with opposite leaves, and *C. macrophylla* has been erroneously applied to that which has the leaves and branches alternate. It is the species with alternate leaves and branches grown in English collections under the erroneous name of *C. brachypoda* and in the collections of other countries under the equally erroneous name *C. macrophylla* that stands in need of a distinctive name. For this alternate-leaved *Cornel* Mr. HEMSLEY proposes the name *C. controversa*. The plant now figured in the magazine has yellow flowers and purple fruits. It thrives best in good loamy soil in a sunny position. The lower branches should be pruned away so that a clean trunk of 5 or 6 feet high may form.

THE HARRY VEITCH PORTRAIT FUND.—We wish to draw the attention of our readers to the list of subscribers to this fund, printed on one of our advertisement pages. The response to the appeal which has been made is extremely satisfactory, and the fund will be closed in the course of a few days. It is understood that Mr. VEITCH will be entertained at dinner after the completion of the portrait, in accordance with the wishes of many subscribers to the fund.

MR. R. WILSON KER, V.M.H.—The Council of the Royal Horticultural Society, on Tuesday last, conferred the Victoria Medal of Honour on Mr. R. WILSON KER, senior partner in the firm of Messrs. KER & SON, Aighurth Nurseries, Liverpool. Most of our readers are familiar with the exemplary culture always to be seen in the Aighurth Nurseries, and this is particularly observable in the plant stoves. Some of the finest specimen *Codiaeums* we have seen were cultivated in these nurseries, and, in former days, when the plants were more popular than they now are, KER'S *Crotons* were known all over these islands. In recent years, Mr. KER has done excellent work with *Hippeastrums*. His novelties have secured awards at the Temple Shows, at Ghent, and other important Continental exhibitions. It is universally regretted that Mr. KER has for some time past suffered from ill-health. Our readers will be grateful to the R.H.S. Council for the honour which they have conferred upon one of the most esteemed of British nurserymen.

MR. JOHN MELVILLE.—The many friends of Mr. MELVILLE will learn with pleasure that the serious operation which he underwent recently at St. Peter's Hospital, Covent Garden, was a complete success, and that his recovery to health and strength is now merely a question of time. Mr. MELVILLE has been with the London County Council for many years, and during the time that he has had charge at Finsbury Park this pleasant North London park has become widely celebrated for the charm and variety of its spring and summer bedding and for the excellence of its general upkeep.

LINNEAN SOCIETY.—A meeting will be held on Thursday, the 17th inst., at 8 p.m., when the following papers will be read:—"On the Growth of a Species of *Battarea*," by Mr. J. G. O. TEPPE; "The Deposits in the Indian Ocean," by Sir JOHN MURRAY, K.C.B., F.R.S.; "The 'Sealark,' *Perseidea*, *Stenopidea*, and *Reptantia*," by Mr. L. A. BORRADAILE; "The 'Sealark,' *Polychæta*," Part II., by Mr. F. A. POTTS; "The 'Sealark,' *Lepidoptera*," by Mr. T. BAINBRIDGE FLETCHER; "New Species of Malesian and Philippine Ferns," by Dr. H. CHRIST; "The African Species of *Triumfetta*, Linn.," by Messrs. T. A. SPRAGUE and J. HUTCHINSON; "The Acanthoid Species of *Malvastrum*, A. Gray," by Mr. A. W. HILL, M.A. Exhibitions:—"Plants in Britain introduced by the Romans," by CLEMENT REID, F.R.S.

THE NATIONAL VEGETABLE SOCIETY.—At a meeting of the Provisional Committee, held at the Hotel Windsor on Tuesday last, certain rules and regulations, which had previously been drafted and circulated for consideration, were, with a few amendments, adopted. The objects of the Society were thus defined:—"To promote the wider cultivation of vegetables as food products, to encourage their consumption as food, to promote exhibitions of such products, whether competitive or otherwise, and to hold trials under such conditions as may offer with a view to finding the best varieties to commend for general culture, and to ascertain commercial value when grown under ordinary conditions." The Society will not concern itself at first with the holding of shows until it is in a position to do so effectively. At first it proposes to conduct commercial trials both in reference to varieties and to methods of cultivation. A list of some 30 vice-presidents was adopted, inclusive of the amateurs, seedsmen, and market-growers. Mr. GEORGE WYTHES, V.M.H., was elected treasurer, and Mr. E. J. QUICK, of 20, Tavistock Street, Covent Garden, hon. secretary. A committee of 24 members was also elected. The next meeting will take place on the 22nd inst.

PRESENTATION TO AN ABERDEEN GARDENER.—Aberdeen florists and gardeners have presented Mr. ALEXANDER PATERSON, market gardener, Ruthrieston, with a gold watch on the occasion of his leaving Aberdeen for Glasgow. Mr. JAMES SMITH, in making the presentation, referred to the keen interest that gentleman had taken in horticulture in the city as an office-bearer of the Horticultural Society and the Aberdeen Chrysanthemum Society respectively, and as a competitor at the local shows. Mrs. PATERSON was the recipient of a gold and pearl brooch.

PRIX 'ACADEMIQUE EMILE LAURENT.—At the last meeting of the Royal Academy of Belgium (Division of Science) the jury announced the award of the Emile Laurent Prize to Mr. T. DURAND, the eminent Director of the Brussels State Botanic Garden, and to his daughter, Miss HELEN DURAND, for his work *Sylloge Floræ Congolanae*. The Emile Laurent Prize, instituted to perpetuate the memory of the genial professor, is to be given alternately every two years: first, to the best work on the flora of the Congo Free State; second, to the best work on agriculture and horticulture of the Congo. The first prize is consequently given to *Sylloge Floræ Congolanae*, an excellent scientific work, which is published under the auspices of the Board of Colonies. The value of the prize is £36. It is particularly interesting to note that the prize goes to a personal friend of EMILE LAURENT, and to the botanist who studied first in Belgium the flora of the Congo (1890). We offer our congratulations to Mr. and Miss DURAND.

THE NATURE STUDY EXHIBITION.—A Nature Study Exhibition was held at the Gardens of the Royal Botanic Society, Regent's Park, on June 4th and 5th, under the auspices of the Nature Study Society. Only one particular branch of the work was dealt with, namely, those animals which can be studied more particularly under town conditions. Aquaria and vivaria were therefore well represented, together with breeding cages for caterpillars and flight cages for butterflies. There were also microscope-preparations and photographic illustrations. Birds—and especially insectivorous birds—should be encouraged for economic reasons, and the plan of the well-known bird sanctuary maintained by the Brent Valley branch of the Selborne Society was appropriately included in the exhibition.

The plan indicated the nesting boxes which have been put up. Flag labels recorded what the occupiers are, and also showed the nests of the more important birds which had built in natural situations. The exhibition was held with a special object, as well as a general one. Mrs. WINIFRED DE LISLE, who acted as honorary secretary to the Exhibition Sub-Committee, has brought forward a scheme for establishing a permanent collection of aquaria and vivaria in the Gardens of the Royal Botanic Society, such as is seen in the Stepney Borough Museum and at the Horniman Museum. It would be especially attractive and useful educationally to the children of the Fellows who constantly visit the Gardens.

PHYLLOXERA IN THE TRANSVAAL.—The announcement is made in the current number of the *Journal of the Transvaal Agricultural Department* that this dreaded disease of the Grape vine has made its appearance in the Transvaal as an immigrant from Cape Colony. All who know of the misery caused by the destruction of the vineyards of France by *Phylloxera vestatrix* will learn the news with profound regret. The only consolation is that the colony has one of the best-organised agricultural departments in the world, and one whose staff may be trusted to adopt the most drastic and progressive methods for dealing with this pest.

"THE COUNTRY HOME."—Among the articles in the June number of *The Country Home* is one on *Rhododendrons* and *Azaleas*. The various duties to be carried out in the garden in June are clearly outlined; the "Cows of a Small Holder" are dealt with by H. S. M. BUCHANAN; and Prof. TÉRASSE discusses the Culture of *Melons* on the principle of intensive cultivation.

THE COUNTY EXPERIMENTAL GARDEN AT DROITWICH.—The thirteenth annual report on this garden and the ninth annual report of the County Instruction Garden, issued by the Worcestershire County Council for 1908, are before us. The experimental garden was established in 1896, and is at the present time nearly 6 acres in extent. In 1908 one acre was set apart for experiments inaugurated by the Board of Agriculture and Fisheries in connection with fruit cultivation on lines similar to those already in operation at the Board's experimental station at Long Ashton, near Bristol. The number of visitors has steadily increased from 981 in 1897 to 4,531 in 1908. The garden is purely experimental, and is not conducted with a view to profit. At the same time, the experiments have a distinctly commercial value, and were begun and continued with that object in view. They are intended to show the results of various methods of pruning and non-pruning, spraying and non-spraying, effects of lime on the growth of fruit trees, the effects of different kinds of manures on fruit trees and vegetables, and the prevention and destruction of insect and fungal pests. The differences between properly pruned, slightly pruned, and non-pruned Apple trees have not proved to be very marked. In the case of the properly pruned trees the crop was only 1 lb. better, but the fruits were large, whilst those from the others were small and less marketable. Observations are being made with respect to early and late-flowering Apples, Pears and Plums, but the 12 years' records do not justify Mr. J. UDALE in publishing them till he has gone more fully into the subject and obtained greater experience of the behaviour of trees under various conditions. The trials of Potatoes in 1908, grown with various kinds of manures, will be of interest to cultiva-

tors. The race in this case is mainly between stable dung supplemented by inorganic manures and stable dung alone, all other manures giving inferior results. Insect and other pests have a short chapter to themselves.

PUBLICATIONS RECEIVED.—*Bulletin du Jardin Imperial Botanique de St. Petersburg.*—*Royal Botanic Gardens, Peradeniya, Ceylon, Report.* Part IV. Education, Science, and Art.—*Ontario Department of Agriculture.* Bulletin 171: Insects Affecting Vegetables, by C. J. S. Bethune, Professor of Entomology; and Fungus Diseases Affecting Vegetables, by J. W. Eastham and J. E. Howitt, Lecturers in Botany. (Ontario: Agricultural College.)—*Transactions of the Academy of Science of St. Louis.* Vol. XVIII. No. 3: The Mexican Fiber Agaves known as Zapupe, by William Trelease. Presented before The Academy of Science of St. Louis. May 3, 1909.—*Agricultural Economist and Horticultural Review.* (June.) (London: Agricultural and Horticultural Association, Ltd., 92, Long Acre, W.C.) Price 6d.—*Porto Rico Agricultural Experimental Station.* Circular No. 9: The Catalase of Soils, by D. W. May and P. L. Gile. (San Juan, P.R.: "Press" Review Printing Co.)—*The Transvaal Agricultural Journal.* (April.) (Pretoria: Government Printing and Stationery Office.)—*British Birds.* An illustrated magazine devoted to the birds on the British list. (June.) (London: Witherby & Co., 326, High Holborn.) Monthly 1s. net.—*Bulletin of the Department of Agriculture.* (Jamaica: Hope, Kingston.)—*Boletim do Museu Goeldi (Museu Paraense de Historia Natural Ethnographia.* (Brazil: Estabelecimento Graphico de C. Wiegandt, Para.)—*Dutch Bulbs and Gardens.* Painted by Mima Nixon. Described by Una Silberrad and Sophie Lyall. (London: Adam and Charles Black.) Price 7s. 6d. net.—*The Country Home.* (June.) (London: Archibald Constable & Co., Ltd.) Price 6d. net.—*Third Annual Report of the Horticultural Societies for the year 1908.* (Toronto: Ontario Department of Agriculture.)

that in former years was merely a greensward and mixed shrubberies. Hardy flowers and flowering shrubs were at one time scarcely represented, but they have been increased every year for a long time past, until now the grounds are interesting at any season, particularly in the spring and early summer. Nevertheless, the formal flower garden of somewhat congested beds immediately under the windows of the house and near to the magnificent purple Beech is maintained just as it was laid out 46 years ago for one of the Earls of Clifden.

In the fruit houses the most striking features were the extraordinary crops of Melons and Tomatos. The Melons are cultivated in small

each. It would be impossible to obtain a more even or satisfactory crop. The third batch was one of the same variety of equal merit, but a little later in development.

The Tomato plants were in 12-inch pots, and bore such crops as could hardly be expected so early in the season in a London establishment. Many of the flowers must have set during a time when the amount of daylight was scarcely sufficient for such a crop. Mr. J. F. McLeod informed us that as these plants were grown during the winter for early fruiting, they became so spindly through cultivation in the dull season of the year that the stem was twisted round and round again in the pots, and that therefore there

DOVER HOUSE GARDENS.

AMONG the principal attractions in Mr. J. Pierpont Morgan's gardens at Roehampton on the occasion of a visit made a few days ago was a bed of Rhododendron Pink Pearl. In this bed were planted during last autumn a considerable number of plants acquired at different times, some of them being as much as 4 feet in height. The natural soil of the bed was removed to 3 feet deep, and in its place was used a compost containing Kettering loam, peat, road-scrappings, cow manure and other materials. The effect of the plants in full flower can scarcely be described. The trusses of bloom were so exceptionally large that they were unequalled by those of any other Rhododendron, whilst the flowers themselves were not only large, but possessed extraordinary substance of petal. There was much variety in the shades of pink, from the rich tint of the freshly-expanded buds to the almost pure white of the fading petals. In a companion bed the rich scarlet variety, known as Doncaster, made a brilliant show. The bed contained upwards of 100 plants of this new and floriferous variety. Doncaster is certainly one of the richest and brightest of Rhododendrons, but it is somewhat dwarf-habited. It would be more effective if the plant could be induced to make more elongated growths than it does at Dover House, notwithstanding the liberal treatment afforded this and all other plants. A third bed of similar size contained the variety John Walter in full bloom, but as this variety was only planted last autumn, the plants are of dwarfer dimensions than those to which we have referred. Lord Palmerston, a rosy-crimson variety with a large yellow blotch, in other beds appeared very pretty, and Rhododendron sinense (Azalea mollis), Anthony Koster, with its orange-yellow-coloured flowers in profusion, created a distinct and pretty picture on the opposite side of the mansion. The Rhododendron beds are situated in a portion of the grounds



FIG. 168.—DORYANTHES EXCELSA VAR. GUILFOYLEI.
(See page 384.)

hip-span structures, with Cucumbers at the back of the house, and there were three different crops in as many houses. In the first, was the variety Hero of Lockinge. There were 12 plants, which bore 54 fruits of an average weight of about 3 lbs. each. They were extraordinary in their even size and quality, and formed an example of good cultivation of which any gardener might reasonably be proud. In the other two houses the variety grown is one raised upon the place. It has a very fine netted exterior and white flesh. In the first batch there were nine plants, bearing together 46 fruits of an average weight of 4 lbs.

were, in each plant, 3 or 4 feet of stem buried in the soil. In Tomatos the stem so easily produces roots that it is not altogether improbable that the burying of the stem, though at the time merely an act of convenience, has had a material influence in the production of the heavy crop. The variety is Earliest of All, having been selected for its free-setting characteristics even in winter. Succession batches are of the variety AI, and still later plants represent the variety Lister's Prolific—still one of the best cropping varieties of the Perfection type. Indoor Peach trees have set crops as satisfactorily as usual. ▲

young tree of moderate proportions, planted in November, 1907, of the variety Duke of York, with 52 finely-coloured fruits upon it, was a striking object. Another Peach tree of unusually large dimensions—it covers an area of 33 by 15 feet—was developing a crop of fruits. The vines looked well, and the crop of Muscat of Alexandria is better than usual. There were plenty of Grapes ready for consumption. In the large orchard-house, the centre of which is given up to the cultivation of Fig trees in pots, the trees are developing as liberal a crop as they could be expected to bear under any circumstances.

In the plant-houses, the Carnations are the outstanding feature. The large specimen plants of Souvenir de la Malmaison appeared even larger and in better condition and more floriferous than ever. These and the perpetual-flowering Carnations indoors exhibited such vigour and freedom from disease as is rarely seen. In the Orchid-

soils as that at Dover House, but it would have been more satisfactory if it had not been accompanied by excessively low temperatures and high winds. Apples have set a good crop. Pears are not quite so plentiful, but Plums have set well, and Cherries promise to be the most abundant crop in the hardy fruit garden.

DORYANTHES EXCELSA VAR. GUILFOYLEI.

It is of comparatively rare occurrence for this noble Amaryllidaceous plant to flower in this country, for it takes many years liberal treatment for the plant to acquire sufficient size and strength. The plant shown in fig. 168 was exhibited at the recent Temple Show from the Royal Gardens, Kew, where it has been flowering in the Temperate House for the past six weeks. The flower-stem is 9 feet high and bears its flowers in a pyramidal spike, mea-



FIG. 169.—GROUP OF SCHIZANTHUS IN ONE OF THE PLANT-HOUSES AT WISLEY.

[Photograph by C. W. Sillince.]

houses there was a splendid display of Cattleyas, and all the plants appeared uncommonly healthy, the leaves having a better green colour than Orchids, especially Cattleyas, sometimes have when cultivated in districts of such gravelly soil as that at Roehampton. There was also a good show of bloom in the Odontoglossum-house. In addition to the ordinary greenhouse flowering plants, which are grouped together in the show-house, another house contained a very choice display of Gloxinias. Some of these are seedlings, but others are varieties which, having proved of superior merit in previous years, have since been propagated by leaf-cuttings. There is an excellent collection of Nerines here; indeed it is probably the finest in cultivation in a private establishment in this country.

Out-of-doors, the vegetable crops were extremely satisfactory. The rain which fell a fortnight ago was just what was needed on such

surroundings 2 feet high by 1 foot through. The individual flower is 2 inches in diameter, of a bright red colour, with a light centre. Clusters of six and seven flowers are borne in the axil of a large leafy bract. The dark green, recurved leaves measure 6 feet long by 6 inches broad, forming a tuft at the base of the plant. Doryanthes requires greenhouse treatment, and a compost consisting of three parts fibrous loam to one part of leaf-soil, with sufficient sand added to keep it in a porous state.

After the flowering period the plant dies away, but numerous suckers are then produced at the base, this being a means by which the species may be increased. Plants may also be raised from imported seeds. *D. e. Guilfoylei* is a native of Queensland, and is sometimes described as the Queensland Lily. It has been looked upon by some as a distinct species, but is now referred to as being a variety of the better-known *D. excelsa*, which inhabits New South Wales. W. T.

SCHIZANTHUS AT WISLEY.

I WAS pleased to read *D.*'s appreciative note in the *Gardeners' Chronicle* for May 22 on the collections of Schizanthus at Wisley. Having had the opportunity of seeing them two or three times during the season, I may say that they were one of the finest batches of annual plants that I have ever seen. It is a pity they were not exhibited at the Vincent Square Hall. Apart from the excellence of culture, one could not but admire the many beautiful forms of the flowers, some of them being good, bold, self-coloured flowers of rose, purple or white, whilst others were remarkable for their delicacy of marking. In nearly all cases the individual blooms were from 1 to 1½ inches in diameter. A portion of the seed was supplied by Mr. Robert Sydenham and a portion by Mr. Turnbull, whilst a great part of it was from a strain that has been selected for the past three or four years by Mr. Smith. The seeds were sown on August 31, 1908, and the plants were grown as hardy as possible through the winter. They were not pinched, and only one stake was used to each. Yet they averaged about 4 feet in height and from 2 to 2½ feet in diameter. They have been in good bloom for about two months. *Thomas Stevenson, Woburn Place Gardens, Addlestone.*

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

DISTINCTNESS IN EXHIBITS.—Reading through the classes for which prizes are offered at the fortnightly meetings of the Royal Horticultural Society, I notice that at the meeting for June 22 the competition is for six dishes and three dishes of Tomatos, all to be "distinct." A similar condition is required in the classes for twelve, six and three dishes of Peas at the same meeting. What is meant by the term distinct? Does it refer to name or appearance? Tomatos are apt to be very much alike, and this applies to both those of the red and those of the yellow types. Competitors may find themselves saved from trouble if they recognise this before they stage their exhibits. Peas offer more variation, but in the case for 12 varieties some considerable similarity of pods is inevitable. *Grower.*

RANUNCULUS AURICOMUS.—At a recent meeting of the Scientific Committee of the R.H.S., it is reported that Dr. Rendle showed specimens of the depauperate form of *R. auricomus*, with one or two petals only in some flowers, and in others the petals scarcely developed. It was stated that this species often has very imperfect flowers. It would be interesting to know if many of your readers have ever seen perfect flowers of this plant. I, for one, do not remember having done so. *H. S. Thompson.*

LARGE SEA BUCKTHORN.—Probably the largest specimens of the Sea Buckthorn (*Hippophae rhamnoides*) in this country are growing in the flower garden, Regent's Park. They are 40 feet high, the largest having a stem girth of 46 inches at three feet from the ground level. Seven others are over 36 inches in girth. *A. D. Webster.*

ONIONS FOR MARKET.—I think those who advocate the cultivation of garden subjects for market—Onions, for example—purely from theory, are giving wrong advice. I would draw the attention of those interested in this subject to an article that appeared in the *Daily Telegraph*, June 3, on the subject of French gardening, in which the writer warns intending cultivators to be moderate in their expectations. I know from experience that it is much wiser to give such advice than it is to make an estimate by weighing up a few bulbs, multiply number and weight, and then to tell persons of the enormous profits that can be made from Onion growing. I have heard leading exhibitors of vegetables, who have at their disposal an abundance of cold frames, pits and handlights, argue that great profits can be made by growing Onions. Of course they have never

counted the cost of such an outlay as frames, pits, &c., to begin with. Put these advisers on a bare patch of ordinary soil and then see what they would turn out without these appliances, to say nothing of the cost of trenching and manure. An instance of the fallacy of such advice came under my notice recently. An owner of half an acre of land was anxious to turn it to a profitable account and suggested Apple culture. An expert advised him to plant the trees (bushes) 15 feet apart. Under no pretext whatever was he to plant anything between the trees, but to keep the ground between free from weeds, and to expect a net profit of £40 per year! The gentleman consulted his gardener, who strongly advised the planting of Potatoes between the rows, which was done, with the result that £9 was obtained for this crop. This sum helped to pay for the labour of planting the orchard and did not injuriously affect the trees. I mention this to show how careful persons should be in advising those who are ignorant of how to proceed on commercial lines. *E. Molyneux.*

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 8.—At the meeting held on Tuesday last the Hall was well filled with exhibits, even the annexes being utilised for accommodating some of the groups of plants. The exhibits included showy flowering plants, mostly of popular subjects such as Carnations, Roses, Gloxinias, Irises, Lupins, Pæonies, Aquilegias, and other garden subjects. Orchids also were freely represented, and a noteworthy exhibit of forced fruits was exhibited by the Duke of PORTLAND. Novelties amongst flowers were numerous: the FLORAL COMMITTEE granted 10 Awards of Merit and the ORCHID COMMITTEE one First-class Certificate and three Awards of Merit.

At the afternoon meeting in the lecture-room an address on "Old Superstitions about Plants" was given by Rev. Prof. G. Henslow.

Floral Committee.

Present: W. Marshall, Esq. (Chairman), and Messrs. C. T. Drury, Henry B. May, W. A. Bilney, Jno. Green, T. W. Turner, G. Reuthe, C. R. Fielder, W. Howe, Chas. Dixon, Chas. E. Pearson, J. T. Bennett-Pöe, Jas. Douglas, W. P. Thomson, E. H. Jenkins, W. J. James, Herbert J. Cutbush, George Gordon, R. W. Wallace, Jas. Walker, W. J. Bean, Jas. Hudson, Jno. Jennings, and R. Hooper Pearson.

Messrs. STUART LOW & CO., Enfield, showed greenhouse flowering plants, including *Gerbera Jamesonii*, *Tremandra verticillata*, *Metrosideros floribunda*, *Pimelia Hendersonii*, a selection of Carnations principally of the *Souvenir de la Malmaison* type, a brightly-flowered, Ivy-leaved *Pelargonium* named *Red Crousse*, and a number of Ferns, Palms, and other foliage plants. A new garden Pink named *Progress* has very pleasing rosy-mauve flowers. (Silver Flora Medal.)

Messrs. JAMES VEITCH & SONS, King's Road, Chelsea, exhibited a magnificent collection of Gloxinias, the plants having numerous flowers arising from a wealth of vigorous foliage. Some with spotted flowers were especially pleasing; others in shades of rose, crimson, scarlet, lavender, white and other tones were equally fine. Perhaps more interesting than these were hybrids raised from varieties of Gloxinias crossed with *Gesnera reginae*, a mauve or lilac-flowered species with small zygomorphic flowers. The influence of the latter parent was the more pronounced in all the progeny, which had flowers generally of some shade of lilac and purple, notwithstanding that some of the Gloxinias used as parents had rich crimson blossoms. Messrs. VEITCH also showed a large selection of showy and uncommon flowering shrubs. Chief of these were *Magnolia parviflora*, the centre of red stamens being very attractive; *Jamesia americana*; *Amygdalus dulcis purpurea*, an ornamental-leaved Peach; *Cornus Kousa*; *Styrax obassia*, with numbers of its pretty, white flowers in racemes; *Philadelphus Lemoinéi* rosaceae, the white flowers being as large as a multiflora Rose; *Fendlera rupicola*, *Berberis elegans*, and *Trochodendron aralioides*. (Silver-gilt Flora Medal.)

Messrs. WM. CUTBUSH & SONS, Highgate, London, N., exhibited a showy group of well-

grown Carnations, another of miscellaneous greenhouse plants, and a large, floor group of hardy subjects. Amongst these latter plants, which were arranged with great skill, we noticed the soft lemon-coloured *Anemone sulphurea*, several species of *Eremuri*, including *E. Warei* × and *E. Bungei auranticus*; *Lupinus Mørheimii*, *Primula capitata*, a fine batch of *Lilium Grayi*, also an assortment of *Pyrethrums*, *Rhododendrons*, *Lupins*, and other garden flowers. (Silver-gilt Flora Medal.)

A charming exhibit of white and pink flowers was shown by Mr. W. H. PAGE, Taingley Nurseries, Hampton. The subjects were Carnations, *Liliums*, Ivy-leaved *Pelargoniums*, and *Astilbes* (*Spiræas*). The group was staged in an artistic manner, the various subjects being blended with fine effect. The groundwork was composed of a new Ivy-leaved *Pelargonium* labelled *Countess de Gray*; it is best described as an improved *Mme. Crousse*. *Lilium longiflorum* and *White Lawson Carnations* were especially attractive. (Silver-gilt Flora Medal.)

Messrs. H. CANNELL & SONS, Swanley, Kent, made a beautiful exhibit with varieties of *Cannas* such as they displayed so effectively at the recent Temple Show. The group contained most of the newer varieties, including the best of Continental origin. (Silver Flora Medal.)

A large group of the floriferous *Andromeda speciosa* was set up by Mr. H. L. RUSSELL, Richmond, Surrey. The shoots of this showy shrub were covered with the white racemes, set off by the green of the foliage.

An exhibit of *Gloxinias* arranged on a circular platform in the centre of the hall was shown by Messrs. JAMES CARTER & CO., High Holborn, London. The plants were excellent specimens of this useful greenhouse subject, and all were freely flowered, the range of colours being pleasing. (Silver Flora Medal.)

Messrs. CLIBRANS, Altrincham, showed their hybrid *Calceolaria C. Clibranii*. The plant has yellow blooms and is very free in flowering.

Messrs. H. B. MAY & SONS, The Nurseries, Edmonton, showed various greenhouse plants in flower, also a number of elegant Ferns. Amongst the flowering plants were *Oleanders*, some with golden variegation in the foliage. Small plants of *Hydrangea Mariesii* bore very large panicles of their pretty rose-coloured flowers. *Abutilon triumphans* is a large pink-flowered variety. *Swainsonia galegifolia* was shown with both red and white flowers. Amongst the Ferns were many *Gymnogramme*—the gold and silver Ferns. *G. elegantissima* planted on the stump of an old tree Fern was a novelty. *Gymnogramme schizophylla superba* is an elegant species that produces the so-called bulbils on its fronds. There were several fine *Nephrolepis*, *Adiantums*, *Platy-ceriums*, and others, but perhaps the most interesting was the Whip Fern, *Acrostichum decurrens*, in which the mid-rib only is developed in the spore-bearing leaves. (Silver Flora Medal.)

Mr. GEO. MOUNT, Canterbury, staged choice blooms of *Roses*, of well-known varieties, such as *Ulrich Brunner*, *Joseph Low*, *Mildred Grant*, and *Mrs. John Laing*. (Silver Flora Medal.)

Mr. GEO. PRINCE, Oxford, displayed garden *Roses* in variety. We noticed a fine stand of the Austrian Copper variety, also *Carmine Pillar*, *Fortune's Yellow*, *Lady Battersea*, *Irish Elegance* and many others. (Silver Banksian Medal.)

Messrs. B. R. CANT & SONS, Old Rose Nurseries, Colchester, staged bunches of *Roses*, many being climbing varieties. *Tausendschon*, *Blush Rambler*, *Philadelphia Rambler*, *Morgenroth*, a large, single-flowered variety, of a rich shade of rose colour; *The Garland* (white), and *Edmund Proust*, a *Wichuraiana* variety with pale pink-tinted blossoms, were prominent. (Bronze Banksian Medal.)

Messrs. PAUL & SON, The Old Nurseries, Cheshunt, showed vases of garden *Roses*, principally of the older kinds, such as *Austrian Yellow*, *Trier*, *Buttercup*, a single variety of a shade of yellow in the bud, but when fully open almost white; *Double Blush Scotch*, *Albertii*, a fine yellow single, *Altaica*, &c.

Miss HEMUS, Holdfast Hall, Upton-on-Severn, showed a charming group of *Sweet Peas*, most of the varieties of her raising. The beautiful variety named *Evelyn Hemus*, one of the finest of *Sweet Peas*, was conspicuous. There was also a fine purple and heliotrope variety named *Helio Paradise*; *Lavender Paradise* is also excellent in its colouring, size and form. *Primrose Paradise* is

one of the best yellow *Sweet Peas*. All were gathered from the open ground from autumn-sown plants. (Silver Flora Medal.)

A pretty exhibit of *Carnations* and *Sweet Peas* was shown by E. J. JOHNSTONE Esq., Burrwood, Groomsbridge (gr. Mr. A. T. Paskett). The *Sweet Peas* included such notable kinds as *St. George*, *Elsie Herbert*, *Helen Lewis*, *Primrose Spencer*, *Princess Victoria* and *Audrey Crier*. These, with *Carnations* and well-grown plants of *Nephrolepis* in variety, made a very pleasing display. (Silver-gilt Banksian Medal.)

Mr. H. BURNETT, Guernsey, showed many varieties of the perpetual-blooming *Carnation*. *Marmion* was especially fine; this variety has its petals flaked with rose and white. *Winona* is a bright shade of rose-cerise. *Beacon* is an excellent scarlet variety. (Silver Flora Medal.)

Mr. C. F. WATERS, Balcombe, Sussex, displayed *Carnations* of excellent quality, the scarlet-flowered varieties, *Britannia* and *Victory* being especially fine, as also were *Nell Gwynne* (white), *Afterglow* (cerise), and *Calypso* (pale pink). (Bronze Flora Medal.)

Messrs. WM. PAUL & SONS, Waltham Cross, showed large plants of *Rhododendron Glory of Waltham*, a red-flowered variety, one of the best garden *Rhododendrons* of its class. Also a row of the elegant *Aemichen Müller Rose*.

A very large display of hardy plants in flower was made by Messrs. R. WALLACE & CO., Colchester, in which *Irises*, *Oriental Poppies*, hybrid *Heucheras*, and *Liliums* were conspicuous objects. (Silver Flora Medal.)

Another excellent exhibit of hardy flowers was presented by Mr. AMOS PERRY, Enfield Chase, Middlesex. Here again *Irises*, *Poppies*, *Heucheras*, and *Liliums* were prominent, also *Pyrethrums* in variety, *Eremuri*, and many other subjects. (Silver Flora Medal.)

Mr. CHAS. TURNER, Slough, displayed varieties of *Papaver orientalis* and seedling *Heucheras*.

Messrs. BARR & SONS, King Street, Covent Garden, showed many *Irises*, a selection of *Pyrethrums*, also *Eremuri*, *Lupins*, *Poppies*, *Gladioli*, *Ranunculi*, and other hardy flowers. *Iris sibirica superba* is a charming shade of deep blue. (Silver Banksian Medal.)

Messrs. T. S. WARE, LTD., Feltham, Middlesex, showed *Alpines* arranged on a rock-garden. *Saxifraga longiflora* was afforded a prominent place, the plants being finely in flower. We also noticed the dwarf *Asperula hirta*, *Verbascum Wiedmannianum* (with purple flowers), *Calceolaria polyrhiza*, *Anthemis macedonica*, and *Campypanula Portenschlagiana bavarica*. (Silver Banksian Medal.)

Mr. GEO. REUTHE, Hardy Plant Nursery, Keston, Kent, displayed hardy flowers and *Himalayan Rhododendrons*. A pan of *Edelweiss*—*Leontopodium alpinum*—was conspicuous. *Anthemis Biebersteinii* is a fine yellow-flowered Composite that does well on a dry bank. *Dianthus callizonus* is most elegantly marked in its petals, which resemble somewhat the wings of a butterfly; *Leschenaultia biloba* has a flower of lovely blue, like a *Gentian*. *Saxifraga Brunoniana* is a novelty; it sends out numerous runners, at the ends of which tiny plants are developed. (Silver Banksian Medal.)

A very large bank of hardy flowers was staged by Messrs. G. & A. CLARK, LTD., Dover, Kent, in which varieties of border *Pyrethrums* were a feature. There were also *Irises*, *Lupins*, *Eremuri*, *Heucheras*, and similar subjects in great assortment. (Silver Banksian Medal.)

Messrs. BAKER'S, LTD., Wolverhampton, displayed fine pans of *Aubrietias*, a large number of *Aquilegias*, *Poppies*, *Lupins*, &c.

Messrs. KELWAY & SON, Langport, Somerset, showed *Pyrethrums*, *Pæonies*, *Lupins*, and a tall hybrid *Linaris* with yellow flowers.

Other exhibitors of hardy flowers included THE GUILDFORD HARDY PLANT NURSERY; Misses HOPKINS, Mere Gardens, Shepperton-on-Thames; H. & W. EVANS, Llanishen, near Cardiff; Mr. MAURICE PRICHARD, Christchurch, Hants. (Silver Banksian Medal); Messrs. GEO. BUNYARD & CO., Maidstone, Kent (Silver Banksian Medal); Messrs. J. CHEAL & SONS, Crawley, who also displayed many interesting shrubs and trees (Silver Banksian Medal); Mr. CLARENCE ELLIOTT, Stevenage; Mr. A. J. HARWOOD, Colchester; Messrs. GEO. JACKMAN & SON, Woking; and Mr. W. J. GODFREY, Exmouth, Devon. Mr. GODFREY showed mainly varieties of the large-flowered *Poppy*.

Messrs. CARTER, PAGE & Co., London Wall, London, showed varieties of Cactus Dahlias and many kinds of Violas.

A fine batch of plants of *Viola cornuta purpurea*, together with a selection of ordinary Violas, were shown by Messrs. GUNN & SONS, Olton, Birmingham.

Mr. A. L. GWILLIM, Cambria Nursery, New Eltham, Kent, showed varieties of tuberous-rooted Begonias, having a wide range of colouring. (Silver Banksian Medal.)

G. CADBURY, Esq., Northfield (gr. Miss Cope), exhibited a seedling *Calceolaria* with spotted flowers having a yellow ground.

Mr. JAMES DOUGLAS, Great Bookham, Surrey, showed hybrid *Dianthus* raised from Uriah Pike Carnation and *Dianthus barbatus* (Sweet William); others shown were raised from a garden Pink crossed with the Sweet William, the characters of the hybrid partaking largely of the Pink.

AWARDS OF MERIT.

Aquilegia.—Messrs. DOBBIE & Co. were awarded an Award of Merit for a first-rate strain of long-spurred *Aquilegias* shown in an excellent group, in which the shades of colour were very numerous. A Silver Floral Medal was awarded the group.

Araucaria excelsa Silver Star.—Four plants were shown, in which the growing points for about 1 inch length were white. It may be assumed that these will ultimately acquire a green colour, and that future growth will again exhibit the white tips. (Shown by Messrs. THOS. ROCHFORD & Co.)

Geum coccineum Mrs. J. Bradshaw.—This is a large, double-flowered variety of bright crimson colour. (Shown by Messrs. G. & A. CLARKE.)

Iris Ed. Michel.—This is a fine variety of the germanica section, with probably something of *I. pallida* in it, judging by the peculiar shade of purple. The flowers are prettily marked, and they are held rigidly erect. (Shown by Messrs. WALLACE & Co.)

Lithospermum prostratum "Heavenly Blue".—A very desirable variety, the flowers being rather larger than those of the type, and paler and brighter—nearly sky-blue. The plants are stated to be less woody and much more easily cultivated than the type. In Mr. E. A. Bowles's garden the variety has proved very valuable for many years past. (Shown by Mr. A. PERRY.)

Polypodium glaucum crispum.—This plant reminds one of *P. Mayi*, but the fronds are less smooth, and the plant is said to grow less tall. (Shown by Messrs. ROCHFORD & Co.)

Schizanthus "Beauty of Trent".—A few cut flowers of this variety were shown by Mr. H. PARR, Trent Park Gardens, Barnet. An Award of Merit was recommended for the strain, but only one variety was shown, and this had orange and rose-coloured flowers.

Scolopendrium vulgare crispum multifidum.—A variety with exceedingly large, divided crests at the end of the fronds. (Shown by Messrs. H. B. MAY & SONS.)

Scolopendrium vulgare crispum muricato fimbriatum.—This extraordinary name has been applied to an exceedingly pretty variety of the common Hartstongue Fern, having much-waved fronds with an unusual degree of fimbriation. (Shown by Messrs. H. B. MAY & SONS.)

Sweet Pea Paradise Apple Blossom.—This is a very pretty flower of white and pink, the pink being generally at the margins of the standard and wings and at the back of the standards. The flower is of the Spencer type, and its size is fairly good. (Shown by Miss HEMUS.)

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair), and Messrs. Jas. O'Brien (hon. sec.), de B. Crawshay, Harry J. Veitch, F. Sander, H. G. Alexander, R. G. Thwaites, Walter Cobb, W. H. White, J. Charlesworth, H. A. Tracy, W. H. Hatcher, A. A. McBean, C. H. Curtis, Gurney Wilson, J. Forster Alcock, W. Boxall, F. J. Hanbury, R. Broomwhite, Stuart Low, and W. P. Bound.

Messrs. STUART LOW & Co., Bush Hill Park, Enfield, were awarded a Silver Flora Medal for a fine group, tastefully arranged, in the centre being graceful *Oncidiums*, *Odontoglossums*, &c. The body of the group was comprised of fine

forms of *Cattleya Mendelii*, *C. Mossiae*, and *Lælia purpurata*. Among the *Odontoglossums* we noticed a pretty variety of *Odontoglossum illustre*, with flowers of a glowing tone of bronzy hue, and *O. laudatum*, a finely-blotched flower. Other plants of merit were *Oncidium bifrons*, *O. cornigerum*, *Sobralia macrantha alba*, *Coelogyne Dayana*, and some varieties of *Spathoglottis*.

Messrs. SANDER & SONS, St. Albans, were awarded a Silver Flora Medal for an effective group, in the centre of which were fine specimens of the beautiful *Cattleya Warszewiczii Sanderiana*. The group also contained a good selection of *Odontoglossums*, several plants of the finely-coloured *Cypripedium Gowerianum Schofield's* variety; some fine specimens of *Lælio-Cattleya Canhamiana Rex*, and *L.-C. Aphrodite*, including the handsome variety *plumosa*, with purple feathered markings on the petals; a handsome plant of *Odontoglossum harvengtense*, and other hybrids; various *Masdevallias*, *Bulbophyllums*, &c.

Messrs. CHARLESWORTH & Co., Haywards Heath, were awarded a Silver Flora Medal for a select group, which contained exceptionally fine specimens of *Odontoglossum Lambeauianum* and *O. amabile*, *Odontioda Bradshawie*, *O. heatonense*, the showy and fragrant *Lælio-Cattleya Fascinator*, one plant bearing six flowers, a plant of the singular *Stelis tristyla*; others of *Vanda cœrulescens*, and its rare variety *Boxallii*, *Bulbophyllum Reinwardtii*, and *B. saurocephalum*.

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), was awarded a Silver Flora Medal for a group containing many fine varieties. *Odontoglossums* included a noble plant of the blotched *O. crispum* President Fallieres, with 18 flowers and flower-buds, *O. c. The Czar*, a very richly-coloured variety, and *O. c. Xanthotes*. Others noted were *Cattleya Mossiae Princess Juliana*, a good white flower, with a tracing of colour on the lip; *C. Dusseldorfei Undine*; a good selection of coloured *Masdevallias*, *Dendrobiums*, &c.

Messrs. JAS. VEITCH & SONS, Chelsea, were awarded a Silver Banksian Medal for an effective group comprising *Cattleya Mendelii*, *C. Mossiae*, good forms of *Odontoglossum crispum*, a grand specimen of the handsome rose-purple *Disa Luna*, with five flower-spikes, *Lælio-Cattleya Ithone*, and other hybrids.

Mr. A. W. JENSEN, Lindfield, Haywards Heath, received a Silver Banksian Medal for a selection of his type of *Cattleya Mossiae*; also *C. Mendelii* and *Odontoglossum crispum*. The last-named included some pretty spotted forms. *Oncidium Kramerianum* and *Miltonia vexillaria* were also well shown by this exhibitor.

Messrs. J. & A. A. McBEAN, Cocksbridge, were awarded a Silver Banksian Medal for a group of *Odontoglossums*, among which were several forms of *O. crispum*, of fine shape and substance, one having very broad segments, and, in some respects, resembling *O. Beauté Celeste*, but of finer form and substance. A form of *O. crispum Xanthotes* had better flowers than the type. *O. harvengtense* and other hybrids were also included in the exhibit.

Messrs. MOORE, LTD., Rawdon, Leeds, were voted a Silver Banksian Medal for an effective and interesting group, in which were noted some fine specimens of *Lælio-Cattleya Aphrodite*, the variety *alba* having pure white sepals and petals, with a bright violet-purple front to the lip; *Cattleya Dusseldorfei Undine*, some showy *Odontoglossums*, including *O. ardentissimum album*, *O. Rolfeæ*, a good form of *Cirrhopetalum Collettii*, a pretty claret-purple *Gongora*, *Cochlioda sanguinea*, *Miltonia vexillaria leucoglossa*, a good white-lipped variety, *Angraecum modestum* and *Disa Luna*.

Mr. H. A. TRACY, Twickenham, displayed a finely-blotched *Odontoglossum eximium*, *Cattleya Mossiae Roehrs'* variety, and *Oncidium Batemanianum*.

Monsieur MERTENS, Ghent, staged a small group of hybrid *Odontoglossums* and *Vanda cœrulea*.

Messrs. ARMSTRONG & BROWN, Tunbridge Wells, showed *Odontoglossum crispum cristatum*, in which the markings, as on the labellum, are shown at the bases of the petals.

WALTER COBB, Esq., Normanhurst, Rusper (gr. Mr. C. J. Salter), showed *Odontoglossum Cobbianum*.

The Hon. Mrs. FOLEY, Packham, Fording-bridge, sent a species of *Lissochilus* near to *L.*

arenarius. The plant was received from tropical Africa. It has a tall inflorescence of pretty rosy-lilac flowers.

EUSTACE F. CLARK, Esq., Chamonix, Teignmouth, sent two flowers of *Lælio-Cattleya Marlburia* (*L. Boothiana* × *C. Schröderæ*), a pretty rosy-lilac variety, and an improvement on *L. Boothiana*.

Mr. F. McBEAN, Plumpton, showed good *Cattleyas* and *Odontoglossums*.

AWARDS.

FIRST-CLASS CERTIFICATE.

Lælio-Cattleya Mikado (parentage unrecorded), from Col. G. L. HOLFORD, C.I.E., C.V.O., Westonbirt (gr. Mr. H. G. Alexander).—One of the finest of yellow-petalled hybrids, the flower being of good size and shape and very bright in colour. The sepals and broad petals are canary yellow colour; the front of the well-expanded lip is ruby-crimson with a narrow yellow margin.

AWARDS OF MERIT.

Cattleya Mossiae var. A. Dimmock, from Col. G. L. HOLFORD.—One of the finest and most distinct forms of *C. Mossiae* of the Reineckiana section. The sepals and petals are both very broad and of blush-pink tint; the large labellum is blush-white at the base, the disc being chrome-yellow, and in front is a large marbled blotch of a bright violet colour, the broad, crimped margin, about half an inch wide, being white, forming a marked feature in the flower.

Lælio-Cattleya Feronia (C. Enid × L.-C. Haroldiana), from Sir TREVOR LAWRENCE, Bart., K.C.V.O., Burford (gr. Mr. W. H. White).—A showy hybrid with flowers equal in size to those of *L.-C. Canhamiana*. The sepals and petals are creamy-white, tinged with gold colour, and with a pink tint on the petals; the lip is of a bright ruby-claret colour.

Odontoglossum amabile Fowlerianum, from J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis).—A fine hybrid with large, broad-petalled flowers, the outer parts of which are tinged with rose, the inner surface being heavily blotched with red-brown; the front of the lip is pure white.

BOTANICAL CERTIFICATE.

Cirrhopetalum vaginatum, from Sir TREVOR LAWRENCE, Bart.—A pretty plant, with numerous umbels of cream-white flowers.

Angraecum expansum, from Sir TREVOR LAWRENCE, Bart.—An upright-growing species with leathery, distichous leaves. The short inflorescence bore two white flowers of thick texture and peculiar form, the spur, longer than the other segments, being curved back.

CULTURAL COMMENDATION.

To Mr. W. H. White, Orchid grower to Sir TREVOR LAWRENCE, Bart., for a fine plant of the rare *Dendrobium Jerdonianum* with many spikes of narrow-petalled, orange-coloured flowers.

Fruit and Vegetable Committee.

Present: G. Bunyard, Esq. (in the Chair), and Messrs. J. Cbeal, J. McIndoe, W. Bates, H. Parr, H. Markham, A. R. Allan, C. Hobday, G. Wythes, G. Woodward, A. Dean, W. Poupart, O. Thomas, J. Harrison, E. Beckett, P. D. Tuckett, J. Gibson, and J. Jaques.

The most noteworthy exhibit was a superb collection of fruit shown by the Duke of PORTLAND, Welbeck Abbey (gr. Mr. J. Gibson). The collection was artistically arranged with numerous graceful plants and foliage. It included 50 fine Melons, placed on branched fruit-stands, these alone forming a striking display. The varieties were Hero of Lockinge, Sutton's Ringleader, Royal Jubilee, Best of All, and Superlative. Flat baskets contained fine fruits of Peaches Bellegarde and Hale's Early; and Nectarines Cardinal and Early Rivers. There were eight of these baskets, containing in all 120 fruits. Cherries were shown in dishes. These comprised: of black kinds, Bigarreau de Schrecken, Black Tartarian, Bigarreau Jaboulay, and Early Rivers; and of white varieties, Governor Wood, Frogmore Early, and Emperor Francis. Oullin's Golden Gage Plums, Brown Turkey Figs, Lady Sudeley Apples, and Royal Sovereign and Leader Strawberries completed the display. (Gold Medal.)

Miss C. M. DIXON, Elmcroft Nursery, Chichester, staged a group of 17 Melons of the variety Elmcroft Beauty. (Cultural Commendation.)

Messrs. J. & F. CHATFIELD, Southwick, showed Strawberries—a basket of superb fruits of Royal Sovereign, and small samples of La Grosse Sucrée, Bedford Champion and Leader, the last-named shown under the name of Kentish Favourite. There were also pot plants of Bedford Champion in fruit.

Messrs. SUTTON & SONS, Reading, set up a pyramidal group of fine, solid, white heads of Latest in All Broccoli.

E. W. DIXON, Esq., Oakfield, Berks., sent several clusters of fruit of the Loquat.

Several new Melons were presented, but none was of sufficient merit to warrant an award.

COMPETITIVE CLASSES.

The only competitor in the several classes for collections of fruit was E. S. HANBURY, Esq., Poles Park, Herts. (gr. Mr. F. W. Church), who showed in the class for six kinds. A 2nd prize only was awarded. Hale's Early Peaches and Early Rivers Nectarines were good. Foster Seedling Grapes were unripe, and the Melons and Strawberries small.

ROYAL COUNTIES AGRICULTURAL.

JUNE 8, 9, 10, 11.—The Royal Counties' show at Reading contained many features of interest to horticulturists. The BERKSHIRE, OXFORDSHIRE, and BUCKS. EDUCATION COMMITTEES each had extensive exhibits of Nature Study objects. In some instances the dried and living specimens were well mounted with roots, stems, and flowers complete.

Messrs. SUTTON & SONS, Reading, showed, in an ornamental building devoted exclusively to their exhibits many fine specimens of fruit, vegetables, and flowers. They had fine pods of Albany, Early Giant, and Defiance Peas, good early Potatos, including May Queen, Gladiator, and Ringleader; also a large collection of tubers of the second early and maincrop types. They also showed Hero of Lockinge Melons, Favourite and Champion Horn Carrots, Cucumbers, and some 40 varieties of other kinds of vegetables. Outside the building were flower-beds planted with annuals. This firm was responsible for the floral decorations about the president's tent and the council's offices. Messrs. SUTTON also arranged a "French" garden, showing how two and three crops are grown at the same time under similar conditions.

Grasses and mixtures of lawn seeds, a collection of forage plants, natural Grasses and Clovers, with growing plots to illustrate the various mixtures for producing temporary or permanent pastures, were all of interest.

Messrs. WEBB & SONS, Stourbridge, also displayed horticultural exhibits. They showed exceptionally large Melons, good, frame-grown Cauliflowers, Prizewinner Carrots, Emperor Cabbages, and other vegetables. Calceolarias, Gloxinias, and Sweet Peas all added to the effect of this stand, which contained many of the firm's cereals that have a reputation in agricultural circles. Their new standard Red and White Queen Wheats are two of the best varieties in cultivation.

Messrs. TOOGOOD & SONS, Southampton, had a finely-arranged group of Salpiglossis in pots, also Spanish Irises, Gladioli in the best early-flowering forms, and other popular flowers. This firm also showed seasonable vegetables, including excellent Peas, Tomatos, Cabbages and Potatos.

The Agricultural and Horticultural Departments of UNIVERSITY COLLEGE arranged in the laboratories of the College various interesting exhibits. Grain in pots that had been fed with varying amounts of fertilisers admirably illustrated the influence of these different manures upon the plants' growth. There were others showing the influence of phosphates, potash, and nitrates in the colouring of the ripened grain. The College also displayed apparatus for seed testing and for making a mechanical analysis of soils. Budded and grafted fruit stocks, fruiting trees to illustrate the effects of pruning and pinching the shoots, the best types of vegetables as grown for market, and the manner of preparing and marketing them, with many other exhibits of an educational character were included in the College exhibit.

Appliances for spraying Potatos, Charlock, fruit trees, &c., were shown by Messrs. BURLAND.

Other exhibits of horticultural interest included examples of boilers, glasshouses, instruments, and the like.

BRITISH GARDENERS' ASSOCIATION.

At the recent, annual, general meeting it was decided, after full consideration, that employers of gardeners and others in sympathy with the aims and objects of the Association should be allowed to join as honorary members, paying a minimum subscription of 20s. per annum. The main object of this resolution, writes Mr. J. Weathers, the hon. secretary, is to bring owners of gardens and their gardeners more closely together for mutual benefit. The employer will be assured of having a gardener who knows his work, and the gardener of an employer who will recognise in him a skilled workman. Anyone wishing to join as a honorary member should apply to the secretary, B.G.A., Talbot Villa, Isleworth, for further particulars.

GLOUCESTERSHIRE ROOT, FRUIT, AND GRAIN.

A SPECIAL meeting of the members of this Society was held recently for the purpose of presenting the orchard pruning prizes and of considering a suggested alteration in the conditions governing these competitions.

Mr. H. W. Bruton said the competition began in 1906, when there were 11 competitors for three prizes. Subsequent alterations in the conditions excluding landowners reduced the number of com-



THE LATE JAMES SHANKS.

petitors in 1937 to 10 for five prizes. In 1908 there were eight competitors for five prizes, and in the present year seven competitors for five prizes. As the winner of the 1st prize was not allowed to compete with the same orchard for three years, this to some extent explained the reduction in the number of competitors.

The 1st prize was awarded to Mr. JOSEPH ROUND, of Selseley Park Farm, Stroud.

After a short discussion, it was decided to alter the conditions governing the competition, so that the owners of two acres, being part of a larger orchard, should be allowed to compete instead of those with whole orchards of not less than two acres, as now.

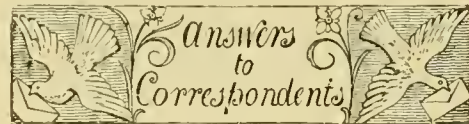
Obituary.

JAMES SHANKS.—We regret to record the death on May 31, of Mr. James Shanks, general manager and director of Messrs. Alexander Shanks & Son, Ltd., Arbroath, the well-known firm of engineers and makers of the celebrated lawn mowers which bear their name. The deceased gentleman, who was 78 years of age, is survived by a wife and family of four sons and three daughters. Three of his sons are connected with the business at Bens Iron Works. The funeral took place on Friday, June 4, at the Western Cemetery, Arbroath.

ENQUIRIES AND REPLIES.

ACETYLENE GAS REFUSE.—In reference to the article (see *Gardeners' Chronicle*, April 24) on "Acetylene Gas Refuse as a Manure," I should like to ask one or two questions: (1) Was the residue new lime or old? If new, it might account for a great deal, as it might be far too caustic. (2) What colour was it? Pure white it should have been; if it was patched with yellow or green it is proof that the charge of carbide had been overheating locally during generation and that a quantity of the gas had again been altered into other hydrocarbons, the discoloration of the residue being caused by the presence of these tarry compounds and benzene products, which cannot be said to be beneficial to plant life. The residue of some generators often contains compounds of sulphur and ammonia which would in time evaporate if left in the open. *A. M. Broadbent.*

The material used had been exposed to the air not less than three weeks, so probably was not thoroughly carbonated. There was no sign of the discoloration of the residue described above. Is there any direct evidence that injurious, tarry hydrocarbons are formed during the production of acetylene gas? If so, this offers a good explanation of the injurious effect of the refuse. The correspondent also mentions compounds of sulphur and ammonia. These, together with phosphorous compounds (e.g., phosphides), I consider, offer a more likely explanation. However, analyses of the refuse, fresh and after keeping, would go a long way towards settling these points. *The writer of the article.*



* * * The Editors will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for reproduction as Supplementary Illustrations in this Journal.

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.

APPLE LEAVES: *J. E.* The foliage has been caused by a fungus, *Macrosporium commune*. Two or three sprayings with weak Bordeaux mixture, at intervals of about four days, just when the leaf-buds are expanding, will prove effectual in most cases.

BOTANICAL REQUISITES: *R. D.* Paper for mounting herbaria specimens may be obtained from Messrs. Gallenkamp & Co., Finsbury Circus. Messrs. Baker & Co., High Holborn, and Messrs. Swift & Co. are the makers of good, serviceable microscopes for students' purposes. The best work on the British flora is Bentham & Hooker's *British Flora*. This work may be obtained from our publishing department.

CATERPILLARS INFESTING FRUIT TREES: *W. W. D.* These are the larvæ of the winter moth (*Cheimatobia brumata*). The "Winter Wash" is of no avail against this pest. See reply to *G. W. W. & Co.*, p. 371, in the last issue.

CUCUMBER PLANT UNHEALTHY: *B. T. A.* No disease is present in the plant. The mottled appearance of the foliage is due to some cultural defect.

EUPATORIUM ODOBATUM. *A. Gooden.* In favourable positions in the south and south-west of England, the west of Scotland, and in Ireland this South American plant, although generally considered a cool greenhouse subject, is often seen doing well out-of-doors. In time it forms a good-sized bush, and is a striking feature when clothed with the white flowers. The correct name of this plant is *E. Weinmannianum*.

MANGELS INJURED: *Pillinger's*. The damage has been caused by the Beet-fly, *Anthomyia betæ*. Dust the plants with soot when the leaves are damp.

MEALY-BUG ON VINES: *J. H.* We think that by white scale you must mean mealy bug. If this is correct, the only thing you can do at the present is to prevent the bugs from entering the bunches of fruit. Carefully examine the young growths and kill all the bugs that can be found: they usually secrete themselves in the axils of the leaves. The spurs should also be painted with methylated spirit, especially near the base of the young shoots. If you do this about once a week till the crop is ripe it should ensure the bunches being clean. After the Grapes are cut, the rods and spurs should be thoroughly washed with strong soft-soapy water. When the winter pruning has been done all the loose bark must be removed and the rods again thoroughly washed with the mixture already described. This should again be repeated just before the vines break into growth. If the vines are growing in a house, the woodwork, glass and trellis must also be thoroughly washed, and, if possible, the house should be painted and the brickwork limewashed. Afterwards there should be no difficulty in keeping the vines clean.

MILDEW ON VINES: *A. F. W.* The most effective way to deal with an attack of mildew at this stage is to dust the affected parts with flowers of sulphur. This can be washed off the bunches with rain-water when the Grapes commence to colour, as the mildew will not spread after that stage. The muslin should be removed from the ventilators; its presence is favourable to the development of the mildew. If the Ferns you mention are in any way obstructing air from reaching the roots in the border they should be removed. The surface of the border should also be lightly pricked up with a fork.

NAMES OF PLANTS: *D. P.* *Spiræa confusa* and *Polygala vulgaris*.—*R. R.* *Spiræa confusa*.—*Roebuck*. *Dendrobium crassinode*.—*J. R.* 1, *Podocarpus chilina*; 2, *Cassinia fulvida*; 3, *Leiophyllum buxifolium*; 4, *Arenaria montana*; 5, *Cistus corbariensis*; 6, *Gaultheria Shallon*.—*C. F.* *Picea orientalis*.—*Cor.* A *Magnolia*, probably a hybrid of *M. conspicua* and *M. obovata*, but flowers badly decayed on arrival.—*G. H. G.* 1, *Halesia tetraptera*; 2, *Solanum Dulcamara*; 3, *Spiræa hypericifolia*; 4, *Berberis vulgaris*; 5, please send another specimen; 6, *Camassia esculenta*.—*J. T.* *Primula capitata*.—*Pine.* 1, *Pinus Laricio*; 2, *Abies concolor*; 3, *Pinus ponderosa*; 4, *P. Laricio*; 5, *Abies concolor*; 6, *A. Lowiana*; 7, *Pinus Laricio*.—*A. W. T.* *Exochorda grandiflora*.—*H. F.*, *Mylor Bridge*. *Pyrus lobata*.—*G. W.* *Eucharis Sanderi* Baker, *Bot. Mag.*, t. 6676, *Gard. Chron.*, March 17, 1883, p. 349 fig. 53. —*R. G.* *Euphorbia Lathyrus* (Caper Spurge).—*E. W. B.* *Cytisus purpureus*.—*A. J. C.* 1, *Weigela hortensis rosea*; 2, *W. hortensis aurea*; 3, *Cornus alba* variety *aurea*; 4, send when in flower; 5, *Spiræa arifolia*; 6, *Magnolia acuminata*.—*Pillingers*. 1, *Spiræa confusa*; 2, *Celsia cretica*.—*C. W. B.* 1, *Veronica Chamædryis*; 2, *Lychnis Flos-cuculi*; 3, *Conopodium denudatum* (Pig-nut).—*W. G.* *Dendrobium pulchellum*, more commonly known in gardens as *Dendrobium Dalhousieanum*.—*R. A.* 1, *Epidendrum virens*; 2, *Oncidium cornigerum*; 3, *O. pubes*; 4, *Gongora quinquerivis*; 5, *Cochloda sanguinea*; 6, *Odontoglossum odoratum*.—*A. J. W.* 1, *Aerides odoratum majus*; 2, *Epidendrum fragrans*; 3, *Rhynchosyris retusa*, generally called *Saccodidion Blumei* in gardens. The others are *Odontoglossum Pescatorci*, and *Dendrobium crystallinum*, both exceptionally good varieties. —*L. E. W.* *Odontoglossum citrosimum*, of ordinary value for garden purposes. —*C. M.* We do not undertake to name varieties of Roses. Send to some grower of these plants.

OATS INFESTED WITH INSECTS: *W. N. B.* The insects submitted for examination are, with one or two exceptions, the common European grain weevil (*Calandra granaria*), and this insect is the sole cause of the injury to the Oats. It was, in all probability, introduced in the way you have suggested in your communication. Its life-history is, briefly, as follows:—

The female drills, by means of her proboscis (snout), a minute hole in the grain, after it is harvested, and lays an egg in it; from this is hatched a legless grub, or maggot-like larva. The larva feeds on the interior of the grain, and, in the case of Wheat, Oats, Rice, etc., leaves practically nothing but the thin, empty shell. In all cases the larva passes the whole of its existence within the grain, and, when mature, changes to a chrysalis (pupa); no feeding takes place in this stage. In a few days the pupa gives rise to a perfect beetle, and the insect effects its escape by cutting a circular orifice in the cuticle or hull of the grain, having the appearance of a small shot hole. The adults also feed extensively on the grain, and thus cause considerable damage. The time required for the completion of the cycle varies with the season and climate, and the number of generations produced in a season is consequently dependent upon temperature. In the tropics, the minimum period for one



FIG. 171.—BLADDER PLUMS, CAUSED BY A FUNGUS.

cycle is about 21 days; but in colder latitudes the period may extend to six weeks, or even months. It is a prolific species, and egg-laying may be continued over a long period. Each female deposits about 250 eggs, and Curtis estimated that one pair of weevils, during a period of five months in Southern France, are capable of producing 6,000 individuals. This insect does not feed upon wood, but you are probably correct in assuming that it has got amongst the old timber in the granary. One of its favourite resorts, however, is the space between the flooring-boards and the ceiling below, especially if—and this is likely to be the case—the space is filled with grain. For the present we recommend (1) that you continue to sift the grain over from time to time and burn the siftings; (2) spread the grain out into as thin a layer as space will admit; and (3) ventilate the granary night and day as much as possible. The cooler the place is kept the less rapid will the insect breed. When the Oats are finished, remove one or two flooring-boards, and if grain is found to have accumu-

lated beneath them, it must be removed and burnt. Afterwards thoroughly spray the whole of the interior—roof, walls and floor—with a strong paraffin and soap emulsion applied as hot as possible, care being taken to thoroughly saturate every part with the spray. An ordinary syringe will do quite well, and the operator should grip the barrel with a piece of cloth to prevent the instrument burning the hands. Fumigation with hydrocyanic acid gas is the method usually adopted in the United States; but as the granary is an old one, it is very doubtful if this treatment would prove successful, unless the building can be rendered practically airtight. We have found it useless in a similar instance in this country. Bisulphide of carbon is also used as a fumigant with good results, but, like the former, it is a poison, and, in addition, also inflammable, and would need to be used with great care.

PEACHES FALLING WHEN UNRIPE: *Mrs. B.* The fruits have no doubt fallen because of some wrong cultural treatment. The splitting of the stones suggest the presence of too much water in the soil and also in the atmosphere of the Peach-house. It may also be due to over-cropping in previous years, or improper ripening of the wood last autumn. Apply a small quantity of lime in the form of old mortar to the border.

PELARGONIUMS UNHEALTHY: *W. B.* The plants are free from fungus disease. The trouble is due to improper root formation owing to the cuttings being too woody when inserted. As soon as genial weather sets in, they will soon make satisfactory growth.

PLUMS: *J. M.* The fruits are attacked by a fungus, *Exoascus deformans* (see fig. 171). They are called bladder Plums, from their inflated appearance. Burn all the diseased fruits and spray the trees with a weak solution of the Bordeaux mixture.

SHOW PELARGONIUM: *A. H. P.* We do not undertake to name varieties of Pelargoniums or other florists' flowers.

TOMATOS DECAYING AT THE ROOTS: *A. S. R. & Co.* The roots are perfectly free from disease caused either by insects or fungi, yet the outer tissue is destroyed. It suggests damage from some strong fertiliser, which need not necessarily be applied directly to the roots; a solution in water is sufficient to cause the injury.

VINE LEAVES WITH WARTS: *H. C. R.* The irregularities on the leaves are not due to disease, either of insect or fungus. They are tiny outgrowths of tissue, caused by excessive moisture in the atmosphere. The disfigurement generally occurs in vinerias that are not sufficiently ventilated and where the atmosphere is stagnant.

WEEDS ON A LAWN: *M. L. E.* Large weeds such as Docks, Plaintains, Thistles, &c., are often destroyed by some strong acid applied to the crown of the plant. But if the sward is infested with smaller weeds the best plan is to apply some nitrogenous manure which favours the development of the grasses, and these will in time crowd out the intruders. The preparation known as lawn sand contains manure which acts on the turf in a similar manner. Make up a compost of fine soil and either nitrate of soda or sulphate of ammonia. Apply the mixture sparingly as a top-dressing.

YOUNG OAK LEAVES: *S. G. E.* It is a very common occurrence for young Oak foliage to assume a brown tone, and in an Oak wood many of the young shoots are beautiful from this reason. It is also seen in the young foliage of other plants, especially those whose natural habitat is in the tropics. The colouring, due to a pigment called anthocyanin, has a physiological value, inasmuch as it serves to screen the young chloroplasts (chlorophyll grains) from intense sunlight.

Communications Received.—*F. J. C.*—*W. A. C.*—*J. G. W.*—*J. J. W.*—*S.*, Frankfort-on-Maine—*C. T. D.*—*R. Farrer*—*J. E. K.*—*F. B.*—*E. J. A.*—*Herman S.*—*W. H. Y.*—*J. G. T.*—*H. S. T.*—*F. W. R.*—*J. U.*—*J. W.*—*J. P. McL.*—*H. M. V.*—*C. S.*, Kastel-Mainz—*L. G.*, Brussels—*Anxious*—*A. D. H.*—*Andrew H.*—*W. G. S.*—*J. Gray*.



RHODODENDRON SOULIEI, A NEW CHINESE SPECIES.

FLOWERING IN MESSRS. JAS. VEITCH & SONS' COOMBE WOOD NURSERY.





THE
Gardeners' Chronicle

No. 1,173.—SATURDAY, June 19, 1909.

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SPRING FLOWERS IN THE SOUTH-WEST.

THE past spring was very backward on account of the prevalence of cold easterly winds, and vegetation has been, in consequence, generally retarded. The winter temperature varied considerably in Devon and Cornwall, for while at Kingswear the greatest frost registered during the past winter was 6½°, at Tregothnan 12° were recorded on two successive nights, and at Trewidden, near Penzance, the thermometer showed 14° of frost. The winter with us was much milder than the two preceding ones, when 10° and 12° of frost were registered. *Arctotis aureola*, which in 1907 and 1908 was cut to the ground and only threw up again from the base in the following spring, was uninjured this year and commenced to flower in March. *Iris stylosa* has been marvellously prolific of bloom through the winter, a neighbour having cut over 5,000 flowers from 18 large clumps. The delightful little Violet Cress (*Ionopsisidum acaule*), which seeds itself freely all over the garden, even on the tops of walls, and has carpeted a bed of early spring Irises such as *I. Histrio*, *I. histrioides*, *I. Bakeriana*, *I. Danfordii*, *I. reticulata* and others, was in flower from December

to April, and spread a mantle of soft lavender colour over the border. *Clethra arborea*, which was badly cut in 1907 and 1908, was quite uninjured during the past winter, and it is hoped will flower in the coming August. Another plant that was badly injured by the frost in the two preceding winters, namely, the New Zealand *Arthropodium cirrhatum*, which flowered well in 1906, but, owing to its loss of foliage, did not bloom in 1907 or 1908, is unhurt and shows signs of perfecting flower-spikes. The rare and delicate *Romulea pylea*, with satin-white, golden-centred, Crocus-like blossoms, which produced dozens of blooms, was a lovely sight in the early spring, and the larger *R. nivalis*, with white flowers faintly feathered with blue, was also pretty. The blue Chilean Crocus (*Tecophilæa cyanocrocus*), with its deep gentian-blue blossoms, was very beautiful. This charming little plant appears to be somewhat capricious, for in some gardens it dies out, and it is only in a very few that it is at home and reproduces itself. *Hardenbergia monophylla alba*, after being flowerless for five years, surprised us by showing bloom in February, and through March and April it was covered with white flowers, which lasted well in the cold weather. *Correa cardinalis* was in flower before Christmas, and is still carrying many perfect blooms. The American *Erythronium* often prove exceedingly difficult to grow satisfactorily, but in a few gardens in the south-west they appear happy. In a certain garden near Truro they presented a beautiful picture in the month of April, several hundreds of vigorous plants being in bloom. The flower-stems were in many cases from a foot to 18 inches in height and bore numerous blossoms. The owner stated that the majority were self-sown seedlings. They were growing in pure leaf-mould collected from beneath a rookery. *Genista monasperma*, which, it was asserted, would not flower in England, was covered with bloom in May, and *Leptospermum scoparium* is now a sheet of white. *Fritillaria persica* has produced a sheaf of flower-stems nearly 3 feet in height, and the rare *F. obliqua* has perfected its almost black blossoms. *Manettia bicolor* is in fine blossom, and both the crimson and white varieties of *Clianthus puniceus* are covered with blossom, which, however, is now past its best. The first flowers were cut from the open wall on Christmas Day. *Semele (Ruscus) androgyna* is making growths that promise to be over 15 feet in length, and its leaves, or cladodes, are already becoming furnished along their edges with tiny greenish-white buds. At Christmas-tide the soft colouring of a large colony of *Crocus Imperati* presented a lovely sight, and was followed by *C. Korolkowii*, *C. Sieberi*, and others. *Jasminum primulinum* has produced its golden bloom in profusion, and *Deutzia kalmiaeflora*, the loveliest of its family, has been covered with blossom. *Buddleia Colvillei* is evidently going to flower copiously, every spray being terminated by a cluster of buds. This *Buddleia* never seems to flower in a small state, and, indeed, it is not until the bush has attained a height of 8 or 10 feet that it begins to bloom with any freedom. *Celmisia coriacea* is in full flower and *Olearia insignis*, which was obtained direct from New Zealand, is showing several broom-buds. The yellow Californian Tree Poppy (*Dendromecon rigidum*) is doing wonderfully

well and is throwing up strong shoots over half an inch in diameter. It commenced to flower in May, and will continue to bloom until well on in November, thus having a far longer blossoming period than its relative *Romneya Coulteri*. The South African *Anemone Fanninii*, the queen of its family, which bears large, snow-white flowers over 4 inches across, is throwing up its bloom-buds, and *Watsonia coccinea* is about to perfect several flower-spikes, which are already showing scarlet. *Neviusia alabamensis* has been in profuse bloom, and the new *Lilium Ghehni* is making strong growth, while *L. sulphureum* is shooting up well from its peat bed. *Ranunculus Lyallii* is alive, but has made but little growth. Every endeavour was made to obtain this plant through English nurserymen, but not a plant could be heard of, and eventually one was procured from New Zealand. It has, I believe, been flowered several times in this country, but apparently has been lost. It has been said that the winter temperature in the native habitat of this species registers 15° below zero, a state of affairs impossible of realisation in South Devon. It is, however, such a beautiful plant that one can but do one's best to succeed with it. *S. W. Fitzherbert.*

NOTES FROM ISLEWORTH.

NOTWITHSTANDING the inclement weather of this spring-time, the orchards promise to yield a good all-round crop. The small fruits also promise well, and both Strawberries and Black Currants will be plentiful. Apples are very variable and difficult to estimate, some trees being crowded with fruit, and others (even of the same variety) standing near them absolutely bare of fruit. This eccentric setting seems to be general in the district, and I note how very shy setters (such as the Improved Gravenstein) are loaded, whereas the long-keeping cookers (such as Lane's Prince Albert and Norfolk Beefin), upon which one generally gets a fair crop, are rather thin this season. I think the explanation is that the early-flowering sorts, for once in a way, had a more propitious blooming period than the later kinds. The general result, however, promises to give about an average crop. Pears are a heavy crop, and the fruit is very well distributed over the trees. Most kinds will require severe thinning. *Marie Louise* is not a good crop, but this is the only exception that I have noted. Plums are again a grand lot as far as the cooking kinds are concerned, and Damsons are also good, but among dessert kinds only the Gages promise well. I have a sprinkling on some Japanese Plums which have hitherto been barren in my garden. Great benefit has accrued to those prolific sorts, such as Victorias, which so often exhaust themselves in carrying one huge crop and then take two years to recover, by heavy dressings of manure alternated with dressings of lime, salt, and soot mixed, and thin dressings of sulphate of iron. Some trees thus treated have carried enormous crops for three successive years and shows no signs of exhaustion. For some unascertained reason dressings of sulphate of iron have also proved beneficial to the Strawberry beds in this district, although I believe it was first applied by mistake. Quinces are about an average crop. Cherries are very plentiful, but will probably be undersized on account of the very cold weather now prevailing. The wall fruit is all splendid in this district. Undoubtedly the fine, warm, and sunny autumn ripened the wood to an exceptional degree. Unfortunately those who grow early vegetables for the market have had a very unsatisfactory time this spring, but in many cases the product of the orchards will probably redress their losses. *A. Worley, June 11.*

OURISIA MACROPHYLLA, Hook.

THE genus *Ourisia* is best known in gardens through the South American scarlet-flowered *O. coccinea*, a plant introduced by Messrs. Veitch so long ago as in 1862, and figured in the *Botanical Magazine* of the same year. Few of the New Zealand or of the other South American species have come into horticulture, and this not because they are undeserving of cultivation as fig. 172, illustrating *O. macrophylla*, will show. *Ourisia macrophylla*, a New Zealand species, of which Mr. Cheeseman (*Flora of New Zealand*) writes, "In its fully developed state this is an exceedingly handsome plant," gives promise in its growth at Edinburgh of satisfying the description. It forms a spreading tuft of basal, dark green leaves 6 inches or so long—with a purple tint on the petiole spreading into the veins and around the margin. Flowering stems rise freely from the base and bear stalked flowers, white, or white streaked with purple, in whorls, several of which may be superposed. The bud before opening has a beautiful pink tinge. The figure shows only the beginning of elongation of the flower axis to give a second whorl, at a later stage of its growth the plant figured had three whorls. Seed is produced abundantly. The plant figured was raised in the Royal Botanic Garden, Edinburgh, from seed received from New Zealand in 1907. It was grown in a cool frame and flowered in mid-March this year, remaining in bloom for nearly six weeks. The species should be a useful hardy one in gardens where New Zealand plants thrive.

* FIXATION OF NITROGEN BY BACTERIA.

(Concluded from page 377.)

MOORE, of the United States Department of Agriculture, began about the same time to send out cultures in a dry form, prepared by dipping cotton wool into an active liquid culture of the nodule organism and slowly drying it. When required for use, a fresh preparation was made by putting the wool into a solution of sugar and potassium phosphate, in which the bacteria would begin to grow. Into this active liquid the seeds could be dipped before sowing. Moore's preparations turned out unsatisfactory because the bacteria did not remain alive for long after drying. However, since that time, various improvements have been made in the methods of growing the nodule bacteria in artificial media, and cultures which retain their activity for a considerable time are now obtainable from all the bacteriological laboratories concerned with agricultural work. Whether solid or liquid, they require to be diffused in a considerable bulk of water or separated milk, which can then be distributed over the land. A better method is to tie the seed in a bag of butter muslin, dip it in the fluid, and then allow the seed to dry somewhat before sowing. The seed should not, however, be allowed to dry for long, or the bacteria are apt to perish. The question now arises whether any practical benefit is to be obtained from such an inoculation of the seed of leguminous crops, and two cases must at the outset be considered. Some soils exist, especially in new countries coming under cultivation for the first time, from which the nodule organism is absent; in such cases inoculation may be of the greatest possible value and may make the difference between obtaining a crop or none at all. Even in these cases, however, the soil is often without nodule bacteria because in some way its condition is unfit for their survival, so that it is of no use to introduce the organism unless at the same time the soil is made a suitable medium for their growth. Soils entirely without nodule organisms are rarely met with in the British Isles, but not infrequently soils are found on which such special crops as Lucerne, which requires a race of bacteria considerably differentiated from that which is found in Clover nodules, fail to nodulate and grow properly. In such cases a preliminary inoculation of the Lucerne seed may prove very effective in establishing the crop, which otherwise fails, although Clover will grow freely on the same land. Examples have been observed of the value of inoculating Lucerne seed when that crop is being sown in a district in which it has not hitherto been grown.

* Lecture delivered on March 14, 1909, by Mr. A. D. Hall, Director of the Rothamsted Experimental Station.

But in most of our soils, where Clover, Beans, and Peas have been cultivated in the regular way, the nodule organism is present, and the leguminous crop nodulates and begins to fix nitrogen without any artificial inoculation. In these cases the gain from inoculation is not likely to be large, 10 to 20 per cent. at the outside—a quantity only perceptible by careful experiment—and its existence must depend either upon some advantage to be derived from early inoculation or upon the establishment of an improved race of bacteria, more active in fixing nitrogen than those normally in the soil. Neither of these propositions has been established, and, though the work is still being actively pursued, a practical return for inoculation on ordinary field or garden soils is not yet to be expected. The nodule bacteria, either pure or mixed with other organisms, have not been induced to enter into partnership with the ordinary

but, having been isolated at Rothamsted from virgin soils obtained from all parts of the world. In order to fix nitrogen it must be supplied with some form of carbohydrate, by the oxidation of which it derives the energy necessary to bring the nitrogen into combination. Carbonate of lime as a base in the soil is also necessary for its growth.

The history of a certain piece of land illustrates the dependence of nitrogen-fixation by *Azotobacter* on supplies of carbohydrates in the soil at Rothamsted. The land in question has been allowed to run wild for the last 25 years, and has been gaining nitrogen during that period at the rate of nearly 50 lbs. per acre per annum, whereas the adjacent arable land has lost rather than gained nitrogen. On the "wild" land the vegetation every year is allowed to die back, thus the soil is continually supplied with compounds of carbon by the oxi-



FIG. 172.—OURISIA MACROPHYLLA FLOWERING IN THE ROYAL BOTANIC GARDEN, EDINBURGH.

non-leguminous plants, which is not to be wondered at, considering the unlimited opportunities the latter have had in ordinary soil of trying the experiment for themselves. An extensive experiment tried upon Tomatos seemed to give an increased yield after inoculation, but this was shown to be due to the nutrient salts introduced by the culture medium, for a similar increase was produced when the same culture medium was given to the plants after it had been first sterilised by boiling.

Turning now to other soil bacteria which fix nitrogen without the intervention of leguminous plants, mention must be made of the organism discovered by Beijerinck and called by him *Azotobacter*. This organism is widely distri-

butation of which *Azotobacter* is enabled to fix nitrogen; on the arable land, however, where the crop is almost wholly removed, there is no return of carbon compounds to the soil.

Certain pot experiments have shown that the application to soil of sugar, a carbon compound containing no nitrogen, is followed by a gain of nitrogen, of great benefit to succeeding crops, but attempts to obtain similar results in the field at Rothamsted have so far yielded negative results. In the Mauritius, however, the treatment of the soil with Molasses has been found beneficial to the following crops, and *Azotobacter* has been also shown to be abundant in the soil.

The piece of "wild" land at Rothamsted supplies the clue to the accumulations of nitrogen

in such virgin soils as the black lands of the North-west of America, the Russian Steppes, the Argentine Pampas, &c., which are naturally occupied by a luxuriant, grassy vegetation. However long such land has been growing grass, the plants themselves could not increase the stock of nitrogen; they could only take up what was originally in the soil and restore it again. But when the carbonaceous matter they have assimilated from the atmosphere falls back to the soil, material is provided by means of which Azotobacter, present in all these soils, can proceed to fix nitrogen. The low ratio of carbon to nitrogen in the organic matter of these virgin soils is

NOTES ON IRISES.

CHANGE OF COLOUR FROM YEAR TO YEAR.

For some time past I have been inclined to suspect that Iris flowers vary from year to year on the same plants, even when the latter remain undisturbed in the same spot. Last year I made careful notes of some dwarf yellow seedlings, with a view to eliminating muddy colours and keeping only the purest. This year the notes do not correspond in the least, and those plants which seemed the best last year have this year

flowers. Last autumn the plants were left undisturbed, and this year the two batches produced blue and yellow beards respectively, as I arranged them in the autumn of 1907!

Can anyone suggest an explanation?

IRIS STRAUSSII.

I SHOULD like to draw attention to a good example of this plant, which I received from Mr. W. Müller, of Nocera Inferiore, Italy, with a note to the effect that it was collected in Persia, on the borders of Beluchistan. The first flower opened on April 22, and agreed with the description given in Mr. Lynch's *Book of the Iris*, except that the head consisted of three flowers within the same outer spathe valves.

Curiously enough, within a few days, a seedling bloomed for the first time and was identical with this Persian I. *Straussii*. It was a plant that I raised from seed of a yellow Iris offered in the trade about four years ago as *I. suaveolens*. Among a dozen plants, four came clear yellow and three others had the curious dull purple of *I. Straussii*. Of these latter, two had beards, in which the yellow-white hairs of the beard were not tipped with blue, as in *I. Straussii*.

All these plants agree in having standards that are noticeably larger than the falls and which project beyond the falls in the unopened bud. The texture of the segments is extremely delicate in all cases, quite unlike that of the European *pumila* or *chamæiris*, and it would seem that we have in *I. Straussii* a dwarf Persian Iris of varying colour which corresponds to the South European *chamæiris* and *olbiensis* with their various colour forms. This Persian Iris is also remarkable in that the base of the haft of the standards often, but not always even on the same plant, bears a few hairs of the same colour as the beard, a phenomenon which is also frequent among the *Oncocyclus* Irises, and occurs, moreover, in *I. florentina*.

COLD STORAGE FOR ONCOCYCLUS SPECIES.

OWING to the folly of a gardener, who during last August copiously watered my cold-stored *Oncocyclus* plants because he thought "they looked rather dry," I was not able to lift and store the rhizomes for a second winter. However, I stored another batch of newly-imported rhizomes until the middle of February. Then for a week or two they lay in a frame in boxes of cocoanut fibre and sand—an excellent medium for encouraging root growth in dry or shrivelled plants. They soon began to send out roots, and I planted them early in March in a sheltered spot in sandy soil well enriched with old cow manure and leaf-mould. Throughout April and May they were kept well watered, and I have had five flowers of *I. lupina* and *I. Elisabethæ*. Four flowers of *I. Haynei* are now open, and *I. Lortetii* and *I. Bismarckiana* are in bud. The plants, too, are making vigorous growth, and will, I hope, provide good rhizomes for storing again in August. W. R. Dykes, Charterhouse, Godalming

PLEUROTHALLIS BIRCHENALLII.

THE illustration in fig. 173 represents this new species, which was imported by Mr. Birchenall, of Alderley Edge, Cheshire, and shown by Messrs. Charlesworth & Co. at a meeting of the Royal Horticultural Society on April 20 last, when it was accorded a Botanical Certificate. The species seems to be closely allied to *Pleurothallis scapha*, figured in the *Botanical Magazine*, tab. 7451, but *P. Birchenallii* is darker in colour. The flowers are whitish, with claret-purple coloured lines. It is an elegant plant, like many of the larger species of *Pleurothallis*.



FIG. 173.—PLEUROTHALLIS BIRCHENALLII.

in itself evidence that very active oxidation of the vegetable debris had been going on: in this respect the organic matter of the virgin soils resembles that which had accumulated on the "wild" plot at Rothamsted, but differs from that which is found in soils devoid of Azotobacter. The gain in fertility of land laid down to grass, where a mass of stubble and roots accumulate, is also probably in part the work of this nitrogen-collecting micro-organism.

only produced flowers in which purple streaks occur. *I. Talischii*, too, was last year distinctly streaked with purple; but this year no purple appeared in the falls.

More striking still is the variation of the colour of the beards of Irises *vaga* and *Leichtlinii*. In 1907, I carefully labelled and separated all blue beards (*vaga*) from yellow beards (*Leichtlinii*). In 1908, in the two batches, there was not a single yellow beard among 50 or 60

ASHBOURNE, CO. CORK.

(See figs. 174 and 175, and Supplementary Illustration.)

ASHBOURNE, the residence of Mr. Richard H. Beamish, is at Glounthaune, nearly opposite the little railway station of Queenstown Junction, Co. Cork.

It is only some seven years or so since Mr. Beamish formed his garden at Ashbourne, with the help of Mr. Hume, his gardener. The residence is not a large one, but it is very beautifully situated, and its walls are clothed with Macartney Roses and other climbers.

Mr. Beamish and his gardener conducted me through the gardens on the occasion of a summer visit. Amongst the first plants I saw of interest was *Eucoma ulmoides*, the new hardy Rubber plant. *Broussonetia papyrifera*

In a warm part of the grounds is a little pond planted with Blue Water Lilies. It presents a sight probably unique in the United Kingdom, as the plants flower entirely in the open, without any protection from the time they are put out in May. There were many fine flowers expanded on the day of my visit, principally of the Berlin variety of *Nymphaea stellata*. The tubers are lifted in autumn, and kept under glass; the young growths or tubers only are replanted, not the old. From the time of their planting-out no protection is afforded these *Nymphaeas*. In addition to the Berlin variety, Mr. Hudson's beautiful form is also found at Ashbourne.

In another pond are a number of the hybrid and other *Nymphaeas*, such as *N. gloriosa*, *N. Froebelii*, *N. Ellisiana*, *N. Marliacea albida*, and *N. M. rosea*.

Caltha polypetal, by the side of the pond, was

moisture from a small rivulet flowing on one side. The plants were doing splendidly, and were producing very large blooms. Thence we passed to a water garden by the side of a little stream (see Supplementary Illustration). Here were many good plants well grown, such as the graceful *Stenanthemum robustum*, a North American member of the Liliaceæ, which was now coming into favour, and of which a good group a little above the water level was charming. The flowers are creamy white. *Achusa italica* succeeds splendidly in the boggy ground. It is shown in full flower in the illustration. The delightful little *Linnaea borealis* flourishes in a way seldom seen, as do *Campanula phytidocalyx*, a large group of the pretty apricot-coloured *Dimorphothea aurea*, and masses of *Primula capitata* and other species of *Primula*. The success of *P. deorum* in moisture here would indicate that it is a moisture lover, and that this treatment will probably be more successful with this scarce Primrose than any other. *Rhododendron kamschaticum* also was greatly enjoying the moisture. Here, again, one of the Castillejas, kept dry at the roots in winter, but apparently revelling in the summer moisture, was bright with its scarlet flowers. Equally flourishing was *Corydalis cheilanthifolia*; the distinct *Saxifraga tellimoides*, with several *Spiræas* and *Astilbes*, and *Astilbe Davidii* looking finer in the surroundings here than anywhere I have seen it, for the colour of the flowers does not always harmonise with other subjects. *Stokesia cyanea*, the fine *Podophyllum Emodii major*, *Roscoea purpurea*, *Geranium Wallichianum* Buxton's variety, and *Geranium Lowii* were also very good indeed; whilst a group of *Primula obconica* had remained in the open unprotected for two years. Some of the older Primroses of worth are also grown. Amongst other plants noted were many *Thalictrums*; a collection of the best species of *Meconopsis*, including *M. integrifolia* and *M. grandis*; *Shortia galaciflora* and *S. uniflora*, with *Galax aphylla*, and doing splendidly in a pool; the fine *Nymphaea tuberosa Richardsonii*; nearly all the *Eremuri*, although their flowering was over; and many other good plants suitable for the water or its banks. Two good annual *Tropæolums* looked well among the shrubs by the side. These are *Isola Bella*, a single, and the fine, double variety called Darmstadt.

Passing from here, among shrubs and trees I observed *Indigofera Gerardiana*, and such *Andromedas* as *A. leucantha*, *A. Catesbæi*, and other good species and forms. The deciduous *Ilex verticillatus* is an excellent and beautiful Holly, and *Jacaranda mimosæfolia*, *Olea fragrans*, *Benthamia fragifera*, and several *Pittosporums*, the lovely *Leptospermum bullatum*, with a number of other good things, were among those which attracted my notice. With *Juglans mandshuricus*, the experience of Mr. Beamish is the same as my own—that it is tender, and apt to be cut back by frosts in spring, but that it breaks away later. One of the most charming of the *Philadelphuses* here is one of *M. Lemoine's* raising, and is called *hybridus erectus*.

Mr. Beamish is fond of *Verbascum*s, the best being *V. pannosum longifolium*. Near by is a little "Lavender garden," with its quiet beauty and fragrant growths.

In a long stretch by the house lies the flower garden proper, where beds and borders of *Roses* and hardy flowers of the best species and varieties looked quite brilliant, although the early flowers were over and the later had not come into bloom. Another feature here is the pathway lined with *Yews* and spanned with arches of *Roses* at intervals.

Although many other features have remained unmentioned, the remainder of my space must be devoted to a brief notice of the rock-garden, which was worth a long journey to see. It is a tasteful combination of natural and artificial rock-work, and provision is made for plants that are not always accommodated properly on natural rocks. The rock-garden is most extensive,



FIG. 174.—VIEW OF PORTION OF THE ROCKERY IN ASHBOURNE GARDENS, CO. CORK.

was also seen, and the distinct *Beschornia de-kosteriana* was doing admirably in a group on the grass. Here, also, were observed several *Cordylines*, including *C. indivisa*, *C. Banksii*, and *C. australis*, with several hardy *Palms*, Ashbourne being well protected from the north winds. *Rhaphithamnus cyanocarpus*, from Chili, with its blue berries; *Cercocarpus breviflorus*, *Ptelea fastigiata*, *Mallotus japonicus*, the distinct *Feijoa Sellowiana*, *Stuartia pseudo-camellia*, the beautiful *Cryptomeria selaginoides*, *Hovenia dulcis*, and, although rather tender, the beautiful *Myoporum serratum* were also noticed. *Cocos australis* withstood the severe winter of 1908, and appeared in a perfect condition of health. A number of *Kniphofias* were very fine.

Some of these were seedlings raised at Ashbourne, and allied to *K. Northia*, of which species there is a small stock in these gardens.

also very fine; whilst *Gunneras*, as elsewhere in Ireland, grow magnificently.

Miscanthus japonicus, a plant allied to *Eulalia*, is also represented by the waterside. *Tricuspidarias* are represented by good specimens of *T. lanceolata* and *T. dependens*. The true *T. dependens* is inferior to the species which was formerly recognised by that name, but which is now known as *T. lanceolatus*. *Decaisnea Fargesii* was cut down by the frost, but it recovered and was bearing fruit. Another plant which is worthy of special mention is the beautiful *Grevillea rosmarinifolia*. I was also pleased to see *Embothrium coccineum*, which, in some Irish gardens, succumbed to last winter's trials. The plant was thriving.

A large break of *Iris Kämpferi*, in the finest varieties, attracted my notice. The land in which they are planted is supplied in summer with

and is full of many features worth noting. Thus, on a steep rock face, there is a splendid plant of *Mandevilla suaveolens*, clambering up and giving plenty of its fragrant, white flowers. Some noble plants of the true *Kniphofia Northiæ* were magnificent. As is proper with such an extensive rock-garden, the plants are generally in masses, which is the best way to produce effect when the rock-garden is of a considerable size. It is impossible to specify in detail the plants, but I may mention masses of the Italian form of *Campanula pulla*; the pinkish-white *Eriogonum racemosum*; a mass of *Umbilicus chrysanthus*; *Lotus peliorynchus*, trailing over the rocks; *Campanula velutina*, a biennial, but very pleasing; *Aquilegia Sturtii*; *Anemone Fanninii*, the showy *Haplocarpha scaposa*; a group of the fine *Rosa sericea pteracantha*; *Campanula G. F. Wilson*; *Campanula isophylla*, very pleasing against the rocks; *Erica tenuifolia*; *Vitis armata*; a number of *Sempervivums*, some not seen as a rule elsewhere; bold groups of the silvery or encrusted *Saxifrages*, a good selection of *Androsaces*, and several forms of *Zauschneria*. There were also observed *Iris stylosa*; *Hypericum reptans*, a splendid specimen; *Ramondias* and *Haberleas*, including the rare *Haberlea virginialis*, doing well, with greater sunshine than they receive in my garden; *Cistuses*, *Helianthemums*, and, in brief, a wonderful collection of old, new, or rare Alpine flowers, as well as some which, in smaller gardens, would

MR. BURBANK AND THE WONDERBERRY.

I ENCLOSE herewith an extract from the *Rural New Yorker*, issue of May 29, regarding Mr. Burbank and the Wonderberry. There is much discussion of this plant here, and we shall know more about it at the end of the season.

Regarding the well-known *Solanum nigrum*, which, I believe, is always regarded as dangerous in Northern Europe, it is used in the north-western States, but, I believe, only in a cooked form, as a sauce or in pies. It is called Stubbleberry, as it grows quite freely in Wheat stubble. It is only used in new districts where there is no other fruit, or where there is difficulty in growing other fruit, just as green Tomatos are used by American housewives to make pies where there is a famine in "pie timber." Prof. Hanson, of the Dakota Experiment Station, expressed his surprise at finding the Black Nightshade thus used in Dakota, but, in addition to the effect of cooking, it is quite possible that climate modifies the poisonous property. It is *Solanum nigrum* that was disseminated by some American seedsmen of recent years under the name of Garden Huckleberry. *Emily Toplin Royle, Maywood, New Jersey.*

Extract from the *Rural New Yorker*.
THE WONDERBERRY AND THE WIZARD
BURBANK.

The "Wonderberry" appeared this season as one of the "novelties" which are sprung upon the public without official test or preparation. We had no chance

most pestiferous weeds, which is also known to be a deadly poison, because we are advised to do this by some seedsmen in America?"

A man in New York bought seed of the Wonderberry, naturally expecting that "Burbank's creation" would prove a prize indeed. A sea captain from England had read the article in the *Gardeners' Chronicle*, and he told our friend what is printed above. This man wrote Luther Burbank about it, and received the following reply:

It is very kind of you to inquire at headquarters about the "Wonderberry." The name "Sunberry" is the one which I rather preferred when I sold my rights in it to John Lewis Childs. As you probably know, newspaper reporters are not always as well posted as they should be.

I am ready to make an offer of ten thousand dollars (\$10,000) cash, cold coin, if any living person on earth proves that the "Wonderberry" is the black Nightshade or any other berry ever before known on this planet until I produced it.

I have seen some criticisms, especially in the *Rural New Yorker*, of New York City, where they simply show their ignorance of the whole matter.

Now, I have made a good offer and it would please me very much if you would publish it in the *Rural New Yorker* and in the English publication you mentioned, the *Gardeners' Chronicle*, as it is not in good taste for me to meet these statements personally, and, furthermore, they will find out how mistaken they are. (Signed) LUTHER BURBANK.

If Mr. Burbank would make as sure of his novelties as he makes safe in his offers little fault could be found with him or them. We name Burbank himself as the "living person on earth," who is well qualified to finger that \$10,000. He proves by his own statements that the "Wonderberry" resulted from crossing *S. villosum* and *S. guineense*. As the *Gardeners' Chronicle* states above, the result of this cross must be Nightshade! Mr. Burbank should at once hand himself that \$10,000, for he has earned it. If, however, he does not consider it good taste to have money or honours thrust upon himself, the *R. N. Y.* will put in a modest plea for the amount. We have a plant of the "Wonderberry" in bloom and with the fruit formed. Botanists declare that it has all the characteristics of *S. nigrum*. Readers in Louisiana have compared the "Wonderberry" with the wild plant and declare that they are the same! As proof we shall print the pictures of these plants. If Mr. Burbank desires further proof will he kindly state what will satisfy him? When we demonstrate the true character of this "Wonderberry" Mr. Burbank will no doubt realise how the American public has been held up for petty plunder on the reputation which goes with his name. Let us now see what this "good offer" is good for!—*Rural New Yorker.*

NOTICES OF BOOKS.

* A FIRST BOOK OF BOTANY.

Now that natural history has obtained a definite place in the school course of study, it has become a matter of great importance to provide suitable text books to aid the teacher by indicating which of the manifold aspects of Nature are most suited for his purpose. All teachers of natural history recognise that plants offer an infinite variety of material for such study: but they also know by experience that it is not altogether easy to select from this variety subjects which serve to build up in the scholar's mind a good general knowledge of the life and work of plants. The little book under review makes this attempt, and, on the whole, makes it with success. The descriptions of the common objects treated of are well done, and the illustrations are none the less useful from being somewhat diagrammatic. We would suggest, however, that the photographs, for example, that of the female catkins of the Willow (p. 88), might well be replaced by careful drawings, or, if that is not possible, in the case of the representation of British trees, omitted altogether. The suggestions for practical work which are made at the end of each chapter are workmanlike, and should prove of great assistance to the teacher as well as to the scholar. In extending a cordial welcome to this little book, we would venture on the criticism that, in the attempt to present a bird's-eye view of the subject, too much ground is covered, and subjects dealt with which, in our opinion, would be best omitted altogether from a *First Book of Botany*. The educational value of frequent observations on a few plants in the various stages of their development is greater than that of more cursory examinations of larger numbers of plants. Nevertheless, we recommend with confidence this little book to the teacher for use in the school.

* By Elizabeth Healey. Pp. 142, price 1s. 6d. (Macmillan & Co. 1909.)



FIG. 175.—AUBRIETIA "DR. MULES" IN ASHBOURNE GARDENS, CO. CORK.

be relegated to the border, but which are quite suitable for such a large garden as that at Ashbourne. Mr. W. E. Gumbleton is enthusiastic in praise of this rock-garden of Mr. Beamish, and it was on his recommendation that I had the pleasure of seeing it. *S. Arnott.*

FOREIGN CORRESPONDENCE.

SOLANUM NIGRUM.

SOLANUM NIGRUM has a wide distribution in Eastern Equatorial Africa, and is used by the natives as a potherb. The plant is very common in cultivated plots, and, although I have never observed artificial plantations of it, yet, wherever it grows spontaneously amongst other crops, it is never uprooted, but tended with the other occupants of the garden.

The young shoots and leaves are gathered and used as a Spinach. The black fruits are never eaten, either raw or cooked, and even small fruits are picked off the Spinach before cooking. I cannot find that the plant has a reputation as a bearer of poisonous fruits here, but its fruits are said by the natives to be "not nice." *E. Brown, Mabira Forest, Uganda.*

to test it, but botanists of high reputation were sure it was in no wise different from the well-known *Solanum nigrum*. We think there are too many half-baked novelties put before the public, and that a thorough roasting will either prove their value or their worthlessness. A correspondent at of the *Gardeners' Chronicle*, of London, England, examined the seeds and made this report:

"The seeds looked ordinary and the given origin excited curiosity, so I proceeded to look up the history of the two reputed parents. They proved to be nothing other than forms of *S. nigrum*, a weed in every country; therefore, the Wonderberry is *S. nigrum* also. The seeds, on careful comparison, proved it beyond doubt. Then I remembered that this same story had been found in another form about two years ago, but the name given then was Huckleberry, instead of Wonderberry. We grew some plants of it and they turned out to be simply Nightshade—*S. nigrum*. What does it all mean? Every intelligent child shuns the fruits of this weed of waste land and manure heaps, the poisonous properties of which are undoubted. Children who have eaten the fruit have died soon after from its effects, which are very distressing—vomiting, colic, convulsions, &c. Mr. N. E. Brown informs me, however, that in some countries the fruits of *Solanum nigrum* are not only innocuous, but they are actually eaten, and on consulting various books I found several records to that effect. A Russian chemist who had investigated the question as to the berries being poisonous in some countries and harmless in others concluded that the difference was not due to any difference in the plants, but to variations in the climatic conditions under which the fruits were grown, the narcotic principle being either undeveloped, or finally dispelled under the influence of certain conditions, of which heat and light were probably the most important. It is, therefore, quite possible that the Nightshade is poisonous in Great Britain and harmless in America. After all, are we so hard up for fruit as to be forced to turn to one of our

MARKET GARDENING.

THREE CHOICE ANNUALS.

Cut flowers of the tall-growing section of the Sweet Scabious are much appreciated by florists for decorative purposes. The three best varieties are as follow:—Pompadour with double flowers, claret-purple in colour, edged with white, and borne on long stems which render the flowers most suitable for arranging in glasses, &c.; Azure Fairy, with large, well-formed, pale blue flowers, a very valuable acquisition to the Sweet Scabious family; and Fire King, the flowers of which are of a rich crimson colour and of fine shape. This variety is of recent introduction. The plants are best raised under glass in order to secure early supplies of cut flowers. They should be transplanted out-of-doors in May in rows 18 inches apart and at the same distance from plant to plant in the rows. Seed of the dwarf and late-growing varieties, sown in flower borders out-of-doors will yield supplies of cut flowers considerably later in the season.

Statice is another flowering annual that has come to be in great request lately. The three following species are the best for yielding supplies of cut flowers, namely, *S. australis* (sinensis), which produces arching spikes of canary-yellow-coloured flowers. The inflorescences are from 15 to 24 inches long, according to the depth and fertility of the soil. *S. sinuata*, which produces fairly long, branching spikes of blue flowers; and *S. Bonduellii*, a free-growing, yellow-flowering variety. These plants continue to bloom into late autumn. They are what is termed "ever-lasting," and on this account, as much as by reason of their habit of growth and colour, are greatly in demand, especially during the early autumn months.

The Sweet Sultan (*Centaurea*) is another grand cut-flower annual. The best varieties for supplying cut blooms include those undermentioned:—The magnificent-flowered *C. imperialis* alba, with pure white blooms, very fine in size and shape; *C. odorata* Marguerita, pure white; *C. Cbameleon*, yellow and rose-coloured; and *C. purpurea*. The Sweet Sultan may also be had in nine separate colours: delicate lilac, bright rose, dark lilac, lilac, purple, rose, dark purple, and white-shaded rose; but the four first-mentioned varieties are the best to cultivate for the purposes indicated above. The globular-shaped flowers are borne on long, stoutish stems, which, in addition to the delicate perfume of the flowers, render them admirably suited for all kinds of cut-bloom arrangements. To obtain an early and prolonged supply of these popular flowers, sow the seed in boxes under glass, afterwards transferring them into 3-inch pots, placing three in each pot, and grow them on in the usual way near the glass in a pit or frame. Transplant out-of-doors in May, placing them in rows, the same distance apart as recommended for Sweet Scabious, allowing the same distance each way for the Statice plants, and afterwards applying water to all the plants to settle the soil about the roots. H. W. W.

The Week's Work.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Herbaceous Calceolarias.—If it is intended to make only one sowing of seed, then July is perhaps the best time for the operation, but if several batches of plants are required, the seed may well be sown at intervals from the present time until the latter part of August. The seeds should be sown thinly and evenly in well-drained pans nearly filled with light, sandy soil. The surface of the soil should be made firm and level. It is not advisable to cover the seeds with soil, but they may be pressed into the surface with a piece of dry, flat wood. As cool conditions at all times are essential to the successful cultivation of these showy plants, the seed pans should be

placed in a shady part of the cool greenhouse or in an unheated frame. The soil should be moist so that water will not be required until the seeds have germinated. A piece of glass laid over the seed pans will prevent excessive evaporation; the glass must, of course, be removed for a time daily, be tilted as soon as the seeds germinate, and finally be removed altogether.

Humea elegans.—Well-grown plants of *Humea elegans* have considerable decorative value, and the scent of the leaves is pleasing to many persons. Seeds may be sown at any time during the next three or four weeks, in pans of moderately light soil. Too high a temperature sometimes prevents germination, therefore the pans containing the seeds must only be placed in a warm house. As soon as possible after the seedlings appear above the soil, they should be potted singly into small pots, exercising care not to injure the roots.

Primula.—These plants require to be kept steadily growing, and as soon as the seedling plants have filled their pots with roots they should be given a shift into others of larger size. Throughout the summer these and the double-flowered varieties should be given cool frame treatment, allowing ample room between each plant. During warm nights, after the plants have become established, the lights may be removed, but judgment must be exercised, as *Primulas*, and especially the double-flowered varieties, are checked by exposure to cold rains and sudden changes of temperature.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Carnations.—A final top-dressing of manure and afterwards a good watering should be given to these plants. Keep the flowers neatly tied up to thin stakes. It is better to do some disbudding, as the buds near to the main flower are of no value and serve merely to retard the development of that flower. As a rule, one flower to each stem is sufficient, but for the purpose of securing a late supply it may be desirable to leave an additional flower-bud near the base of the spike.

Irises.—In some districts Irises may require watering. Manure water obtained from cow manure is very beneficial to them. I. *Kempferi* usually does best in a moist position, but I have known it to succeed on what would be termed a dry border.

Flowering shrubs.—*Deutzia discolor* grandiflora, *D. kalmiaeflora*, *D. Wilsonii*, and *D. Vilmoriniana* have flowered abundantly. Let such plants be pruned directly they have finished flowering. Otherwise the branches, becoming long and weak, will droop to the ground. The beautiful *Rubus deliciosus* requires pruning and top-dressing after flowering. There are many other shrubs that will be all the better for being pruned at this season. Lilacs, for instance, if it is necessary that they should be kept dwarf and bushy, should be pruned at the present time.

Roses.—Trailing Roses should be neatly, but not tightly, trained, and the young, vigorous shoots which start from the base should be carefully secured. Gather the old seed vessels from early-flowering varieties. If Roses are syringed thoroughly each week, it helps to keep them clean and in a healthy condition. Remove all suckers from Briars as soon as they appear.

Herbaceous plants.—Remove the weeds and decaying foliage from herbaceous borders. Much work will be required now in the tying and staking of various plants. Let both operations be carried out before the growths become so tall that they fall about and acquire a bad shape. Vacant spaces in the borders may be filled with annuals and such plants as Dahlias. Plants which have recently been put into the ground must be watered if the weather is dry at the time. A plant may die very quickly after removal unless attention is given it. Reduce any excessively large stumps in the borders, as these may interfere with the space required for other plants.

Alpine garden.—Keep the Alpine garden perfectly free from weeds. Sow seed of early *Primulas* as soon as ripe seeds can be obtained. Prick out *Ramondias* into pans. *Primula sikkimensis* is doing well this season, although the

plants were very small when they were put out last autumn. It is a species to be recommended. Keep the soil about *Sarracenias* moist and free from weeds. The plants are now showing their flowers. *Trilliums* that have flowered may require root waterings. The foliage should be allowed to die away very gradually. *Trilliums* succeed well in a partially-shaded position amongst Himalayan *Rhododendrons*.

Romneya Coulteri.—If this plant is cultivated close to walls or in any dry position, it will need a good soaking with water occasionally.

General work.—Keep the beds and borders free from weeds and all dead leaves. Thin the grass verges and mow the grass frequently. Let the gravel paths be rolled at frequent intervals. Prick out *Polyanthus* and *Primroses* on a cool border. Water Sweet Peas in warm positions. Sow seeds of *Myosotis*, also *Silene*, for spring flowering. If the Wallflowers or any other spring-flowering plants have failed, let another sowing of seed be made at once.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire.

Coleworts.—Two sowings of this useful vegetable should be made during the present month. Scatter the seeds thinly broadcast on beds of suitable size. These seeds must be carefully protected against birds. Coleworts should be cultivated in every garden whether large or small, as they are amongst the most hardy of green vegetables, and their quality is good. The Improved Rosette Colewort and London Hardy Green are the two best varieties.

Turnips.—Make frequent sowings of Turnip seed, selecting as far as possible the more shady parts of the garden. Red Globe is one of the finest summer Turnips. It possesses a robust constitution capable of withstanding drought, and its flavour is excellent. Plants from previous sowings should be thinned to the required distance. Let soot and wood ashes be dusted over them occasionally. Stir the surface soil frequently with a hoe. Where the Turnip fly usually gives much trouble let the young plants be dusted thoroughly every morning with road sweepings. These are very distasteful to the pest.

Celery.—All side growths and split leaves should be removed from the earlier plants, the surface soil should be stirred frequently and an abundance of both liquid manure and clear water applied to the roots. Let the tops be sprayed with clear water every afternoon. Celery is a moisture-loving plant and can scarcely be given too much water. Keep a sharp look-out for attacks of the Celery fly, and destroy the maggots whilst quite small by pressing them between the thumb and the finger. Apply a good dusting of fresh soot once a week, early in the morning or late in the evening. The latest plants should be put into the trenches as quickly as possible. In gardens where space is limited it is a good plan to take out trenches between the rows of Peas if the Peas are sufficiently wide apart. The presence of the Peas will be a help rather than a hindrance to the Celery, as they will afford the plants a little shade from sunshine during the time they are getting a hold of the ground. When the Peas are removed, the ground between the Celery should be broken up, and will provide excellent sites for Endive, Lettuces or Spinach.

Cucumbers.—Plants growing in pits or frames should now be yielding good crops of fruits. Let the growths be frequently thinned out. Apply surface dressings to the roots. Thin out the young fruits in order to avoid overcropping and keep the growths perfectly clean. The plants should be syringed early in the afternoon and the lights closed. At every other watering liquid manure should be employed in the place of clear water. If any sign of thrip or aphid be present fumigate the plants with a nicotine vaporising compound. Make another sowing in small pots.

Tomatos.—Strong plants which were put out in the open will now have started vigorously into growth. Keep all side growths removed, and should the plants be extra strong the lower leaves may be shortened. No manure of any kind must be given the plants until the crop of fruits is set.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Bush Apple trees.—These are now growing quickly, and require attention both in the matter of thinning the fruit and shortening the side growths. The latter operation is necessary in order to expose the fruit to the influence of the sun. The trees, too, can be kept cleaner than if all the shoots were allowed to grow to their full length. Treat the early varieties first. Among the best dessert kinds are Irish Peach, Beauty of Bath, Mr. Gladstone, and Lady Sudeley. The newer Langley Pippin, the result of a cross between Mr. Gladstone and Cox's Orange Pippin, is a valuable Apple. Here it grows moderately strong and crops freely. The smaller varieties, such as Yellow Ingestrie, should not be thinned severely, because the fruits never attain to a large size. Yellow Ingestrie is an excellent little Apple, but it does not appear to be planted now so frequently as formerly. Kitchen varieties require to be thinned much more severely. Many of them crop far too freely. Such, for instance, as Lord Grosvenor and various Codlins. If the trees are allowed to go unthinned there will probably be a quantity of useless Apples, owing to their small size, and the trees will be crippled for some time to come. By judicious thinning the cultivator may obtain fruits of greatly-increased value, and by regulating his crop according to the strength and character of the tree, he will do what is possible to ensure continuous cropping.

Cherries.—The earlier varieties on walls are now ripening. Let the trees be examined, and if necessary apply a final washing by means of the garden engine before placing the nets in position. Shoots required to fill up blanks or for extending the tree should be neatly tied in, and all others stopped as advised in previous Calendars. When water is required, give a thorough soaking to the roots, as frequent dribbles are useless. The mulching material should be drawn away from the trees before applying water, but should be replaced when the operation is finished. As the fruits become fit for dessert, select the ripest and gather them very carefully in order not to injure the buds.

General work.—The netting of the main crops of Strawberries must not be longer delayed. Birds are apt to attack the fruits even before they change colour, and if once the attack is commenced, they will be most persistent in their efforts to reach the fruits, even after the application of nets. In this locality there is every prospect of a very heavy Strawberry crop. Later varieties grown under the shade of a north wall to prolong the season must be given water and occasional applications of liquid manure, should dry weather occur. If these late plants should be allowed to get very dry, the fruits will ripen prematurely and be of little value.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Miltonia.—In many collections, *Miltonia vexillaria* will have passed its flowering stage, and entered upon its short period of rest. It is, therefore, essential that nothing should be done that will induce growth, for the longer period of rest which this species enjoys the stronger will be the new breaks when the season of activity recommences. For the next six or eight weeks it will only be necessary to keep the surface of the compost just moist. This will preserve the pseudo-bulbs fairly plump and the foliage healthy till new growth appears. While at rest, *M. vexillaria* enjoys a cool atmosphere and as much fresh air as *Odontoglossum crispum*. August is the best month for repotting the plants. The later-flowering varieties, such as *M. v. rubella* and *M. v. Leopoldii* should be kept in the intermediate house till they bloom, after which they may also be removed to the cool house. The hybrid *M. Bleuana* and its variety *nobilior* must always be given a position in the intermediate house. This plant begins to make growth at this season, and it is therefore a good time for repotting, should this be necessary. The *Osmunda* and *Polypodium* fibres well mixed together, with plenty of small broken crocks to keep the mixture porous, make an excellent compost for this plant. It is important that the pots should be rather more than half-full of drainage

materials, and the potting should be done with moderate firmness. *M. Phalaenopsis* may be repotted, as the young shoots will now be rooting freely. Be careful to avoid overpotting. Should small yellow thrips attack the foliage of these *Miltonias*, let the plants be dipped occasionally in some safe insecticide, and the leaves afterwards rinsed thoroughly clean in tepid rain-water. The Brazilian *Miltonias* such as *M. spectabilis* and *M. Moreliana*, are at present in full growth. They require plenty of water at the root, and should not be exposed to much strong light during summer, otherwise the leaves will become infested with red spider, and often more yellow than is desirable. Woodlice do much damage to the young roots of *Miltonias*. If the plants are examined immediately after each watering, numbers of woodlice may be destroyed on the surface of the compost. Baits of Apple or Potato should also be laid for them.

Cymbidium.—Examine the species and hybrids of this genus and carry out any necessary repotting, especially in the case of those plants requiring additional pot room. It is not always advisable, however, to repot the plants as soon as they become pot-bound, as in this condition they produce larger spikes and finer flowers. Specimens requiring larger pots should be shifted on with as little root disturbance as possible; others that have become exhausted may be broken up and potted separately. Rather small pots should be used for this purpose, as the pieces establish themselves quicker than when placed in larger receptacles. Established plants in good health should be placed in pots of sufficiently large size to contain them for several years. The pots should be clean and well-drained and the compost should consist of good fibrous, turfy loam, one half, and turfy peat, leaf-mould and Sphagnum-moss the other half, adding some small broken crocks and a little coarse silver sand. Make these materials moderately firm, but not so hard as to hinder percolation of the water. Instead of elevating the plants above the rim of the pot, keep the soil at least half-an-inch below. For several weeks after repotting very little water at the root will be necessary. Cultivate the plants in a cool, shady position in an intermediate temperature the whole year round. The plants require ventilation at all times; if grown in too warm an atmosphere the leaves will soon become infested with insect pests. Damp the stages and other surfaces around the pots several times each day.

FRUITS UNDER GLASS.

By E. HARRISS, Fruit Foreman, Royal Gardens, Frogmore.

The layering of Strawberries.—Preparations must now be made for layering plants which will form the earliest batch for forcing next season, it being essential that strong, well-ripened crowns shall be obtained by the end of the autumn. The variety *Royal Sovereign* still holds its own as the best forcing Strawberry, at any rate this is the case where large quantities of fruit are in demand. Unless there be some favourite variety which the gardener is desired by his employer to grow, I would recommend him to force *Royal Sovereign* to the exclusion of all others. There are several methods of layering the young plants. The one that we employ here for raising 10,000 plants each year for forcing is as follows. We fill a number of 3-inch pots with rich loam and no other ingredients. The loam is made moderately firm, and rough pieces of turf are placed in the bottom of the pots, these being sufficient to provide what drainage is necessary. The pots are carried to the Strawberry beds and placed closely together between the rows. They are partly plunged in the ground in order to protect them from the full glare of the sun. Owing to the extra trouble thus taken, the plants do not require nearly so much attention in watering as they would if they were exposed to the direct influence of the sun. Moreover, the plants root more readily into the new soil when treated in this manner. Do not select any but the best runners for layering. Any which have become already firmly rooted into the ground should be rejected. The most suitable layers are those which are just beginning to produce roots. Only one crown on each runner should be layered. The young plants must be fixed securely on the surface of the soil in the pots by pegs or pieces of raffia pressed firmly into the soil. The layers should be sprayed with a rose-

can each morning and afternoon during bright weather. When they are fairly well rooted into the soil they may be detached from the mother plants and be placed in the shade for a few days, when they will be ready for shifting into 5-inch pots. By that time it will be found that the old plants have produced plenty of runners for furnishing later batches of layers.

The early vinery.—When all the Grapes have been cut from the vines the borders must be given a thorough soaking with clear water. If red spider is discovered on the foliage let it be syringed with a strong mixture of soft soap and sulphur in water. Choose a dull day for this operation, or, failing this, let it be performed late in the afternoon. During sunny weather the vines should be syringed with clear water every afternoon. The ventilators may now be left wide open at all times.

THE APIARY.

By CHLORIS.

The honey season.—At best the honey season is very short, and the beekeeper must be alert if he wishes to reap the full harvest. The beekeeper himself must settle whether the honey shall be extracted or sectional, and this, of course, according to the facilities for sale of one or both classes. Generally speaking, it is well to aim at sections if the honey is of a kind which will not easily granulate. When the sections or shallow frames have been placed on the hives, many beekeepers feel they have done all that man can do, and then feel disappointed when the bees swarm. When the honey flow is good, a close watch must be kept, and when the racks are about two-thirds full of honey, then it is time to add another rack. This is necessary, because the bees cannot proceed at once to seal over the cells, for the honey must have time to ripen, that is, for the surplus water to evaporate, before it can be sealed. A third rack may often be placed under, and before these additional racks are full the top lot will be ready for removal. By this time the honey flow will have slackened, and it will be well to give strong colonies those sections or frames which the weaker ones will not complete.

Taking off frames or sections.—Many beekeepers have spoiled well-filled sections by not being able to remove them without a great deal of unnecessary commotion and trouble. Much annoyance, both to the owner and neighbours, may be avoided if a super clearer with a "Porter bee escape" in the centre be used. This can be purchased from any maker of bee appliances for about eightpence; and if a board be cut the size of a rack of sections and the escape fixed in the centre, all will be ready for use. Round the top edge (the one containing the circular opening of the escape) it will be best to nail pieces of wood about an inch wide and quarter of an inch thick, so as to leave a clear space below the crate in which the bees may move about. The clearer should be placed at night, under the rack which is to be removed, then by the morning it will be clear of bees. If it be put on during the day the operation will require a few hours.

Removing sections from racks.—It is not uncommon to find many beautifully-filled sections spoiled by careless and inexperienced people. First remove the piece of wood at the end which has been used as a block. If the sections are then difficult to remove, because of the propolis, place three pieces of wood, just the length of the spaces between the bars and nearly the same width, and then press the rack evenly on them. This will raise the sections without any danger of injuring them. Perform all operations with perfectly clean hands, for nothing spoils the wood of sections more than finger stains.

Cleansing and storing sections.—When the sections are removed from the rack, it is well to scrape the wood of the full ones to remove the propolis and stains, and to make them look appetising. When this has been done, store them in a place free of dust and where bees or other insects cannot reach them. The imperfectly-filled sections should be replaced in the rack, and when the requisite number to fill it has been collected, it may be placed on a hive requiring more storing space. In the case of frames, the cappings should be cut off at once and the frames placed in the extractor, for the honey runs from the combs more freely when it is of the hive temperature, thus saving much waste and labour.

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.

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 plants, flowers, trees, &c., 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.

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

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JUNE 22—

Roy. Hort. Soc. Coms. meet. (Masters' Memorial Lecture, on "Masters' Vegetable Teratology," by Prof. Hugo de Vries at 3 p.m.).

WEDNESDAY, JUNE 23—

Gard. Roy. Ben. Inst. Ann. Festival Dinner at Hotel Metropole, London.

THURSDAY, JUNE 24—Midsummer Quarter Day.

SATURDAY, JUNE 26—Windsor and Eton Rose Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich—60.8°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, June 16 (6 P.M.): Max. 66°; Min. 51°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London—Thursday, June 17 (10 A.M.): Bar. 30.3; Temp. 57°; Weather—Cloudy.

PROVINCES.—Wednesday, June 16 (6 P.M.): Max. 63° Cambridge; Min. 52° Scotland North East.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Bulbs and Roots, at 12.30; Palms, Plants, Ferns, &c., at 1.30; Dwarf Japanese Trees and Flowering Plants, Bamboo Hats and Twig Baskets, at 3, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

FRIDAY—

Unreserved Sale of the whole of the Collection of Orchids, by order of the Exors. of Col. W. E. Brymer, deceased, at 12.45; nearly new Pantechnicon Van, at 2, at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

The Covering of Ripening Fruit.

Though it does not follow necessarily that a practice which has been found to be good in one country will prove equally successful in another where climate and conditions of cultivation may be very different; yet the success which, according to French horticulturists, follows from the wrapping of ripening fruit of the Apple, Pear, and Grape is worthy of the attention of growers in this country. According to an article entitled "De l'Enschage des Fruits," by M. Lochot, published in *Le Jardin*, the advantages which result from enclosing fruits in bags are numerous, and include the protection of the ripening fruit from various insect and fungus pests, as well as from damage by weather, the hastening of maturity (particularly in the case of out-door Grapes), and the increase, by preserving the delicacy of their bloom, in the commercial value of the fruits. M. Lochot recommends two types of paper bag for this purpose; the one made of a non-transparent paper and the other of semi-transparency, the former to be used in hot, dry regions, the latter in more temperate places, where, indeed, if the intensity of the light is but low, a yet more transparent paper should be employed.

In using the bags, it is recommended that aeration of the enclosed fruit should be secured by means of a number of small holes made in the paper by means of a stout needle or awl. The bags should be secured by the use of a piece of lead-wire to the branch to which the fruit is attached.

For Grapes, instead of a bag, a paper covering in the form of a cloche may be employed. In the case of Pears ripening in summer, the bottom of the bag should be torn off about a fortnight before the fruit is gathered; in that of later Pears the bag should be torn and then four or five days afterwards removed altogether. Pears ripening in late autumn should have the covers removed about a month before gathering. Apples with coloured fruits colour well when enclosed in transparent bags, but the colouring is enhanced if the bags are removed a little while before the fruit is ripe. It is, however, Grapes which, in M. Lochot's experience, repay best the expense of covering. In this country, where Grape culture is carried on almost exclusively under glass, no further covering is required, but in the out-door vineyards of France it is claimed that by this practice the maturing is advanced and the appearance of the fruits enhanced. The cloche form of cover which is recommended is made by the use of semi-transparent stiff paper rolled up funnel-wise and secured in that shape by means of two pieces of soft wire, one at the base and another at two-thirds the height of the cloche; a third wire at the apex serves to fix the bunch to its stem. These methods of enclosure are, of course, not novel. They have been tried by many gardeners in this country, especially in cases where hardy fruits of extra size and quality are required for exhibition or other special purposes, and it would be interesting if those who have made experiments in this direction would give others interested in the production of fruit of finest quality the benefit of their experience.

The Late Blight of Potatoes.

In the course of an admirable and beautifully-illustrated account of the prevalent plant-diseases in New Zealand, Mr. Cockayne, assistant in the Division of Biology and Horticulture, makes some interesting observations on the origin and mode of distribution of late blight of Potatoes (due to *Phytophthora infestans*). According to Mr. Cockayne (Annual Report. New Zealand Department of Agriculture, 1908), no precise record exists as to the date of introduction of the *Phytophthora* disease into New Zealand, though it would appear to be of comparatively recent importation. At the time of the severe epidemic in 1904, Professor Thomas stated that the disease had appeared, though in a less virulent form, 20 years earlier.

Mr. Cockayne adopts the view that the fungus *Phytophthora infestans* hibernates in the resting tuber, and when conditions are favourable spreads therefrom to the leaves, where it gives rise to spore-bearing branches which bear the well-known spores. Whether the tubers are infected through the stem or by means of spores germinating in the earth, the writer is not prepared to say, though he inclines to the view that both modes of infection

occur. Mr. Cockayne draws attention to the fact that tubers infected with *Phytophthora* may become rotten rapidly or may show no sign of rot. In the absence of readily recognisable symptoms of disease (as in the latter case), such infected tubers are doubtless used for "seed" and provide so many centres for spore-manufacture, and hence for the dissemination of the disease. If, again, climatic conditions remain unfavourable, no external sign of disease is given, though the tubers of the plant formed from the infected "seed" in turn contain the hibernating mycelium. That some such course of events takes place is rendered probable by the well-known fact of the rapidity with which the disease declares itself whenever a spell of moist, warm weather coincides with the later period of the growth of the Potato. More thorough-going investigation of the obscure phases in the life-history of this fungus pest is much to be desired.

Experiments in spraying with Bordeaux mixture might be given a rest for a time—since the efficacy of Bordeaux mixture as a check to the disease has been demonstrated a hundred times—and in place of such unnecessary repetitions some of our horticultural institutions might turn their attention to the elucidation of the modes of perpetuation of this pestilent late blight.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—We would remind our readers that the 70th anniversary festival dinner in aid of the funds of this institution will be held at the Hotel Metropole on Wednesday, June 23 next, when LIONEL DE ROTHSCHILD, Esq., will preside. Contributions to be placed on the chairman's list are earnestly solicited, and may be sent to LIONEL DE ROTHSCHILD, Esq., New Court, St. Swithin's Lane, E.C., or to the Secretary, at 175, Victoria Street, Westminster, S.W. We hope this event will be attended with conspicuous success.

HORTICULTURAL CLUB.—The next house dinner of the club will take place on Tuesday, June 22, 1909, at the Hotel Windsor. Mr. ALEXANDER DEAN will speak on "The Importance of Vegetable Culture and Cooking." The date fixed for the summer excursion is Thursday, July 15, when, at the kind invitation of LEOPOLD DE ROTHSCHILD, Esq., the members will visit his beautiful garden at "Ascott," Leighton Buzzard. Particulars as to trains and other arrangements will be announced later.

MR. A. W. BENTON, a member of the gardening staff of the Royal Botanic Gardens, Kew, has been appointed gardener for Government House, in the Falkland Islands.

TIFLIS.—The Director of the Botanic Garden at this town, M. A. ROLLOV, intends to establish in the elevated zone of the Lower Caucasian Mountains two research stations as branches of the Botanic Gardens at Tiflis. One will be formed at a height of 5,000 feet above sea level, and the other at a height of 7,000 feet.

TO DESTROY MOSS ON LAWNS.—The results of experiments conducted by *Der Kgl. Gärtnerlehranstalt* at Dablen, and reported in *Der Handelsgärtner* (March 13), indicate that a 5 per cent. solution of sulphate of iron is effective in ridding lawns of moss. After the application of the green vitriol solution, the Grass should be sprinkled several times with a weak (3 per cent.) solution of nitrate of soda.

JUBILEE OF THE FRUIT AND FLORAL COMMITTEES.—The President and Council of the Royal Horticultural Society have issued invitations to the members of these Committees, and others, to be present at a jubilee commemorative dinner, to be held at the Hotel Windsor, on Wednesday, July 7, at 7 p.m.

JUBILEE EXHIBITION, HAARLEM, 1910.—The complete programme for this exhibition forms a book of 80 pages in the Dutch language. It contains lists for the four coming exhibitions, and of the prizes accompanying them. There are, besides the prizes of honour from Royalty and important authorities, 75 gold medals and

and, lastly, cut flowers. The second special exhibition consists of 300 programme numbers, and will be held from April 15 to 24. It will in its general features resemble the first, while the third special exhibition from May 4 to 12 will consist chiefly of Orchids and objects of the florist's art. The usual judging of novelties will take place in the exhibition halls during the duration of the exhibition.

CARNATIONS AT BOSTON, MASS.—The Union of the Park Street Wholesale Flower Market for traders and gardeners held this year's show in the Massachusetts Hall. All the exhibitors being wholesale cultivators, only

autumn freely after repotting. Of the novelties shown by Messrs. F. R. PIERSON & Co., New York, may be mentioned the white sport Mrs. Thomas W. Lawson, similar in colour to Prosperity: a light rose sport from the variety Winsor, and a deep rose sport from the same variety.

THE RESULTS OF EXPERIMENTS WITH VARIOUS NITROGENOUS ARTIFICIAL MANURES.

—Extensive experiments, including both pot-cultures and field-trials, carried out, during 1905-7, by Prof. SCHNEIDEWIND, Director of the Experiment Station at Halle, and reported in the *Arbeiten der Deutschen Land. Gesell. Heft. 146*, have given the following, amongst other results:—The average relative values of nitrate of soda and sulphate of ammonia were as 100:90. Nitrate of lime (Norwegian) gave average results equal to those obtained by the use of nitrate of soda. Calcium cyanamide was not found to be a satisfactory manure on sandy soils or on sandy loams, but in heavier soils it gave good results, except in the case of roots. The plants used in the series of experiments were Rye, Wheat, Barley, Potatoes and Sugar Beet.

THE FLORA OF NGAMILAND.—An interesting report on the flora of Ngamiland is published in No. 3 of the *Kew Bulletin*, 1909. The plants from this almost unknown region of S. Africa were collected during the years 1896-1898 by Major and Mrs. E. J. LUGARD and Sir F. LUGARD at the request of the authorities at Kew, little or no information being previously available as to the flora. The specimens have since been determined by Mr. N. E. BROWN, and include 92 new species out of a total of 373—a striking testimony to the unknown character of the vegetation. The list of plants, catalogued and classified by Mr. BROWN, is accompanied by a preface by Major LUGARD, who gives a brief but striking account of the physical characters and climate of the country, with a general summary on the flora and fauna. Ngamiland is the most remote province of the Bechuanaland Protectorate and is cut off from the civilised parts of S. Africa by the Kalahari Desert, a country practically waterless during eight months of the year, and, for that reason, almost uninhabited. Lake Ngami, which forms the northern limit of this rainless tract—"a fine-looking sheet of water" in Livingstone's day—is now almost dry, being in the intermediate stage between a lake and one of the salt pans common in certain parts of the desert. The physical features of the country north of the lake are peculiar. Ngamiland consists of reed-grown swamps, traversed by a network of rivers and streams, all forming part of the same river system which drains a country of greater rainfall further north. These streams ultimately lose themselves in the sand of the desert, but have no outlet to the sea. The plants were collected in the neighbourhood of the Kwebe Hills, a low range 20 miles south of the lake. This part of the Kalahari Desert has well-marked dry and rainy seasons, although the rainfall is limited and is sometimes known to fail. The dry season lasts from April to the end of November, and rain, during these months, is almost unknown. The rainy season, corresponding as it does with the warm season of the year, is responsible for the abundant vegetation which appears with extraordinary rapidity after the first rains. Almost all the plants collected flowered during the rainy season from December to March. Among the more interesting of these are two new species of *Ceropegia*, several unrecorded species of *Stapelia*, and a new species of *Crinum*, *C. rhodanthum*, with very brilliant flowers. Trees are not numerous, no valuable timber tree occurring, and plants of economic value are poorly represented.



FIG. 176.—REMOVAL OF A CEDAR AT PADDOCKHURST.

(See p. 398.)

about 2,500 prizes. Only Dutch exhibitors may compete for these, though the juries are international throughout. The permanent exhibition in the open air, to be held from March 23 to May 16, 1910, consists of 200 classes. The first special exhibition, which lasts from March 23 to 31, containing 275 programme numbers, will chiefly consist of Hyacinths, Tulips, Narcissus, Crocus, Amaryllis and other bulbs and tubers in pots. A special division is set apart for retarded tuberous plants; and other important programme items include Rhododendrons, Roses, Lilacs, other shrubs, stove and greenhouse plants,

such plants were shown as can be cultivated with profit. Entry was free to all, so that the public, rich and poor, had the opportunity to see what excellence in commercial wares meant; and the cultivator could observe the novelties in Carnations and Roses, which next season will be of great worth. Among the chief plants exhibited were Carnations, Roses, Sweet Peas, Violets, Cyclamens and some flowering bulbs. Perpetual Carnation Georgia, a white flower, was deserving of special notice. The flower is of great beauty and endurance. It bears carriage well, the calyx does not split, it is a free bloomer and grows on in

THE LATE FIRM OF HUGH LOW & Co.—In connection with the dissolution of this firm, which was announced on p. 381, we are informed by Mr. EDWARD V. LOW that the old firm has ceased to exist as from June 2, 1909, and by agreement entered into between the partners, neither of them is entitled to represent himself as the successor of the said firm. Mr. STUART H. LOW, having purchased the general nursery and ordinary Orchid stocks, together with a three years' tenancy agreement, remains at the Bush Hill Park Nurseries, Enfield, whilst Mr. EDWARD V. LOW, who has acquired part of the collection of Orchids, has removed to Vale Bridge Nursery, Haywards Heath.

CUSTOMS DUES TO THE MAURITIUS.—For horticultural purposes seeds and tubers, and also living plants and products of the same for botanical studies, are now admitted free of duty. Fresh fruit and fresh vegetables are liable to an import duty of 100 cents = 4s. per 100 kg. The importation of vines and vine cuttings is not permitted.

THE GENEVA INTERNATIONAL HORTICULTURAL EXHIBITION.—The programme and regulations of the thirty-fourth International Exhibition, organised by the Société d'Horticulture de Genève, announces that the exhibition will take place from September 8 to 14, 1909, and will be held in the Electoral Buildings and the surrounding grounds. The exhibition will consist of seven principal sections, including novelties or recently-introduced plants, floriculture (greenhouse, open air, and "floral art"), vegetable cultivation, ornamental and fruit trees, scientific horticulture, horticultural arts and industries. Full information may be obtained from the general secretary, Mr. JOHN WOLF, Grand Saconnex, Geneva.

THE SOUTH AFRICAN BAMBOO.—The Kew *Bulletin of Miscellaneous Information* (No. 2, 1909) contains an interesting article by Dr. OTTO STAFF on the South African Bamboo *Arundinaria tessellata* Munro. According to Dr. STAFF, the existence of a Bamboo in Cape Colony has been known for more than 70 years. Discovered by DEECE on high mountains (4,000 to 7,000 feet) in 1832 or earlier, and found also by other travellers, it was originally ascribed by NEES to the genus *Nastus* and named *N. tessellata*. MUNRO gave it its present name of *Arundinaria tessellata* in 1868, though in the absence of its flowers its proper generic position remained dubious. An examination of flowering specimens which were sent to Kew in December of last year proved that MUNRO was right in assigning the Bamboo to the genus *Arundinaria*. Dr. STAFF refers to the economic value of *A. tessellata* and concludes with a description of the inflorescence and flowers.

MR. CHARLES FOSTER.—At the annual reunion of old students at Reading University College last week the Associateship of the College was conferred on Mr. CHARLES FOSTER, Assistant Director of the Department of Agriculture, on his leaving to take up a position as director of Lord NORTHCLIFFE'S model farm.

PUBLICATIONS RECEIVED.—*Holidays Abroad.* An illustrated booklet of tours in Holland, North Germany, the side valleys of the Rhine, the Belgian Ardennes and the Tyrol, published by the Great Eastern Railway.—*Proceedings of the Academy of Natural Sciences of Philadelphia.* Vol. LXI., Part I., January, February, March, 1909. (Philadelphia: The Academy of Natural Sciences).—*Garden Cities and Town Planning.* (May.) (London: Garden City Association, 31-32, Birkbeck Bank Chambers, Holborn, W.C.) Price 3d.—*Beautiful Flowers and How to Grow Them.* by Horace J. and Walter P. Wright. (Part XV.) (London: T. C. & E. C. Jack.) Price 1s.—*The Estate Magazine.* (June.) Price 6d.—*The Forest Flora of New South Wales.* by J. H. Malden. Vol. IV., Part IV. (Sydney: Forest Department of New South Wales).

TRANSPLANTING A LARGE CEDAR AT PADDOCKHURST.

NUMEROUS instances are recorded in the *Gardeners' Chronicle* of the shifting of large trees, a notable instance being the removal of the celebrated Buckland Yew, near Dover, an account of which is given in the issue for April 25, 1891, p. 324, figs. 107, 108. Fig. 176 illustrates the removal of a large tree of *Cedrus deodara* by Messrs. J. Cheal & Sons, at Paddockhurst, Sussex. This Cedar stood in the forecourt of the mansion, but additions to the building have necessitated the removal of the tree a distance of some 20 yards. The tree, with the ball of roots and soil, weighed from 70 to 75 tons. The work of preparation was laborious. The huge tree had to be tunnelled under, and supported by great baulks of timber, leaving a big open space. All the preparations having been made, and a strong platform erected, the tree was gradually moved into its new bed. Messrs. Cheal inform us that the principal point in moving the tree was the tunnelling under it in order to place a platform of large baulks of oak timber in position, and to bolt these together with rollers beneath, the rollers being then laid on another platform to facilitate the moving. The tree in its new position appears as fresh as though it had not been moved.

INDIA.

HAILSTORM IN UDAIPUR.

ON April 20 a hailstorm of unusual severity visited Udaipur. It travelled in a north-westerly direction over the Pichola lake and down the Jarden valley, destroying everything in its wake. The storm commenced about 2 o'clock p.m.; the hailstones were from the size of a pea to that of an ordinary fowl's egg. Some of them, measured at the garden office, were 3 inches in circumference, and of a flat, irregular shape, but the majority of the stones were round.

The storm travelled over the fruit garden and completely destroyed the fruit crops. All the grafted Mangos suffered, as well as the common variety (*Mangifera indica*). The fruits, which were of a fair size, were most of them knocked off. A few that had been hit by the hail, but which had remained attached to the tree, soon turned black and dropped, thus depriving the garden, for this year at least, of one of its most delicious fruits and a large source of revenue. Plums and Apples suffered in the same way. The fruits of the Pippin variety were collected in mounds under the trees. Peaches, too, suffered, very few of them being left on the trees. Carica Papaya presented a sad sight: the umbrella-like heads were shattered to shreds. The crop of Plantains (*Musa*) was destroyed. The beautiful leaves, which only a few minutes before were a treat to look on, were so torn that nothing was left but the upright stems, with a smashed bunch of fruit here and there. Pears were just setting and were destroyed. The Quinces and Figs, being situated in a sheltered position, did not suffer so badly. Pomegranates suffered, but, owing to their stiff, thorny branches and thick-rinded fruit, were not damaged so badly as the more delicate fruits. Sapodilla fruits were of a good size, but were knocked off, leaving nothing but bare barked stems.

The vegetable garden was, as it were, between the two seasons. The cold weather English vegetables were just getting finished. Drum-head Cabbages raised from Messrs. Sutton & Sons' seed, and most of them quite 20 lbs. in weight, solid and pure white, which were the admiration of all visitors to the vegetable garden, were smashed to pieces, with holes knocked right into them. Brussels Sprouts that were just coming into season were reduced to shreds. Broad Beans were destroyed; Early Gem Carrots, Beet, Lettuce and Scotch Kale were all

broken in an unrecognisable form. A fine crop of Potatoes was badly injured; large tubers on the tops of the drills were smashed to pieces. It was most extraordinary how the hail penetrated the soil. The hot weather Indian vegetables, that were in a very promising condition, such as Cucumbers and Pumpkins, were destroyed, and, as the season is far advanced, it will be difficult to meet the demand.

A jungle fire in a night sweeps a whole forest away; but this hailstorm was quite as destructive in another form. The flower-garden, which includes bulbous plants grown in pots, suffered. The pots were broken to pieces, and the bulbs, lying exposed to the storm, were badly injured. *Eucharis* were torn to shreds, *Dahlias* broken, *Achimenes* were badly damaged, and the young shoots—they were just showing—were all cut down; also *Polianthes tuberosa* was badly injured. Beautiful clumps of *Begonias* were all torn to shreds, and everything in the flower-garden beds was broken down. Roses were completely stripped of flowers and foliage, and in many places the stems barked badly. *Poinciana regia* was coming into flower and was severely damaged, only a flower here and there remaining. The beautiful avenue of *Amaltas*—*Cassia Fistula*—was quite stripped of its Laburnum-like flowers. *Hibiscus* and *Lagerstromias* of sorts suffered, hardly a flower being left. *Murraya exotica* was in full flower, and was completely cut to pieces.

However, most of the trees and shrubs are throwing out new shoots and leaves, though the flowers, for this year at least, are all lost. The Doopgrass (*Cynodon Dactylon*) all over the gardens was much improved by the hail and rain; in fact, this was the only part of the gardens that derived any benefit.

One inch and 77 cts. of rain was registered after the fall of hail. Birds of various kinds were found killed in all parts of the garden. The garden covers an area of 150 English acres. There are 10 miles of carriage drives, exclusive of footpaths. The storm seems to have broken right over the garden, and a little distance from it, on the south side, the storm ceased altogether among the hills, where no harm was done at all. Again, on the north, the rain was very trifling in comparison; the hailstones were very small, and did little or no harm to the beautiful gardens there. *Thos. H. Storey, Superintendent Sajjan, Niwas Gardens, Udaipur, Rajpootana, India, May 10, 1909.*

NOTES FROM A "FRENCH" GARDEN.

THE damp weather of the past fortnight has been detrimental to Melons now fruiting; this is especially noticeable in gardens where the beds were not prepared with warm, strawy manure. It has been necessary to exercise great care with regard to the ventilation, but we were obliged to open the lights daily in order to prevent decay in the stems or in the stalks of the young fruits. The first batch planted in April have proved healthy plants, and, provided the temperature improves, the fruits will soon ripen. The only Melons that are covered at night are those which were planted late in May. We are anxious to gradually harden the older plants so as to be able in July to plant Cauliflowers amongst them.

The Cauliflowers planted on the hot-beds in March are now ready. The earliest was the variety "Driancourt," which has also given the largest heads. Those planted among the Cos Lettuces on hot-beds are not likely to be satisfactory, as the drought in May and the damp weather in June have forced the plants to bud prematurely. The Cauliflowers, Endives and Celery that will replace the Cauliflowers are growing rather too freely; it will be advisable, should the weather become fine, to keep them somewhat dry, and harden them off for transplanting in July.

We have disposed of the Passion and Cos Lettuces planted outside early in the spring, and although we had a fine lot of plants, unfortunately the prices were very low. We have hoed and mulched the Cauliflowers which occupied the same bed. The main batch of Endives "La Ruffec" or "La Meau," or the Batavian Green will be sown within a fortnight, and they should be ready by August 15.

Although it is premature to map out a programme for next season, we generally plant the Endives where the ground will not be required before Christmas, as these salads are usually ready in October and November, when gardeners are busy preparing for the Lettuce season the following spring. *P. Aquatics.*

ANGRÆCUM SESQUIPEDALE.

THE excellent specimen of this well-known Orchid, illustrated in fig. 177, has been cultivated by Mr. G. Carpenter, The Gardens, West Hall, Byfleet, who furnishes the following details in regard to its culture. The plant has been growing here for 11 years, but previously never bore more than two flower-spikes at the same time. This year it produced five spikes, and four of these spikes bore three flowers each, whilst the other had four, making a total of 16 flowers. The plant has always had the same treatment, and always appeared healthy. It has been grown with a mixed collection of Orchids, such as Cattleyas, &c. I do not know why it should have flowered more this year than any other. It is interesting to note that three of the spikes came out above the last year's old flower-spike—which, of course, is quite natural—two breaking out under the last year's old flower-stems, a thing that I have not seen before. The photo is by Mr. Thomas Stevenson, Woburn Park Gardens, Addlestone, Surrey.

LILIES AT THE TEMPLE SHOW.

AMONG the many items of interest at the recent Temple Show were the fine masses of different members of the Lily family. They were especially well shown in the collection of flowering subjects arranged by Messrs. R. Wallace & Co., of Colchester. A notable feature was the large number of the different members of the Martagon group. Included among them was that beautiful Japanese species, *Lilium Hansonii*, whose yellow blossoms are as massive as if carved out of wax. The segments, however, do not reflex to quite the same extent as some others of the Martagon section. Magnificent bulbs of *Lilium Hansonii* have been sent to this country from Japan during the last two or three winters. Unlike several members of the Martagon section, this species can be depended upon to flower well the first season after planting. The blooms are much less strongly scented than are some others. Such cannot be said of the Caucasian Lily, *Lilium monadelphum*, for the flowers have a strong perfume which, in a confined space, is not at all agreeable. It is, however, one of the most beautiful of Lilies.

The Nankeen Lily (*Lilium testaceum*), which is also known as *L. excelsum* and *L. Isabellinum*, is a tall, stately species. The drooping flowers are supported by almost horizontally-disposed pedicels, so that each stands clear of its neighbour. The clear nankeen tint of the petals, with the conspicuous red anthers, are pleasing, and the flower possesses a fairly strong but agreeable perfume. This Lily, as well as *L. monadelphum*, succeeds better in loamy soil than in one containing peat.

Of the true Martagon (*Lilium Martagon*), the white-flowered variety was shown in good condition, as well as its three hybrids, namely, *L. Dalhansonii*, whose parents were *L. Hansonii* and the dark-coloured Martagon known as *dalmaticum*; *L. Marhan*, a cross between *L. Mar-*

tagon album and *L. Hansonii*; and *L. Ellen Willmott*, a particularly fine form of *L. Marhan*.

The Siberian *L. tenuifolium*, an elegant little member of the Martagon group, is, when seen in a mass, particularly effective, by reason of the bright red colour of its elegantly-reflexed blossoms.

The trumpet-flowered Lilies corresponding to the sub-genus *Eulirion* include some of the most popular of these flowers for flowering under glass. The best is *L. longiflorum*, its long, silvery trumpets being always admired. The supply of bulbs is principally kept up by immense importations from Japan. Conspicuous at the Temple were large masses of the varieties gigan-

is, in *L. japonicum Colchesteri*, of a cream tint. *L. Brownii* is chiefly propagated in Holland, but *L. japonicum Colchesteri* is obtained from Japan.

Lilium speciosum, which is now so popular as a market plant, was represented on many stands. Some of the flowers were particularly rich in colour, and contrasted markedly with the white variety *Krätzeri*.

Belonging to the same section as the preceding is the Golden Rayed Lily of Japan (*L. auratum*), which I have seen more fully represented than at the last show.

Lilium Henryi, though scarcely seen at its best so early in the season, arrested attention by reason of its distinct colour. Though this has



FIG. 177.—ANGRÆCUM SESQUIPEDALE AS CULTIVATED IN WEST HALL GARDENS.

teum and *Takesianae*, this last being characterised by dark-coloured stems, although the flowers, when fully expanded, are pure white.

A great deal of confusion exists between *L. Brownii* and *L. japonicum Colchesteri*, or *L. odorum*, as it is sometimes called. In Messrs. Wallace's group a mass of each was shown in close proximity, so that an opportunity was afforded of comparing the two. In *L. Brownii* the leaves are long, slender, and gracefully recurved; whereas, in *L. japonicum Colchesteri*, they are shorter, broader, and much thinner. The flowers, too, of *L. Brownii* are longer and more heavily suffused with chocolate on the exterior, whilst the inside is ivory white, which

been known for the last 20 years, it must still be looked upon as one of the newer Lilies. A great recommendation is the manner in which it has become established in this country.

Lastly, mention may be made of the representatives of the *Isolirion* group, a class with upright flowers that are more or less cup shaped. *Lilium elegans* or *Thunbergianum*, an extremely variable species, includes some of the dwarfiest of all Lilies. At the Temple I noticed a fine mass of the variety *Orange Queen*, while particularly noticeable among the others were *venustum macranthum*, of an orange-apricot colour, and the deep-tinted *L. elegans atrosanguineum*. II.

TOWN-PLANTING.

PRUNING OF TREES AND SHRUBS.

THOUGH timely and judicious pruning should never be neglected, yet the annual trimming to which many of the town trees and shrubs are subjected cannot be too strongly denounced. To annually prune and elbow in such noble forest trees as the Lime and Plane, in order that the restricted growth may render them suitable for the cramped positions in which they have been unwisely planted, is unreasonable. The Lime and Plane perhaps suffer most in this way, for as soon as they have overgrown the allotted space an annual system of hacking and hewing is resorted to, the result being the formation of great mop-headed protuberances at the points where amputation took place, which not only rob the tree of its natural appearance, but render it readily susceptible to disease and insect pests. Glaring examples of badly-pruned trees may be seen at Kensington, on the Chiswick Road, at Cricklewood, and along many of our streets, and in our public parks and gardens. Some excuse might be offered for planting our largest-growing forest trees in cramped and unsuitable positions were there no other species of smaller growth available, but the various kind of Pyrus, Mulberry, Catalpa, Dwarf Acacias, Sumach, Prunus, Cratægus, and others are all well suited for town planting. Where ample space is available, such as on the Thames Embankment, and other wide promenades and streets, or where interlacing of the branches is not a serious drawback, by all means let the larger-growing trees be planted, but where the streets are narrow and necessity compels planting within a few yards of buildings, the smaller-growing species are preferable. Numerous instances could be pointed out, as at Gray's Inn Road, London, in which Plane trees have been planted within 9 or 10 feet of houses and other buildings, the result being that in a few years heavy pruning becomes a necessity, and the natural beauty of the trees is destroyed, and, worse still, a repetition of the trimming must be carried out at frequent periods. A point, of the greatest importance in town planting, is suiting the trees to the positions they are to occupy. The Lime is perhaps one of the most cruelly treated of all suburban London trees, for the lopping and beheading to which it is annually subjected, and which it tries bravely to support, strikes every lover of the natural with feelings of regret and shame that so beautiful and noble a tree should be so tortured and disfigured. For the first ten years after being planted in its restricted space, it looks everything that could be desired, but when the confined boundary limit is attained—the windows darkened, the patch of garden rendered useless by the overhanging branches, and the pedestrian on the footpath annoyed—then comes the retribution, and the saw and the pruning-knife being brought into request, the stalwart, beautiful sapling is elbowed in; it becomes mop-headed, or contorted into some other unnatural or ungraceful shape. By planting at the first such moderate-sized trees as the Robinia viscosa, the Mulberry, Mountain Ash, and Beam Tree, Indian Bean (Catalpa), or the beautiful flowering Almonds, Cherries and Thorns, all this would be avoided. The Plane tree, too, is badly managed in many of the London thoroughfares, and when, through indiscriminate planting, pruning of the branches has to be resorted to, this operation is usually performed in the most slovenly and unscientific manner, and has in not a few instances led to a diseased and unhealthy state of the trees operated upon. There are cases, however, where pruning is justifiable, and the abuse of a system should furnish no argument against its legitimate use. In the public parks and gardens the removal of weighty branches from such trees as the Elm and Poplar, that frequently break during even still weather and endanger the lives

of visitors, is not only admissible, but a duty that should never be neglected by those in charge. This also applies with equal force to diseased and hollow branches and stems, which are fraught with danger to the public. As to whether or not dead wood should be removed in quantity from our old Oaks and other trees there is a diversity of opinion, though it cannot be denied that the careful pruning of such is highly beneficial, whether from the point of the health of the trees or safety of the public, who may frequent their shade. It is certain that in some of our town parks and gardens there exists an undue quantity of dead and dying wood which may be attributed to natural decay, the poor quality of the soil in which the trees are growing, or to long-standing neglect in the matter of non-attention to wounds which have been caused by wind-broken limbs and branches or other injuries. Such trees would be greatly improved, both in health and appearance, by the removal of the dead branches and attention being paid to old wounds in order to prevent the ingress of water, the decay and death of not a few trees being directly attributable to this cause. That dead and dying wood will also induce the attacks of injurious insect pests, such as the goat and wood leopard moth, which attack healthy trees, is well known, and was exemplified in some of our London parks lately where Thorns and various species of Pyrus were attacked and injured by the caterpillar of the leopard moth, which was bred in the adjoining old Chestnut trees. The latter part of May or beginning of June is perhaps the best season for pruning the majority of hard-wooded trees, as during that time the motion of the sap is most vigorous, and, in consequence, the wounds caused by amputation heal quickest. There are a few exceptions—the Birch, Maple and Sycamore—where, on account of profuse bleeding, pruning is best postponed till after the leaves have developed. In cutting or shortening small branches a sharp pocket-knife will be found most convenient, but when large and weighty limbs have to be removed, they should first be cut through at any convenient distance from the main stem, and then close to the trunk, undercutting by a few draughts of the saw in order to prevent the bark and wood from tearing when the severed branch falls away. In order to prevent water lodging on the freshly-cut surface, the face and edge of each wound should be neatly dressed and made quite smooth by a sharp knife or adze, and then painted or tarred over. When cutting over an upright growing branch never cut on the horizontal, but always in a sloping direction, so that the rain may pass off quickly. Much mischief has been done by the pruning knife and saw in the hands of inexperienced workmen—a fact that will be patent to every interested person who watches the operation as being carried out by the workmen of some of the city and suburban councils. When conducted with care, on sound principles, the effect of pruning on standard trees should be rather beneficial than otherwise, whereas when done by inexperienced workmen the operation has disastrous results.

Generally speaking, shrubs are pruned with little or no consideration as to whether they will be benefited by the operation. While symmetry and regularity of outline are to be admired in a shrub, these qualities should never be gained at the expense of natural grace and production of flowers. The judicious pruner will, therefore, aim at preserving the peculiar habit of each shrub as far as possible, while interfering as little as possible with the production of flowers. The various species of Deutzia, Forsythia, Philadelphus, and Weigela flower on the wood of the preceding year's growth, therefore such shrubs should be pruned immediately after the flowering season—say in June, but never in spring or winter—at least, if the production of flowers is to be taken into account. Again, the various species of Syringa, Spiræa, Lonicera, and Hibis-

cus may safely be pruned during winter, the flowers being produced on the young wood, while Hydrangea paniculata grandiflora must be severely pruned in early spring, for only by doing so will the greatest wealth of flowers be produced. Chimonanthus fragrans should be pruned in February; while the various species of Ceanothus should not be touched till all danger of frost is past. Kerria japonica should be pruned in autumn, when old wood may be cut away.

All pruning operations should be carefully carried out with a sharp knife and not with the pruning shears, the point of amputation being always close to an eye or bud. Too severe pruning should be avoided, a judicious thinning out of the branches being far preferable to indiscriminate shearing and cutting back. A. D. Webster.

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

THE SUPPLY OF ANIMAL MANURE (see p. 359).

—That there may come in the course of time a comparative famine of animal manure is certainly possible and may well arouse interest in the subject. We, as human beings, create an enormous quantity of vegetable plant food in the form of sewage, but we are so uneconomical that this, for the most part, is wasted in the sea. Sewage farms seem not to be cultural successes, and the dried product of sewage sludge is but a moderately fertilising compound. Street sweepings which usually have had considerable manurial value, now contain so much of tar or petrol waste, that their benefit to vegetation is of an exceedingly doubtful kind. But no form of locomotive change can prevent us getting late autumn-sown crops of Tares, Oats, Rye, or Rape, which when dense, yet short, can be dug into the soil in March and, so treated, become almost immediately decomposed or soluble. These green crops are most valuable manures and of the cheapest kind, yet strangely enough are little used in gardens. The farmer who makes due provision for rich crops, folds his sheep over them, and afterwards ploughs in the remaining vegetable fibre and the animal excrement, thus providing succeeding crops with capital manure. Even the ploughing in of corn stubble has great value. If to these fibre crops a light dressing of artificial manures be added, crops benefit greatly. But the gardener has a resource which is not that of the farmer or usually of the market grower. The farmer seldom breaks up his soil deeply. Trenching would not suit his corn crops. Generally, his land is broken by the plough to a depth of but 10 inches, thus leaving the soil below that depth hard and impervious to roots. Much of this soil, if only broken up, would show wonderful productiveness. The market grower generally relies on the plough as his soil cultivator, but because his crops have to be forced into growth rapidly, he uses heavy dressings of animal manure. This is not buried deeply, and crops of field vegetables having a very shallow root run, the manure is soon exhausted. An enormous quantity of this manure, from 30 to 40 per cent., is lost, owing to the fermenting and wasting to which it is exposed before being applied to the soil. Compare this form of culture with what may be seen on thousands of workers' allotment plots, cultivated and cropped by men not permanently engaged in the occupation of gardening. These plots are deeply trenched so that the soil, from 24 to 30 inches in depth, provides root-room for the plants. Allotment holders can only provide the soil with very moderate manure dressings, yet with such limitations they secure marvellous produce, and in their small way illustrate the wonderful productive capacities of the soil when intelligently cultivated. But the very foundation of such success lies in the deep working of the soil. A. D.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JUNE 8.—Present: Mr. E. A. Bowles, M.A., F.L.S. (in the Chair); Sir J. T. D. Llewelyn, Prof. G. S. Boulger, Messrs. W. E. Ledger, R. A. Rolfe, W. Hales, J. Fraser, L. Crawshay, G. Gordon, R. Hooper Pearson, J. Douglas, W. Fawcett, G. S. Saunders, H. T. Güssow, J. T. Bennett-Poë, E. M. Holmes, A. W. Hill, J. S. Arkwright, and F. J. Chittenden (hon. secretary).

Impatiens × *comoricoma*.—The award of a Certificate of Appreciation was unanimously recommended to Messrs. CAYEUX in acknowledgment of work done in raising the hybrid *Impatiens* shown at the last meeting, and the careful notes thereon contained in the *Revue Horticole*.

Hybrid Dianthus.—Mr. DOUGLAS exhibited flowers of hybrid *Dianthus*. One has been raised by crossing *Dianthus barbatus* with a double pink (*D. plumarius*). This had rather glaucous foliage, leaves about $\frac{3}{4}$ in. broad, and pink flowers with about a dozen petals lacinated at the margins, borne on branched stems carrying about 8 or 10 flowers. The second was the hybrid between *D. barbatus* and *D. caryophyllus* var. *Uriah Pike*, known as *Lady Dixon*, a form which never produces seeds but flowers very profusely.

Variiegated Laurel.—Mr. CRAWSHAY showed foliage of a much variegated form of the Common Laurel, *Prunus lauro-cerasus*. The bush from which this was cut was an old one and the variegation had proved constant.

Alpine plants.—Mr. J. FRASER, F.L.S., showed cultivated specimens of a very dwarf form of *Salix herbacea* which he had collected at an elevation of 3,984 feet on Ben Lawers. The height to which it attained in the wind-swept situation in which it was growing was only from $\frac{1}{4}$ inch to $\frac{1}{2}$ inch. He also showed *Draba rupestris* from the same locality, and *Tofieldia palustris* from an altitude of 2,800ft. in Perthshire, with fruit. These had all been grown in pots, and were somewhat taller than when collected. Mr. FRASER also showed flowers of *Rosa spinosissima*, which is still found growing wild within the county of London, though it does not now fruit. The flowers exhibited were very small, and had been picked from a wild specimen.

Lonicera Standishii.—Mr. E. M. HOLMES exhibited ripe fruit of this *Lonicera*, which rarely fruits in Britain.

Aquilegia double.—Mr. HALES drew attention to the doubling of *Aquilegia* where, somewhat as in the hose-in-hose *Primrose*, the petals are packed one within the other. Mr. CHITTENDEN pointed out that the additional petals were modified stamens, of which the filament became the claw of the petal, while the spur and the limb of the petal were developed from the anther; in specimens in which the modification had not gone far the two anther lobes could be seen around the mouth of the spur.

Malformed Orchid.—Mr. ROLFE exhibited an *Odontoglossum* in which the petals had acquired somewhat the coloration of the lip.

Primroses flowering.—Mr. A. W. HILL said that there was at present flowering at Kew a common *Primrose* which had been brought from Shetland last year, and had thus retained its normal time of flowering.

Trachycarpus excelsus monocius.—Mr. BOWLES exhibited an inflorescence of *Trachycarpus excelsus*, and remarked that although most of the flowers were staminate in the inflorescence for some years, a few pistillate flowers had developed and had produced fruit. This was most evident in the inflorescences which had developed late in the season.

NATIONAL VEGETABLE.

JUNE 8.—We are informed that a meeting of the Provisional Committee of the newly-constituted National Vegetable Society was held at the Hotel Windsor, on the above date. It was decided to ask His Grace the Duke of Portland to accept the office of President. Twenty-seven gentlemen and 17 firms were proposed as vice-presidents

RANUNCULUS AURICOMUS.—In answer to Mr. H. S. Thompson (see p. 384), I can state that the perfect form of *R. auricomus* is plentiful in the neighbourhood of Sevenoaks (Kent), and, as far as my experience goes, the variety *depauperata* is somewhat uncommon. In Hanbury and Marshall's *Flora of Kent*, 1899, it is stated, "Petals occasionally imperfect, especially in hill-woods." My own observations are quite in accordance with this, but I have hardly ever noticed the imperfect form in a moist situation, or upon good soil. There is one large patch of several hundred plants, which I have observed carefully for about eight years, and during that time have never found a single imperfect flower amongst them. All the plants are also very constant in their time of flowering, and the form of the radical leaves. I should be interested to hear if other readers have consistently observed this species, and if they have found any correspondence between the nature of the soil and the condition of the flowers. *Lionel Crawshay*.

NITROGEN OF THE AIR.—Will Mr. Hall kindly tell us in what way nitrogen, pure and simple, can be restored to the air? In the process of photosynthesis plants give us back the oxygen, which all living beings consume; but as nitrogen has also an important part to play in the atmosphere, one would like to know how it is to be restored after the air has been robbed of it in making nitrate of lime. It is said that the gas which bubbles up in the baths of Buxton is pure nitrogen; but how it has become isolated I do not know. Is any other source of pure nitrogen known in nature? Four-fifths may seem to be a large proportion now; but a time may come when the making of nitrate of lime on a large scale—perhaps in many countries and perpetually, for centuries—may reduce that proportion and render the amount insufficient to check the too active properties of pure oxygen. *Geo. Henslow, Leamington*.

Unfortunately there are all too many agencies breaking up the compounds of nitrogen and returning it to the atmosphere in the form of gas. When any vegetable matter is burnt the greater part of the nitrogen it contains is lost as gas, and the same is true of coal and other fossil forms of bygone vegetation. Then the soil is full of wasteful bacteria, which as they oxidise the organic matter are always evolving some of the nitrogen as gas. In very rich soils the wastage is considerable; we estimate that about one-half of the combined nitrogen which has been put on the Wheat plot at Rothamsted in the shape of farmyard manure every year for the last sixty years has been thus lost, for it is to be found neither in the soil nor in the crops that have been harvested from the plot. Again, all our explosives depend for their action on the liberation of free nitrogen gas from one or other of its combined forms, and one item in the wastefulness of war is the enormous destruction of combined nitrogen which follows a modern battle. Mr. Henslow need not fear for the world's stock of free nitrogen: it was the combined nitrogen which seemed likely to run out until we learnt latterly something of the powers of bacteria to regenerate the supply. *A. D. Hall*.

EARLY SWEET PEAS.—I am sending you a box of Sweet Peas. The seeds were sown early in October in 4-inch pots, six seeds in a pot, and placed in a cold frame, where the plants remained during the winter. Air was admitted freely on all favourable occasions. The plants were potted on into 7-inch pots in the first week of January. At about the middle of March they were placed out-of-doors under the shade of a south wall. They were planted out early in April in a south-west corner of the kitchen garden, each potful being placed at distances of 2 feet. At the present time they are 3 feet in height, and they meet in the rows. The foliage is strong and healthy. We commenced cutting flowers for Whitsuntide, and have since had a continual supply. Upwards of 100 spikes were sent away this morning. I have usually sown out-of-doors in autumn with very good results, but the system adopted this year has given earlier blossoms and less trouble. Owing to this late season it will be quite another fortnight in this locality before we can cut flowers from plants raised from spring-sown seeds. *G. Hatch, Carenham Park Gardens, Mildenhall, Suffolk, June 10*. [The flowers were excellent.—ED.]

It was further resolved to ask the following gentlemen to accept places on the Executive Committee:—B. Ashton, Gardener to the Earl of Lathom, Lathom House, Ormskirk; N. F. Barnes, Gardener to the Duke of Westminster, Eaton Hall; E. Beckett, Gardener to the Hon. Vicary Gibbs, Aldenham House; E. T. Cook, Editor of *The Garden*; W. A. Cook, Gardener to Sir Edmund Loder, Bart., Leonardslee; A. Dean, Horticultural Instructor, Surrey Education Committee; C. Foster, Horticultural Director to Lord Northcliffe, Sutton Place; G. Gibson, Gardener to the Duke of Portland, Welbeck Abbey; G. Gordon, V.M.H., Editor of the *Gardeners' Magazine*; F. W. Harvey, Sub-Editor of *The Garden*; G. Hobday, Romford; R. Hooper Pearson, Managing Editor, *Gardeners' Chronicle*; J. Harrison Diek, Sub-Editor of the *Journal of Horticulture*; J. Jaques, Horticultural Director, White City; J. Lyne, Gardener to H. F. Tiark, Esq., Foxbury, Chislehurst; H. Markham, Gardener to Viscount Enfield, Wrotham Park; S. Mortimer, Market Grower, Rowledge, Farnham; W. Poupart, Market Gardener, Twickenham; R. J. Steel, Market Garden Salesman; Owen Thomas; H. H. Thomas, Editor of *The Gardener*; J. Vert, Gardener to the Rt. Hon. Lord Howard de Walden, Audley End; G. Wythes (Treasurer); E. G. Quick (Hon. Sec.), Kelmescott, Harrow View, Wealdstone, Harrow.

OBJECTS AND RULES OF THE SOCIETY.

1. The title of this Society shall be the National Vegetable Society, and its object shall be to promote the wider cultivation of vegetables as food products, to encourage their consumption as food, to promote exhibitions of such products, whether competitive or otherwise, and to hold trials under such conditions as may offer with a view to finding the best varieties to commend for general culture, and to ascertain commercial values when grown under ordinary conditions.

2. Membership shall be open to all persons who will pay an annual subscription of not less than 5s., and who are in entire agreement with the objects above stated.

3. Executive body.—The governing body of the Society shall be a president, vice-presidents, treasurer, and secretary, who, together with an executive committee, not exceeding 24 members, shall be elected annually.

4. Annual meeting.—An annual general meeting of all members shall be held in the month of January each year, when the report of the committee's work for the previous year shall be read, and a duly audited balance-sheet of accounts presented. The annual election of officers and committee shall also then be held. Two auditors shall be elected at such meetings.

5. Meetings of the committee shall be convened by the secretary from time to time as the business of the Society may require, as the committee itself shall determine, or on the request of any four members of the committee, such request to be made in writing to the secretary. The committee shall elect its own chairman and vice-chairman at its first meeting immediately following the annual general meeting.

6. Subscriptions become due on the first day of the month of January in each year, and should be paid through the treasurer, who shall forward an official receipt to the member for same at the earliest possible date. All cheques shall be made payable to the National Vegetable Society.

7. All members will be entitled to vote at the general meetings, and also be eligible for election on the executive committee. Members will also be entitled to receive copies of any reports or publications issued by the Society, and to exhibit at any show or in any classes arranged by the Society.

8. All trials conducted by the Society shall be thoroughly impartial and designed to elicit useful information. They shall be under the control of a special trial sub-committee of not less than three members, who shall be responsible to the general committee.

BIRMINGHAM BOTANICAL AND HORTICULTURAL.

JUNE 9.—The annual Orchid and early summer flower show was held at the Botanical Gardens, Edgbaston, on the above date. Orchids, miscellaneous plants and cut flowers were

YORKSHIRE GALA.

extensively and well shown, and, as the weather was fine and warm, an unusually large number of visitors were present, who pronounced the show to be not only the biggest but the best of the special shows held under the auspices of the Society.

The premier award—Gold Medal—was worthily given to W. WATERS BUTLER, Esq., Southfield, Norfolk Road, Edgbaston (gr. Mr. R. H. Jones), who filled a space of 180 square feet with a meritorious collection of well-flowered plants nicely arranged over a groundwork of Ferns and backed by tall white Lilioms and foliage plants. This interesting exhibit contained splendid examples of Cattleya Mossiae Waterloo, C. M. Gloire de France, C. Lawrenceana Hyeana (very large deep flower), C. intermedia White Queen, Lælia Iona, Lælio-Cattleya Canhamiana, Oncidium amphiatum majus, Odontoglossum crispum Empress of India, O. c. Lindenii, O. c. Harryanum grande (extra good), Cypripedium callosum Sandera, C. bellatulum, Trichopilia Wagneri, Miltonia vexillaria, and many others.

The Right Hon. JOSEPH CHAMBERLAIN, M.P., Highbury, Birmingham (grower Mr. John Mackay), had an extensive display of grandly flowered Miltonias, Cattleyas, Lælias, and Lælio-Cattleyas, together with Anguloas, Phalænoopsis, Angraecum Sanderianum, Cochlioda Noezhana, Disa Premier, and Odontoglossums. (Silver-gilt Medal.)

Alderman G. H. KENRICK, J.P. (Lord Mayor of Birmingham), Whetstone, Edgbaston (gr. Mr. J. V. Macdonald), contributed a small, but choice group consisting principally of Vanda teres (well-flowered), Dendrobiums, and Odontoglossums. (Bronze Medal.)

RICHARD FENWICK, Esq., J.P., Plough and Harrow Road, Edgbaston, had an artistically-arranged group of Odontoglossums, Cattleyas, Dendrobiums and Epidendrums. (Bronze Medal.)

From Messrs. MOORE, LTD., Rawdon, Leeds, came an effective group, in which many curious and beautiful species and hybrids were noted, including Disa Lana, Odontoglossum Rolfeæ, Cattleya Dusseldorferi Undine, Dendrochilum Cobianum, Gongora Wilsonii, Lælio-Cattleya Aphrodite alba, L.-C. Fascinator, Vanda suavis, Trichopilia tortilis, Renanthera Imschootiana, Cirrhopetalum Collettii, and Miltonias. (Silver Medal.)

MISCELLANEOUS PLANTS AND CUT FLOWERS.

MESSRS. GUNN & SONS, Olton, Birmingham, showed a very fine assortment of hardy flowers and Sweet Peas, together with a representative collection of Roses as bush, standard, weeping and pillar varieties. (Silver-gilt Medal.)

MESSRS. BAKERS, Codsall, Wolverhampton, sent a selection of Pyrethrums, Lupins, Violas, Irises, Columbines and Oriental Poppies. (Silver Medal.)

W. BYNG KENRICK, Esq., Metchley House, Somerset Road, Edgbaston (gr. Mr. Jas. Webb), sent twelve well-flowered plants of Pelargonium Achievement. (Vote of Thanks.)

ROBERT SYDENHAM, LTD., Tenby Street, Birmingham, contributed a pleasing group of Spanish Irises and Gladiolus. (Bronze Medal.)

RICHARD PEYTON, Esq., Augustus Road, Edgbaston (gr. Mr. W. Young), showed a very nice group of Gloxinias, Hydrangeas, Caladiums and ornamental grasses. (Bronze Medal.)

Mr. H. N. ELLISON, Bull Street, West Bromwich, showed upwards of eighty species and varieties of Ferns, mostly in small pots suitable for table decoration. (Bronze Medal.)

MESSRS. BICK BROS., Olton, Birmingham, sent a collection of Violas, which were much admired. (Vote of Thanks.)

Mr. C. H. HERBERT, Hazlewood Road, Acock's Green, sent plants of his new perpetual-flowering Pink "Progress," bearing large, shapely, fragrant purple flowers. Mr. HERBERT also showed Violas and Columbines. (Bronze Medal.)

MESSRS. JAS. SIMPSON & SONS, Court Oak Road, Harborne, sent a group of hardy ornamental-foliaged shrubs in pots, including several Rhododendrons in flower. (Vote of Thanks.)

New Violas were sent by Councillor T. BROWN, Olton, and by Mr. W. MARPLE, Summer House, Penkridge.

AWARD OF MERIT.

Lælio-Cattleya Eudora magnifica, from Messrs. MOORE, LTD., Rawdon, Leeds. This differs from the type by reason of its large, rich-coloured flowers.

JUNE 16, 17, 18.—The exhibition held on these dates will rank as one of the best held in Bootham Park. Last year's show was bigger, but that was an exceptional year, and certainly in point of quality the display which opened on Wednesday last was not inferior. The entries were only three fewer than those of the Jubilee Gala, so that good competition was seen in the numerous classes. The rock-garden exhibits, always a feature at these shows, were carried out on an imposing scale; very fine, also, were the groups of flowering and foliage plants, and beautiful displays of garden plants were seen on all sides. As being exceptionally fine from a cultural point of view, we may instance Begonias, Gloxinias, and Calceolarias. A regrettable accident happened to the exhibits of Mr. SHARPE, Almondbury, Huddersfield; one of the railway vans containing his plants took fire, and thus prevented him from exhibiting. Numerous trade groups contributed to the success of the show. The secretary, Mr. Fred. Arey, and the management are to be congratulated on the general results.

GROUPS OF PLANTS.

The largest class for a group of miscellaneous plants arranged for effect was represented by six exhibits. Each exhibitor was allotted a space of 300 square feet. The 1st prize was awarded to J. PICKERSGILL, Esq., Bardon Hill, Westwood, Leeds (gr. Mr. J. Donoghue). The group was a bizarre of beautiful colours furnished by flowers and foliage. A magnificent Kentia, half-hidden with Dorothy Perkins Rose and Liliom longiflorum, dominated the background, while the body of the display was of Codiaums (Crotons), beautiful in their colouring; elegant Coeos Palms, Vitis with variegated leafage, Begonias of the Rex type, Alocasias, Caladiums, Ferns, &c., with Orchids, Roses, Kalosanthe, and Lilioms. 2nd, Mr. W. A. HOLMES, West End Nurseries, Chesterfield. A flatter group than the preceding, but very effective, the groundwork of Codiaums, Dracænas, Caladiums, Abutilons, Begonias, Colens, and the like, being admirably disposed. Taller plants of Codiaums, Roses and Palms, with sprays of Odontoglossums, served as foils for the general display. 3rd, Mr. JAMES BLACKER, Thorpe Villas, Selby (gr. Mr. W. Curtis). Pillar Roses were admirably shown in this group.

A similar but smaller class for a group of flowering and ornamental-leaved plants brought four good exhibits. The space allowed was 200 square feet. The 1st prize was again secured by Mr. PICKERSGILL (gr. Mr. J. Donoghue), whose splendid Crotons contributed largely to his success. These, with Roses, Cattleyas, Odontoglossums, Ericas, and Crassulas, with fine foliage plants intermixed, formed a group of considerable beauty. The 2nd prize was awarded to the adjoining group, put up by Mr. W. A. HOLMES, West End Nurseries, Chesterfield. The groundwork, as in the other group from this competitor, was remarkably effective; the background was perhaps a trifle weak, otherwise there was not much to choose between this and the 1st prize display. 3rd, Mr. W. VAUSE, Leamington Spa.

Very large plants were staged in the classes for specimen stove or greenhouse plants. In that for nine examples there were only two entries. Messrs. JAMES CYPHER & SONS, Cheltenham, had much the better plants. They showed a grand specimen of *Darwinia tulpifera*. Others of note were *Bougainvillea Cypheri*, *Pimelia diosmæfolia*, and *Stactia intermedia*. 2nd, Mr. W. VAUSE, Leamington. Two growers also contested the class for six plants, and again Messrs. CYPHER won the 1st prize, their showiest example being *Azalea Modele*, covered with its elegant salmon-pink blooms. 2nd, Mr. W. VAUSE.

Messrs. CYPHER & SONS also showed better than two other competitors in the class for three plants.

Mr. VAUSE was the only exhibitor of a single specimen stove plant, taking the 2nd prize for a poor plant of *Anthurium Scherzerianum*.

The best specimen greenhouse plant in bloom was *Erica ventricosa magnifica*, shown by Messrs. CYPHER, Mr. VAUSE winning the 2nd prize with *Erica eximia minor*.

The best half-a-dozen ornamental foliage

plants, to include two Codiaums, were staged by Mr. W. VAUSE. 2nd, Messrs. R. SIMPSON & SON, Selby. Mr. VAUSE was again placed 1st in the class for three ornamental-leaved plants; and Messrs. SIMPSON excelled in the class for three Codiaums (Crotons), Mr. VAUSE following. The best single plant of a Codium was shown by the last-named exhibitor.

There were two groups in a class for 20 Alpine and herbaceous plants. Much the better of the two staged was put up by Mr. WALTER PYBUS, Monkton. This exhibitor showed as his best examples *Lupinus*, *Mimulus Sillingii*, *Saxifraga pyramidalis*, variegated-leaved *Funkias*, and *Sedum Sieboldii*. 2nd, Mr. J. NICHOLSON, 22, Whitecross Road, York.

A collection of decorative plants and cut flowers.—This was a very pretty class, and, there being seven exhibitors, the displays occupied a considerable space. Each group was limited to 12 feet frontage and a depth of 5 feet. The competition for the premier position was keen between Mrs. WHITEHEAD, Deighton Grove, York (gr. Mr. G. W. Richardson) and JAMES BLACKER, Esq., Thorpe Villas, Selby (gr. Mr. W. Curtis). The former exhibitor won the premier award. Both exhibited choice examples of conservatory and greenhouse plants arranged in the most pleasing manner.

BEGONIAS.—Exhibits of these showy flowering plants were exceptionally choice, a magnificent group shown by Mr. T. WINN, 14, Ratcliffe Street, York, taking the 1st prize. Such excellent plants as were shown by this gentleman would be hard to surpass, the flowers being large, exquisitely coloured, and having a wealth of fine healthy foliage. The 2nd prize was awarded to Mrs. AKENHEAD, Acomb Park, York (gr. Mr. R. W. Leadhill) for a group of much merit.

GLOXINIAS.—Five exhibitors competed in a class for a group of Gloxinias in bloom arranged with foliage plants and Ferns. The 1st prize was worthily won by Sir J. GRANT LAWSON, Bart., Middlethorpe Lodge, York (gr. Mr. J. Dobson). Nothing finer could be desired than the splendid specimens shown in this group, the plants having 20-30 finely-developed flowers and equally good foliage. 2nd, J. A. DUNKERLY, Esq., 7, St. Mary's Terrace, Beverley (gr. Mr. G. Bush). This also was a fine display of the cultivator's skill. 3rd, Capt. WALKER, Mill Mount House, York (gr. Mr. H. Clark).

CALCEOLARIAS.—As in the case of Gloxinias and Begonias, some splendid plants of Calceolarias were staged. The competition was between seven exhibitors, and all showed excellent plants, the best being staged by P. STANCLIFFE, Esq., Solbergh, Northallerton (gr. Mr. George Jarvis). Exceedingly large flowers, bright and fresh in appearance, with a galaxy of other plants as foils, characterised the exhibit. 2nd, J. W. COULHURST, Gargrave House, Gargrave, Leeds (gr. Mr. Skinner). 3rd, W. T. AGAR, Esq., Brockfield Hall, York (gr. Mr. W. Barnes).

CARNATIONS.—A group of Carnations, principally of the Souvenir de la Malmaison type, shown by Mr. JOSEPH PICKERSGILL, Bardon Hill, Westwood, Leeds, was adjudged the best of three exhibits. A few Tree Carnations were grouped at the back of the group. 2nd, Messrs. WALSHAW & SON, Scarborough.

SHOW PELARGONIUMS.—A good group shown by Mr. GEORGE LEE, 49, Surtees Street, York, was placed 1st, and another local exhibitor, Sir GRANT LAWSON, Bart., Middlethorpe Lodge, York, followed.

The best pot plants of Calceolarias were shown by S. LEETHAM, Esq., Elm Bank, York (gr. Mr. Geo. Skill). 2nd, Rev. Canon ARGLES, St. Clement's Rectory, York (gr. Mr. W. Ettey).

Tuberous-rooted Begonias in pots were best shown by Mr. T. WINN, Ratcliffe Street, York: they were beautifully flowered specimens and very large. 2nd Mrs. A. AKENHEAD, Acomb Park, York (gr. Mr. R. W. Leadhill).

For eight Gloxinias in pots the 1st prize was awarded to Dr. R. APPLETON, The Bar House, Beverley. 2nd, Sir J. GRANT LAWSON, Bart. (gr. Mr. J. Dobson).

PELARGONIUMS.—Large trained specimens of these plants were shown in considerable numbers; gaunt, ungainly examples of most

unnatural training. For six plants of the show section Mr. JOHN WEDGEWOOD, 159, Burton Lane, York, was 1st. For 12 Zonal Nosegay or Hybrid Nosegay Pelargoniums Mr. HENRY PYBUS, Monkton Moor, Wormald Green, led, and for six plants of the same types Mr. HENRY PYBUS was again placed 1st. Other winners in the classes for Pelargoniums were Mr. J. W. CLARKE, 13, Skelton Street, Clifton, York, and Mr. F. W. CROWTHER, York.

Large Fuchsias were very freely flowered, especially those shown by Mr. JOHN CLARK, 13, Skelton Street, Clifton, York. The plants were pyramidal trained and of well-known kinds. 2nd, Mr. W. KETTLEWELL, Horner Street, York.

ROCK-GARDEN EXHIBITS.

These are always an important feature at the York shows, and on this occasion there were five exhibitors, the displays occupying the whole length of one of the largest tents. The main contest lay between three competitors, but Messrs. JAS. BACKHOUSE & SON, York, had no difficulty in securing the premier award. Their group was a splendid representation of a rock-garden, large blocks of sandstone, many weighing two hundredweight, being admirably disposed and the planting was carried out with suitable subjects. A jutting portion in the centre divided two large receding bays, and at one end—rather higher than the other parts—a stream trickled down a gully from which Ferns peeped out, the water falling into a basin planted with Nymphaeas. The background was of Rambler Roses, *Acer californica*, Bamboos, with *Eremuri* interspersed. The rockery proper had bright patches of *Aubrietias*, Saxifrages, *Aquilegias*, *Incarvillea Delavayi*, *Dianthus caesus grandiflora*, *Edraianthus pumilio*, *E. serpyllifolius*, *Aster alpinus speciosus*, *Primula sikkimensis*, *P. japonica*, *Cypripedium spectabile*, *C. acaule*, *C. hirsutum*, and *C. montanum*. There was also a wealth of *Azaleas*, *Gerbera Jamesonii*, *Rhododendrons*, *Lupins*, *Wistaria*, &c. It was a boldly-designed scheme, and very effective; perhaps the stonework was a trifle obtrusive. It was a keener fight for the 2nd prize, but the judges decided in favour of Messrs. W. ARTINDALE & SON, Sheffield. Their exhibit was a capital representation of a rock-garden, boldly designed and planted effectively. A pool, with rustic bridge entwined with Ivy, was a pleasing feature, and especially fine was the background of *Eremuri*, *Rhododendrons*, *Roses*, *Acer Negundo* and other tall plants. Disposed in crannies and nooks were Ferns, Saxifrages, *Irises*, very fine pink-flowered *Spiraeas*, *Campanulas*, *Anemones*, *Primulas*, *Liliums*, and many others. 3rd, Mr. S. PICKERING, Rosslyn Street, Clifton, York. This group had a large water basin at the foot of the stonework, a stream of water supplying it from one corner of the group, flowing past Ferns, Saxifrages, *Myosotis*, *Mimulus*, and overhung with *Acers*, *Lupins*, *Aquilegias*, &c. In the exhibit were also *Irises*, *Poppies*, *Paeonies*, some very choice *Aquilegias*, *Pyrethrums*, Bamboos, Conifers, *Acers*, *Prunus pissardi*, and numerous other elegant shrubs.

ROSES.

Exhibits of Roses were plentiful and generally of good quality, especially in the more important classes for cut blooms.

Several good groups were seen. The best collection staged for effect was shown by Mr. WM. TODD, Haxby Road, York, mainly of well-known varieties of Hybrid Perpetual kinds and taller pillar plants as foils. 2nd, Mr. J. E. SKAIFE, 60, Clarence Street, York.

Another class was for a group of pot Roses with decorative plants, including Ferns. The premier prize was taken by Mr. LANGSTAFFE, 16, Sydney Street, York, a fine row of the *Polyantha* variety, *Mme. N. Levasseur*, forming a pleasing border. 2nd, Mr. J. E. SKAIFE, Clarence Street, York, who utilised Rambler kinds at the back and in the centre of the display.

The largest class for cut Roses was for 72 blooms. There were three exhibitors, and many choice flowers were shown. Mr. G. MOUNT, Canterbury, showed the finest blooms, having well-known kinds, such as Richmond, Mrs. John Laing, Kaiserin A. Victoria, *Mme. Constance Soupert*, Frau Karl Druschki, Liberty, &c. 2nd, Mr. GEO. PRINCE, Oxford, who had many good flowers, Lady Ashtown, Anna Olivier, Mrs. Ed. Mawley, and Betty being noteworthy

In the class for 48 blooms, the most successful exhibitors were Messrs. W. & J. BROWN, Stamford and Peterborough. 2nd, J. D. HUTCHINSON, Esq., Crown Square, Kirby Moorside.

Mr. GEO. MOUNT was 1st for 24 blooms, followed by Mr. ELISHA J. HICKS, Twyford, Berks; but the names were reversed in the class for 18 blooms. There were numerous other classes for Roses.

ORCHIDS.

MESSRS. JAMES CYPHER & SONS, Cheltenham, were the only exhibitors in a class for a table of Orchids measuring 12 feet by 5 feet. The exhibitors were allowed to employ dwarf plants and cut blooms, either in baskets, glasses, or from a base of moss, the object being the obtaining of an effective display. The group was admirable both in its composition and staging, and worthily received the 1st prize. Among the best plants were displayed *Miltonia vexillaria* in number, light and dark-coloured varieties; *Lælio-Cattleya Canhamiana*, *Odontoglossum crispum*, *Cypripedium bellatulum*, *C. callosum*, *Sanderæ*, *Dendrobium Dalhousieanum luteum*, *Epidendrum prismatocarpum*, *Lælia purpurata*, &c.

Messrs. JAMES CYPHER & SONS, Cheltenham, carried off the premier prize for a collection of 10 Orchids of distinct varieties, having *Thunia Marshalliæ*, with 12 fine flower-spikes; *Miltonia vexillaria*, bearing 30 flowers; *Lælio-Cattleya Canhamiana*, with 10 flowers; a nice specimen of *Anguloa Clowesii*, with four blooms; *Epidendrum prismatocarpum*, &c. 2nd, W. P. BURKINSHAW, Esq., The West Hill, Hessele (gr. Mr. J. T. Barker). This gentleman had *Miltonia vexillaria* Hessele variety, *Odontoglossum crispum*, *Brassia-Cattleya Maronii*, *Cattleya-Mossia Reineckiana*, &c. 3rd, Mr. W. VAUSE, Leamington.

The best six Orchids in bloom were staged by Messrs. JAMES CYPHER & SONS. They were *Miltonia vexillaria*, with 30 flowers; *Lælio-Cattleya Canhamiana*, with 10 blooms; and *Lælia tenebrosa*, carrying 10 flowers. Mr. BURKINSHAW was awarded the 2nd prize, with *Cypripedium Schillerianum* as his finest specimen.

For the best three Orchids in bloom Messrs. JAMES CYPHER & SONS were placed 1st with *Lælio-Cattleya Canhamiana* (16 flowers), *Miltonia vexillaria* (50 flowers), and *Thunia Marshalliæ* (10 flower-spikes). 2nd, Mr. BURKINSHAW.

In the remaining three classes for Orchids Mr. BURKINSHAW won all the 1st prizes.

CUT FLOWERS.

Collections of cut flowers from the open garden occupied considerable tabling in one of the largest tents. One class was for a group measuring 15 feet by 6 feet. Four exhibitors entered, all nurserymen, and their flowers made a fine display in their bright patches of scarlet *Poppies*, *Pyrethrums*, *Heucheras*, *Lupins*, *Polemonium*, *Irises*, and the many other subjects now in season. The best display was adjudged to be that shown by Messrs. HARKNESS & SONS, Bedale, Yorkshire. 2nd, Messrs. WM. ARTINDALE, Nether Green, Sheffield.

For a smaller collection, restricted to 24 bunches, Messrs. HARKNESS won very easily, and they were followed by Messrs. G. GIBSON & Co., Leeming Bar, Bedale.

The best 12 bunches of hardy flowers were put up by Mrs. PROUD, East Layton Hall, Darlington (gr. Mr. G. Finlay). 2nd, Marquis of NORTHAMPTON (gr. Mr. Searle).

FRUITS AND VEGETABLES.

The most important class in this section was one for a table arranged with flowers and fruits. The schedule allowed 14 dishes, including Grapes, Peaches, Nectarines, Figs, Plums, Strawberries, Cherries, and one each of Melon and Pineapple. The Grapes were to include two bunches each of black and white varieties. Beauty of flowers and foliage and the general effect were to be considered by the judges when making their awards. Three exhibitors competed, viz. Duke of PORTLAND, Welbeck Abbey (gr. Mr. J. Gibson); Marquis of NORTHAMPTON, Castle Ashby, Northampton (gr. Mr. A. R. Searle); and Earl of HARRINGTON, Elvaston Castle (gr. Mr. Goodacre), the prizes being awarded in the order of the names. It was possible to obtain 136 points, and of this number the 1st prize-winner obtained 113. The fruits were remarkably fine produce. *Bigarreau de Schrecken* Cherries, *Bellegarde*

Peaches, Lord Napier Nectarines, large Brown Turkey Figs, Jefferson Plums, and a magnificent Melon of the Hero of Lockinge variety being the more notable. The floral arrangement was rather heavy, although a free use of greenery served to throw the fruits into greater relief. The 2nd prize group was a great success from a decorative point of view. *Odontoglossums*, lightly intermixed with *Selaginella* and *Lælio-Cattleyas* in small vases, were very pretty. Early Rivers Cherries, Brown Turkey Figs, Stanwick Elruge Nectarine, *Grosse Mignonne* and other Peaches, and an excellent Melon are a selection of the best fruits. The Earl of HARRINGTON (gr. Mr. J. H. Goodacre) was a close 3rd, his exhibit being only half a point inferior to the 2nd prize group.

A collection of fruits to include ten kinds.—The better of two exhibits was from the gardens of Baron DE FOREST, Londesborough Park (gr. Mr. J. C. McPherson). A very choice Melon, Cardinal Nectarines, Barnack Beauty Apples, and a Queen Pine were the best dishes. 2nd, the Earl of HARRINGTON (gr. Mr. Goodacre). A large seedling, yellow-skinned Melon was prominent; also good Black Hamburg Grapes, Rivers' Early Nectarines, and Hale's Early Peaches.

In the class for a collection of six kinds, Mr. J. BRENNAND, Baldersley Park, Thirsk (gr. Mr. J. E. Hathaway), led, having some well-finished bunches of Buckland Sweetwater Grapes, good Royal George Peaches, &c. 2nd, Baron DE FOREST.

Mr. BRENNAND was also 1st in the class for a collection of four kinds of fruits.

GRAPES.—The best black Grapes were shown by Lady HAWKE, Wighill Park, Tadcaster (gr. Mr. H. Bray), the variety being Black Hamburg. 2nd, Lady BEAUMONT, Carlton Towers, York (gr. Mr. Wm. Nicholls), with the same variety. The best white Grapes were large-berried, but rather green bunches of Buckland Sweetwater, shown by Lord HOTHAM, Dalton Hall, Beverley (gr. Mr. W. Jackson). 2nd, J. BRENNAND, Esq. (gr. Mr. J. E. Hathaway), with Buckland Sweetwater.

MELONS.—The best scarlet-fleshed variety was shown by the Earl of HARRINGTON (gr. Mr. Goodacre). 2nd, Duke of PORTLAND (gr. Mr. J. Gibson). The best fruit of green flesh was staged by W. D. CLIFF, Esq., Meanwood Towers, Leeds (gr. Mr. Wm. Hague); and the best of the white-fleshed kinds by W. C. GRAY, Esq., Tunstall Manor, West Hartlepool (gr. Mr. T. Pattison).

VEGETABLES were plentifully exhibited. In a class for a collection, the prizes being given by Messrs. Webb & Son, Wordsley, Stourbridge, the Marquis of NORTHAMPTON (gr. Mr. A. R. Searle) was an easy 1st prize-winner, and he also won in Messrs. Backhouse's class, having a splendid exhibit. In Messrs. Sutton's class this exhibitor was beaten by the Duke of PORTLAND (gr. Mr. Gibson), but both had excellent produce. Mr. Gibson's Cauliflowers and Peas were very fine. Mr. Searle showed some of the best Tomatos in the exhibition; also good Cucumbers and Carrots.

NON-COMPETITIVE EXHIBITS.

Messrs. SUTTON & Sons, Reading, had a very attractive group of Melons, Tomatos, herbaceous *Calceolarias*, *Clarkia pulchella*, *Nigella Miss Jekyll*, &c. (Gold Medal.) Mr. CHAS. W. BREADMORE, Winchester, staged Sweet Peas and Carnations. Mr. C. F. WATERS, Balcombe, Sussex, showed Carnations. Messrs. LANTON BROS., Bedford, showed Bedfordshire Champion and Royal Sovereign Strawberries, also Peaches and Nectarines. Messrs. BEES, LTD., Mill Street, Liverpool, showed *Primula Bulleyana* in numbers. Messrs. WEBB'S, Stourbridge, exhibited Melons, Tomatos, *Gloxinias*, *Coleus*, Sweet Peas, &c. (Gold Medal.) Messrs. W. & J. BROWN, Stamford and Peterborough, showed Roses and greenhouse plants. Messrs. R. H. BATH, LTD., Wisbech, had a fine display of herbaceous plants and Carnations. Messrs. WM. CUTBUSH & Sons, Highgate, London, showed Carnations, *Eremuri*, *Coleus Cordelia*, *Ericas*, Rambler Roses, &c. (Gold Medal.) Messrs. CLIBRANS, Altrincham, had a big group of their new *Calceolaria*, which received a First-class Certificate. Messrs. JAS. BACKHOUSE & SON, York, staged greenhouse flowering plants, also floral devices, and in the open park ornamental trees, shrubs and hardy flowering plants. (Gold Medal.) Messrs. KELWAY & SON, Langport,

Somerset, showed Pæonies, Pyrethrums, and a yellow-flowered Lupin. Messrs. MOORE, LTD., Rawdon, Leeds, were awarded a Silver-Gilt Flora Medal for a group of Orchids, including *Phalenopsis Rimestadtiana*, *Odontoglossum Rolfei*, *Brasso-Cattleya Thorntonii*, and *Angraecum Sanderianum*. Messrs. JOHN FORBES, LTD., Hawick, showed hardy flowers, including *Pentstemons*, *Phloxes*, *Pansies*, and *Antirrhinums*. Messrs. DOBBIE & Co., Rothesay, displayed *Aquilegias*; also *Violas*, *Pansies*, and show *Pelargoniums*. Mr. H. N. ELLISON, West Bromwich, showed Ferns in variety. Messrs. ROBERT SYDENHAM, LTD., Tenby Street, Birmingham, showed Sweet Peas and a table decorated with *Carnations*. Mr. THOS W. DARLINGTON, Warton, Carnforth, had Sweet Peas. Messrs. LADHAMS, Shirley, Southampton, exhibited *Pinks*, *Scabious*, *Heucheras*, *Gaillardias*, *Lupins*, &c. Messrs. JARMAN & Co., Chard, showed Zonal *Pelargoniums* and a new Sweet Pea. Messrs. DICKSONS, Chester, staged herbaceous plants and *Carnations*. Messrs. WM. ARTINDALE & SON, Nether Green, Sheffield, showed *Violas*, *Carnations*, and *Poppies*. Sweet Peas were shown by Miss HEMUA, Holdfast Hall, Upton-on-Severn. Messrs. FRANK LILLEY & Co., Guernsey, staged bulbous flowers. Messrs. THOS. RIVERS & SON, Sawbridgeworth, Herts., put up a group of fruit trees in pots, showing excellent *Peaches*, *Nectarines*, *Cherries*, *Plums*, and *Oranges*. (Gold Medal).

GHEENT HORTICULTURAL.

JUNE 7.—At the monthly meeting of the Chambre Syndicale des Horticulteurs Belges et la Société Royale d'Agriculture et de Botanique de Gand, held on the above date, the following awards were made to new plants:—

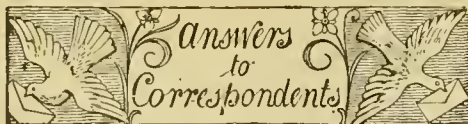
CERTIFICATES OF MERIT to *Lælio-Cattleya Endora* (*Lælia purpurata* × *Cattleya Mendelii*) and *Cattleya Withei*, both exhibited by M. VERDONCK; *Odontoglossum crispum Prince d'Orange*, *O. crispum* var. *Bemel*, *Miltonia vexillaria striata*, *Odontoglossum Lambaeanum splendidissimum*, *O. crispum maximum*, *Miltonia vexillaria gigantea*, all from M. F. LAMBEAU; *Brassovola flagrans* × *C. Mendelii*, *Odontoglossum crispum* "Alma," exhibited by M. le Dr. BALLION; *Ansellia Congoensis*, shown by M. F. DE BIEVRE; *Miltonia Bleuana nobilior*, exhibited by M. le Comte J. DE HEMPTINNE; *Cattleya Schröderæ* var. *Mont Blanc* and *Vanda cœrulea* var. *Rex*, exhibited by M. E. PRAET; *Cattleya Mendelii* (blue lip), exhibited by Messrs. STUART LOW & Co., London; *Rhododendrons* Mdle. *Marguerite Nanot*, Mdle. *Albert Moser*, M. *Auguste Pellerin*, *Comtesse E. de Dreux-Brezé*, Mme. *Fritz Benary*, and *Marquise de Chasseloup-Laubat*, all shown by M. PYNART-VAN GEERT; *Ficus australis* fol. var., exhibited by M. L. DE SMET-DUVIVIER; *Anthurium* Mme. *Dallière* var. *eximium*, exhibited by Mme. DALLIÈRE; *Anthurium Scherzerianum* *superbissimum* and *A. Rothschildianum Goliath*, both exhibited by LOUIS DE SMET; a strain of *Gloxinia*, shown by M. le Comte J. DE HEMPTINNE; *Strelitzia Regine*, from M. V. HEURSEL; *Codiaeum* M. *Banse*, *Anthurium Hookeri*, *Codiaeum* Mme. *Lucien Linden*, *Livistona altissima*, and *Anoëtochilus Petola*, exhibited by the SOCIÉTÉ ANONYME HORTICOLE GANTOISE; *Fejtoa Sellowiana*, exhibited by M. V. HEURSEL; *Bougainvillea glabra Sanderiana*, exhibited by Mme. DALLIÈRE; *Anthurium Andreanum*, *Souvenir de M. Hardy*, exhibited by M. LOUIS DE SMET; *Phœnix Roebelini*, exhibited by MM. DURIEZ FRÈRES; *Polypodium albo-punctatum*, *Tectaria Coriaceræ*, both exhibited by M. DUQUESNOY, and to a collection of 40 cut blooms of *Iris*es exhibited by M. le Dr. BALLION.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

JUNE 14.—The monthly committee meeting of this society was held at the Horticultural Hall, Vincent Square, Westminster, on the above date, Mr. Chas. H. Curtis in the chair.

Seven new members were elected, making a total of 34 for the six months this year.

Sickness among the members has been somewhat lighter, £37 4s. having been paid since the last meeting, against £65 7s. for the previous month. Several amounts of interest were paid to members over 60 years of age.



* * * The Editors will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for reproduction as Supplementary Illustrations in this Journal.

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.

BEECH LEAVES: *Beech*. The *Beech* leaves arrived in a very unsatisfactory condition, with few living insects on them that could be identified. The trouble, however, is green fly, the cast skins of which cover the leaves. The sticky substance is honey dew from the green fly. There are also some honey fly larvæ present, but these are beneficial, and feed on the green fly. The remedy in this case is to spray with a paraffin emulsion. Green fly is unusually prevalent this year. You should have sent a fresh twig with the leaves and insects alive.

CHRYSANTHEMUMS: *W. Brown*. The variety *Nellie Pockett* should be pinched on June 20, *W. Duckham*, *Mrs. Barkley*, and *Mrs. E. Thirkell* on June 15, and *General Hutton* on June 20. *Lady Hanham* should be flowered on the second natural crown, and *Godfrey's King* on the first natural crown. In the case of *Baron Hirsch*, "take" the second crown bud. *Souvenir de W. Clibran* requires to be stopped early in April and then flowered on the second crown bud. You had better "take" the natural crown bud.

FIG: *W. G.* There is no disease present. The injury is in some way due to the treatment the trees have received.

FLOWERING STOCK: *E. W.* There is no disease present. Something in the soil, such as an irritant fertiliser, has destroyed the roots.

GARDEN ROCKERY: *W. C. D. O.* The best type of rockery for your area would be either a stone-supported bank or winding shallow trench. If you decide upon a stone-supported bank, let its width be twice as great at some points than others, in order to diversify the surface. Throw up soil into hillocks and connect each by graduated declivities, then support the soil in position by stone or other material. If you decide to have a winding trench, let this be V-shaped and twice as wide at some point or points as at others. This arrangement will give you sharp slopes and others less abrupt—stone being used to form ledges and to retain the soil in position. You would do well to start with plants of easy growth, and as you gain experience, add to the collection. To begin with try *Arabis*, *Aubrietia*, *Lithospermum prostratum*, *Primula farinosa*, *Arenarias*, *Alpine Wallflowers*, *Muscari*, bulbous *Iris*es of the *reticulata* group, *Phlox setacea* and *Stellaria* in variety, *P. divaricata* and *canadensis*, *Helianthemums*, particularly the double scarlet "coccinea," *Gypsophila repens* and *cerastioides*, *Sedums* and *Saxifragas* of the encrusted section. Try also *Waldsteinias*, *Omphalodes verna*, *Bellis sylvestris*, *Geum montanum*, *Dianthus* in several "cushiony" species, *Ethiopia Arendsii* and *eximea*, *Arnebia echioides*, *Potentilla fulgens* and *formosa*, *Plumbago Larpentæ*, *Nepeta Mussinii* and *Linarias alpina* and *rosea*. The 12 plants last named are effective from June onwards.

HAWTHORN: *J. T.* Most of the buds have failed to expand. Fork the ground over as far as spread of roots and apply manure. We cannot find evidence of any disease.

LILIAM: *Zebra*. The plants are affected with the Lily disease (*Botrytis cinerea*). It cannot be said that any remedy for this disease has been

found. The plants may be sprayed very early in the spring with a weak solution of potassium sulphide, or dusted with flowers of sulphur, but the results hitherto have not been very satisfactory. Attempts have been made to treat the bulbs with sulphur before planting them, in order to kill any fungus infecting them, but it is not known that such treatment has had the effect of converting diseased bulbs into bulbs capable of making satisfactory growth. Cultivators, therefore, are advised to burn infested plants, and after procuring fresh stock from an uncontaminated source, to plant in a fresh situation as far from the old site as circumstances will permit.

NAMES OF PLANTS.—Enquirer. 1, *Aristolochia Siphio*; 2, *Jasminum humile*; 3, *Iris neglecta* "Hannibal"; 4, *Iris*, flower too withered for identification. — *S. Leucothoë racemosa*. — *W. J. Pyrus Aria*. — *H. F. G.* 1, *Spiræa nudiflora*; 2, *Jasminum fruticosum*; 3, *Spiræa media*. — *F. H. H.* 1, *Oncidium sarcodes*; 2, *Oncidium pubes*; 3, *Oncidium flexuosum*, 4, *Oncidium excavatum*; 5, *Pteris tremula*; 6, *Selaginella involvens*. — *R. T. H.* 1, *Dendrobium clavatum*. Thanks for sending a good specimen with part of a pseudo-bulb. 2, *Dendrobium transparens*. — *Constant Reader*. 1, *Acerides odoratum*; 2, *Muscari comosum* variety *monstrosum*, a remarkable instance of fixed abnormal characters. — *A. E. S.* 1, *Coleogyne ochracea*; 2, *Lonicera involucrata* (*Ledebourii*). — *P. T. G.* A *Stanhopea*, but which species it is impossible to tell without seeing a flower. — *F. H.* 1, *Odontoglossum Coradinei*; 2, *Odontoglossum Wilckeanum*; 3, *Odontoglossum mulus*; 4, would probably be called a spotted *Odontoglossum crispum*, and it is very near to true *O. crispum*, although it is more likely to be an imported plant of *O. Fascinator* (*crispum* × *Adriane*) from the district in which both grow together. The others you send also have peculiar features.

PEACH LEAVES: *W. E. W.* These are attacked with the Peach leaf blister disease, caused by the fungus *Eoascus deformans*. See reply to *Wales*, in *Gardeners' Chronicle* for June 5, p. 372.

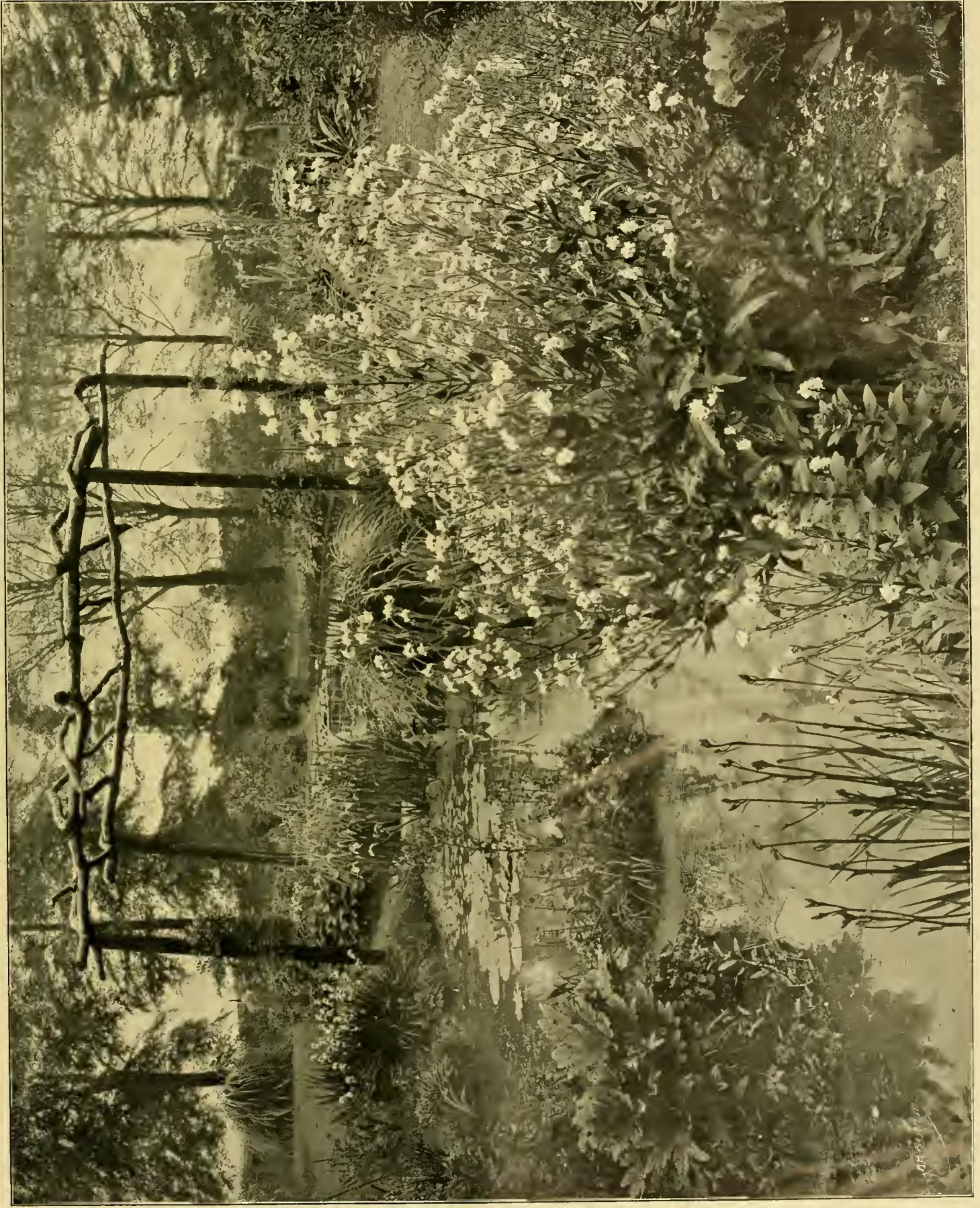
ROSES: *H. E. W.* The trouble has probably been caused by cold winds and ungenial weather. If the condition continues we shall be glad to examine fresh specimens.

TOMATOS: *Worried*. If you will send specimens of the caterpillars we will endeavour to help you. — *B. T. A.* The fungus *Ascochyta* is present. It is a destructive parasite. Destroy diseased plants and spray the lower part of the stem of the remaining plants with the Bordeaux mixture, soaking the soil with the same mixture.

TOMATOS DISEASED: *F. W. and Anxious*. The fruits are affected with *Macrosporium solani*. The fungus gains admittance through the style, and when once the berries are affected the damage is done. Burn all diseased fruits.

WATER GARDENS: *Aqua*. There are water gardens at the Botanical Gardens at Birmingham, Glasgow and Edinburgh, and at such private country seats as Rufford Abbey, Worksop, Carberry Towers, Musselburgh, and many others. The plants grown in these Midland and Northern water gardens do not differ materially from those cultivated in the south, but such tender plants as *Nymphaea odorata* and pygmæa in their many forms do not succeed. *Mariae's* hybrid Water Lilies (excluding the odorata group) are successful, whilst many of the water-loving *Primulas*, *Polygonums*, *Spiræas* and *Astilbes*, *Cimicifugus*, *Dodeca-theons* and *Iris*es are often seen in stronger growth than in southern gardens. *Iris Kämpferi* excepted. The use of many ponds for winter sports in the North, Midlands and Scotland has not helped water gardening to attain the popularity it enjoys in the south. The climate is not by any means the principal deterrent.

Communications Received.—Laxton Bros.—D. S. Melville—C. T. D.—Sir W. T. T. D.—Roy. Meteorological Soc.—E. B. J. O'B.—W. A. C.—J. G. W.—E. H. K.—E. M.—E. H. J.—W. D.—S. A. G. M.—W. H. W.—A. O.—J. J. W.—H. M. V.—A. N.—H. S. T.—B. R. F.—S. & Sons—R. D.—W. G. S.—J. S.—Anxious—K. & Co.—H. A. S.—R. H. B.



THE WATER GARDEN AT ASHBOURNE, COUNTY CORK.



THE
Gardeners' Chronicle

No. 1,174.—SATURDAY, June 26, 1909.

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DARWIN.

WHILE our number has been passing through the press the University of Cambridge has celebrated the centenary of Charles Darwin's birth and the jubilee of the publication of the *Origin of Species!* When a century has rolled by with three generations of men since an illustrious man was born and his memory is still venerated by his fellow-countrymen, he has received such measure of immortality as it is in the power of mankind to bestow. And the jubilee of a book stamps it with the mark of permanent vitality which makes it a classic. Although Darwin's university and college were the natural seat of the celebration, it was no local one. With a splendid enthusiasm every country in the civilised world has sent delegates to carry its sympathy and respect. For Darwin's place in the affection of mankind has been earned by something more than scientific achievement. The supreme nobility of his character, as revealed to us in the *Life* which we owe to the pious labour of his son, is an ethical message to the human race. Where shall we find so earnest and lifelong assiduity in work, so patient and uncomplaining submission to ill-health, such modest diffidence, so serene an indifference to praise or blame, so lofty a communion with Nature in its more intimate secrets?

The hearts of the readers of this journal will go out to Cambridge. Those of an older generation will remember that Darwin was a not infrequent contributor to its pages. But all may remember with some natural pride that, more than elsewhere, he found in them an almost inexhaustible store of observation which he could use to test, to support and to illustrate his conclusions.

Much will be said, much has already been said, as to the illuminating insight with which Darwin broke new ground in every part of the biological field as well as in geology. This is not the place to discuss so vast a theme. But we may dwell with gratitude on what he accomplished in the study of plant life and inci-

dentally for horticultural science. The note that runs through all this, as through the rest, is its absolute originality, freedom from prepossession and from the trammels of traditional theory. The scientific, like every other mind, is apt to get into a groove and to be surprised and hurt when required to leave it. This was the continual difficulty which Darwin had to face in obtaining a hearing. In the conclusion of the *Origin* he says rather sadly:—"I by no means expect to convert experienced naturalists' . . . but I look with confidence to the future to young and rising naturalists." *Securus judicat orbis terrarum*, and to-day the world replies that his confidence was not misplaced.

Darwin, and in this respect he may be compared with Faraday, always looked Nature squarely in the face and with gentle persuasion extorted her secrets. He would not have succeeded had he not been gifted with great intellectual power; and this he inherited from a family of more than average ability. But it would have availed little without qualities which were personal to himself. With a perfectly open mind, he possessed a fertile imagination which he learnt to keep in severe discipline and an incomparable industry "in the observation and collection of facts." He tells us in his autobiography:—"I have steadily endeavoured to keep my mind free so as to give up any hypothesis however much beloved (and I cannot resist forming one on every subject), as soon as facts are shown to be opposed to it."

When a problem proved intractable he was fond of attacking it by what he would call "a fool's experiment." This has been found a hard saying. But great discoveries have sometimes been made in a haphazard way when the observant eye was present to note them. And the response to an extreme change of conditions may sometimes reveal an unexpected clue. Perhaps behind there was a half-humorous hope of catching Nature napping.

How to educate is a question that still baffles us. When Darwin was sent to Cambridge with the intention of taking orders he tells us that his "probable destination" had seemed to be that of "an idle sporting man." In the flush of youth and of health that had not then deserted him, he hunted and shot and, like thousands before and since, spent a happy time, to which, in his later years, he still looked back with "much pleasure." It was human that he should do so. But as he tells us himself, there must have been something in him "a little superior to the common run of youths." And though academic routine yielded him nothing but a creditable pass degree, out of this "something" Cambridge built the foundations of the Darwin that we know. The interest of the process lies in the fact that it was due to personal influence and contact, and that this is only possible in the atmosphere and easy intercourse of a university. Darwin obtained the friendship, never relaxed in faithfulness, of Henslow, "my master in natural history," and through him made the acquaintance of Adam Sedgwick and of the omniscient Whewell. Mere physical enjoyment did not stand in the way of his receiving the most inspiring impulses perhaps available anywhere at the time. Geology, through Sedgwick, had got a firm grip of him. He was bent on visiting Teneriffe when Henslow secured for him the post of volunteer naturalist on board the "Beagle."

Darwin sailed with the ordinary traditional belief in the immutability of species. That they must "gradually have become modified" seems to have first suggested itself to him when he observed in South America that the fossil animals were obviously allied to, though different from, the existing animals. When he visited the Galapagos Archipelago and found that the animals and plants in the different islands were closely related but distinct, he says, "I fancied myself brought near to the very ace of creation." And the idea flashed across his mind that the explanation was to be found in descent with modification. This, of course, was evolution. A distinguished German, Professor Witt, has recently called it "the flaming truth . . . given to humanity by one of the greatest minds that ever stood up amongst men."

There is often an inclination to assert that it was all that Darwin actually achieved. This was far from his own opinion: it would eliminate Darwin from Darwinism. While at Cambridge he had read Paley's *Natural Theology*, which gives copious examples of adaptive structures. It is interesting to note that Paley had been a member of his own college. Darwin tells us that until adaptations "could be explained it seemed to me almost useless to endeavour to prove by indirect evidence that species have been modified." The explanation came to him in 1838, as it did subsequently to Wallace, on reading Malthus, and he saw that "natural selection was the inevitable result of the rapid increase of all organic beings."

The next 20 years were spent with indefatigable labour in testing the theory by applying it to all the facts of organic nature. The results were to have been given to the world in three large works, of which only one, *Animals and Plants under Domestication*, was ever published. Their place was taken in 1859 by the *Origin*, an abstract which, "as my health is far from strong," he had been "urged to publish." This was fortunate for science. For, as Darwin tells us, it "is one long argument from the beginning to the end, and it has convinced not a few able men." Huxley's reflection was:—"How extremely stupid not to have thought of that." It is the merit of a great idea that as soon as it is announced it seems obvious. The extended works might possibly not have gripped men's minds in the same way.

The essential point in Darwin's theory is that the modification of species is produced by the accumulation of inherited small favourable variations. The organism is thus kept in adjustment to the surrounding conditions and changes with them. Some have thought, like De Vries, that the process is too slow and that species must be produced by sudden and abrupt variations. But, as Darwin pointed out, it is improbable that these would be always favourable, and though they undoubtedly occur in Nature, they are rarely able to maintain themselves. Under cultivation we are familiar with them, but they are only perpetuated by the art of the cultivator. To call small inherited variations "mutations" is a mere question of words.

Darwin was not a technical botanist, but he had been a pupil of Henslow's and his love of plants was profound. "It has always pleased me," he says, "to exalt plants in the scale of organised beings." There is a passage of great beauty in his *Journal of Researches*, in which he describes the

impression made on him by a tropical forest. But his thoughts were fixed upon the plant world for another reason. Writing to Romanes about another investigator, he said he "makes, I think, a gigantic oversight in never considering plants; these would simplify the problem for him."

We need not be surprised therefore that in the *Origin* he dwells with constant emphasis on the facts presented by the vegetable kingdom. Incidentally he gave for the first time a rational theory of plant distribution, "that grand subject, that almost keystone of the laws of creation," as he called it; he vastly increased our knowledge of the means of seed dispersion; he showed that classification is founded on descent, and that the sterility of hybrids is independent of affinity. Towards the end of his life he became more and more occupied with botanical problems. This was partly a recreation from more laborious work, partly to show how cases otherwise difficult of explanation could be brought under the theory.

At a very early period Darwin was led to attend to the cross-fertilisation of flowers by the aid of insects, as it seemed probable to him that crossing played an important part in keeping specific forms constant. Through Robert Brown he became acquainted with the forgotten work of Sprengel, who was the first to show the part played by insects in pollination. Darwin rescued for him a belated fame. For his own part he showed that Orchids for the most part exhibit the most elaborate adaptations to cross-fertilisation. Ultimately he was led to the result that "it is a general law of Nature that flowers are adapted to be crossed, at least occasionally, by pollen from a distinct plant." And he further made the discovery, the importance of which cannot be exaggerated, that seedlings of self-fertilised parentage are inferior in vigour to those of cross-fertilised. On the other hand he was able to show that if it is desired to fix a fleeting variety this can only be done by repeated self-fertilisation. The impulse Darwin gave to the study of the subject has been enormous. There was little before but Sprengel, and he had been neglected. Knuth's recently published handbook enumerates 3,792 papers.

The investigation of the meaning of thrum-eyed and pin-eyed Primulas was a masterpiece of investigation. Darwin regarded it with not unnatural pride. "I do not think anything in my scientific life has given me so much satisfaction." But the theoretical significance of the result went much further. For the two forms of the same species behave exactly as if they were species of different genera. It is a conclusive proof that sterility or fertility have no relation to affinity. This was a stumbling block both to Huxley and Romanes, who could not rid their minds of the belief that sterility was a specific criterion. Orchid growers have now shown us that things as diverse as three genera can be combined in one hybrid.

The species problem, as it presented itself to Darwin at the start, was to account for differences of external form. But as soon as he grasped the explanation that these were adaptive, i.e., useful to the organism, it became necessary to show in what way. His standpoint shifted insensibly from the morphological to the physiological. The transition is seen in his researches on climbing plants. The advantage to a climber of being able to reach the light with the least expenditure of

material is obvious. Darwin traces in a masterly way the adaptation of the most diverse organs to the purpose. But this brings him face to face with response to stimulus and spontaneous movement, things which we had been accustomed to regard as peculiar to animal life. He opened a path which has been followed with no small success by his son, Dr. Francis Darwin, and already it promises to carry us very far indeed.

Pangensis was one of Darwin's more remarkable speculations. It was a bold induction from facts such as could only be arrived at by a mind of genius, but the microscopical knowledge of the time was insufficient to give it corroboration. Yet it contained the fundamental conception that hereditary characters are carried over by particles which can multiply by division. Darwin's hypothesis that these could be transferred to the reproductive cells from the general body of the organism is now abandoned. But that he conceived a material mechanism for heredity will remain everlastingly to his credit.

It must always remain a matter of regret that Mendel's memorable discoveries remained dormant during Darwin's lifetime, and never came to his knowledge. The separation of unit characters in hybrids implies their transmission by material particles. That this is of much importance in Nature seems improbable, but of its occurrence in cultivated plants the evidence is overwhelming. Darwin was obliged to assume variation and heredity as facts, leaving their explanation to the future. Terrestrial conditions are now stable whatever they may have been in the past, and the process of variation in Nature mostly eludes observation. But cultural conditions unlock the bonds, and it is in our gardens that the secrets of variation and heredity will be revealed.

Darwin was attracted to insectivorous plants partly by adaptive structures of a singularly striking kind, but most of all by the underlying physiological problem. In showing that plants possessed a digestive ferment similar to that of animals, he once more drew closer the vital phenomena of the two kingdoms, and opened a new field of investigation which has been fertile of results of the deepest significance.

Darwin's grave lies by that of Newton, Cambridge's other greatest son. As Wallace has justly said, "he was the Newton of natural history." The one introduced a rational order into the inorganic, the other into the organic world. But Darwin did more: he created Biology, the intelligent study of living things. We no longer regard a plant in Nature as a whimsical creation, but see in it the perfect adjustment of form and function, brought about by natural agencies.

Looking back on this great chapter of scientific history, it is interesting to note that it all belongs to Cambridge. Paley and Malthus sowed the seed: Darwin grasped the flower. For the germ of the whole matter is in Paley's conclusion, "no organ will be formed for the purpose of causing pain or doing an injury to its possessor." *W. T. Thiselton-Dyer.*

DARWIN AND THE "INDEX KEWENSIS."

THE last work initiated by Darwin was that which is known under the above title. It was begun when the great exponent of evolution had entered upon the last few months of life. Though he did not live to

see even the early stages of a long and arduous task, his wishes were known to his family and were most scrupulously carried out.

It was early in December, 1881, that Sir William Thiselton-Dyer first broached the matter to me, saying that if I could undertake the work of compiling a new edition of Steudel's *Nomenclator*, Mr. Darwin would be willing to devote a certain sum annually for its fulfilment. The magnitude and character of the prospect were alluring, so, after a few days' consideration, I explained my plans to Sir Joseph Hooker, and before the new year dawned the methods of procedure were broadly outlined and were approved by Darwin. Although a new edition of Steudel was all that was proposed, that is, with the new genera and species of 40 years from 1840 added, yet, from the very first I dwelt upon the absolute necessity of supplying references to the place of first publication. This plan, though favourably received by Sir Joseph Hooker as "quadrupling its value," he thought likely to hinder the progress of the work, but happily this was not allowed to stop the way, and after several weeks of preparation I began the actual work in February, 1882, with two young clerks as assistants.

For a work of this character there are two methods of procedure, (a) by intercalation of new matter, or (b) by writing separate slips and sorting into sequence. In this particular case I had no difficulty in selecting the better one to adopt, for at Kew there happened to be in the Library of the Herbarium a copy of Steudel's *Nomenclator* laid down in folio, with copious additions in manuscript. It was therefore possible to set out from this admirable base on the modified plan occasioned by our making the *Genera Plantarum* of Bentham and Hooker the groundwork as regards genera. Accordingly, specially-ruled half-sheets of foolscap paper were headed with the names of the genera retained, followed by those genera included in them, in every case with the references. The synonymic genera simply had their references, and a cross-reference to the retained genus.

When these sheets had been copied out they were alphabetically sorted, and placed flat in boxes which opened in front. The next step was to enter up all the species printed or written in the Kew Steudel. When this was begun the last part of the *Genera Plantarum* had not been published, so for monocotyledonous genera Steudel was the temporary guide. In due course, in 1883, when the last part of Bentham and Hooker came out, our sheets were collated and regulated with it.

After this came the insertion of references to the species. Whilst my assistants were busy on the work just described, I was hard at work searching the literature and drawing up lists of new species to be entered on our sheets. In this manner many false references were rectified. Beginning with Linnaeus, Richter's *Codex Botanicus Linnæanus* was of great use, though, as it contains no pagination suitable for our use, Linnaeus's actual volumes had to be used to complete the entries of the original place of publication.

By this time the manuscript had grown to its full proportions. Each genus was enclosed in a strong paper wrapper (or portfolio if thick), and laid flat in the boxes previously described, of which 168 were used and housed in a special stand in the Herbarium at Kew.

For revising these lists, certain authorities were used, relying upon the great experience

of Professor Daniel Oliver. After the first few years, a consultative committee used to meet every few weeks or months, consisting of Sir Joseph Hooker, Prof. D. Oliver, Mr. John Ball, the alpinist, and latterly Mr. W. B.

geographical distribution, so that by the autumn of 1891, after preliminaries, the work began to be printed by the delegates of the Clarendon Press, at Oxford. In round numbers 65,000 sheets were sent to press.

with the help of one to seven assistants, as the work needed it. The cost of compilation was wholly borne by the family of Mr. Darwin, and it was ever a matter of regret on my part that his life ended before any progress had been made on the last work originated by him, with the object of helping others in a field in which he had himself sometimes vainly sought for information.

I have endeavoured in the limits of a brief article to give a rapid and discursive account of an undertaking which at the time though hard and exhausting and apparently unending, can now be looked back upon, with all its imperfections, as a piece of work in the service of the botanic world on which I gladly spent the best years of my life. *B. Daydon Jackson.*

ORCHID NOTES AND GLEANINGS.

EULOPHIELLA ELISABETHÆ.

THE illustration (see fig. 178) of this beautiful Orchid is from a photograph sent by Mr. John Easter, gardener to Lady St. Oswald, Nostell Priory, Wakefield. Mr. Easter writes: "The plant has been grown from a single pseudo-bulb which was purchased some years ago. It has been grown in company with *Phalænopsis*, and has flowered regularly every season." It is pleasing to hear it thus well spoken of as a cultivated plant, for there are few who could give it such a good character. Since it was first imported in quantity from Madagascar in 1893 by Messrs. Sander and Sons, it has generally proved to be unmanageable for any great length of time, although occasionally a thriving plant of it is recorded. Nevertheless, it is clear that *Eulophiella Elisabethæ* may be grown satisfactorily, provided it receives proper conditions and treatment. It always does best in a warm, moist house having a uniform temperature throughout the year. In Mr. J. Gurney Fowler's collection a plant of this species has occupied the same sheltered corner for many years, and it continues to increase in vigour. The collector's original account of its habitat in Madagascar showed that it grows up the stems of trees, most frequently on tree Ferns. A healthy specimen in cultivation is an ornamental plant, even when not in flower, and when in bloom it is one of the most beautiful Orchids of its section, being totally distinct from any other. The large plicate green leaves are very graceful. The stout flower-scapes, which are tinged with purple, are sometimes 2 feet in length. The flowers last a considerable time in perfection. The segments are thick in texture and pure white, the reverse side of the sepals being tinged with purple, while the callus on the hinged labellum is yellow. A plant was first shown by Sir Trevor Lawrence, Bart., K.C.V.O., at the meeting of the Royal Horticultural Society on April 10, 1894, when a First-class Certificate was awarded it.

CATTLEYA MOSSIÆ "THE KING-EMPEROR."

A FLOWER of great size, fine shape, and very bright colour is sent us by Francis Wellesley, Esq., Westfield, Woking (gr. Mr. Hopkins), under the above name. It is a noble flower of the typical *C. Mossiæ* class. The petals measure 8 inches from tip to tip, and they are 2½ inches wide, both sepals and petals being of a warm rosy-mauve colour. The lip is large, and in a great degree it resembles that of *Cattleya Warszewiczii*, the front lobe being elongated and finely crimped. The base has yellow lines on a red ground; the front is mottled with violet-crimson and margined with lavender colour.



FIG. 178.—EULOPHIELLA ELISABETHÆ: FLOWERS WHITE, TINGED WITH PURPLE.

Hemsley, when difficulties were discussed and progress noted.

Comparatively early in the compilation it became evident that the departure from the plan of Stendel's *Nomenclator* was so great that the new work was simply an *Index*, for in addition to its register of references there was no attempt to transfer species from included genera, but only to enumerate those names which botanical writers had already ranged under the retained genera.

The revision, naturally, could not be critical; the amount of work to be got through did not permit of pausing for long over any one species. Time was running on, and the estimated period of compilation had extended from six years to ultimately nine and a half

From that date the routine was proof-reading in the forenoon, with collation of Sir Joseph Hooker's corrections from his proof sheet, and in the afternoon revising manuscript in advance. Two sheets weekly were passed through all their stages until, in 1893, the first fasciculus was issued, extending from *Aa* to part of *Dendrobium*. This partition, which called forth some criticism, was solely the work of the printers without consultation; besides dividing a genus, it made the next fasciculus unduly small. The proper division would have been that page 632 should have closed the part, as it came exactly midway in the volume and ended with *Cranichis*, page 633 beginning with *Craniorhiza* and a new signature.



FIG. 179.—HAVERING PARK, THE RESIDENCE OF MRS. CHARLOTTE MCINTOSH. (See p. 408.)

years. Mr. Ball gave certain notes he had made out, Mr. C. B. Clarke read through all the Cyperaceæ, Sir Joseph Hooker read through the manuscript and revised it for

The work was completed in 1895, and with the issue of the fourth fasciculus ended the period of 13 years and five months, the greater part of my time being devoted to it,

HAVERING PARK.

THE delightful residence of Mrs. Charlotte McIntosh is situated on a high elevation in one of the prettiest parts of Essex, at a distance of about three miles from Romford station. It commands extensive views to the south across the Thames on to Shooters Hill, and on the north to Epping Forest. The picturesque country church of Havering, which has a peal of six bells, is situated within a few minutes of the mansion. Havering Park is famous for its fine herd of Jersey cattle, of which Mrs. McIntosh is a successful exhibitor. The park consists of about 400 acres, is splendidly timbered and beautifully undulated. The principal trees include Oak, Elm, Chestnut, Beech, Scotch Firs, and Cedars. Extensive plantations have been made during the past 50 years, both for effect, shelter and game preserve.

The gardens, and particularly the pleasure grounds, are large, but much work is still in progress for extending and improving them. A magnificent avenue of *Sequoia gigantea*, about half a mile in length, which was planted about 50 years since, is a very striking and beautiful feature, many of the trees being extremely handsome specimens (see fig. 181).

Rhododendrons succeed remarkably well. Large

luna vulgaris, *Alportii*, *Ericas mediterranea*, *hybrida*, *vagans* and its variety *alba*, *vulgaris pilosa*, *mediterranea nana*, *vulgaris Serleii*, *cinerea rosea*, *cinerea alba*, and *carnea*. I may here mention that, although the surrounding land consists of a stiff clay, this particular part consists chiefly of sand and gravel.

Rock plants in large numbers find homes here in suitable positions. In the flower garden spring bedding is made a feature, and the plants were little the worse for the severe frosts experienced. The plants employed consist chiefly of Wallflowers of sorts, *Polyanthus*, *Aubrietias*, *Arabis*, *Pansies*, *Myosotis*, and large quantities of bulbs.

Many of the fruit houses have been replanted during the past three or four years. There are four good-sized vineries, the early house being planted with Black Hamburg, which was started early in the new year. The second and third houses were devoted entirely to Muscat of Alexandria. The latest house contains Black Alicante and Gros Colmar. All the borders had been renovated by the gardener, Mr. J. A. Cox, who has had charge of these gardens for the past three years. He has made great improvements generally, and especially in the fruit garden.

A large centre house in the same range con-

drons; especially fine were Countess of Haddington, Lady Fitzwilliam, R. Fosterianum and Princess Royal.

A Peach case, 160 feet in length, contained trees in a most promising condition. Other smaller houses were devoted to Cucumbers, Melons, Tomatos, French Beans and similar crops. A number of pits and frames were well filled with a good assortment of plants.

A long north house is found to be exceedingly useful for retarded plants, during the summer months especially. A large conservatory adjoins the house, in the centre of which was a very fine plant of *Kentia Belmoreana*, fully 30 feet high, and many other fine Palms.

The kitchen garden is not an extensive one, but a large portion of ground for vegetable culture is situated on another part of the estate. A particularly good lot of cordon Pears were to be seen here. Mrs. McIntosh takes a keen interest in all appertaining to the garden, and her wishes are well carried out by her gardener. B.

GROWERS AND THE BUDGET.

THE proposals for the taxation of land, as contemplated by the Budget now before Parliament, cannot fail to interest the horticulturist, and as the matter is somewhat complicated, a short explanation of the clauses which touch specially on this point may possibly be of use, although any discussion of either a political or a technical nature would be out of place in these columns.

From the horticultural point of view the three most important branches of the Finance Bill now before Parliament are those which seek to impose further taxation on land by means of (a) a tax on unearned increment; (b) a tax on undeveloped land, including (c) a tax on gardens exceeding one acre in extent, all of which are quite distinct in their effect and must be separately considered.

INCREMENT TAX.

It is proposed in the first place to levy a duty of 20 per cent. on all capital profit accruing to any person having an interest in land (i.e., either freehold or on lease for seven years or more), by reason of any increase in the value of such land. The occasions on which the tax is to be levied are as follows: (a) when such person sells his interest or grants a new lease for a term of seven years or more; (b) when such person dies (this being in addition to the increased death duties); and (c) in the case of a limited company (which of course cannot die) this tax is to be levied every 15 years, the first payment to be made in 1914.

In assessing the value of the land for this tax the value of all "permanent works" is to be deducted if used for any trade, business or industry except horticulture and agriculture. The latter industries do not escape, although the cost of removing their buildings, trees and bushes may be considered. (See clause 14, section 4, which must not be confused with clause 2.) Though it is true that any value due solely to the special capacity of the soil for agricultural purposes is not to be taken into account; yet the fact remains that "permanent works" for nurseries are hit although those for factories or shops are not.

It is submitted that nurserymen might well be exempted from this tax. They already have to pay very high rents as tenants, and it is as much necessary for a nurseryman to have at least one branch of his business within the precincts of a town as it is for the vendor of any other retail article to have a shop in a populous district. Consequently the rent which a horticulturist has to pay is not only much higher than that which falls upon the agriculturist, but, owing to the extent of premises required, the rent is also much larger in proportion to the amount of the turnover than that which is paid by most other tradesmen.

In the case of a nurseryman who has bought the freehold of his land the tax might bear even more hardly. For the reasons stated above, he has to pay a heavy price (often as great as if he proposed to cover the area with bricks and mortar) in order to obtain a suitable site upon which to carry on his business, and the interest on the capital thus sunk constitutes a heavy



Photograph by Mrs. Deives Broughton.

FIG. 180.—VIEW IN THE BULB GARDEN AT HAVERING PARK.

beds and borders containing many very fine specimens and varieties have been established on the south side of the house. They contain beside Rhododendrons, *Kalmias*, *Azaleas*, and a magnificent show of *Pieris floribunda*. The principal part of the planting operations was carried out about 40 years ago. As before stated, large additions are still being made, and Mrs. McIntosh is wisely grouping together large beds of many of the most beautiful shrubs, both for summer and winter effects. They include Brooms, *Rhododendron sinense*, *Sea Buckthorn* (*Hippophae rhamnoides*), large quantities of the *Wichuraiana* *Roses*, *Spiræas canescens* and *Douglasii*, *Hydrangea paniculata grandiflora*, *Cornus* of sorts, *Rhus typhina*, *Poplars* in bush form, *Pernettyas*, *Rubus odoratus*, large beds of *Lavender*, *Veronica Traversii*, and *Mahonias*.

A striking novelty, especially for this part of Essex, is a large portion set apart for the cultivation of the hardy *Ericas*. These are grouped together in masses, and particularly well they looked, all being in the best possible condition. Among the varieties I noticed were Cal-

tained fine specimen Palms, and many other both flowering and foliage plants, all in good condition. Adjoining this is a small stove, used principally for growing decorative plants for house decoration. The early Peach house had been entirely replanted, and the trees were in excellent condition. The varieties I noticed were:—Nectarines: *Cardinal*, *Early Rivers* and *Lord Napier*; and Peaches: *Royal George*, *Gros Mignonne* and *Hale's Early*.

One small house was principally devoted to *Rose* culture, and another house to *Carnations*. Fine batches of the following varieties of *Carnations* are cultivated:—*Mercia*, *Mrs. Martin Smith*, *Lady Grimston*, *Maggie Hodgson*, *Princess of Wales*, *Old Blush* and *Horace Hutchinson*. Most of the plants were in 8 and 10-inch pots. A large span-roofed house was devoted entirely to *Ferns*, and some were specimens growing in tubs over 5 feet in diameter. Particularly fine were *Davallia Mooreana*, *Microlepia hirta cristata*, *Davallia elegans*, *Adiantum formosum*, *A. cuneatum* and *A. Williamsii*. Another large greenhouse contained some greenhouse *Rhododen-*

addition to his annual cost of trading, quite apart from the working capital required. Frequently, also, he has to raise part of the purchase price by means of a mortgage, and if the Budget proposals should cause the value of land to fall, most mortgages will either call in their loan or require the amount already advanced to be very substantially reduced. The exemption of permanent works for horticulture from this tax should be urged.

Nurserymen have sometimes been able, on removal, to reconp a portion of the heavy expenditure referred to above by selling their nursery land at a higher price than they originally gave for it. With the profit thus obtained they are able to meet to some extent the

UNDEVELOPED LAND TAX.

In addition to the above, it is also proposed to levy every year a further tax, at a present rate of one halfpenny in the pound, on the "capital value of undeveloped land." "Undeveloped land" means, for the purposes of the Budget, any land which: (a) has not been developed by being built upon, or (b) has not been developed by being used bona fide for any business, trade or industry, with one single exception—agriculture (which term for the purposes of this Act includes nurseries, market gardens, and allotments). Nurserymen therefore will have to pay the tax although other tradesmen will not. The Bill, however, extends to the horticulturist and agriculturist two slight concessions, namely:—

house, a depository, a slaughter house, or for the erection of factories, or for building speculation.

This proposed tax, if applied to nurseries and market gardens, will bear especially heavily upon small growers who cater solely for the English market. It is essential for them to be in or near the outskirts of a town, not only so as to be near their local customers but also so as to be within the "collection and delivery" area of a railway station.

Parliament has already recognised the difficulties which await a grower who is forced to remove. The Agricultural Holdings Act, which came into force on January 1 last provides that "if a landlord without good and sufficient cause and for reasons inconsistent with good estate management" gives notice to quit or refuses to grant his tenant a new lease, either at all or except at an increased rent, then the landlord must repay to the tenant the whole of the cost of removing or selling his household goods, his implements of husbandry, his produce and his farm stock. It is hoped the Government will bear this point of view in mind.

GARDEN TAX.

By this time most readers will probably be aware that it is also proposed to impose the "undeveloped land tax" on the owner of every garden which exceeds one acre in extent. It is impossible to discuss the pros and cons of this tax here, but if it is to be adopted it is submitted that the Government might possibly see its way to make some concession on this point.

The question of "increment" taxation is one which will probably be decided on general principles, but the neglect to treat nurseries as equivalent to shops for this purpose and the question of the "undeveloped land" tax, including the "garden" tax, are matters in which the position of horticulturists might well be brought to the notice of the Government. H. M. V.

FLORISTS' FLOWERS.

GLOXINIAS.

In recent years Gloxinias have shown wonderful development in regard to colour and habit. The flowers range from pure white, pink and pale blue to deep reds, purples and blues, while the newer French spotted hybrids, though less robust in habit and more delicate in flower than the older type, are a most valuable addition. They are marked and spotted with colours varying from pink and mauve to dark blue, red, and even chocolate.

The cultivation of Gloxinias is not, perhaps, simple, but any gardener, provided he has a warm glasshouse at his disposal, by selecting seed of a good strain, and by following the few hints given below, should be able to produce a brilliant display of blooms within about seven months of the date of sowing the seed. The seed is best sown in mid-winter, in deep, well-drained pans of fine peat and sand. The pans should be placed in a propagating frame having a temperature of about 75°, covering the surface of the soil with a piece of glass until germination has taken place. The glass must be turned and dried night and morning, as Gloxinias at all stages are liable to suffer from damp. As soon as the first seed-leaves develop the plants should be pricked off into shallow pans. This is best done by means of small tweezers, as the seedlings are too small to be handled. When established they may be removed from the frame into a fairly moist atmosphere of 65° to 70°, and when large enough transplanted into boxes and ultimately potted off into small pots, using peat, sand and leaf-soil, as fibrous and rough as possible.

Careful watering is one of the most important points during the stages of growth. The water should be slightly warmer than the temperature of the house, and never applied unless really necessary. The atmosphere must be kept moist by frequent damping, and the plants lightly syringed morning and evening.

In the final potting into 6-inch pots a good mixture of equal parts of peat, leaf-soil, yellow loam and sand should be used, with a little charcoal and good manure added. The soil, when mixed, should be warmed to the temperature of the house before potting. When potted, the plants may be grown on in a night temperature



FIG. 181.—AVENUE OF SEQUOIA GIGANTEA AT HAVERING PARK.

(See p. 408.)

expenses which fall upon a nurseryman in building greenhouses on the fresh site, and in rendering the new soil suitable for the special purposes required by horticulture. It certainly seems hard on the horticulturist to demand under these circumstances one-fifth of any increase on the original site value—that is to say, £20 out of every £100 profit realised. In the case of a limited company the land has to be revalued every 15 years, and this 20 per cent. increment tax will have to be paid upon any increase in value which has accrued in the meantime.

(1) The tax is not to be imposed on any land which does not exceed a selling value of £50 an acre, and (2) in assessing the value of the land no special charge is to be made in respect of whatever special value it may bear for agricultural or horticultural purposes.

This will protect agricultural land to some extent, but some further protection for nurserymen appears to be urgently necessary. The value of the land for any other purposes must be taken into account, even on the assumption, for instance, that it might be required for some other trade, such as a shop, a brickfield, a ware-

of not less than 60°, giving them all the light possible, but at all times shading them from strong sunshine. Further feeding is not necessary during the first season.

The established tubers are best started towards the end of December, in shallow boxes of cocconut fibre. They should be allowed to start gently, 65° to 70° being quite sufficient heat. Pot them on when started into small pots, and later into the flowering pots, using a similar mixture as before. The pots must be well drained, and the plants should not be potted deeply or firmly. When the blooms appear, a little weak manure water will be beneficial, but this may easily be overdone. It is often advisable when the plants are flowering to remove some of the centre leaves, which sometimes cramp and smother the opening blooms.

The worst pest of Gloxinias is the white thrip, which, if once allowed to get a foothold, is very troublesome. It is, therefore, advisable to spray with an insecticide or to fumigate the plants at intervals as a preventive. *C. H. Middleton.*

The Week's Work.

PLANTS UNDER GLASS.

By A. C. BARTLETT, Gardener to Mrs. FORD, Pencarrow, Cornwall.

Hæmanthus Katherine.—This is the most showy of the greenhouse plants in flower at the present time. While the flowers remain fresh, let the plants stand in the cooler end of the structure, but remove them to the intermediate house as soon as the blooms fade, to complete and mature their growth. After this has been effected, a period of rest is necessary. Propagation is best done by potting up the offsets and keeping them in moist conditions until roots have formed. Many species of *Hæmanthus* produce most showy flowers, and they might very well be cultivated more often in private gardens.

Callistemon lanceolatus.—This greenhouse shrub is better known by the name of *Metrosideros floribunda*. Like many species of the nearly-allied genus *Melaleuca*, it is a showy, flowering shrub needing the conditions of a cool greenhouse or conservatory. The culture is comparatively easy, but, as with most hard-wooded plants, care must be exercised in watering. Propagation may be effected by seeds, which are freely produced on large plants, but seedling plants do not flower so quickly as plants raised from cuttings. The cuttings should be made of nearly-matured shoots and inserted in sandy soil, placing the cutting pots under a bell-glass. When the cuttings have rooted they should be firmly potted in loam, peat and sand. Whilst young, the shoots should be freely pinched to induce a bushy habit.

Mignonette.—No flowers are more highly appreciated than those of the *Mignonette*. For pot-culture the "tree" kinds are more often selected, but the dwarf-branching varieties are also very useful as pot plants or for furnishing flowers. Whatever kind is required, seeds should be sown at intervals from now onwards. *Mignonette* requires a compost of good loam and leaf-mould, firm potting, and cool treatment at all times. The seeds should be sown shallowly in 3-inch pots, and as soon as the seedlings are well through the soil they should be thinned out to one plant if for pyramids, and to three plants if dwarf, bushy plants are required. When the small pots have become filled with roots, the plants should be potted into 5 or 6-inch pots, using similar soil. Make the soil as firm as possible, exercising care not to break the ball of the root.

FRUITS UNDER GLASS.

By E. HARRIS, Fruit Foreman, Royal Gardens, Frogmore.

Pincapples.—The earliest plants of the Queen variety, now fast maturing their fruits, must receive attention in order that the fruiting season may be extended over as long a period as possible. Those fruits that have commenced to colour should be removed to a house where the plants can be kept cool and dry, and, if necessary, shaded during the hottest part of the day with tiffany. Manurial stimulants must be withheld and clear water given sparingly. Later

fruiting plants, however, should still be liberally supplied with both diluted liquid manure and guano water. Maintain a moist atmosphere in the pit and close the ventilators about 3 o'clock in the afternoon, after first spraying the plants with tepid rain-water. All weak suckers not required for stock purposes should be removed from the parent plants from which the fruits have been cut. Those which are bearing suckers, required for propagation, should be placed in a position near to the glass and be syringed and watered with care, as it is important to have a batch of strong suckers for potting next month.

Successional plants.—Young Pines intended for fruiting next year will have filled their pots with roots, and they should be encouraged to develop into strong, healthy plants. On no account allow them to suffer drought at the roots; at the same time, water must not be applied until it is required, when sufficient should be given to soak the soil through. Manure water may be applied more frequently than hitherto. Weak soot-water should be given occasionally, both at the roots and in the water when syringing in the afternoon. Whenever the weather is warm and sunny, dispense, as far as is possible, with fire heat, for excessive warmth will cause the plants to grow weakly and often to fruit prematurely. A little fresh air should be admitted by the top ventilators early on fine mornings, and the amount may be increased as the temperature rises; but close the house sufficiently early in the afternoon to allow the temperature to reach 95° or 100° after syringing and charging the atmosphere with moisture. Young plants which require re-potting must be attended to before they become pot-bound. Plunge them in a moderately warm hot-bed near to the glass, and allow them to grow as fast as is consistent with the development of strong, healthy foliage.

Planted-out Pines which are ripening their fruits must not be over-watered, nor must the atmosphere of the pit be overcharged with moisture. Should the crowns on the later-fruiting plants show signs of becoming too large, they should be carefully stopped. Pines planted out last spring should now be well rooted; they will require water at least once a week, but need not be given stimulants at present. Ventilate the house early in the mornings of fine days, but take full advantage of the sunshine by closing the structure early in the afternoons, after well syringing the plants with rain-water.

THE KITCHEN GARDEN.

By E. BECKETT, Gardener to the Hon. VICARY GILES, Aldenham House, Elstree, Hertfordshire.

Asparagus.—The heads should now be cut very sparingly, and the plants should be given every encouragement to assist them in building up strong crowns. It is a good plan, especially where the beds are situated in an exposed position, to provide some means of support to the shoots to prevent them being blown about by wind. The beds should be hand-weeded, it being impossible to use a hoe without damaging the *Asparagus*. On light soils, a moderate sprinkling of salt and applications of liquid manure from the farmyard will be beneficial.

Capiscums intended for fruiting in pots may now be placed in cold frames. Afford frequent applications of manure water, and syringe the foliage copiously with clear water twice each day. Do not overcrowd the plants, but let the air circulate freely amongst them. Remove the lights entirely on hot days. Spare plants may be placed in a sheltered, sunny position in the open, where they will produce satisfactory results if the season is favourable.

Cauliflowers.—The foliage should be tied up immediately after the heads are set, to keep them perfectly white. Keep the plants well supplied with moisture, affording liquid manure at intervals. Immediately they are ready for cutting, lift the plants and place them in a cold shed or cellar, where they may be suspended with their heads downwards. They will remain in a good condition for several days. Successional batches of later varieties should have the soil about the plants stirred with a draw-hoe. Work the soil well around the stems, and afterwards apply a liberal mulching of manure. Continue to plant *Cauliflowers* raised from late sowings in open positions in the garden. Such late plants

are often useful for planting in frames in the autumn.

Brussels Sprouts.—The hoe should be frequently and thoroughly worked between the rows. In the case of poor soils, slight applications of some concentrated manure should be dusted over the roots in showery weather. They will also be benefited by a mulching of farmyard manure, especially if the weather is dry. Make a final planting of the later-raised plants, selecting a piece of good land for this crop. The variety *Dwarf Gem* is a very suitable one for planting at this season.

Endive should be sown in small quantities about once a fortnight. Thin the plants to 12 inches apart, and keep them well supplied with moisture. Both the curled and the plain-leaved varieties should be grown.

Autumn-sown Onions.—To ensure large, well-developed bulbs of both *Naples* and *Giant Rocca* varieties, the soil should be frequently stirred with a hoe, and copious applications of moisture, including liquid manure, should occasionally be given this crop during the present month. Those which show signs of flowering prematurely should be used for present consumption.

Watering.—Many of the kitchen-garden crops will need to be supplied with water, both at the roots and overhead. Much water is not only of value in increasing the quantity of the crop, but it also improves the quality.

PUBLIC PARKS AND GARDENS.

By W. W. PETTIGREW, Superintendent of City Parks, Cardiff.

The Children Act, 1908.—On April 1 last, when the *Children Act, 1908*, came into force, new powers were given to park officials the like of which had never before been exercised by them. Before this Act came into operation, park-keepers were primarily employed to protect park property and otherwise prevent any infraction of park by-laws, but except in quite an indirect way, they were not generally regarded as having any special powers outside of public parks Section 40 of the *Children Act* provides:—

"That it shall be the duty of a constable and of a park-keeper, being in uniform, to seize any cigarettes, or cigarette papers in the possession of any person apparently under the age of 16 years whom he finds smoking in any street or public place, and such constable or park keeper shall be authorised to search any boy so found smoking, but not a girl."

From these words it will be seen that the official existence of the park-keeper is now recognised by law and his services enlisted for work which is quite beyond his special park duties. Having thus become recognised as fit to carry out some of the provisions of this Act, one hardly knows what other duties of a like nature may not sooner or later be thrust upon him. So far, however, whilst this legislation has considerably increased the responsibilities of park-keepers, it has not added to their actual labours, for, whereas before April 1 the juvenile smoker was, unfortunately, frequently in evidence, he has since that date almost entirely disappeared from public view, and consequently gives no trouble.

There are two facts about this Act that it is well to impress upon the minds of park-keepers. The first is that they are compelled to exercise the powers conferred upon them by Section 40 of the Act and when they see a boy smoking in any public place it is as much their duty to take action in the matter as it would be were the boy stealing flowers or damaging property in a park. The other fact is that no park-keeper—and, for that matter, no constable either—unless attired in uniform is permitted to interfere with young smokers, and if they do so they will probably get into trouble. This stipulation is a very reasonable one, as without it in all probability many persons would become self-constituted constables or park-keepers whenever an opportunity arose for appropriating some youngster's tobacco.

Possible effects of the innovation.—No doubt some park officials may feel that their staff have quite enough to attend to in carrying out park work and therefore do not require extraneous duties put upon them by the State. Others may welcome the addition of these and similar duties in the hope that the time may come when the Exchequer will see fit, on account of these services, to contribute towards the maintenance of that somewhat expensive institution, the park police.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to H. J. KING, Esq., Eastwell Park, Kent.

Red and White Currants.—The bushes have made a considerable amount of growth, and this must be thinned in order that the sun and air may reach the fruits. Stop the side-shoots at the fourth leaf, but leave the leading growths un-stopped for another week or two, when the tops may be taken off according to the amount of space which the bushes are required to furnish. Very fine fruits may be obtained from cordon plants allowed to cover small spaces on fruit walls. Currants planted against north or north-west walls will furnish a supply of fruits late in the season. Red Currants will hang for several weeks in excellent condition on plants cultivated against north walls. On light and porous soils much water must be given to the roots. The cordon Currants should have the side growths stopped as recommended above in the case of bushes, allowing the leading shoots to grow unchecked for the present. Where wall space is limited, cordon Currants may be trained to a wire trellis, or they may be planted as small standards by the side of the paths, where they are very attractive when laden with fruit. The fruits on such small bushes can be protected easily from the birds. An excellent plan of using Red Currants is to mix them with Raspberries.

growths are pinched as recommended and at once burned this will destroy most of them. A thorough washing with the garden engine afterwards will generally suffice to make the bushes perfectly clean. Every effort should be made to cleanse them before the fruit commences to ripen, ripen, or many of the berries will be spoiled.

Weeding.—Keep the hoe constantly at work where it can be used. In the case of Strawberry beds or other beds or borders which have been mulched or littered with clean straw, it will be necessary to practise hand-weeding.

THE FLOWER GARDEN.

By W. A. COOK, Gardener to Sir EDMUND G. LODER, Bart., Leonardslee, Sussex.

Sowing seeds of perennials.—Seeds of Dianthus should now be sown. Rake the ground very smoothly and sow in drills made 9 inches apart. It is necessary to shade the seed-bed during the germination period, but when the seedlings are well through the ground the shading material should be removed. The plants, when of a suitable size, may be either transferred direct to their flowering positions, or be pricked out for transplanting in the autumn.

If Hollyhock seeds are not already sown, no time should be lost before doing this. The drills should be drawn 1 foot apart and 2 inches deep.

sown at once. This is also advisable with Soldanella and Haberlia. Insert cuttings of Arabis and any other plants that are required to be propagated from cuttings. Remove the old flower-spikes and all dead foliage from early-flowering, bulbous plants, and in order to denote their position should all the foliage be removed, place a label or a stick on the spot where they are planted. Weeds must be destroyed early; be careful not to allow any of them to seed.

Herbaceous border.—A considerable amount of work will be required to keep the border smart and tidy. The plants will need staking and tying very frequently, and the hoe must be freely used to keep down weeds and loosen the soil. Any blank spaces should be planted, but do not overcrowd the subjects. Guard against insect pests, especially in places where the ground is heavy.

Conifers.—Attend to newly-planted trees, affording stakes to any that need them. See that no tree is injured by the string being too tight. Should any specimen have lost its leading branch, train up another shoot to take its place. Many newly-planted trees, and especially Conifers, are checked in their early stages by an insufficiency of moisture at the roots. Old Conifers are often benefited by a mulching of cow manure. Do not place the material close to the stem of a tree, but at a little distance away, where the most active roots are to be found. After the manure is applied, a soaking of water will be the more beneficial.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Surrey.

Cypripediums.—Many of the species and hybrids of the warm-growing Cypripediums such as *C. Stonei*, *C. Curtisii*, *C. Maudiae*, *C. macrochilum*, *C. grande*, *C. Rothschildianum*, *C. superciliosum*, *C. Lawrenceanum*, *C. L. Hycanum*, *C. L. hackbridgensis* and others, should be examined as to pot room as soon as they have recovered from the effects of flowering. None of these free-growing plants should be left long in a root-bound condition, and the present is a suitable time to give them a shift, and to divide large, unwieldy specimens. The best compost is one consisting of three-fifths good fibrous loam, one-fifth Osmunda fibre (cut up moderately small) and one-fifth Sphagnum-moss, adding small broken crocks and a little coarse silver sand. Fill the pots to about half their depth with clean crocks and cover these with a layer of rough Sphagnum-moss. In the process of potting the soil should be made moderately firm about the roots, keeping the base of the plant and the surface of the compost just below the rim of the pot. After root disturbance, keep the compost only just moist until the roots are again growing freely, when the plants will require an abundance of water. Place them on the shady side of the house and let the surroundings be kept always moist. When the weather is bright, a fine spraying overhead, both in the morning and early afternoon, is beneficial. The dwarf-growing species such as *C. niveum*, *C. concolor*, *C. bellatulum*, and their hybrids, including such beautiful plants as *C. Lawrebel*, *C. Olenus*, *C. Godefroyae*, *C. Chapmanii*, *C. Arnoldiae*, *C. Helen II.*, *C. Rolfei*, *C. Venus*, *C. Muriel Hollington*, *C. Vipani*, and many others equally fine and rare but too numerous to mention, may also be repotted if necessary. For this purpose the same kind of compost as advised for the stronger-growing varieties is suitable, but the potting should be done rather more firmly, as the roots have a decided tendency to cling and ramble among hard substances. At Burford, all the species and hybrids of this dwarf-growing section thrive best when suspended in a light position in the Cattleya house. The plants need plenty of moisture when growing freely, but care must be taken to prevent water lodging in the growths or axils of the leaves. Small yellow thrips are exceedingly fond of the young foliage, therefore, whether these insects be present or not, it is advisable, whenever any of the houses are being vaporised, to place these plants there during the operation. The foliage, too, should occasionally be carefully sponged over. It is necessary to caution those who do the work not to raise the leaves too high, for this causes the mid-rib to crack and the plant afterwards suffers disfigurement.



[Photograph by Mrs. Delves Broughton.]

FIG. 182.—PIERIS FLORIBUNDA AT HAVERING PARK.

(See p. 408.)

Place alternate layers of each fruit and another of white sugar in a glass dish, which should be stood in a refrigerator on a block of ice for 24 hours before being required for the table. By many this is considered the best manner of preparing these fruits for the dessert.

Black Currant bushes.—Do not stop the shoots of these bushes until after the fruits are gathered, when all unnecessary growths should be removed and any other thinning done which is required.

Gooseberries.—Gooseberries should be stopped in the same manner as advised for Red Currants. If the berries were thinned, those now on the bushes will develop rapidly. The finer dessert varieties should be afforded copious supplies of water during dry weather, and the foliage should be well syringed in order to prevent red spider. After the watering is finished the ground should be mulched, if a mulch has not already been applied. See that the fruits are properly netted from the birds. There are heavy crops of all small fruits in this locality. Green Gooseberries have proved very useful for culinary purposes. Aphid has recently appeared on the shoots in great numbers, but if the young

Sow the seeds a quarter of an inch deep. Thin the plants as soon as they are large enough. Pansies, Polyanthuses and Primroses may be also sown now. The Primroses and Polyanthuses will make fine plants for flowering in the spring of 1911. There is still time for the sowing of Wallflowers, although I prefer to sow them earlier in the season, in order to obtain large plants. *Campanula pyramidalis* and *C. media* (Canterbury Bell) should also be sown. *C. pyramidalis* does better in every respect when cultivated under quite cool conditions. Even for pot purposes the plants are best grown quite hardy, and may be lifted from the border for the purpose. Choose a rather warm spot for sowing the seeds. Brompton Stocks may now be sown in the open, where they will do quite well, especially if sown on a cool border.

Alpine garden.—Many subjects may now be propagated, and it is advisable to raise fresh stocks to replace any subjects which have become too large for their positions or that may have died. Freshly-raised plants are always better than portions of old plants. Continue to prick out seedlings into pots and pans. Seeds of *Ramondia* should be collected when ripe and

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

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, JUNE 28—Isle of Wight Rose Sh. (provisional).

TUESDAY, JUNE 29—

Southampton Roy. Hort. Soc. Summer Sh. (2 days).
Brighton Fl. Sh. (2 days). Canterbury and Kent Rose Show at Canterbury.

WEDNESDAY, JUNE 30—

Richmond (Surrey) Fl. Sh. Ipswich Fl. Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last fifty years at Greenwich—61.6°.

ACTUAL TEMPERATURES:—

LONDON.—Wednesday, June 23 (6 P.M.): Max. 63°; Min. 51°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—Thursday, June 24 (10 A.M.): Bar. 29.4; Temp. 60°; Weather—Cloudy.

PROVINCES.—Wednesday, June 23 (6 P.M.): Max. 60° Corwall; Min. 50° Scotland North East.

SALES FOR THE ENSUING WEEK.

FRIDAY—

Choice Imported and Established Orchids, Orchids in variety, at 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 12.45.

The Darwin Commemoration. The past week has witnessed, in the commemoration ceremonies at Cambridge, the tribute of the world to the genius of Darwin. From all parts of Britain and the Empire, from every State of Europe, and from the uttermost parts of the earth, men have assembled to celebrate the centenary of Darwin's birth and the fiftieth anniversary of the publication of the *Origin of Species*.

They have met in Cambridge to acknowledge on behalf of mankind the debt which it owes to the great naturalist. The magnitude of this debt has formed the subject of eloquent addresses by distinguished delegates, but no more adequate appreciation of Darwin's life and work has been offered than that which we print to-day from the pen of Sir William Thiselton-Dyer. Horticulturists will rejoice that the great and special services which Darwin rendered to their science should be recorded and appreciated in such a manner. The present generation may be reminded, moreover, that on former occasions these pages have served for high authority to pronounce its emphatic conviction of the supreme importance of Darwin's contribution to the sum of human knowledge. So long ago as December, 1859, Sir Joseph Hooker, as he himself recently reminded us, wrote, in the course of a review of the *Origin of Species*, the following words:—

"We have risen from the perusal of Mr. Darwin's book much impressed with its import-

ance, and have, moreover, found it to be so dependent on the phenomena of horticultural operations, for its facts and results, and so full of experiments that may be repeated and discussed by intelligent gardeners, and of ideas that may sooner fructify in their minds than in those of any other class of naturalists, that we shall be doing them (and we hope also science) a service by dwelling in some detail upon its contents. Thus much we may premise, that it is a book teeming with deep thoughts on numberless simple and complex phenomena of life; that its premises in almost all cases appear to be correct; that its reasoning is apparently close and sound, its style clear, and, we need hardly add, its subject and manner equally attractive and agreeable; it is also a perfectly ingenious book, bold in expressions as in thought where the author adduces what he considers clear evidence in his favour, frank in the statement of objections to the hypotheses or conclusions founded on its facts and reasonings; and uniformly courteous to antagonistic doctrines. In fine, whatever may be thought of Mr. Darwin's ultimate conclusions, it cannot be denied that it would be difficult in the whole range of literature of science to find a book so exclusively devoted to the development of theoretical enquiries, which at the same time is throughout so full of conscientious care, so fair in argument, and so considerate in tone."

We quote the passage with particular pleasure, because, as readers of the *Life of Darwin* will remember, Darwin himself valued Sir Joseph Hooker's reviews above all others.

Turning again to the Cambridge celebrations, it is not enough to say of them that they were successful. They were triumphantly successful. Men engaged in following up the lines of investigation indicated by their great master, left their gardens and laboratories, their microscopes and geological hammers, and their Mendelian hybrids and devoted their united labours to the perfecting of the organisation of this Darwin festival. The colleges opened their sometimes exclusive doors to welcome and to entertain the visitors. The Chancellor, Lord Rayleigh, received the delegates in the Fitzwilliam Museum on Tuesday evening. On Wednesday the addresses from Universities, colleges, academic and learned societies were presented to the University in the Senate House. Darwin's own college (Christ's) entertained the guests in the afternoon, and in the evening, at the great banquet, members of all the important Universities of the world dined together at the invitation of the University of Cambridge. In addition to other receptions, a conferment of honorary degrees was held on Thursday, whilst in the afternoon of the same day took place the most charming and, in some respects, the most impressive of all the ceremonies—the garden party given by the members of the Darwin family. As the envoys of the world of learning were received in the Fellows' Garden of Trinity by the living representatives of Charles Darwin, they could not but reflect that, beside what the world owes to Darwin for his own work and his own noble interpretation of life, it owes another and not a light debt to him for giving to the world a group of children who, like the father, have shed lustre on British science. The University hospitality was generous to a degree that would have delighted the heart of Darwin himself, who was wont to say to children visiting at his house: "Be good and eat large mouthfuls." Nor was the hospitality in material things alone; for the intellectual delectation of its visitors the University had

made most liberal provision. As memorials of the Commemoration there had been prepared, by Francis Darwin, a new edition of the first draft of the *Origin of Species* and a volume, edited by Professor Seward, entitled *Darwin and Modern Science*, containing essays by the most distinguished men of science.

Laden with gifts and charged with grateful memories, the guests will return to their near or distant homes, united by the common bond of love and reverence for the name of Darwin.

Acidity in Soils.

Important as are the nitrogen-fixing bacteria, they form only a small part of the microflora of the soil; other groups of organisms prepare the food of plants; some break down the nitrogenous compounds constituting manure or humus into simpler nitrogen compounds and finally oxidise them into the nitrates, in which form most plants obtain the nitrogen they require. Other bacteria are, from the point of view of the horticulturist, wasteful in that they convert the nitrogen compounds into free nitrogen; others, again (particularly certain microfungi), compete with the crop for the plant food in the soil, and perhaps produce substances which are injurious to plant life. The relative predominance of particular groups of organisms, useful or injurious, can be affected by the farmer or gardener, because the various species of micro-organisms are very sensitive to minute changes in the soil, for example, its acidity or alkalinity.

Soils that are distinctly acid in their reaction are not infrequently met with in nature; when they are in grass they may be recognised by the generally rusty aspect of the vegetation, which consists mainly of shallow-rooting grasses growing in tufts, and by the absence of Clover; when they are under arable cultivation their acidity may be revealed by the presence of such weeds as Spurrey, Sheep's Sorrel, and Corn Marigold, and by the "clubbing" of cruciferous crops.

Similar acid soils have been produced artificially by the long-continued use of sulphate of ammonia as a fertiliser. The best example is afforded by the continuous Wheat and Barley plots on the farm of the Royal Agricultural Society at Woburn; where ammonium salts have been used as the source of nitrogen the land is now almost sterile, Barley refuses to grow at all, and the whole plot becomes covered by a growth of Spurrey. At Rothamsted, where the arable land is sufficiently furnished with carbonate of lime, acidity has not set in, but on the grass plots it has become very marked.

In order to determine the cause of this acidity experiments have been made to see if any purely chemical or physical interactions would take place between the constituents of the soil and solutions of ammonium salts, which would split off a free acid from the latter, but with negative results. The action was found to be a biological process; the soil is rich in certain moulds and other microfungi which rapidly attack solutions of ammonium salts, and, by withdrawing ammonia from their own nutrition, set free the acid. It was shown that the degree of acidity thus produced was approximately equal to the

soluble acidity of the Rothamsted plots soon after the ammonium salts had been applied as manure. At the same time, in the soils there was also a very much larger quantity of comparatively insoluble humic acid, which had accumulated year by year as a result of the attack of the mineral acids split off from the ammonium salts upon the neutral humus of the soil.

The first consequence of the acidity of the soil on these plots has been the cessation of the nitrification process, because the bacteria bringing about that change will only work in a neutral medium. Some of the falling off in the yield of these acid plots is thus due to the fact that the grass is driven to obtain its necessary nitrogen from ammonia instead of from the more usual nitrates; at the same time, the mass of micro-fungi with which the soil is permeated competes successfully with the grass for the manure. Whether these fungi also excrete substances more or less poisonous to the grass has not yet been definitely settled. The remedy for this acid condition of the soil lies in the use of lime, which, applied at the rate of 2,000lb. per acre to portions of the Rothamsted grass plots, has effected a great improvement both in the yield and the character of the herbage.

Another problem of the same order—the secondary effects of certain fertilisers upon the soil—is afforded by the well-known fact that the use of large quantities of nitrate of soda upon heavy soils always makes them very wet and sticky after rain and causes them to dry with a hard, intractable crust. This has been attributed to the attraction of nitrate of soda for moisture, but the amount of water absorbed by the few hundredweight per acre of nitrate of soda which are ever applied is insignificant and could not cause the effects observed. Some of the Rothamsted plots, which have been receiving nitrate of soda every year for the last half century, show these effects to a marked degree, and on examination the clay on these plots was found to be in its most "deflocculated" condition. Clay consists essentially of excessively fine particles, and when a clay soil is in good tilth these particles are largely bound together in loose aggregates, thus giving the soil as a whole a coarser texture. Any working of the soil when wet, or the "puddling" which a potter or brick-maker gives to his clay, breaks down these loose aggregates, and, by giving the clay its most finely-grained condition, markedly increases its typical properties of impermeability to water, and shrinkage on drying. It is also found that a trace of any soluble alkali, such as carbonate of soda, will loosen these aggregates and deflocculate the clay.

By further experiments it has been shown that a growing plant fed with nitrate of soda gives rise to a little carbonate of soda, because it takes up more of the nitric acid than the soda base with which it was combined, leaving the latter in the soil combined with the carbonic acid excreted from the root. It was found possible to extract free carbonate of soda from the plots which had long received nitrate of soda as a manure; one of the grass plots yielded as much as 175lb. per acre down to a depth of 3 feet. This alkali then, by deflocculating the clay, is the source of the bad tilth resulting from the use of nitrate of soda.

The bad tilth, which is a serious trouble to many market gardeners who manure heavily

with nitrate of soda, cannot be rectified by the use of lime, which, being itself an alkali, only exaggerates the trouble. The use of acid manures like superphosphates, and liberal applications of soot, will improve matters, but the best plan is to use, instead of nitrate of soda alone as a nitrogenous fertiliser, a mixture of it with sulphate of ammonia. Since the one tends to set free acid and the other alkali in the soil, jointly they would leave it unchanged, and they would also come into action successively as sources of nitrogen.

These and other cases of the same character go to show that we must study more closely the chemical and biological actions of fertilisers upon our soils if we are to obtain full value from them and avoid some of the disadvantages long recognised by farmers as attending their use.

FLOWERS IN SEASON.—We have received a few flowers of a new variety of Pink named *gloriosa*, from Messrs. STUART Low & Co. It is of light purple colour, of considerable size, and very fragrant. Novelties in Pinks are not numerous, as is the case of Carnations, and therefore this variety, which is very effective when seen in gaslight, may be recommended.

—Messrs. KELWAY & SON have sent us flowers of a number of varieties of their double and single-flowered Pyrethrums. *P. roseum* is one of the most showy border plants, and the best varieties exhibit varied colours that should appeal to every taste. —From Mr. EDWIN MOLYNEUX, Swannore Park Estate, we have received a bouquet of varieties of *Papaver orientale* in such brilliant colours as would defy description. These flowers, received as perfectly hard and closed buds, have expanded in water, and their colours appear just as bright as if they had opened whilst still exposed to sunshine.

NATIONAL ROSE SOCIETY.—The summer exhibition to be held at the Royal Botanic Society's Gardens, Regent's Park, on July 2, promises to be very successful. Notwithstanding the trying weather experienced during both the winter and spring, and also throughout the first half of June, there is likely to be an unusually large and fine display of blooms. Early in the month the prospects looked very gloomy, but, as the late Rev. D'OMBRAIN used to say, "When the time of Roses comes there is sure to be plenty of Roses." The classes number more than 100, and there are numerous valuable challenge cups and other trophies offered as prizes. Those who intend to exhibit should apply to the hon. secretary, Mr. ED. MAWLEY, Rosebank, Berkhamsted, not later than June 28.

SIR JOSEPH DALTON HOOKER.—At a meeting of the Linnean Society, held on the 17th inst., a letter congratulating Sir JOSEPH HOOKER on his approaching 92nd birthday was read from the Chair, and signed by the Fellows present. Sir JOSEPH HOOKER was born on June 30, 1817.

ROYAL BOTANIC SOCIETY.—We are informed that the following resolution will be moved by Mr. J. S. RUBINSTEIN at the Fellows' meeting of this Society to be held on Friday, June 25, at 4.15 p.m.:—"That this meeting desires to place the following views on record:—(1) That the objects for which the Society was established in 1840 are as material to-day as when the charter was granted, such objects being the promotion of botany and its application to medicine, arts, and manufactures. (2) That the gardens are pre-eminently calculated to promote these objects,

and it is accordingly of the utmost importance that the gardens should be maintained, and because they secure an ideal, and the only really suitable place in London, for the holding of floral and horticultural exhibitions and for outdoor shows and receptions organised by public authorities and by recognised societies and institutions. (3) That if the gardens are closed, or cease to be available for the purposes mentioned, the loss to London will be irretrievable. (4) That the Society cannot, in view of its liabilities, continue with advantage the control of the gardens. (5) That the Royal Horticultural Society possess a constitution and organisation enabling it to take over the gardens with the greatest advantage, and it is therefore highly expedient that the gardens should be immediately transferred to that society. (6) That in arranging a transfer provision should be made for (a) the payment of a sum of money representing the value of the Royal Botanic Society's assets, to be applied towards discharging its liabilities, and (b) an option to the Fellows to become Fellows of the Royal Horticultural Society."

THE POISONS AND PHARMACY ACT, 1908.—

London has given the provinces a very satisfactory lead in connection with the granting of licenses to nurserymen for the sale of poisonous compounds to be used for horticultural purposes. Twenty-one applicants applied to the London County Council for these licenses, and the usual opposition was offered by the Pharmaceutical Society. This society suggested that the Act was not intended to apply to populous towns such as London (on the ground that there are already over 2,000 chemists in London, though these know little of horticulture and plant diseases). The committee, however, rightly took the view that such a construction of the Act would be erroneous, and decided that each application should be dealt with on its merits. In the result they recommended that 18 of the 21 applications for licenses should be granted, and this recommendation was adopted by the London County Council late last Tuesday evening without a single dissident. Although the decisions of the London County Council are, of course, not binding on provincial councils, yet they naturally carry considerable weight by reason of the fact that the L.C.C. has special means of obtaining reliable information and expert advice on all matters coming before it. The nursery trade may be congratulated upon the useful precedent which has now been created, and its thanks are due to the Horticultural Trades Association who, recognising the importance of the matter, furnished the applicants with legal assistance at its own expense, and also co-operated with Mr. RICHARDS.

DISEASE OF BEES.—The Board of Agriculture and Fisheries desire to warn all bee-keepers that an outbreak of disease, believed to be identical with the Isle of Wight bee disease, has occurred in several hives in Buckinghamshire. This disease, which has destroyed almost all the bees in the island from which it takes its name, is due to a bacillus closely resembling the bacillus of plague, and no remedy for it is known. It is of the utmost importance, therefore, that bee-keepers should take every precaution to prevent the disease spreading, and they are strongly advised to keep a careful watch for any signs of its appearance. A full description of the disease was published in the *Journal* of the Board of Agriculture for February, 1909, and bee-keepers who find symptoms of disease corresponding to the description there given should communicate with the Board of Agriculture and Fisheries, 4, Whitehall Place, London, S.W.

ROYAL SOCIETY OF ARTS.—The annual conversazione of the Royal Society of Arts will be held in the galleries of the Natural History Museum on Tuesday, June 29, from 9 to 12 p.m. The reception by Sir WILLIAM H. WHITE, F.R.S., the chairman, and the members of the council will take place in the central hall from 9 to 12 p.m.

THE EXPORT OF MANGOS.—All who have tasted the fruit of the Mango are agreed that it is the king of tropical fruits. It is, therefore, good news to learn from the *Bulletin of the Department of Agriculture of Jamaica* (Vol. 1, No. 1, New Series, 1909) that experimental shipments of Mangos from Kingston to England have proved successful—the produce of a single tree having realised £70—and that the Director of Agriculture, Mr. H. H. COUSINS, is encouraging the extensive planting of Mango trees in the island. According to Mr. COUSINS, the "Bombay" Mango, introduced to Jamaica by Sir JOHN PETER GRANT, is the most promising variety; it is a hardy tree, of prolific bearing, and has the further advantage of fruiting frequently out of season, when, in all probability, higher prices are to be obtained than during the normal fruiting season. The Mango may be raised from seed or propagated by budding, and it is proposed to carry out budding on a large scale on the many thousands of Jamaican Mango trees which now bear inferior fruit. We are in full agreement with the concluding sentence of Mr. COUSINS' article. "The choice East Indian Mango is not only a most grateful fruit to the palate of any normal person, but it also possesses a fascination for those who have acquired a taste for the fruit that bespeaks an ever-growing demand when this, the most luscious fruit of the tropics, is made accessible to the peoples of America and of Europe."

INTERNATIONAL EXHIBITION AT FLORENCE, 1911.—The City of Florence, and the Royal Tuscan Horticultural Society will hold an international exhibition of horticulture in 1911, on the occasion of the fiftieth anniversary of the proclamation of the Kingdom of Italy. The programme contains six classes: ornamental foliage or flowering plants, either new, or of recent introduction; fruit-bearing plants; vegetables and kitchen-garden plants; seeds; bulbs and tubers; Colonial plants; flower decoration; horticultural arts and industries; horticultural literature and instruction; packing and preserving; history of horticulture. Besides numerous cash prizes and medals to the value of 25,000 lire, objects of art will be offered for competition. At the same time as the horticultural exhibition, a portrait exhibition will take place in the artistic rooms, which have recently been restored in the historical municipal palace (Palazzo Vecchio) besides other shows and amusements.

DETERMINATION OF THE FEEDING HABITS OF BIRDS.—Our attention was recently directed to an interesting case which illustrates how difficult it is to determine the feeding habits of birds. An important contribution to this subject by Mr. NEWSTEAD was recently published in the *Journal of the Board of Agriculture*, and it is there stated that every species of bird must be taken not merely on its merits, but it must also be considered with regard to the amount of available food in its district. Many a bird which, under ordinary conditions, may be regarded as beneficial, becomes noxious if there is a scarcity of its normal food. The present case concerns the jackdaw. Our correspondent writes as follows:—"Herewith I am sending you a jackdaw I shot this morning on my Barley. These birds have been most persistent in their attacks on this particular field, so much so that

I have had a man to keep them off. This morning I happened to get close to this particular bird unobserved, and shot it whilst busy, as I thought, pecking up Barley. My surprise was great when I picked it up to find, not Barley, as I expected, but its bill full of some kind of fly. It is an object-lesson for me. The bird had pulled some Barley up, but no doubt to get at the fly which was attacking the young plant, and whose ravages will be perceived later on." On examination of the fly we find it to be a very common and perfectly harmless insect, so that the jackdaw can receive no credit for destroying it. But, further, whilst the crop of the bird was absolutely empty, its gizzard was full of fragments of Barley, on which it had undoubtedly been feeding. There were also a few of the flies there. The bird, therefore, was, in this case, seriously damaging the crop, and we see how important it is not to form any conclusions as to the food of any bird without a thorough investigation of every attack.

PEACH FRECKLE OR BLACK SPOT.—Peaches cultivated in Europe, America and South Africa are subject to a disease which has for its first effect the spotting and discolouring of the fruit, and for its final effect a checking of growth and cracking of the fruit, which fails to ripen. According to Mr. I. B. POLE EVANS, Plant Pathologist to the Transvaal Department of Agriculture (*Trans. Agric. Journal*, Vol. VII., No. 27, 1909), the disease, which affects also Apricot, Almond, Cherry, Nectarine, and Plum, is due to the fungus *Cladosporium carpophilum* (Thuem). Small, round, dark green spots make their appearance on the stalk end of the young Peaches. The spots increase in number, spread, and coalesce to produce dark patches. The affected parts of the fruits harden, shrivel and, finally, crack. Mr. EVANS finds that winter spraying with Bordeaux mixture, applied three weeks before the buds begin to burst, is the most effective means of prevention. The formula recommended is that used for Peach leaf-curl, viz.: Copper sulphate, 5 lbs.; lime, 5 lbs.; water, 45 gallons. He recommends subsequent sprayings, one when the fruit has set and another when it is half-grown. For these latter sprayings the proportions should be: Copper sulphate, 6 lbs.; lime, 4 lbs.; water, 100 gallons.

PUBLICATIONS RECEIVED.—*The Agricultural Gazette of New South Wales*. (May.) Price 6d.—*Le Chrysanthème et sa Culture*. Société Française des Chrysanthémistes. (Paris: Librairie Horticole, 84 bis, Rue de Grenelle.)—*The Journal of the Board of Agriculture*. (June.) (London: Board of Agriculture and Fisheries.) Price 4d.—*Fourth Annual Report of the Ontario Vegetable Growers' Association*. (Toronto: Ontario Department of Agriculture.)—*Ontario Department of Agriculture*. Bulletin 171: Insects Affecting Vegetables, by C. J. S. Bethune, and Fungus Diseases Affecting Vegetables, by J. W. Eastham and J. E. Howitt, Lecturers in Botany. (Toronto: Ontario Department of Agriculture.)—*Annals of the Royal Botanic Garden, Calcutta*. Vol. XI. Asiatic Palms—Lepidocarpacee. (Part I.) The Species of Calamus, by Dr. Odoardo Beccari. Letterpress and Plates. (Calcutta: Bengal Secretariat Press.) Price £7.—*Order of the Proceedings at the Darwin Celebration held at Cambridge, June 22-June 24, 1909*, with a Sketch of Darwin's Life. (Cambridge: University Press.) Price 2s. 6d. net.—*The Queensland Agricultural Journal*. (May.) (Brisbane: Department of Agriculture and Stock.)—*Small Holders: What they must do to Succeed*, by Edwin A. Pratt. (London: P. S. King & Son, Orchard House, Westminster.) Price 2s. net.

TREES AND SHRUBS.

CASTANOPSIS CHRYSOPHYLLA (THE GOLDEN-LEAVED CHESTNUT).

THIS evergreen tree is closely allied to the Sweet Chestnut, and was included in the genus *Castanea* by Sir Joseph Hooker, when it formed the subject of a plate and description in the *Botanical Magazine* (t. 4953). In this description it is named *Castanea chrysophylla*, but that name is now discarded in favour of *Castanopsis chrysophylla*, of de Candolle. It is a native of North America, and was discovered by David Douglas in 1830 growing in hilly regions about the Grand Rapids of the Columbia (Oregon), Cape Orford, and near Mount Hood. It was subsequently observed by Burke and Hartweg in California, and they are reported to have sent the first seeds of the tree to Europe. It is curious that, although seeds were sent to Kew by Burke nearly 60 years ago, and plants in that establishment are recorded as having fruited in 1856, no old specimens exist at Kew, whilst very few fine examples are recorded from other parts of this country. One of the finest specimens in Great Britain is found on the estate of Earl Ducie at Tortworth Court, Gloucestershire, and this was probably one of the earliest introductions. Travellers describe *Castanopsis chrysophylla* in its natural habitat as a tree, but it varies considerably in stature, being sometimes less than 20 feet high when mature, whilst at other times it reaches 70 feet in height with a trunk of considerable proportions. The leaves are very like those of the Holm Oak, except that the under surface is of a pretty golden colour. The fruits resemble in form those of the Sweet Chestnut, but are much smaller. The nuts, nearly half an inch in diameter, are similar in flavour to those of the Sweet Chestnut. The plant fruits when only a few years old, and in favourable seasons the fruits mature in this country. At Kew it is found to thrive best in sandy soil with which a little peat has been mixed. Trees raised from seeds exhibit remarkable differences in habit; some grow freely with long leading shoots, whilst others form stunted bushes. This was very noticeable in a batch of plants raised at Kew from seeds received from Earl Ducie in 1900. The dwarfest examples are from 2½ to 3½ feet high, whilst the tallest is 15 feet in height, with a trunk girth of 9¼ inches at 2 feet from the ground. The tree is valuable as affording variety for planting, and the golden colour of the undersides of the leaves is very pleasing. It is doubtful whether this tree would succeed in cold or exposed situations. W. D.

MUTISIA CLEMATIS.

THIS beautiful climbing plant (see fig. 185) has recently flowered in the nurseries of Messrs. Robert Veitch & Son, Exeter, to whom we are indebted for specimens. The species is rarely to be seen in gardens, although it has been known to cultivation since the time of the younger Linnæus, who first described it. Messrs. Veitch's plant has flowered in an unheated greenhouse, having a north aspect, and, consequently, unexposed to sunshine. The plant belongs to the Compositæ, and is found wild on the Andes in tropical South America. The pinnate leaves have a long terminal tendril, by means of which the plant climbs. The flowers are terminal, about 2½ inches long, and with involucreal scales, having a whitish downy covering. These scales are a prominent feature in the flower, and increase in length from below upwards. The ray florets are structurally female, the stamens being vestigial. The disc florets are hermaphrodite and tubular, about 1½ inches long, five-toothed at the top, the five segments separating above the base and forming slits, through which the filaments and style partly protrude. In some cases the flowers are cleistogamous.

THE BOTANICAL GARDENS AND PARK AT BATH.

In the prettily undulating park, hemmed in by the hills which surround the town, can be seen remarkably fine specimens of many trees. Thus:—*Arbutus Andrachne*, introduced in 1724 from the Levant; the Tulip tree (*Liriodendron*

Pinus halepensis (one of the few specimens in England); *Catalpa bignonioides*, from U.S.A., introduced in 1726; *Cerasus serrulata*, from China in 1822; *Planera Richardii*, from W. Asia in 1760; and very large specimens of *Quercus Ilex*.

Among the more interesting shrubs in the gardens may be mentioned *Magnolia Kobus* and

with pale yellowish racemes; and the "Chusan Palm" (*Trachycarpus excelsus*). The specimen of *Potentilla fruticosa* at Bath has smaller leaves and larger flowers than is usual, but I am unaware if it has a varietal name.

The Alpine garden was formed in 1877, and designed by Mr. J. W. Morris, F.L.S., who published in 1893 (2nd edition, 1897) a catalogue



FIG. 183.—*MUTISIA CLEMATIS*: FLOWERS ORANGE-SCARLET.
(See p. 414.)

tulipifera), introduced in 1688 from "Canada to Florida"; *Aesculus flava*, from U.S.A. in 1711; *Aesculus rubra*; *A. californica* (the only specimen which has fruited in Britain); *Tilia petiolaris* (one of the finest specimens of this Lime in Europe); a fine example of the rare *Cornus brachypoda variegata*; *Sequoia sempervirens*:

the common *Magnolia stellata*, with its brown, woolly calyx; *Forsythia suspensa*, from China; *Berberis Wallichiana*, from the Himalayas; *Fatsia (Aralia) japonica*; a very fine specimen of the Double Sloe; *Daphne Mezereum*, with cream-coloured flowers; *Genista aethnensis*; *Nuttallia cerasiformis*, resembling a *Ribes*,

of the original plants which were given by Mr. C. E. Broome, F.L.S., to start the garden. The rock-gardens were laid out with care and knowledge, so that the result is both natural and pleasing to the eye. A good supply of local carboniferous limestone forms the staple foundation of the rockwork.

Visitors to Bath will be well rewarded if they visit these pretty gardens so close to the city. The collection of Saxifragas is particularly fine, and comprises the rare *S. Griesbachii*, from the Balkans, with its spike of red, mucronate leaves, which almost hide the blossoms; *S.*

small white-flowered *S. cordifolia*, from Siberia; the hybrid *S. apiculata*; the bright yellow *S. sancta*, from Macedonia, and the weed-like *S. Sibthorpii*, which is not given too much license in these neatly-kept gardens, so that it does not come up on damp gravel paths as we have seen

ginata, from Dauphiné and Piedmont, but somewhat duller and bluer in colour than in its natural state, and *P. Clusiana*, from the Tyrol, with its large flowers and entire, shiny leaves. *P. scotica* was only just appearing above ground.

Several interesting cruciferous plants are now in bloom, such as *Draba hirta*, from the Arctic regions; the ubiquitous *D. aizoides*; *Morisia hypogæa*, peculiar to Corsica and Sardinia; *Dentaria digitata*; a pale yellow *Dentaria*, which is probably *D. diphylla*; *Arabis rosea*, and *A. aubretioides*. I noticed also the following among the more interesting plants in blossom, viz., *Helleborus odorus purpurascens*; *Corydalis cheilanthisifolia*, with its elegant leaves somewhat like those of Milfoil; *C. cava*, both purple and white forms, from the Jura; *Pulmonaria saccharata*; *P. angustifolia* var. *azurea*, a beautiful patch of this small *Pulmonaria* with flowers quite as brilliant a blue as those I have seen at the head of Val Touranche and elsewhere in Piedmont; the white *Daphne Blagayana*; the blue *Synthryis reniformis*, from N.W. America; *Sanguinaria canadensis*, and *Erythronium grandiflorum giganteum*, a beautiful cream-coloured form with yellow eye. *Ruscus hypoglossum* was stunted in growth and of a yellowish-green colour, perhaps from frost. In addition to being only 8 inches high, the leaves were narrower and longer than those of this plant as it grows luxuriantly in some of the gardens at Hyères in the south of France, where formerly it was found wild, though possibly only naturalised. There is a good clump of the handsome and valuable *Pæonia Whittmannia*, on one of the rockeries.

The Victoria Park, with its numerous fine specimens of native and foreign trees, and the botanical gardens, are under the direction of Mr. Halliburton, recently of Kew Gardens. *H. S. Thompson.*

A BEAUTIFUL HARTSTONGUE.

THE beautiful frilled and fringed form of *Scolopendrium vulgare* illustrated in fig. 184 was raised by Messrs. H. B. May & Sons, Lower Edmonton. It affords a vivid idea of what this normally simple-fronded Fern is capable of in the way of variation. In one variety or another of *Scolopendrium vulgare* every normal character has diverged in numerous directions, the bluntly-pointed frond tip producing tassels round or flat, dense or fimbriate, simple or branched. The flat frond has assumed both frills and fringes as the example now illustrated demonstrates; in some varieties it has disappeared entirely, bearing crests on bare stalks. The smooth surface has broken up into ridges and roughnesses, and the heart-shaped base has diverged into a sagittate or barbed form, these barbs going yet further in several varieties and bearing tassels on their own account on assuming an independent frond form. Under selective culture, this Fern has proved peculiarly amenable to cross fertilisation, and Messrs. May's example is a case in point, since it undoubtedly presents a combination of three types, viz., the frilled or crispum section, the fimbriate and the muricate, the murication or roughening of the surface appearing along the centre near the midrib. *Chas. T. Drury, V.M.H., F.L.S.*



FIG. 184.—SCOLOPENDRIUM VULGARE MURICATO FIMBRIATUM.

juniperifolia, from the Caucasus; *S. Aizoon rosea*; *S. Boydii*, both yellow and the variety *alba*; *S. marginata*, from Central Italy; *S. Fergusoni*; *S. cochlearis*, looking nearly as healthy on the Somerset limestone as it does on that of the Maritime Alps; *S. Cotyledon*; *S. Stracheyi*, from the Himalayas, resembling a

it on the Continent. Incidentally, if I remember rightly, the two Sibthorps were buried in Bath Abbey.

A good many Primulas are scattered about the Alpine garden, conspicuous among those in flower at Easter were *P. denticulata* and var. *alba*, *P. viscosa*, *P. rosea* var. *grandiflora*, *P. mar-*

SWEET PEA MASTERPIECE.

THIS new variety of Sweet Pea (see fig. 185) is one of the finest of the lavender-coloured varieties having a waved standard. As will be seen from the illustration, the floral segments are very large, and, there being four blooms on the spike, it has most of the desirable qualities a Sweet Pea is required to possess, at any rate, by those who do not admire an erect standard. Our illustration is from a photograph supplied us by Messrs. Dobbie & Co., Rothsay

AMERICAN NOTES.

ANTIRRHINUMS.

WE learn from *Horticulture* that a member of the Gardeners' and Florists' Club at Boston stated that he raised his Antirrhinums from cuttings in the month of June, taken from seedlings which he had been selecting for a period of seven years, and kept at a temperature of 40° to 45° Fahr. during the winter. He left four or five spikes on each plant. These spikes were of extraordinary size—nearly 2 feet of flowers and buds. Doubtless, this extraordinary vigour in his plants was due to the exercise of selection in regard to the seed-bearing plants.

CEMENT BENCHES IN ROSE GROWING.

IN America Carnations and Roses are extensively grown on benches made of stone, bricks, and cement. Owing to their durability Americans are generally adopting this method of constructing what we should call a flat stage or shelf.

In a paper on Roses read by Mr. Badgeley at a recent meeting of the Morris County Gardeners' and Florists' Society, it was mentioned as a fact not hitherto stated in the gardening journals, that the Rose American Beauty, grown on cement benches, has proved almost a failure.

HOME CORRESPONDENCE.

(The Editor does not hold himself responsible for the opinions expressed by his correspondents.)

NIGHT-FLOWERING CEREUS.—This season we have had a fine display of flowers of this plant, and there are others to follow. We recently cut several fully-expanded blooms; they opened about 7.30 in the evening. Next morning one flower was quite open, whilst another was partially expanded, and they remained in that condition all day; the others faded the morning after being cut. The species is *Cereus grandiflorus*. Perhaps some of your readers may be able to explain why they did not close in the usual way. This is the first time they have lasted fresh for more than one night. *D. S. Melville, Pottaloch Gardens, Lockgilthead, N.B.* [There is nothing remarkable in this. The flowers sometimes remain open nearly two days when the weather is dull.—Eos.]

ANTHUSA ITALICA VARIETIES.—This season will remove any doubt that existed as to the value of *Anchusa italica* "Opal" and its distinctness from the now well-known "Dropmore variety." Large groups of the two plants in flower here shew that the light blue of "Opal" is very different from the deep, rich blue of "Dropmore." When viewed from a distance, so that the two patches can be taken in at one glance, the effect is very fine and such as can never be obtained in the show-tent. Which is the better plant must remain a matter of taste. To describe "Opal" as "like Delphinium Belladonna in colour" is hardly correct. It being brighter and less pale than that plant, I do not know any flower that has just the same shade of blue. In constitution, habit, and length of flowering period "Opal" is identical with "Dropmore." *Harold Evans, Llanishen, Cardiff, June 21.*

OURISIA COCCINEA.—The illustration of *Ourisia macrophylla* in the *Gardeners' Chronicle* of June 19 reminds one of the difficulty many experience in flowering *O. coccinea*, a native of Chili. *O. coccinea* is a handsome plant, which has been widely distributed, but is rarely seen in good condition. In many gardens it dwindles away, and in others in which it grows well it flowers in the sparsest possible manner, and causes much disappointment to its owners. A study of the plant under various conditions leads me to think that it is akin to the *Gentianella* in its uncertainty, and that it frequently fails to respond in one garden to the treatment in which it

flourishes in another. It has often been stated that it does best in a moist and peaty soil with a considerable amount of shade. I have seen it flower well enough in such conditions, but have also met with it in an equally happy state in totally different circumstances. The other day I saw a fine clump of *O. coccinea* in full flower in Sir Herbert Maxwell's garden at Menreith, in Wigtownshire. Here the conditions were not precisely in accord with these frequently advocated. The plant was in the open

however, be said to be really moist. This is the best plant I have seen, excepting those I saw at Straffan, Co. Kildare, some years ago. There the soil seemed more peaty and moister than at Monreith. This *Ourisia* also succeeds well in one part of the garden of General Stewart, at Carruchan, near Dumfries, where it is in a border facing almost north, and therefore shaded from the mid-day and afternoon sun. There it has flowered well, but not so strongly as at Monreith; while at Carruchan it appears



FIG. 185.—SWEET PEA MASTERPIECE: COLOUR LAVENDER.
(See p. 416.)

border, with a fairly open exposure, mainly to the east, although it seemed as if shaded from the afternoon sun by trees and shrubs behind. The foliage of this clump was remarkably healthy, and the plant bore many spikes of the handsome scarlet flowers. The border looked dry, but underneath there was a good depth of soil of a free kind, and not so dry as the appearance of the surface indicated. It could not,

to resent removal to another part of the garden. In my own garden I have a plant obtained from that at Carruchan, and in a low-lying part of the rock-garden and with a north exposure it does not bloom. I recollect trying it more than once in my former garden, with an eastern exposure, and in a more peaty and a moister soil than that at Carruchan, and there it flowered fairly well for a short time, but eventually rotted

off at the base of the stock. Mr. Reginald Farrer has an interesting record of his experiences with this species. He states that he found it to succeed well in borders and on rockwork, preferring to be started in rich, moist soil in a rock-shaded spot. He adds: "Some people tell me of *Ourisia* making a weed of itself as a sun-plant; here, certainly, all my success has been in cool corners under walls or in rocky dells." My own advice to those who want to try this fine plant is to cultivate it in several positions. One may suit when others fail. *S. Arnott.*

STUDENTS AT CAMBRIDGE BOTANIC GARDEN.

—In the Cambridge Botanic Garden for several years past unpaid student gardeners have been employed from time to time, until at last the practice has become a regular one. It arose from the impossibility of finding places for certain applicants who wished to learn. At present there are three young men who are having valuable experience; whilst their services are valuable to the Botanic Garden. They have facilities and privileges that are not possible for those who are paid. They have had, for instance, during the past year the advantage of attending the whole of Professor Seward's botanical lectures without payment of fees; and, for practical observation, the curator himself has taken them to all the principal gardens in the neighbourhood. They have time, too, for private study in the garden when lectures are not going on, and it may be worth mention that, by the kindness of the professor, attendance at these lectures will continue to be permitted. In the Botanic Garden they have had very good work to do. The scheme is now supplementary to the paid staff, and it has been found to work extremely well. The only stipulation made is that these young student gardeners must be under the same rules and regulations as the paid men, certain special facilities that may be given them being understood. *C.*

RANUNCULUS AURICOMUS.—This species, referred to by your correspondent Mr. H. S. Thompson (see p. 384), is by no means uncommon in the perfect state: were it otherwise, it would hardly have gained its English name of "Goldilocks." I have often seen it in hedges and woods in Somersetshire, with numerous well-formed flowers. I remember Portishead Wood was a locality for it; but it looks its best in hedge-banks of a thicket character. A few years ago I found two young plants on the same day about a mile apart, some 20 miles from York, one on a limestone ledge, the other in the middle of a wood. They interested me greatly, as I was unable to determine them. I planted both, and one survived. It is now in fruit. On reading your correspondent's note, I immediately examined the plant again, and found the carpels in their downy, ventricose character and hooked stigma, to agree with *R. auricomus*. It is the only specimen I have ever found with depauperate flowers. A leaf was shown to a distinguished member of the British Association, at that time meeting here, and he was unable to identify it. It is remarkable that your correspondent's enquiry has settled the point after such a lapse of time. *Frank Gunning.*

THE PERPETUAL-FLOWERING CARNATION SOCIETY.—The schedule for the December show just completed, offers largely increased prizes to amateurs and gardeners. Lord Howard de Walden's magnificent challenge cup (value 40 guineas) is accompanied by a money prize. I would like to remind readers that plants for this show should now be in their flowering pots, and it is not advisable to stop any after the end of this month excepting the quickest-growing varieties. *Laurence J. Cook, hon. treasurer, 92, First Avenue, Bush Hill Park, Middlesex.*

A LARGE MELON.—I have this day cut a Melon fruit weighing 14 lbs. The variety is Messrs. Sutton & Sons' Universal. It is a white-fleshed variety and beautifully netted. It would be interesting to know the heaviest weight recorded for a Melon. *H. J. Bloxham, The Gardens, Tongswood, Hawkhurst.* [Our "record" book has many entries of large Melons, including fruits weighing 24½ lbs., 24 lbs., and 20 lbs., but these are all varieties of the Cantaloupe type. There is also a record

of a very large fruit which weighed as much as 32 lbs., but the variety is not stated. Mr. Phillips, who gave the information on this one (see *Gardeners' Chronicle*, November 14, 1857, p. 174), wrote as follows:—"One of your correspondents has asked whether a Melon 16 lbs. in weight is not the heaviest that has been grown in this country? I am sorry I cannot find the memorandum taken at the time, but I have a very distinct recollection of a fruit (the plant was raised by myself) grown by a neighbour of mine, which weighed 32 lbs., and measured fully 3 feet 6 inches in circumference. The same plant produced another fruit of 14 lbs. It was a red-fleshed variety, having a rather smooth skin, and very fair flavour. I believe I took the seed from a fruit served at a table d'hôte in Switzerland. This was about 20 years since. I have since grown a fruit 14 lbs. weight, a green flesh, something like the Ispahan, but flatter in shape and beautifully netted. The flavour of this was excellent. I do not, however, now grow any variety but one called after my gardener, Austen's Incomparable, which is a most delicious fruit, and I think superior to any other; it is of a medium size, green flesh, of the hybrid Persian kind, and most exquisite flavour. I can strongly recommend it." Amongst named varieties the following entries in our book are the more noteworthy: *Victoria*, 12½ lbs., July 2, 1870; *Hoosainee*, 10 lbs., August 1, 1843; do., 12 lbs. 3 ozs., July 2, 1844; *Ispahan*, 13 lbs. 7 ozs., August 8, 1846; *Monro's Green Fleshed*, 9 lbs. 3½ ozs., August 7, 1849; and *Lady Emma*, August 24, 1837.—Eds.]

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 22.—At the meeting held on Tuesday last the principal exhibits were groups of hardy-flowering plants; indeed, there was much repetition in the displays of *Pæonies*, *Pyrethrums*, *Irises*, *Lupins*, *Eremuri*, and similar subjects. Sweet Peas were numerous, and there were also *Roses*, *Carnations*, *Pelargoniums*, a unique collection of *Nephrolepis*—both species and varieties; and a considerable number of greenhouse flowering plants. Orchids were fewer than usual, whilst the exhibits in the fruit and vegetable section were almost negligible.

The FLORAL COMMITTEE granted eight Awards of Merit to novelties; but neither the ORCHID COMMITTEE nor the FRUIT AND VEGETABLE COMMITTEE granted an Award.

At the afternoon meeting in the lecture room, the first of the "Masters" Memorial Lectures was given by Prof. Hugo de Vries, the subject being "Masters' Vegetable Teratology."

Floral Committee.

Present: W. Marshall, Esq. (Chairman), and Messrs. C. T. Druery, Henry B. May, Chas. E. Shea, Jno. Green, W. Bain, W. P. Thompson, W. J. James, E. H. Jenkins, W. Cuthbertson, Chas. E. Pearson, Chas. Dixon, J. T. Bennett-Poë, F. Page Roberts, H. J. Jones, Jas. Douglas, Chas. Blick, Herbert J. Cuthbush, J. F. McLeod, W. Howe, J. Jennings, G. Reuthe, W. J. Bean, E. A. Bowles, R. Hooper Pearson, Ed. Mawley, R. C. Notcutt, James Hudson and E. T. Cook.

The Hon. VICARY GIBBS, Elstree, Herts. (gr. Mr. Ed. Beckett), showed a comprehensive collection of scented-leaved *Pelargoniums*. The one labelled tetragonum has succulent, angular stems; others of especial interest were *betulinum*, the Birch-leaved *Pelargonium*; *tomentosum*, smelling of Peppermint, Old Unique, and *saxifragoides*, the last-named having foliage resembling small Ivy leaves. In another part of the hall this exhibitor showed very large plants—standard trained—of the variety *Clorinda*, a groundwork of white-flowered *Astilbe* (*Spiræa*) being employed. (Silver Banksian Medal.)

Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea, showed miscellaneous greenhouse flowering plants. *Kalanchoe flammea* was finely exhibited, the red flowers being very attractive; *Medinilla magnifica* was exceedingly handsome, the large inflorescences of pink blooms showing prominently against the broad coriaceous leaves; *Exacum macranthum*, with flowers of the deepest blue; *Hydrangeas*—both blue and pink

flowered; *Cannas* in variety; *Lobelia tennior*, *Anthuriums* and *Calceolaria Clibranii*, all contributed to a well-arranged and very effective exhibit. Adjoining the greenhouse plants the same firm showed *Alonsoa Warszewiczii*, *Brachycome iberidifolia*, *Candytuft*, *Nemesia*, and other annuals. (Silver-gilt Banksian Medal.)

Messrs. H. B. MAY & SONS, The Nurseries, Edmonton, exhibited bunches of Zonal *Pelargoniums* in about 40 varieties, representative of the best kinds. A selection includes King of Spain (scarlet), Princess Feodar de Wyzeway (pink, with white centre), Miss Ashworth (double flowers, white), Mr. B. W. Currie (pink), and Vicomtesse de Vogue (salmon). Adjoining the *Pelargoniums* was a group of Ferns. These were varieties of *Nephrolepis*. Especially handsome were *N. exaltata superba*, *N. canaliculata*, *N. Amerpholii*, *N. Duffii*, *N. cordifolia tessellata*, *N. Bausei* and *N. Mayi cristata*. (Silver-gilt Flora Medal.)

Mr. HOWARD H. CRANE, Highgate, London, N., displayed varieties of *Violas* and the miniature type known as *Violettas*. The beautiful blue *Viola* named Archie Grant was charming, as also were *Duchess of Fife* (yellow, with blue margin), *Bessie* (very faintly suffused with lavender), *Sultan* (purple), *Acme* (plum colour), and *Miss E. M. Cam* (yellow). The flowers were very fresh and bright in appearance, and were staged in pans of sand.

Sir EDMUND LODER, Bart., Leonardslee, Horsesham, Sussex (gr. Mr. W. Cook), staged interesting plants from the open. There were many finely-developed blooms of *Sarracenia purpurea*, intermixed with them being spikes of *Eriophorum* (Cotton). Other plants of interest were *Abutilon vitifolium*, *Magnolia Watsonii*, *M. parviflora*, and *Philadelphus Falconeri*. (Silver Banksian Medal.)

Messrs. BAKERS, Wolverhampton, staged *Aquilegias*. The flowers were of many shades of colours, and represented an excellent strain. (Bronze Banksian Medal.)

Messrs. H. CANNELL & SONS, Swanley, Kent, also staged some fine *Aquilegias* having blooms of numerous colours and with long-spurred sepals. (Silver Flora Medal.)

Mr. JAMES DOUGLAS, Edenside, Great Bookham, Surrey, exhibited a collection of garden *Pinks*, showing in all some 210 plants in about 27 varieties. *Snowdrift* is an excellent white variety, the blooms being large and full. *Border Chief* is a beautiful laced flower, the markings being pink and with crimson-coloured centre. *Adonis* is very free in flowering. One named *The Duke* has a clove-coloured centre and rose lacing. Mr. DOUGLAS also showed varieties of German *Irises*.

Mr. H. BURNETT, Guernsey, displayed choice *Carnations* of the perpetual-flowering section, having vases of most of the prominent varieties, pleasingly arranged with *Smilax* and other greenery. (Silver Banksian Medal.)

A fine, new, white *Carnation* of the perpetual-flowering type, named *Stirling Stent*, was shown by REDLANDS Co., Emsworth, Hants.

Messrs. PAUL & SON, Old Nurseries, Cheshunt, arranged a floor group of hardy flowers, and, as a centre plant, a tall specimen of *Goldfinch Rose* with numbers of its pretty yellow blooms. Messrs. PAUL also showed garden *Roses* in variety. (Silver Flora Medal.)

Bunches of *Roses* were also shown by Messrs. BEN. R. CANT & SONS, Colchester (Silver Banksian Medal); another exhibit of *Roses* was made by Messrs. F. CANT & Co., Colchester, who had bunches of excellent blooms of well-known varieties. (Silver Flora Medal.)

Messrs. W. CUTBUSH & SON, Highgate, London, N., showed a large group of hardy flowers, including some magnificent spikes of *Eremuri*, arranged in a setting of *Maples* and *Bamboos* with a groundwork of *Campanula glomerata*. *Gladiolus Prince Henry* of the ramosus section is one of the earliest of these flowers. *Papaver Prince of Orange* is a beautiful variety of the Oriental *Poppy*, the name being indicative of the colour. (Silver-gilt Banksian Medal.)

Mr. G. REUTHE, Keston, Kent, showed Alpine and border flowers, also flowering shrubs and *Rhododendrons*. (Silver Banksian Medal.)

Mr. AMOS PERRY, Enfield, Middlesex, staged a large exhibit of garden flowers. Hybrid *Heucheras* were a feature, the colours in the flowers ranging from pure white to shades of red. Other subjects noticed were *Dictamnus Fraxinella*, *Drimys Winteri*, fine spikes of *Eremuri*, *Liliums* in variety, *Achillea alpina*, *Oriental Poppies* (on

named after Mrs. Perry is a delicate shade of pink), and Irises in variety. (Silver Flora Medal.)

Messrs. BARR & SONS, King Street, Covent Garden, London, staged large batches of Pæonies, Irises, Lupins, Liliams, Campanulas, and other garden flowers.

GUILDFORD HARDY PLANT NURSERY showed interesting Alpines in small pots, also bunches of Pæonies, Pyrethrums, Liliams, Heucheras, &c.

Messrs. GEO. BUNYARD & Co., Maidstone, staged a very large exhibit of hardy flowers, embracing most of the best kinds in season. A considerable portion of the display was of varieties of Pæonies, but Poppies, Heucheras, Gaillardias, Lupins, &c., were also shown in great assortment. (Silver-gilt Flora Medal.)

Messrs. WM. BULL & SONS, King's Road, Chelsea, exhibited varieties of Spanish Irises. Ophir (pale yellow), Cyrus (darker yellow), Bronze King, Alexander von Humboldt (blue with a yellow blotch), Flora (pale lavender, white, and yellow), Darling (deep blue), and British Queen (white) are a selection.

Pæonies were well shown by Mr. CHAS. TURNER, Royal Nurseries, Slough. Single-flowered varieties were very beautiful, including such handsome flowers as Queen of Singles (white), Enchantress (pink), and Leonora (rosy-red); several were exhibited for the first time.

A large floor group, principally composed of Pæonies, was set up by Mr. MAURICE PRICHARD, Christchurch, Hants. A batch of the beautiful Dropmore variety of *Anchusa italica* was prominent. The group was outlined in sprays of *Gypsophila*, varieties of *Heucheras*, and other light inflorescences. (Silver Banksian Medal.)

A large number of Pæonies was displayed by Messrs. R. H. BATH, LTD., Wisbech. (Silver Flora Medal.)

Messrs. G. & A. CLARK, LTD., Dover, arranged a pleasing exhibit of hardy flowers in great variety, including many Pæonies, *Lychnis viscaria*, *Inula grandiflora*, Lupins, and Pinks. Messrs. CLARK also staged several vases of Sweet Peas. (Silver Flora Medal.)

Messrs. T. S. WARE, LTD., Feltham, staged garden flowers, amongst which *Eremuri* were conspicuous, also *Delphinium Persimmon* of beautiful pale blue colour, *Lilium Davuricum*, Pæonies in variety, Campanulas, and Phloxes. (Silver-gilt Banksian Medal.)

Messrs. J. CHEAL & SONS, Lowfield Nurseries, Crawley, staged sprays of flowering shrubs and trees. *Quercus nigra* has almost black foliage, whilst *Q. concordia* is a shade of golden green. *Crataegus Carrieri* has large bunches of white flowers; the plant retains its foliage until Christmas. *C. × Leana* has a globular inflorescence and sweet-smelling flowers. It is a free grower, and forms a valuable stock for more delicate kinds. *Kalmia latifolia* was very showy. There were numerous *Rhododendrons*, including *R. punctatum*, *R. ovatum*, *R. myrtifolium*, and others of the Alpine section. Messrs. CHEAL also showed hardy flowers in variety.

Messrs. GEO. JACKMAN & SON, Woking Nursery, Surrey, put up a group of hardy flowers. We noticed a choice Iris named Snow Queen; *Delphinium Belladonna* and *Dracocephalum Ruychiana* are two lovely blue-flowered plants; *Betonica nivea* was also shown finely in this group. (Silver Banksian Medal.)

Messrs. KELWAY & SON, Langport, Somerset, showed, as at the last meeting, large numbers of Pæonies and Pyrethrums. Queen Alexandra (white) and Princess Beatrice (pink) are two choice varieties of these latter flowers. (Silver Flora Medal.)

The Misses HOPKINS, Mere Gardens, Shepperton-on-Thames, arranged a rock-garden exhibit with seasonable Alpine plants in flower.

Mr. CLARENCE ELLIOTT, Six Mills Nursery, Stevenage, showed pans of Alpine plants and a small rock-garden exhibit.

Messrs. JOHN PEED & SON, West Norwood, London, S.E., arranged seasonable Alpine flowers on a rather extensive rock-work exhibit. It was pleasing to notice in the arrangement there was no crowding of the subjects, so that a natural effect was produced.

Other exhibitors of hardy flowers were Mr. A. J. HARWOOD, St. Peter's Nursery, Colchester; Mr. R. C. NOTCUTT, Woodbridge (Silver Banksian Medal); and Messrs. MAWSON BROS., Windermere, who showed *Papaver orientale* Jennie Mawson, the flower being a pleasing tone of salmon.

Messrs. E. W. KING & Co., Coggeshall, Essex,

displayed Sweet Peas in great assortment. (Silver Banksian Medal.) Another large exhibitor of these popular flowers was Mr. W. J. UNWIN, Histon, Cambridge, who showed beautiful blooms of Heston Favourite (orange-scarlet), Cambridge Pride (light ground, heavily edged with pink), Gladys Burt (cream, suffused slightly with pink), Frank Unwin (lavender), Nancy Perkins (orange-salmon), &c. (Silver Banksian Medal.)

Mr. CHAS. BLICK, Warren Nursery, Hayes, Kent, showed new Carnations. One received an Award of Merit (see below). Another, named John Ruskin, is a fine, light-edged flower, with a yellow ground. Mr. BLICK also showed well-grown blooms of the beautiful Carnation named after Lady Hermione.

AWARDS.

AWARDS OF MERIT.

Aster mesa grandiflora.—An excellent border plant growing about 2 feet high. The neat, well-formed flowers are of a bright tint of satiny-purple. The plants are said to flower from June to September. (Shown by Messrs. W. CUTBUSH & SONS.)

Campanula phlytidocalyx.—Inflorescences of this species were shown by Sir TREVOR LAWRENCE, Bart. (gr. Mr. Bain). The flowers measure about 1 inch across, and they are of deep purple colour. The plants grow from 1 foot to 2 feet high.

Carnation "Her Majesty".—A yellow-ground flower with very deep purple edge. It is of excellent form, and one of the best heavy-edged varieties raised. (Shown by Mr. CHAS. BLICK, Warren Nursery, Hayes.)

Delphinium Moerheimeii.—This is a lax-flowered variety obtained from a cross between *D. Belladonna* and *D. sinensis*. The flowers are white, except for touches of green. (Shown by Messrs. W. CUTBUSH & SONS.)

Pæonia "Leonora".—A very handsome, single-flowered variety, with large, crimson flowers.

Pæonia "Queen of Singles".—A pure white variety of very large size. The white petals and yellow stamens are very effective. (Both these Pæonies were shown by Mr. C. TURNER, Slough.)

Sweet Pea Blanche Stevens.—This is a very large, pure white variety, with broad, erect standard. There were three flowers on a stem. (Shown by Mr. H. J. JONES.)

Sweet Pea Sterling Stent.—A very bright-looking, salmon-red variety of good size. (Shown by Mr. J. AGATE.)

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair), and Messrs. Jas. O'Brien (hon. secretary), Harry J. Veitch, de B. Crawshay, W. Boxall, W. Thompson, F. Sander, F. J. Hanbury, R. G. Thwaites, Walter Cobb, C. H. Curtis, J. Charlesworth, W. P. Bound, W. H. Hatcher, W. H. White, H. A. Tracy, Gurney Wilson, J. Wilson Potter, R. Brooman-White, W. Bolton, A. Dye, Stuart Low, A. A. McBean, J. Forster Alcock and Elijah Ashworth.

There was the smallest display of Orchids which has been staged at Vincent Square for a considerable time, and only three plants were entered to go before the Committee, who made no awards.

Messrs. STUART LOW & Co., Bush Hill Park, Enfield, staged an effective group of considerable extent, and containing many pretty species, the group securing a Silver Flora Medal. Some very fine *Cattleya Mendelii*, *C. Warszewiczii*, and other *Cattleyas*, including the very large *C. grandis*, were in the group, in which also were noted many other species.

Mr. A. W. JENSEN, Lindfield, showed a small group of very fine forms of *Cattleya Mendelii*, *C. Warszewiczii* and *C. Mossiae*, including a plant of the blush-white *C. M. Arnoldiana aurea*, with little other colour than yellow in the lip. (Silver Banksian Medal.)

Messrs. STANLEY & Co., Southgate, staged a group in which the varieties of *Cattleya Mossiae Reinckiana* were well displayed, showing great variation in the colour of the lips in the different forms. White-petalled forms of *C. Gasckelliana* were also included. (Silver Banksian Medal.)

Monsieur MERTENS, Ghent, showed a selection of hybrid *Odontoglossums*, *Odontiodas* and *Cattleyas*.

J. G. BERGHEIM, Esq., Belsize Court, Hampstead (gr. Mr. Page), sent a singular-looking *Megaclinium* from tropical Africa.

R. G. THWAITES, Esq., Chessington, Streatham (gr. Mr. Black), showed *Odontoglossum crispum Trianae majesticum*, a grand white variety with large flowers of fine shape and substance.

Baron Sir H. SCHRÖDER, The Dell, Egham (gr. Mr. Ballantine), sent *Odontoglossum Black Prince*, a showy hybrid densely blotched with dark claret-red, showing the white ground colour at the margins and between the blotches.

Fruit and Vegetable Committee.

Present: A. H. Pearson, Esq. (in the Chair); and Messrs. J. Cheal, W. Bates, W. Poupart, J. Willard, A. Dean, J. Perkins, P. C. M. Veitch, J. Lyne, H. Hooper, J. Davis, H. Parr, J. Vert, E. Beckett, O. Thomas, C. Foster, W. Barnes, A. H. Allan, T. Hobday, C. G. A. Nix, J. McIndoe, G. Wythes, J. Jaques and S. T. Wright (secretary).

The only exhibit of importance was a collection of Cabbage Lettuces and early Cauliflowers, shown by Messrs. JAMES VEITCH & SONS, Chelsea, for which a Silver Knightian Medal was awarded. The best of the Lettuces were Passion, Unique, a brown-leaved variety; Imperial, New York, the largest shown; Palatine, with neat, compact heads, and well-hearted; Rudolph's Favourite, a fine variety for garnishing and salads, the colour being golden-green; Best of All, and Early Cold Frame. The Cauliflowers were sown on January 2, and planted out on April 16. The variety was Early Forcing.

Messrs. KELWAY & SON, Langport, showed a basket of Harbinger Cauliflower.

COMPETITIVE CLASSES.

There were three classes for Tomatos, but only one was contested, that for three dishes of distinct varieties grown by an amateur. The 1st prize was awarded to the Hon. VICARY GIBBS, Elstree, Herts. (gr. Mr. Ed. Beckett), who had good fruits of Perfection, Golden Perfection, and Sutton's A1; 2nd, Lord FOLEY, Ruxley Lodge, Claygate, Surrey (gr. Mr. H. C. Gardner), with Hipper's 1st, Dwarf Red, and Winter Beauty; 3rd, Lord HOWARD DE WALDEN, Audley End, Saffron Walden (gr. Mr. J. Vert).

THE FIRST "MASTERS" LECTURE.

THIS was the first of a series of lectures designed to commemorate the name of Dr. Maxwell T. Masters, for so long a period Editor of the *Gardeners' Chronicle*. The selection of Professor Hugo de Vries as the deliverer of the lecture was peculiarly fitting. The modesty of the great Dutch botanist prevented those who saw him—in the majority of cases for the first time—in the Lecture Room at the Horticultural Society on Tuesday afternoon from knowing how appropriate the selection had been. For it is by Professor de Vries that the most considerable advances in the scientific study of teratology have been made since the ground was first broken by the publication, in 1869, of Masters' *Vegetable Teratology: An Account of the Principal Deviations from the Usual Construction of Plants*.

Professor de Vries paid a just tribute to the painstaking work of Dr. Masters, stating that although the book was to a very great extent a narration of observed facts, nevertheless on most of its pages there were evidences of the philosophical mind possessed by the author. Mainly through the influence of Dr. Masters, English horticulture had developed upon a sound and scientific basis. The study of abnormalities has a strange history. This is primarily due to the basis on which Linnaeus founded his system of classification. Before Linnaeus's day the genera were regarded as the units of the natural system; but he elevated the sub-divisions of the genera—the species—to this rank: this elevation meant that the species were believed to have been created. The abnormalities which could be observed to arise in one's own garden from normal parents had obviously not been created in the beginning, and were, therefore, in the opinion of Linnaeus, not worthy of the attention of the serious botanist. It is, indeed,

recorded that Linnæus forbade his students to pay any attention to such abnormalities. It seems not unreasonable to suggest that this ruling out of court of all "deviations from the usual construction of organism" may have contributed largely to the persistence in a belief in the immutability of species. So long as permission to pay attention to, and much less to devote a lifetime to the investigation of deviations from the normal, was withheld by those who directed the course of biological enquiry, it was impossible that any progress could be made with the study of evolution, except by those who disregarded the injunctions of their professors.

If it may be said that, before the general acceptance of a theory of evolution, too little attention was paid to the study of abnormalities, it certainly may be urged, not without some justice, that since a belief in evolution has become general, abnormalities have assumed a prominence which is not commensurate with the share which they have had in the evolutionary process. The theory of evolution demands the existence of variations; and in the search for these, which this demand necessitated, many kinds of abnormalities were collected and recorded, which, in all probability, have little to do with the main lines of differentiation. What we have said merely refers to abnormalities in their direct bearing on evolution. What we really want is some criterion which will enable us to distinguish between normal abnormalities (if the expression may be permitted), which are the variations to which evolution is due, and abnormal abnormalities, or monstrosities, which have nothing to do with evolution. The only hope of obtaining such a criterion is to work on the lines laid down by Masters; to record with detailed figures the structure of any abnormality of whatever kind that may appear, and, what is equally important, to find out whether the abnormality is repeated in the offspring of the monster. Such investigation, as Professor de Vries pointed out, has been made possible by the work of Masters, which enables the enquirer to find out whether an abnormality of a similar kind has been recorded before, and to fit it into a scheme which, as Masters admits, is only an approximation to a natural one.

Teratology may often succeed, as Professor de Vries told us, where the investigation of normal form has failed, in affording a clue as to the primitive structure of organs. The study of monstrosities is, further, likely to throw a great deal of light on the question of the symmetry of distribution of organs in the plant body. And, lastly, we cannot yet guess what problems, which have not yet taken shape in men's minds, may not be solved by a proper acquaintance with these curious phenomena. These are merely illustrations of the truth that the surest road to a knowledge of the normal is the investigation of the abnormal.

ROYAL AGRICULTURAL.

R.H.S. DEPUTATION TO HORTICULTURAL SHOW.

JUNE 23 to 26.—The general show at Gloucester was of great extent and complete in every class. The weather on Tuesday, the opening day of the agricultural or main section, was stormy, but there was a large attendance.

The horticultural exhibition in connection with the show, under the management of Mr. Peter Blair, of Stoke-on-Trent, as opened on Wednesday afternoon. It was undoubtedly the best ever held in connection with the Royal Agricultural Society, the visit of his Majesty King Edward VII. inducing the best efforts of all engaged. The horticultural show under canvas was arranged in one of the largest marquees procurable in the country, with two smaller tents, one at each end, the commodious walks for the visitors being arranged so that the whole of the show could be inspected without leaving the tent space. The King congratulated Mr. Blair on his efforts, and expressed great satisfaction.

The R.H.S. deputation included Sir Trevor Lawrence, Bart., K.C.V.O. (President), the Rev. W. Wilks (Secretary), Mr. Henry B. May, and Mr. A. E. Bowles.

In their inspection of the exhibits they were assisted by Mr. Jas. O'Brien, V.M.H. Sir Trevor Lawrence, Bart., K.C.V.O. (President of

the R.H.S.), formed one of the deputation to receive the King, and took lunch in the Royal Pavilion. The other members of the deputation partook of the hospitality of the Mayor.

Certain Awards were made by the R.H.S. deputation in addition to the Schedule Awards made by the judges.

The Nature Study Section, in which Sir W. T. Thiselton-Dyer has taken such interest, and the Forestry Department, in which Mr. H. J. Elwes has taken a prominent part, were good educational displays, which would require much space even to refer to briefly.

In front of the main entrance on the central stage was the grand group of Orchids from Colonel G. L. HOLFORD, C.I.E., C.V.O., Westonbirt, which undoubtedly gave the superlative character to the show, the arrangement being cleverly and artistically carried out by Mr. H. G. Alexander, who may well claim to be not only England's best Orchid grower, but a decorative artist of the highest order of merit. The plan of the arrangement consisted in the middle being well carried up at the back, fine *Lælio-Cattleya Canhamiana* and *L.-C. Aphrodite* being chiefly used. On each side were masses of very fine white *Odontoglossum crispum*, with handsomely-coloured *Cattleyas* and hybrid *Lælio-Cattleyas* continuing to the ends at each side. In the front and middle distance, and forming the most striking feature in the group, were many marvellous specimens of *Miltonia vexillaria*, so densely set with flowers that the foliage was almost hidden. Among the best noted were the bright magenta-rose variety *Empress Augusta Victoria*, with 20 spikes bearing 105 flowers; a pair of the white-lipped variety *virginale*, with 75 flowers and 77 flowers respectively; *M. vexillaria superba*, with 23 spikes of 103 flowers; *M. v. chelsiensis*, and other varieties grandly flowered. *Odontoglossum crispum* were represented by over 100 spikes, the spotted and best named varieties being *Norah*, *Zoroaster*, *Westonbirt* variety and *Trianae*. Among the hybrids were very dark-coloured *O. Othello*, *O. amabile*, *O. Wilckeanum imperiale* and others. Among the *Cattleyas* were many fine *C. Mossiæ*, the best white variety *Wageneri*, and *Countess Grey* being charming plants. *C. Dusseldorferi Undine*, which was raised at Westonbirt, like most of the hybrids shown, shows up as one of the best white *Cattleyas*, and *C. intermedia alba*, good *C. Warneri*, *C. Warszewiczii* and *C. Mendelii* were noted. *Brasso-Cattleyas* made a telling feature in this excellent group, a true albino of *Brasso-Cattleya Digbyano-Mossiæ*, *B.-C. Siren superba*, and some finely-coloured *B.-C. Digbyano-Warszewiczii* being specially good. *Lælio-Cattleyas* raised at Westonbirt and displaying the most varied colours were effectively arranged, *L.-C. Ganymede*, *L.-C. Lustre*, *L.-C. Elva* *Westonbirt* variety and the numerous varieties of *L.-C. Canhamiana* being very effective. Other good things well displayed in batches were *Vanda teres*, *Phalenopsis Rimestadtiana*, *Sophrolaelia leta Orpetiana*, fine forms of *Lælia purpurata*, *Dendrobium illustre*, *D. formosum*, and other *Dendrobiums*. The Lawrence Gold Medal for the finest exhibit of the year was made by the R.H.S. deputation.

Messrs. JAS. CYPHER & SONS, Cheltenham, arranged their fine exhibit of specimen stove and greenhouse plants next, and which included two noble specimens of *Darwinia tulipifera*, each 6 feet across, a still larger *Erica Cavendishiana*, the bright magenta-rose *Bougainvillea Cypheri*, certainly the best as an exhibition plant, large *Pimelia diosmaefolia*, *Erica verticosa magnifica*, *Clerodendron Balfourii*, and the whole effectively set up with scarlet *Clerodendrons* intermixed. Messrs. CYPHER & SONS also arranged a most effective group in Class 1, group of miscellaneous plants not exceeding 350 square feet, their group having tall *Kentias* at the back, with pillar *Roses* beneath them, salient points being made with handsome *Codiaeums*, the body being effectively filled in with good Orchids, comprising *Cattleyas*, *Lælio-Cattleyas*, *Odontoglossums*, &c. Very pretty effects were made by an elegant specimen of *Oneidium divaricatum*, with yellowish-bronze flowers; slender yellow *O. flexuosum*, and an unusually elegant feature in a tall, graceful plant of *Cyperus papyrus* (*Papyrus antiquorum*). (Gold Medal.) The same firm staged a beautiful group of Orchids, well arranged for effect, made up of showy *Lælio-Cattleyas*, *Cattleyas*, *Brasso-Cattleyas*, *Odontoglossums*, &c. *Lælia tenebrosa* (with many flowers), *Lælia purpurata* (in fine

variety), *Lælio-Cattleya Canhamiana* (with 10 flowers), a selection of showy *Masdevallias*, two distinct varieties of *Bulbophyllum Lobbiai*, good *Miltonia vexillaria*, *Vanda cœrulea*, *Odontoglossum cordatum*, *Cœlogyne pandurata*, finely-flowered yellow *Anguloa Clowesii*, graceful *Epidendrums*, &c., were also included. For this and the fine specimen stove and greenhouse plants, the R.H.S. Gold Medal was given.

Other fine exhibits in Class I. (not exceeding 350 square feet) were shown by the following exhibitors:—

Mr. W. A. HOLMES, West End Nursery, Chesterfield, had fine *Kentia* Palms, *Codiaeums*, *Roses Hiawatha* and *Lady Gay*, *Caladium argyrites* being effectively used as an edging. (Silver-gilt Flora Medal.)

J. BLACKER, Esq., Selby, Yorks. (gr. Mr. Curtis), had *Roses Pink Rambler*, *Hiawatha*, and *Delight*, fine *Codiaeums*, and *Humea elegans*. (Small Silver Cup.)

Mr. SHARP, Almondbury, Huddersfield, *Roses*, *Abutilon Savitzii*, and *Odontoglossums*. (Silver gilt Banksian Medal.)

Mr. VAUSE, Leamington, *Codiaeums*, *Ferns*, *Odontoglossums*, &c. (Silver-gilt Banksian Medal.)

Class II. (Amateurs).—This was for a group arranged on a space of 200 square feet. There was only one entry, Sir JOHN DORINGTON, Lypiatt Park, Stroud (gr. Mr. Savegar), cleverly occupying the end space with one of the prettiest exhibits in the show, a tastefully-arranged group of foliage plants and Orchids, in which *Cattleyas*, &c., *Hippeastrums*, scarlet and white *Anthuriums*, and many interesting plants were shown to advantage. (Silver Cup.)

Other very fine exhibits in the large tent included a large collection of fruits in pots from THE KING'S ACRE NURSERIES, Hereford, the same firm staging an extensive and artistically-arranged exhibit of showy herbaceous perennials, *Ferns*, foliage plants, &c. (Silver-gilt Banksian Medal.)

On one side of the main entrance Messrs. WM. CUTBUSH & SONS, Highbury, had a cleverly-arranged group of *Carnations*, *Roses*, &c., with tall *Eremurus robusta* at the back. Specially fine were *Carnation Lady Coventry* (large red), *Enchantress* (both white and blush), *Winsor* (salmon pink), and *Victory* (scarlet). The charming dwarf decorative *Rose Mrs. Wm. Cutbush* also was very effective. (Silver-gilt Banksian Medal.)

MESSRS. HEATH & SONS showed *Carnations* and scarlet *Pelargoniums*. (Silver Cup.)

HUGH ANDREWS, Esq., Toddington Manor, Winchcombe (gr. Mr. Tooley), good *Carnations* and *Eremurus*. (Silver Flora Medal.)

MESSRS. YOUNG & CO., Hatherley, Cheltenham, *Carnations*. (Silver Flora Medal.)

Mr. GODFREY, Exmouth, decorative plants, in which Godfrey's very handsome varieties of *Papaver orientale* were prominent. Also *Pelargoniums*, pink *Spiræas*, *Solanum Wendlandii*, &c. (Silver Banksian Medal.)

MESSRS. J. JEFFRIES & SONS, Cirencester, *Carnations*, *Roses*, &c. (Silver Flora Medal.)

BAKER'S, Wolverhampton, herbaceous plants. (Silver Flora Medal.)

At the entrance of one of the end tents Colonel G. L. HOLFORD, C.I.E., C.V.O. (gr. Mr. Chapman), staged a very fine group of the superb *Westonbirt Hippeastrums*, the large flowers varying from white to the most intense scarlet, with intermediate white forms prettily striped with rose and red. (Gold Medal.)

Messrs. STUART LOW & CO., Bush Hill Park, Enfield, filled one side, extending 75 feet, with an extensive group of Orchids, the forms of *Cattleya Mendelii* including two new varieties, the one with slate-blue lip, and the other with rose-feathered petals, being good. *Odontoglossums*, including spotted *O. crispum*, the pretty *O. Adrianae* Low's variety, and some hybrids, were also noted. The firm continued with fine *Carnations*, the new *Pink gloriosa*, a batch of blue *Hydrangeas*, the new *Ampelopsis Lowii*, scarlet *Gerberas*, &c. (Silver-gilt Flora Medal.)

MESSRS. BLACKMORE & LANGDON, Bath, had a grand group of *Begonias*, chiefly double. (Gold Medal.)

MESSRS. DICKSONS, Chester, a fine show of *Pæonies*, *Delphiniums*, &c. (Silver Flora Medal.)

Mr. H. W. EVANS, Llanishen, Cardiff, showy herbaceous plants.

Mr. H. N. ELLISON, West Bromwich, a nice selection of exotic *Ferns*. (Silver Banksian Medal.)

Supplement to the "Gardeners' Chronicle."



CHARLES DARWIN.



Messrs. JARMAN & Co., Chard, the fine blue and white Sweet Pea Mrs. Townsend, Roses, Pelargoniums, &c.

Messrs. GEO. MALLETT & Co., Cheddar, fine herbaceous plants.

Messrs. GUNN & SONS, Birmingham, had a fine exhibit of Roses, Gladioli, and the handsome bell-shaped *Viola cornuta purpurea*. (Silver Banksian Medal.)

Mr. R. H. BATH, Wisbech, a very extensive show of Carnations, Pæonies, Delphiniums. (Silver Flora Medal.)

Messrs. KELWAY & SONS, Langport, a fine lot of Pyrethrums and Pæonies.

In the tent at the other end of the main tent Messrs. DOBBIE & Co., Rothesay, had a grand show of hardy flowers—Violas, Aquilegias, Iris, &c. (Silver-gilt Banksian Medal.)

Competitive groups of herbaceous plants were also here arranged.

Messrs. RICH & Co., Bath, showed fine hardy plants; and Mr. A. A. WALTERS, Bath, Roses and White Pæonies. (Silver Banksian Medal.)

The very fine competitive groups of Sweet Peas were also well displayed.

Mr. MOUNT, Canterbury, showed Roses; Messrs. J. H. WHITE & Co., Worcester, herbaceous plants; Messrs. GEO. COOLING & SONS, Bath, Roses; Mr. C. F. WATERS, Balcombe, a fine lot of 40 varieties of Carnations, the good, salmon-red decorative Carnation Edith Waters being very handsome. (Silver Flora Medal.)

In the open ground Messrs. SUTTON & SONS, Reading, had a very interesting exposition of intensive vegetable culture on the French system, showing how different crops may be grown together. (Silver Knightian Medal.)

Messrs. JEFFRIES had a good show of fine hardy trees and shrubs.

Messrs. PULHAM exhibited a very pretty rock and water-garden.

Messrs. HEATH & SONS, Cheltenham, an extensive Alpine garden.

Messrs. WHEELER, of Gloucester, made a beautiful floral decoration in front of the Royal Pavilion and other buildings.

Messrs. WEBB, Messrs. CARTER, Messrs. SUTTON, and other seedsmen also had their stands tastefully decorated with flowers. Messrs. SUTTON had also a fine display of Gloxinias, Begonias, Schizanthus, &c.

AWARDS.

R.H.S. FIRST-CLASS CERTIFICATES.

Cattleya Mossiae Countess Grey, from Colonel G. L. HOLFORD, C.I.E., C.V.O.—A most charming flower of the typical *C. Mossiae* class, with enormous magenta rose blooms, with large, violet-marbled lip.

BRITISH GARDENERS' ASSOCIATION.

At the last meeting of this association, the new Executive Council met for the first time. Mr. Geo. Hemming was elected chairman for the ensuing year, and Mr. John H. Witty vice-chairman. The question of editing and enlarging the *Journal* of the association was considered, but no decision was arrived at pending further information in regard to the financial aspect. It was decided by a majority that the monthly committee meetings shall be held on Tuesdays at 4 p.m. as usual. The secretary was instructed to prepare a form and draft a letter to be sent out inviting the attention of those wishing to become honorary members. It was also decided to obtain samples and specimens of a badge. Seventeen new members were elected, bringing the total up to 1,517. J. W.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

JUNE 25.—The seventieth annual festival dinner of the friends of this charity was held on Wednesday evening (as these pages were being prepared for press) in the handsome Whitehall Room of the Hotel Metropole. The chair was occupied by Lionel de Rothschild, Esq., the sixth member of his family to preside at these annual gatherings. In proposing the toast of "Continued Prosperity to the Gardeners' Royal Benevolent Institution," the Chairman said there were no fairer gardens than those of England, and those who derived pleasure from them owed a duty to those who had made them fair.

Mr. Harry J. Veitch, in responding, made a fervent appeal for funds. He said the society disbursed yearly to its pensioners nearly £4,320. During the society's 70 years' existence the sum of £124,000 had been expended in relieving necessitous cases. There were 239 pensioners receiving relief, and six of the recipients were more than 90 years of age. The Secretary announced that £2,099 had been subscribed at and in consequence of the dinner, including 100 guineas from the Chairman, a similar sum from Messrs. Rothschild, £100 each from Messrs. Hurst & Son, Sutton & Sons, and Mr. Ed. Sherwood. Friends at Covent Garden Market had collected a total of £236 15s., including £176 5s. gathered by Mr. Geo. Munro. The total sum was nearly £100 more than that subscribed at the last festival dinner.

Mr. Sherwood, in proposing the health of the Chairman, stated that £4,000 had been subscribed to the charity by members of the Rothschild family.

DEBATING SOCIETIES.

STIRLING & DISTRICT HORTICULTURAL.—The members visited Cronlix, Dunblane, the seat of Arthur Hay Drummond, Esq., on June 12. The party was met by the gardener, Mr. Pratt, and after tea was partaken inspected the rock-garden, lawns, shrubberies, the wild garden in a glen, lily ponds, kitchen gardens and glass structures.

GUILDFORD AND DISTRICT GARDENERS'.—A meeting of the association was held on Tuesday, June 15. Mr. Nicholls, of Merrow, presided, and matters concerning the annual show were discussed. Three new members were elected. At the invitation of the president, Mr. F. Wellesley, J.P., a party of over 20 members visited his garden at Westfield Common. Owing to the lateness of the hour only a few members were enabled to take advantage of Messrs. Jackman's invitation to visit their nurseries at Woking.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending June 19, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The weather.—Over the United Kingdom generally the weather was dry, and in Scotland and the western counties of England it was often bright, but in the eastern and central parts of England the sky was mostly cloudy or overcast. Local thunderstorms were experienced in the south of England on Wednesday.

The temperature was slightly above the average in Ireland, but more than a degree below it in most parts of Great Britain. The highest of the maxima were recorded on somewhat irregular dates, and ranged from 73° in Scotland E., Scotland W., and England S.W., to 70° in England E. and the English Channel. The lowest of the minima occurred generally on the 18th, and varied from 30° in England S.W. (at Llangamarch Wells on the 14th), and 31° in Scotland E., to 39° in Ireland S., and to 42° in the English Channel. Frost was recorded on the grass in several localities, the lowest readings reported being 28° at Crathes and Llangamarch Wells, 25° at Birmingham, and 23° at Newton Rigg and West Linton.

The mean temperature of the sea.—Except on the east and south-east coasts of England the temperature of the water was higher than it was during the corresponding week of last year. The actual values ranged from 57.7° at Margate and Newquay, and 57.3° at Seafield to 49.2° at Burmouth, and to 48.1° at Lerwick.

The rainfall amounted to considerably less than the average in all districts. At several stations in England the week was quite rainless.

The bright sunshine exceeded the average in the east and west of Scotland and the north-west and south-west of England, as well as in Ireland N. and the English Channel. Elsewhere, however, it was below the normal. The percentage of the possible duration ranged from 65 in the English Channel, 56 in Scotland W., and 55 in England N.W. to 26 in England N.E., and to 24 in England E.

THE WEATHER IN WEST HERTS.

Week ending June 23,

Another cold week.—The last three weeks have all been cold, but the past week the least cold of the three. Since the present month began there has not been a single unseasonably warm day, and only five warm nights, four of these being in the past week. The ground is at the present time one degree colder at two feet deep, and two degrees colder at one foot deep than is reasonable. Rain fell on three days, but to the total depth of only a quarter of an inch. This small quantity was, however, sufficient to restart the bare soil gauge, through which there had been no measurable percolation for over a week, but it had no effect on the gauge on which short grass is growing, which has been dry for eight days. The sun shone on an average for 4½ hours a day, or for 14 hours a day less than is usual at this period of June. The atmosphere remained very calm throughout the first three days of the week, but since then the wind has been at times moderately high. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by 7 per cent.—E. M., *Berkhamsted*, June 23, 1909.

MARKETS.

COVENT GARDEN, June 23.

[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 is not to 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.—Ed.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Anemone fulgens, p. dz. bunches	1 6-2 0	Narcissus, double white, dozen bunches	2 0-2 6
Carnations, p. doz. blooms, best	2 6-3 6	Odontoglossum crispum, per dozen blooms	2 0-2 6
American (var.) second size	1 0-2 0	Pæonies, per dozen bunches	6 0-10 0
smaller, per doz. bunches	9 0-12 0	Pelargoniums, show, per doz. bunches	4 0-6 0
"Malmaisons," p. doz. blooms	6 0-8 0	Zonal, double scarlet	4 0-6 0
Cattleyas, per doz. blooms	10 0-12 0	Poppies, Iceland, per dozen	3 0-6 0
Cypripediums, per dozen blooms	1 6-2 6	Shirley	2 0-3 0
Enchiridion grandiflora, per doz. blooms	2 6-3 6	Pyrethrums, per dozen bunches	2 0-3 0
Freeseias (white), p. doz. bunches	2 0-2 6	Richardia africana, per dozen	1 6-2 6
Gladiolus, per doz. bunches	6 0-9 0	Roses, 12 blooms, Niphetos	1 0-2 0
Gypsophila elegans, per doz. bunches	3 0-4 0	Bridesmaid	2 6-4 0
Iris (Siamish), per dozen bunches	6 0-12 0	C. Testout	2 0-3 0
(German)	2 0-4 0	Kaiserin A. Victoria	2 0-4 0
Ixias, per dozen bunches	2 0-3 0	C. Mermet	1 6-3 0
Lilac, mauve	0 6-1 0	Liberty	3 0-5 0
Lilium auratum, per bunch	2 0-3 0	Mme. Chatenay	2 0-4 0
longilorum	1 6-2 6	Mrs. J. Laing	1 6-3 0
lanceifolium, rubrum	1 6-2 6	Richmond	3 0-6 0
album	2 0-2 6	The Bride	3 0-4 0
Lily of the Valley, p. dz. bunches	6 0-9 0	Ulrich Brunner	2 0-4 0
extra quality	12 0-15 0	Spiræa, per dozen bunches	5 0-8 0
Marguerites, p. dz. bunches white and yellow	2 0-3 0	Stocks, double white, per doz. bunches	2 0-3 0
Mignonne, per dozen bunches	3 0-5 0	Sweet Peas, per doz. bunches	2 0-6 0
Myosotis, per doz. bunches	1 6-2 0	Tuberoses, per doz. blooms	0 3-0 4
Narcissus, per doz. bunches	1 0-1 6	on stems, per bunch	0 9-1 3
		Tulips, Darwin varieties, p. dz.	6 0-12 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Adiantum cuneatum, per dozen bunches	6 0-9 0	Grasses (hardy), dozen bunches	1 0-3 0
Agrostis, per doz. bunches	1 6-2 0	Hardy foliage (various), per dozen bunches	3 0-9 0
Asparagus plumosus, long trails, per doz.	8 0-12 0	Honesty (Lunaria) per bunch	1 0-1 6
medium, each	1 0-2 0	Ivy-leaves, bronze long trails per bundle	0 9-1 6
Sprengeri	0 9-1 6	short green, per doz. bunches	1 6-2 6
Berberis, per doz. bunches	2 6-3 0	Moss, per gross	4 0-5 0
Croton leaves, per bunch	1 0-1 3	Myrtle, dz. bchs., (English)	4 0-6 0
Cycas leaves, each	1 6-2 0	smal-leaved	1 0-1 6
Ferns, per dozen bchs. (English)	2 0-3 0	French	4 0-6 0
(French)	0 6-0 9	Smilax, per dozen trails	4 0-6 0
Galax leaves, per dozen bunches	2 0-2 6		

Plants in Pots, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Ampelopsis Veitchii, per dozen	6 0-8 0	Cyperus alternifolius, dozen	4 0-5 0
Aralia Sieboldii, per dozen	4 0-6 0	laxus, per doz.	4 0-5 0
larger specimens	9 0-12 0	Dracenas, per doz.	9 0-24 0
Moseri	4 0-6 0	Erica persoluta alba, per doz.	12 0-24 0
Araucaria excelsa, per dozen	12 0-30 0	candidissima, per doz.	18 0-24 0
large plants, each	3 6-5 0	Cavendishi, dz.	24 0-36 0
Aspidistras, p. dz., green	15 0-24 0	Euonymus, per dz., in pots	4 0-9 0
variegated	30 0-42 0	from the ground	3 0-6 0
Asparagus plumosus nanus, per dozen	12 0-18 0	Ferns, in 100s.	8 0-12 0
Sprengeri	9 0-12 0	in small and large 60's	12 0-20 0
tenuissimus	9 0-12 0	in 48's, per dz.	4 0-6 0
Boronia megastigma, per doz.	24 0-30 0	chooser sorts	8 0-12 0
heterophylla	12 0-18 0	in 32's, per dz.	10 0-18 0
Calceolaria, yellow, per dozen	5 0-7 0	Ficus elastica, p. dz.	8 0-10 0
Chrysanthemum coronarium, per dozen	5 0-8 0	repens, per doz.	6 0-8 0
Clematis, per doz. in flower	12 0-18 0	Fuchsias, per doz.	8 0-10 0
Cocos Weddelliana, per dozen	18 0-30 0	Greivilleas, per dz.	4 0-6 0
Coleus, per dozen	4 0-6 0	Hardy flower roots, per dozen	1 0-2 0
Crassulas, per doz.	8 0-12 0	Heliotropiums, per dozen	5 0-6 0
Crotons, per dozen	18 0-30 0	Hydrangea paniculata	12 0-24 0
		hortensis	9 0-18 0
		Isolepis, per dozen	4 0-6 0
		Kenia Belmontiana, per dozen	15 0-24 0
		Fosteriana, per dozen	18 0-30 0

Plants in Pots, &c.: Average Wholesale Prices (Cont'd.).

	s.d.	s.d.
Latania borbonica, per dozen	12	0-18 0
Lilium longiflorum, per dz.	12	0-18 0
— lancifolium, p. dozen	12	0-24 0
Lily of the Valley, per dozen	18	0-30 0
Lobelia, per dozen	4	0-5 0
Marguerites, white, per dozen	5	0-8 0
— Yellow, per dozen	12	0-15 0
Mignonette, per dozen	4	0-6 0
Musk, per dozen	3	0-4 0
Pansies, per box of 24 plants, each	2	0-3 0
Pelargoniums, show varieties, per dozen	8	0-12 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples (Tasmanian), per case:		
— Ribston Pippin	10	0-11 0
— Scarlet Pearmain	10	0-11 6
— Alexander	8	6-10 0
— Prince Alfred	10	0-11 0
— French Crab	10	0-11 0
— Sturmers	10	0-11 6
— (Australian), per case:		
— Dunn's Seedling	11	6-19 0
— Rome Beauty	11	0-12 6
Apricots (French), per box	0	10-1 6
Bananas, bunch:		
— Doubles	9	0-10 0
— No. 1	6	8-8 0
— Extra	8	0-9 0
— Giant	10	0-12 0
— (Claret coloured)	5	0-7 6
— Jamaica	5	0-5 6
— Loose, per dz.	0	6-1 0
Cherries (English), per peck	2	6-4 0
— 3/4 sieve	5	0-8 0
— (French), box	0	9-1 6
— 3/4 bushel:		
— Black	5	0-7 0
— White	4	0-4 6
— Oxbearts	5	0-6 0
Currants (French), red, handle bkt.	2	6-3 0
— black, 3/4 sieve	6	0-7 0
Custard Apples	3	0-12 0
Gooseberries (English), 3/4 sieve	1	6-1 9
Grape Fruit, case	0	13-0 0
Grapes (new)	1	6-3 0
— English Hambros, per lb.	1	3-1 6
— Alicante, p. lb.	1	6-1 9
— Muscats, p. lb.	1	9-3 0
Guernsey Figs, dz.	1	6-2 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Artichokes (Globe), per dozen	1	9-2 0
— white, p. bushel	2	0-2 6
— per cwt.	3	6 —
Asparagus, per bundle:		
— (English)	1	3-2 0
Beans, per lb.:		
— (English)	0	6-0 7
— (French)	0	7-0 8
— (Guernsey)	0	6-0 7
Beetroot, per bushel	3	0-4 0
Cabbages, per mat	4	0-4 6
— per crate	7	6-8 0
— per box (24)	3	0-3 6
— Greens, per bushel	1	0-1 6
Cardoons (French), per dozen	8	0-10 0
Carrots (English), dozen bunches	4	0-5 0
— washed, bag	6	0-6 6
— unwashed	4	0-5 0
— (French), bunch	0	4-0 5
Cauliflowers, doz.	3	0-3 6
Celery, per doz.	1	6-2 6
Chicory, per lb.	0	3-0 4
Cucumbers, per dz.	1	3-2 6
Endive, per dozen	1	3-1 9
Horseradish, foreign, per doz. bundles	17	0-21 0
Leeks, 12 bundles	2	0-2 6
Lettuces (English), per crate, 5 dz.	3	0-4 6
Mint, doz. bunches	6	0 —
Mushrooms, per lb.	0	6-0 8
— broilers	0	4-0 6
— buttons, per lb.	0	8-0 10

REMARKS.—Strawberries from Kent and the Southampton District are arriving in large quantities, but most of the fruit is lacking in colour. Green Gooseberries are selling at about the same price as last week. Kentish Cherries are being received, principally of the varieties Crown Heart and Baumann's May. French Cherries are much cheaper owing to larger supplies. The demand for Oranges and Lemons remains good. Supplies of English hothouse Strawberries have finished after a poor season, their prices remaining low throughout. English Peaches are a better trade, especially those of good quality. Nectarines being very plentiful are consequently cheaper. Trade generally is fairly good. E. H. R., Covent Garden, June 23, 1909.

	s.d.	s.d.
Lincolns—		
Up-to-Date	2	6-3 0
Maincrop	2	0-2 6
Evergood	1	9-2 6
King Edward	2	3-2 6

REMARKS.—The trade for old Potatos is nearly finished, most business being in new tubers from Jersey, St. Malo, and Cherbourg. The demand, even for new Potatos, is not brisk. Edward J. Newborn, Covent Garden and St. Pancras, June 24, 1909.

COVENT GARDEN FLOWER MARKET.

There are still large supplies of bedding plants on sale. Yesterday (Tuesday) morning, after the market was closed, I found there were large quantities of plants and also of cut flowers unsold.

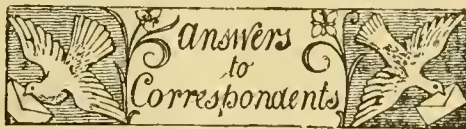
CUT FLOWERS.

Roses from the open are arriving from all quarters and their prices are very low. Blooms of the best quality of Mrs. J. Laing have sold for 3s. per dozen, but those of second quality are sold at from 9d. to 1s. or even less. The same remarks apply to all other sorts. Moss Roses have been sold as cheaply as 4s. to 6s. per dozen bunches. The many blooms of Carnations purchased by hawkers is evidence of bad trade, or over supply. The new white variety, shown on Tuesday last at the R.H.S. meeting, should prove a valuable market variety, because of its powerful scent: it is named "Stirling Stent." The grower informed me it is one of the most prolific varieties he has grown. Lilioms have fallen to very low prices except for flowers of the best quality. Good blooms of L. longiflorum were obtainable at 1s. 6d. per bunch, but this must not be regarded as the ordinary market value.

Hardy flowers are seen in large quantities, including Paeonies of the best varieties, and they are all cheap. The pink and the pure white Paeonies are most in demand. Of Pyrethrum the single-flowered kinds are most appreciated. Iceland Poppies are so cheap that their culture can hardly be profitable. Centaurea Cyanus (Cornflower) in various colours is good, but it is only those flowers of the best blue and pink shades that are appreciated. Irises include those of the Spanish, German and English types. Achillea alpina is extensively grown, and is a good substitute for Gypsophila. Some of the hardy Grasses are now extensively used for florists' work, and supplies of these are large.

POT PLANTS.

At this season supplies of pot plants are variable, but up to the present they have been excessive. The growers have not lowered their prices for Rambler Roses, but there must be a considerable waste in these plants. Hydrangea Mariessii, some with flowers of blue tint and others with the natural rosy pink shade, are good. H. hortensis varies; few growers produce a good blue shade in the flowers. Supplies of Ericas are not quite finished; both E. Cavendishii and E. ventricosa magnifica are good. Boronias are nearly over for the season, but plants of B. elatior are procurable. Pelargoniums of all sections are plentiful, also Fuchsias, Marguerites, yellow Chrysanthemums, Heliotropes, and Spiraes. Verbenas in several colours are good, but only for the pink variety, Miss Willmott, is there much demand. A. H., Covent Garden, Wednesday, June 23, 1909.



* * * The Editors will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for reproduction as Supplementary Illustrations in this Journal.

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.

CATERpillars ON APPLE TREES: T. W. Spray the trees with some arsenical compound, such as Paris Green.

GOOSEBERRIES: F. J. T. The foliage is injured by red spider. Spray the bushes with some insecticide.

MELONS: Worried. The trouble is due to a destructive disease caused by a fungus, Ascochyta. Remove the diseased plants, and spray the bases of the stems of the remaining plants, also the soil, with the Bordeaux mixture.

NAMES OF PLANTS:—H. C. 1, Veronica Teucrium; 2, Hypochoeris erecta; 3 and 4, hybrids of Saxifraga Hostii x Aizoon; 5, Saxifraga trifurcata var. ceratophylla; 6, S. trifurcata.—S. F. S. Statice Suworowii.—G. W. Miller. Anthericum Liliago.—A. J. Keen. 1, Sanicula europaea; 2, Galium cruciata.—Alba. 1, Pelargonium capitatum var.; 2, P. citriodorum major; 3, P. c. "Prince of Orange." We do

not undertake to name varieties of Carnations.—E. S., Scarborough. Prunus Padus; Bird Cherry.—S. J., Stroud Green. Viola species, probably V. cornuta. The specimen is insufficient to determine accurately.—H. Y., Ireland. 1, Pyrus Aria var.; 2, Diervilla florida variegata.—W. C. U. 1, Rubus, species near nutkanus, send when in fruit; 2, Pieris japonica; 3, Nemophila insignis; 4, a variety of the common Box, Buxus sempervirens, probably the form known as myrtifolia.—Pillingers. 1, Spiraea bracteata; 2, Neillia opulifolia, has been named Spiraea opulifolia; 3, Diervilla japonica var. hortensis.—H. C. 1, Lonicera involucrata var. Ledebourii, 2, Pyrus Aucuparia.—H. F. Penryn. 1, "The Cockspur Thorn," Crataegus Crus-galli; 2, Veronica Lyallii.—J. R. B. Climbing White Niphetos.—G. S. 1, Lælia tenebrosa; 2, Vanda suavis; 3, Masdevallia coriacea. The others are Maranta Massangeana, and some varieties of Adiantum cuneatum. Your numbers are not readable.—A. R. T. 1, Oncidium flexuosum; 2, O. pulvinatum; 3, Ada aurantiaca; 4, Ocotemora Loddigesii; 5, Stelis micrantha; 6, Masdevallia trichate.—Foreman. 1, Pteris tremula; 2, Asplenium lucidum; 3, Pteris cretica; 4, P. serrulata cristata; 5, P. cretica.—A. G. 1, Aloe socotrina; 3, A. verrucosa; 3, Metrisoderos floribunda (Bottle-brush); 4, Jacobinia (Justicia) carnea.—E. A. 1, Nerium Oleander fl. pl.; 2, Impatiens Sultanii.—S. G. 1, Codiaem (Croton) majesticum; 2, C. Mortii; 3, C. interruptum; 4, Begonia fagifolia and the Orchid Brassia verrucosa.—E. R. S. 1, Not found; 2, Ornithogalum longibracteatum; 3, Pachyphytum hybridum; 4, Adiantum hispidulum; 5, Aspidium (Nephrodium) molle; 6, Athyrium filix-femina pulcherrima.

NEW ZEALAND AND TASMANIAN BEECHES: J. C. Nothofagus (Fagus) cliffortioides is in cultivation in the temperate house at Kew, Messrs. Veitch's at Coombe Wood (outside), at Enys, Cornwall, and no doubt in several other gardens in that county and Ireland. Perhaps the most notable specimen of N. Cunninghamii in England is at Osborne, Isle of Wight; it may also be seen at Fota and Kilmacurragh, in Ireland. It is grown in the temperate house at Kew. N. fusca is in cultivation at Kew, in one or two Cornish gardens, and at Castlewellan, in Ireland. N. Menziesii is at Kew; we do not know any other place where it is cultivated. N. Moorei grows out-of-doors at Kilmacurragh and in the temperate house at Kew. Two other Australasian Beeches (N. Blairi and N. Solandii) do not appear to be in cultivation. Nothofagus is a very distinct group of Beeches, confined to the Southern Hemisphere. Some authorities, including Elwes and Henry, keep them apart as a distinct genus, as we think, with ample reason. The above species are all more or less tender. N. cliffortioides is perhaps the hardiest, as a fine specimen has lived out-of-doors for many years at Coombe Wood. N. Cunninghamii, also, used to be grown out-of-doors in the garden of the late Mr. Mongredien, at Heatherside, in Surrey. But it is only in the milder counties and in exceptionally favoured gardens that any of them can be expected to thrive permanently. We are not aware that any of them are kept in stock by the trade, but you might write to Messrs. Veitch, of Chelsea, Messrs. Gill, of Falmouth, and Messrs. Gauntlett, of Chiddingfold. No special treatment is necessary; they thrive in any moist, deep soil provided it is not too heavy.

PEACH LEAVES: F. J. T. The damage has been caused by drip. No disease is present.—F. F. Red spider is present in quantity, and this pest is responsible for the trouble.

TOMATO DISEASED: F. S. The plants are affected with "Black stripe." Spray the foliage, at intervals of four days until the complaint is checked, with a solution of sulphide of potassium, using one ounce in three gallons of water.

Communications Received.—J. Harris (thanks for 2s. 6d. sent for R.G.O. Fund). W. Hackett—Laxton Bros.—J. V. & S.—S. & S.—W. C. P.—A. D. D.—J. J. W.—E. B.—Flora—G. B. L.—C. G. B.—G. B.—H. M. V.—W. P.—T. D.—Anxious—W. G. S.—Sir C. D.—H. S. T.—W. B. H.—Bees Ltd. (with thanks)—Prof. I. B. B.—Sir W. T. D.—C. T. D.—S. A.—G. Monro—W. H. W.—A. B. H. & Sons, Mass., U.S.A.—M. B., Java.—Dr. F. W. K.—F. W.—R. W. P.—V. S.—H. & S.—H. J. M.—A. & McC.—F. M.—R. I. L.—E. F. A.—A. D. W.—J. D. G.—C. T. D.—W. H. Y.—Chloris—A. O.



